Introduction: multilateral verification in flux
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The past year saw the most intensive and intrusive international verification undertaking ever—that of the UN Monitoring, Verification and Inspection Commission (UNMOVIC) and the International Atomic Energy Agency (IAEA) in Iraq. Those of us who support multilateral verification can only despair at the fact that this endeavour—hastily deployed and equally hastily ended and superseded by war—was not given the opportunity to prove itself fully. Nonetheless, it brought verification to the fore in international, and some cases national, discourse in a way that is without precedent.

The whole decision about whether the UN Security Council should authorise war against Iraq or, alternatively, whether the United States, the United Kingdom and their allies should go it alone, was made contingent on the answer to a verification question: was Iraq already sufficiently in verifiable non-compliance or should UN inspectors be given additional time to make the case? Questions about the veracity, interpretation, and use or misuse of national intelligence information by both the British and the US governments in making the case for war reinforced for many observers the need for a multilateral verification process to be allowed to discern the truth. Largely unsuccessful post-war efforts by the US army, followed by the joint Australian/UK/US Iraq Survey Group (ISG), to find any evidence of reconstituted or new Iraqi weapons of mass destruction programmes kept the verification question in the news throughout 2003. The tragic death of British weapons inspector and scientist Dr David Kelly, a friend of VERTIC and contributor to last year’s volume of the Verification Yearbook, and the subsequent Hutton Inquiry, have kept the Iraq issue, and with it the verification question, in the public arena in the UK long after it might otherwise have subsided. Inquiries by
the legislatures in Australia, the UK and the US into the credibility of the coalition governments' case for going to war have further fuelled debate about the value of multilateral verification as a means of resolving compliance crises.

As if this were not enough, 2003 also saw the emergence of serious questions about Iran's compliance with its legally binding commitment, under the 1968 Nuclear Non-Proliferation Treaty (NPT), to renounce the option of acquiring nuclear weapons. Here a verification and compliance regime has, to date, functioned exactly as it should: allegations were made, the IAEA undertook inspections to verify the charges and discovered suspicious and ambiguous evidence, and Iran was given a deadline to greatly increase its co-operation, permit even more intrusive inspections, cease the production of enriched uranium and sign an Additional Protocol to its existing nuclear safeguards agreement. International pressure, notably from the European Union, and the IAEA's steadfastness have produced Iran's compliance, so far, with these demands.

The case of North Korea, considered by Kenneth Boutin in this edition of the Yearbook, became more worrying from a verification perspective in the past year: currently there are no IAEA inspections in the country, North Korea has claimed that it has already acquired nuclear weapons undetected—meaning that previous verification efforts, including by the IAEA, have been seriously inadequate—and current multiparty talks to find a political solution have produced no verification plan that would be remotely acceptable to both North Korea and its regional interlocutors. All these high-stakes situations—in Iraq, Iran and North Korea—confirm, once again, the old verities of multilateral verification and compliance.

**Political context**

One of the most important variables in the life cycle of a verification regime, dramatically confirmed by the fate of UNMOVIC, is the degree of political support it commands. Verification does not operate in a vacuum, no matter how clever negotiators might be in attempting to establish legal and organisational barriers to the intrusion of politics. As Duncan Brack shows in his chapter in this Yearbook, it was the sudden scare about the hole in the ozone layer in the 1980s that led swiftly to the 1987 Montreal Protocol and its successful monitoring and compliance regime. By contrast, there had not been sufficient political momentum behind
the Biological Weapons Convention (bwc) when it was negotiated in 1972 to afford it a comprehensive verification system—an outcome that multilateralists have lived to regret, as Jez Littlewood recounts in his chapter in this volume.

The politics of the moment can be used to set up quite far-reaching verification regimes if the time is ripe. It also means, however, that verification systems can atrophy if not well tended. Often there will be great enthusiasm for a new regime’s establishment, with large numbers of states coming on board, but over time the interests of governments turn elsewhere as other priorities arise. This appeared to be the fate of the Organisation for the Prohibition of Chemical Weapons (opcw) before the heartening developments of the past year, as described by Bob Mathews in his chapter. If they are not reoriented, some regimes may end up being targeted at the wrong problem or only part of the problem. For example, the threat of terrorism was not well taken into account by states when the goals of the verification systems for the original treaties dealing with weapons of mass destruction were negotiated. They are all now scrambling to make good the resulting lacunae. An example dealt with by Klaas van der Meer in his chapter is the use of radioactive sources in or as radiological dispersion devices (RDDS), a possible threat only recently identified.

