

# Verification Developments: Opportunities and Challenges

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10 May 2012

Prepared for: *Academic Peace Orchestra Middle East, The Middle East and Arms Control Verification Lessons Learned*, Alghero, Italy, 23–25 May 2012

## Introduction

Verification has been an ambition for international weapon control treaties since the early 20th century. However, conceptions of national sovereignty precluded ideas such as onsite inspections (except in cases of defeated enemies) and lack of technical means left designs for remote verification aspirational for most of the century. The technological push in the armament dynamics of both the Soviet Union and the United States, together with the conquest of space and a growing need to inject a greater degree of stability and predictability in their bilateral relations, shaped increasingly sophisticated verification processes based on information exchanges and remote observation. Yet, some early efforts (e.g., the US Open Skies proposal of the early 1950s) ran afoul of a domestic public opinion hostile to the idea of arms reductions. By the end of the 1980s, inspections in military installations and civilian facilities by nationals of the adversary power had become politically possible, paving the way for the complex verification designs of multilateral disarmament and arms control treaties, such as the Chemical Weapons Convention (CWC).

Besides the technological and political considerations, judgment of verification feasibility also depended on the practical (rather than the legal) definition of a breach and the perceived ability to respond to such a breach by an adversary. *Arms control* is about the management of mutually agreed quantitative and qualitative levels of armament. After the treaty-specified objectives have been achieved, the weaponry under consideration still forms an integral part of military doctrine and national security policies, and residual assets remain deployed with the military. Compliance uncertainty was therefore assessed in terms of a militarily significant risk, in other words, a breach that might upset the military balance. Verification means available to the USA and the USSR in the 1970s and 1980s could detect the buildup of large excess capacities and, in view of long lead times for major weapon development and production, sufficient time was then thought to be available to respond in kind.<sup>1</sup>

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<sup>1</sup> This is the essence of US Ambassador Paul Nitze's definition of effective verification during his 1988 Senate testimony in support of the INF Treaty he had negotiated: 'if the other side moves beyond the limits of the treaty

A *disarmament treaty*, in contrast, requires the total elimination of a discrete weapon category, and related equipment and installations. It thereby removes the weaponry from military doctrine. Parties to a disarmament agreement retain no residual military capacity anymore, as a consequence of which even small illegal stockpiles may have significant military consequences. Moreover, a party to a disarmament treaty commits itself not to reequip itself with the prohibited weaponry under any circumstances, including defections from the agreement, threats of use or actual use in armed conflict. The quality of ‘uncertainty’ in a disarmament treaty is therefore fundamentally different from that in an arms control agreement, hence the necessity of more intrusive verification procedures as well as guaranteed security assistance in case of threats or attacks with the proscribed weapons.

However, with the end of the cold war, the disarmament objective lost currency in favour of non-proliferation strategies, which relied much more on national intelligence assessments (whether or not coordinated with those from like-minded governments) of intent of potential adversaries. Nitze’s definition of verification expectations has not been updated,<sup>2</sup> and consequently little consideration has been given to new approaches and roles for the participation of actors other than states. In addition, the more recent prominence of terrorist and criminal entities in threat perceptions has also altered the context for considering disarmament and arms control verification.

### **New pathways to confidence in compliance**

While the sources of the threat and threat perceptions have changed in significant ways, tools and processes for enhancing transparency, ascertain compliance and organizing verification too have multiplied and gained in both sophistication and efficacy. They include:

- *The acceptance of the principle of off-site and on-site inspections*, as well as the availability of inspection tools, procedures and expertise from other arms control and disarmament regimes. The 1986 Stockholm Agreement first introduced onsite inspections by one party on the territory of another party as a compliance and

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in any military significant way, we would be able to detect such violations in time to respond effectively and thereby deny the other side the benefit of the violation’. Cited in Ola Dahlman, ‘Verification: to detect, to deter and to build confidence’, *Disarmament Forum*, no. 3 (2010), p. 3.

<sup>2</sup> See, e.g., Rose Gottemoeller, Assistant Secretary, Bureau of Arms Control, Verification and Compliance, ‘From the Manhattan Project to the Cloud: Arms Control in the Information Age’, Sidney Drell Lecture at Stanford University, Stanford, CA, 27 October 2011, URL <<http://www.state.gov/t/avc/rls/176331.htm>>.

verification tool.<sup>3</sup> Under the INF Treaty, agreed the next year, this became a continuous activity. The CWC extended these type of inspections to civilian facilities that have the potential to develop and manufacture CW, but were not necessarily involved in past government-run CW programmes. From the late 1980s onwards, the chemical industry became heavily involved in the drafting of verification procedures that meet the goals of the CWC and safeguard industry interests.