Part of the solution to tackling the possibility of non-state actors undermining treaty implementation is to ensure that states parties adopt national legislation and other domestic implementation measures to make sure that their treaty commitments are complied with across their national jurisdictions and that appropriate penal and other sanctions are in place. The renewed emphasis in many treaty regimes on the domestic implementation of international legal commitments is long overdue. This should not, however, be at the expense, or in place, of strengthening multilateral verification and compliance mechanisms. Unfortunately, the current us focus on national measures to combat biological weapons proliferation is intended deliberately to subvert the strengthening of multilateral verification arrangements for the bwc.

States parties’ neglecting their verification regimes is one danger. The obverse danger is unwarranted political interference in them. Many accused the us of interference on political grounds in the case of the removal of the head of the opcw in 2002, while in the case of UNMOC’s predecessor, the UN Special Commission
on Iraq (UNSCOM), a number of permanent members of the UN Security Council attempted to exert undue influence. The lesson here is to have proper guidelines in place, to encourage greater transparency in the operation of verification systems, and to try to avoid overdependence on one state or one group of states for material and financial support. UNMOVIC seems to have learned these lessons well.

**Negotiation of verification**

Like all other aspects of an arms control or disarmament regime, the monitoring and verification aspects should be well negotiated so that they function effectively when the treaty comes to be implemented. However, there is almost always a tension between achieving consensus on a treaty to allow it to go forward and achieving agreement on the optimal verification and compliance system that should be adopted. Often a powerful conception of verification will be traded off for some other, unrelated aspect of the envisaged treaty, such as its entry into force provisions. While states almost invariably tend not to like intrusive verification which involves them in great effort and expense and the possibility of embarrassing revelations, there is a price to be paid later in terms of verifiability, the credibility of the verification mechanisms that are established and the possibility of international controversy. An example was the crisis in IAEA nuclear safeguards in the 1990s after Iraq, and then North Korea, were found to have flouted them.

One other difficult trade-off that occurs in negotiating verification arrangements is that between the level of detail that is included in the text and the pressure to conclude the negotiations. The temptation is often to avoid particulars in favour of getting an early agreement, leaving the detail to the bodies charged with implementing the treaty. It is, indeed, sensible to avoid setting too much detail in stone, since implementation always throws up unexpected problems which may be difficult to resolve if options are precluded by treaty language that can only be amended through protracted procedures requiring consensus and/or the negotiation of additional legal instruments. On the other hand, situations like that which faced the Comprehensive Nuclear Test Ban Treaty Organization (CTBTO) need to be avoided: it was charged with establishing seismic monitoring stations whose geographical co-ordinates were in the sea or in the middle of urban areas because the negotiation of the detail had been rushed in order to ensure that the treaty was
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adopted. All this speaks to the immense value of pre-negotiation research and preparation, part of which can be done by non-governmental research organisations like vertic.

One aspiration that negotiators should have is to build flexibility into their verification system so that it can adapt itself to future needs and challenges. This should be done creatively. States will oppose too much flexibility because they want to be sure about what they are signing up to: they need reassurance that future modifications will be made on an agreed basis. As the chapters by both Molly Anderson and Jason Anderson reveal, the Kyoto Protocol is an extreme example of an agreement that has been a work in progress ever since it was agreed in 1997. Even now there remain hugely complex details of implementation, such as the operation of the so-called flexible mechanisms and their monitoring and verification.