- *The expansion of state surveillance capacity.* Since the 9/11 terrorist strikes, many aspects of public life are now routinely monitored, increasing, among other things, the ability to track or trace domestic and international movements of individuals. Such scooping, for instance at airports, border controls or simple road traffic or site monitoring, takes place irrespective of whether people are suspected of malfeasance. Data traffic, including among other things telephone calls, faxes, e-mail, can be monitored on a permanent basis. Specific trigger words may initiate in-depth investigations of particular communications with a view of preempting, for instance, criminal or terrorist activities.<sup>4</sup> Similarly, forensics increasingly have the ability to determine the nature of activities and the provenance of certain substances, as well as to place people at a particular location at a specific time. Overall surveillance capacity is furthermore vastly increased by complex search functions enabling access to interlinked databases.
- *The application of information and communication technologies to manage the ever growing generation of digital data.* Economic actors increasingly computerise their activities, while government agencies maintain digital databases ever growing in size and sophistication holding information on private practices in certain sectors of activities.<sup>5</sup>
- *Newly accepted practices of social control* include the adoption of standards, best practices, codes of conduct and behaviour, as well as the appointment of ombudsmen or the acceptance of the role of whistle blowers.
- *Strengthened oversight and monitoring of industry practices and research activities* cover public health as well as safety and security standards, government li-

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<sup>3</sup> Document of the Stockholm Conference on Confidence- and Security-building Measures and Disarmament in Europe Convened in Accordance with the Relevant Provisions of the Concluding Document of the Madrid Meeting of the Conference on Security and Co-operation in Europe, 19 September 1986, para. 65, available from URL <<http://www.osce.org/fsc/41238>>.

<sup>4</sup> Gerhard Schmid, Report on the existence of a global system for the interception of private and commercial communications (ECHELON interception system) (2001/2098(INI)), European Parliament: Temporary Committee on the ECHELON Interception System, document A5-0264/2001 (Final), 11 July 2001, available from URL <<http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+REPORT+A5-2001-0264+0+DOC+PDF+V0//EN&language=EN>>.

<sup>5</sup> Keith Krause, 'Leashing the Dogs of War: Arms Control from Sovereignty to Govern mentality', *Contemporary Security Policy*, vol. 32, no. 1 (2011), p. 24.

censing of certain activities, applications under export control regulations and end user certification, data collection under confidence-building measures, etc.

- *International expectation of transparency regarding state behaviour* based on a growing appreciation that the governance of a disarmament treaty is a shared responsibility. The increasing levels of information exchanges make that the past practice of state secrecy is now taken as an indicator of malevolent intent.
- *The mobilisation of social networks* to discover, detect or monitor certain events and developments. Presently social media already play a central role in transnational disarmament and arms control campaigns. One experiment demonstrated the possibility of inducing people to find a finite number of artefacts in a large geographical space in a short time frame through remote coordination.<sup>6</sup> Experiments stimulate the development of both technologies and strategies for public participation in remote verification and monitoring.<sup>7</sup> Tracking and cross-analysing postings on internet-based social networking tools enables the detection of patterns that can point with a reasonable degree of confidence to certain types of behaviour that might be relevant to prevent illicit armament programmes.<sup>8</sup> Their potential as a future tool for monitoring and verification has been recognised, although further investigation is still required to determine that such activities cannot be spoofed or manipulated.

### **A pathway to the future: multi-level and overlapping networks**

The Biological and Toxin Weapons Convention (BTWC) lacks a verification system and an international implementation organisation. Notwithstanding, states parties remain actively engaged in maintaining and strengthening the norm and in the process are developing a transparency and confidence-enhancing toolbox based on extended stakeholdership. Overlapping networks of cooperation and integration of activities appear to point to the future of disarmament. The two series of activities between review conferences (2003-2005

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<sup>6</sup> For a general description of the 2009 Defense Advanced Research Projects Agency (DARPA) Network Challenge, see the Wikipedia entry at URL <[http://en.wikipedia.org/wiki/DARPA\\_Network\\_Challenge](http://en.wikipedia.org/wiki/DARPA_Network_Challenge)>. For more detail on the mobilisation strategy by the winning team, see 'Media Lab team wins DARPA's Red Balloon Challenge', press release, MIT Media Relations, 10 December 2009, URL <<http://web.mit.edu/press/2009/darpa-challenge-1210.html>>.