The organisation of verification

Much has been learned by now about the organisational structures required for effective verification and compliance, especially when a comprehensive system is envisaged. There is now a standard model of a conference of states parties, an executive body and a technical secretariat, including where necessary a standing inspectorate. International verification organisations still, however, rarely adopt best management practices as used in business or in the more effective national governments. They still tend to use allegedly tried and true UN practices, often simply because they are readily available. They still often assume that running a verification organisation is a unique organisational challenge that has no parallels elsewhere. The OPCW has been grappling with this legacy in the past year. There would appear to be no a priori reason why the highest managerial standards—including those relating to finance and human resources—should not be expected of our verification systems. International security is too important to be waylaid by distracting organisational problems that have ready solutions. As Alex Vines illustrates in his chapter on African sanctions monitoring, one individual or national delegation (in this case in the UN Security Council) can be enough to make a difference. As Jill Cooley shows in her chapter on integrated safeguards, new approaches to making verification more effective and efficient, and in the long-run saving money, are possible in the most venerable of multilateral verification bodies.
Funding of verification
The question of the funding of verification is a perennially fraught one. While no one expects verification systems to be given a blank cheque, verification cannot be expected to be done on the cheap lest it discredit the whole verification enterprise. Almost all of the multilateral verification organisations and arrangements are experiencing funding challenges at present. Luckily, rescue money is being provided for the OPCW and, thanks to the US, the IAEA has in 2003 finally been released from over a decade of punishing zero growth. Particularly when compared to spending on defence, spending on verification is a security bargain. It should be considered in the same light as allegedly more hard-headed co-operative threat reduction and counter-proliferation programmes, the monitoring of which is considered by Michael Jasinski in his chapter on laudable American efforts in this regard. Verification regimes need to be looking at other funding possibilities, including foundations and commercial spin-offs. For example, some of the data collected by the CTBTO's International Monitoring System has commercial value, for instance, for the airline industry.

Techniques and technologies
The extent to which the latest and most appropriate techniques and technologies can be used in multilateral verification systems is, perhaps surprisingly, often controversial. To begin with, there is always a trade-off between effectiveness and cost. States parties will naturally want to keep the costs of verification as low as possible, while still giving the verification system the requisite degree of credibility. But other issues are involved. Some states are fearful of technology that is too capable and will want to restrict it. This was a difficulty in the negotiations on the 1992 Open Skies Treaty, to the point where the sensor technology being allowed for use by the treaty parties is now, one year after it entered into force, quaintly old-fashioned. In other cases the type of verification technology being applied needs to be restricted in order to prevent proliferation-relevant information being disseminated to the verifiers—hence the use of so-called blinded instrumentation that will detect only specific, limited types of information. Sometimes bureaucratic inertia in multilateral organisations prevents greater use being made of technologies, as in the case of the mysterious inability of the OPCW to replace expensive permanent
human monitors at chemical weapon destruction facilities with equally effective remote on-site monitoring equipment.

Another difficulty is that verification technology can be so specialised that it must be researched and developed by verification bodies themselves: no commercial company will invest in research for such a limited market and potentially low profit. This can be a heavy burden on verification organisations, although creative partnerships with universities and less commercially-driven organisations should be possible. As Christine Comley and Owen Price point out in their chapter on the UK’s role in radionuclide monitoring for the CTBT, there can also be a mutually beneficial exchange of technology and methodologies between international verification organisations and national research and monitoring agencies.

The good news where technology is concerned is that off-the-shelf equipment can be readily used for a variety of verification roles, and its price often drops rapidly once it begins to penetrate the commercial market. Both the hardware and the software of computers have demonstrated this trend dramatically.

National technical and technological incapacity for self-monitoring and for implementing treaty commitments is also a major issue in many regimes. Many developing countries, especially in Africa, and those that used to be part of the Soviet empire, struggle to report on their own compliance with international treaties and to adopt national implementation measures. They have even more difficulty in contributing technical personnel, including on-site inspectors, to international verification efforts. Molly Anderson illustrates this in relation to the ‘demonstrable progress’ issue under the 1997 Kyoto Protocol on climate change, while Angela Woodard considers three treaty regimes— for chemical and biological weapons and anti-personnel landmines— where large numbers of states are in non-compliance with their obligations to adopt national implementation legislation, often due to a lack of capacity. The obvious answer is for regimes to ensure that appropriate assistance and capacity-building are available to those states that need them.

As a verification technique, on-site inspections have come a long way in recent decades. The confidence-building measures (CBMs) pioneered by the Organization for Security and Co-operation in Europe (OSCE), the 1990 Treaty on Conventional Armed Forces in Europe (CFE Treaty) on-site inspections and those for the US-
Soviet bilateral nuclear treaties were the forerunners of today's modern inspections, as exemplified in Iraq and Iran in 2003. There are now bodies of professional on-site inspectors, detailed protocols, procedures and technologies for on-site inspections, and a useful corpus of experience in making them effective. This includes 'managed access' techniques, the use of remote monitoring to supplement on-site inspections, environmental sampling, and procedures for handling commercially and militarily sensitive information. The difficulties that the CTBTO is facing in reaching agreement on its on-site inspection manual indicate, however, the sensitivities surrounding on-site inspections and the need for an educational process about them.

**Use of information**

One of the most pleasing verification developments in recent years has been the realisation that multilateral verification organisations can and should use the vast array of open source material to their advantage. Commercial satellite imagery and the internet are just the most obvious of the new information tools available. The IAEA is leading the way in this respect and is to be highly commended. Clearly, however, open source information needs careful and discriminate handling lest the multilateral organisations be overwhelmed by a tidal wave of information, as some national intelligence agencies would appear to be.

Similarly, the use of information provided by states from their national technical means (NTM) is a significant development. The experience of UNMOVIC is, however, salutary. The intelligence information provided to UNMOVIC and the IAEA about Iraq was late and much of it was of dubious character— notably the infamous allegation that Iraq had tried to obtain yellowcake (milled uranium oxide) from Niger. When almost all of the intelligence leads were verified by the international bodies as being without foundation, there was no public acknowledgement by the states that had provided the information that they had been wrong. Indeed, the impression was left that the UN's inspectors were not quite up to the verification job. While there are clearly enormous difficulties in states obtaining credible information from closed, autocratic regimes through NTM, and there is an undoubted need to protect sources, especially human sources of intelligence, those states that are able to provide NTM-derived information should be more honest and transparent.
in doing so. The UNMOVIC experience should be a warning for the standing verification bodies.

**Determination of compliance**

One of the least developed aspects of verification regimes is often the compliance aspects. While a great deal of attention is paid to what information is to be sought and how it is to be collected, collated and analysed, there is often a reluctance to be clear about how a determination of non-compliance is to be made and what subsequent steps are possible if such a finding is made. Even IAEA safeguards have not been free from this: the confusion surrounding the possibility of ‘special inspections’ (essentially challenge inspections) has long been a factor in at least popular scepticism about the effectiveness of verification of the NPT. If Iran fails to comply with its recent undertakings, including its Additional Protocol, the question of how it can be induced to comply will soon confront the UN Security Council, since the IAEA itself will have exhausted the range of ‘carrots and sticks’ that it has at its disposal. The Montreal Protocol in late 2003 was faced with the prospect of the US unilaterally violating its obligations by increasing its use of methyl bromide under pressure from its farming lobby. The parties are already in heated discussion about how to respond to this unexpected compliance threat to their treaty—whether to grant the world’s most powerful state a precedent-setting exemption, to rewrite the treaty or to declare the US in non-compliance and apply sanctions. All the options look daunting.

**Building the international verification community**

One of the critical lessons that can be drawn from the experience of multilateral verification and compliance regimes over recent years has been the necessity to sustain political support and relevance. In this respect the multilateral organisations need to do better at promoting an appreciation of the contribution they make to international peace and security, global environmental well-being or whatever their objective may be. Even governments themselves need to be reminded. Some governments, for example, when pressed to sign Additional Protocols to their nuclear safeguards agreements, have actually requested a quid pro quo in the form of technical and/or economic benefits—in essence a bribe from developed
countries—when clearly the primary benefit derives from enhancement of their national security. These benefits need to be made clearer.

While political support can, naturally, wax and wane after a verification system has been put in place, there are steps that verification bodies can take to cushion themselves against this. They could start by cultivating stakeholders elsewhere, including in civil society and among non-governmental organisations (NGOs), the general public, the media and the philanthropic foundation world, and even in business. The treatment of NGOs by some treaty parties and secretariats, oblivious to the benefits that co-operation with civil society can bring, is short-sighted. Unless verification organisations can improve their record in this they will forever be dependent on the kindness of governments and the limited attention span they often display, and their work will always be seen as arcane and marginal.

For its part VERTIC has attempted to steadily enhance its relationship with and support for multilateral verification organisations by participating in states parties' annual and review meetings, organising 'side events' at such gatherings, undertaking research into the challenges faced by verification regimes and, increasingly, by offering assistance and advice to states parties, including in such areas as national implementation legislation, compliance reporting and fact-finding missions. This eleventh Verification Yearbook is published in the same spirit. Once more it is a collaborative effort involving VERTIC staff and external collaborators. VERTIC is indebted to them all, especially commissioning co-editor Kenneth Boutin, sub-editor Eve Johansson, and Richard Jones, who handled design and production. VERTIC also acknowledges the financial support of the Joseph Rowntree Charitable Trust, the Ford Foundation, and particularly the John D. and Catherine T. MacArthur Foundation, which in early 2003 made a new three-year grant to VERTIC, in part to permit continued publication of the Verification Yearbook.

This Yearbook is dedicated to the memory of David Kelly.

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