<sup>7</sup> For instance, Public Laboratory for Open Technology and Science (PLOTS), at URL <<http://publiclaboratory.org/home>>. PLOTS contributed to the environmental monitoring after the Deepwater Horizon oil spill in the Gulf of Mexico in 2010.

<sup>8</sup> See, for example, Laila Shereen Sakr's study of traffic patterns from Twitter and Facebook to determine the directions of the uprisings in the Middle East during the spring of 2011. Jon Friedman, 'Twitter's window on Middle East uprisings', *Market Watch*, 18 May 2011, URL <<http://www.marketwatch.com/story/twitters-window-on-middle-east-uprisings-2011-05-18>>.

and 2007-2010) brought in representatives from organisations as diverse as the World health Organisation, Food and Agricultural Organisation and the World Organisation for Animal Health, Interpol, the World Trade Organisation and the World Customs Organisation, United Nations agencies concerned with disarmament, environmental protection and development, treaty-specific disarmament organisations, multi- and transnational companies, research institutes, etc., into the debates on strengthening the BTWC. The meetings also expanded the number of participating non-governmental organisations (NGOs) and contributed to the professionalisation and specialisation of their input. The range of actors who can apply for disarmament purposes the tools and processes described in the previous section has also widened from state agencies to international organisations, civil society constituencies, professional and scientific associations, and even individuals.

## **Conceptual solidification**

Even if such a multi-stakeholder model could become more prevalent over the next years, it still requires further conceptual development of some key ingredients.

First, the concept of transparency requires solidification, particularly if its ultimate goal is the generation of data that offer context to interpret activities and judge treaty compliance in the absence of formal verification. In its most traditional sense transparency pertains to governments and concerns the opportunities they have to establish compliance with a disarmament treaty by another state party. However, they have more tools at their disposal to ascertain compliance among allied and friendly states and will adopt a more congenial approach to activities whose potential ambiguity might raise concern if undertaken by a more antagonistic party. To avert this type of interpretation bias, states may also be willing to generate transparency proactively in order to demonstrate compliance to other state parties. This requires a degree of openness that can remove ambiguity. While today states share information with each other on levels that would have constituted high treason only a few decades ago, it remains true that even the most open democracies are unable to share all. More importantly, however, depending on a polity's conception of 'national sovereignty', the willingness to share certain information about domestic activities with dual-use potential in science, technology and manufacturing in fields directly or indirectly linked to a particular arms category may vary considerably. Therefore, as some states move forward with proactive openness, the risk that reluctance to voluntarily share such information be interpreted as an indicator of non-compliance may rise in the near future. Stakeholder communities, whether as part of data exchanges among members of transnational epistemic communities or for business and trades reasons, can contribute to the generation of neces-

sary transparency and offer context on how to interpret information, which otherwise would remain ambiguous.

Second, who should share in the results of such transparency activities? Stakeholders other than states increasingly contribute to the generation of transparency, whether as part of formalised procedures enabling the public access to government documents or as an outcome of the widening role of civil society and professional organisations in treaty implementation. Having access to certain data from transparency activities would not only improve civil society monitoring and analysis, but also contribute to the development of future governance models. In addition, a better sense of expectations from the disarmament community can help the relevant scientific communities and industries to ameliorate confidence in the legitimacy of their international business partners and in turn feed into the generation of transparency. For the foreseeable future, again a major discrepancy between those societies that actively invite civil society and other constituencies into the disarmament debate and implementation and those that advocate the primacy of the state as the sole stakeholder in disarmament treaties will continue to exist, if not grow. The principle of the matter must be resolved to reach a shared understanding of transparency and reach beyond that concept to devise verification.

## **Conclusion**

These evolutions illustrate the growing appreciation that the prevention of armament lies not just with a single treaty, but has become a shared responsibility of all. The future governance of disarmament, arms control and non-proliferation may increasingly come to rest on multi-stakeholdership and functional specialisation between governments and other stakeholders.

However, the many institutions and agencies still need to expand their respective comfort zones for working together, sharing information and integrating activities where possible. Bureaucratic resistance, different membership, or the stakes of different state agencies in the functioning of the various international organisations may remain major impediments. The same applies to interactions among the scientific and professional communities, industry, civil society constituencies, as well as with their interactions with governments and intergovernmental organisations.