Mr Schulte subsequently notified the Inquiry that material contained in this submission was developed into a journal article entitled **"Proliferation, Intelligence and the Case for Normalizing a Technical Accountability Obligation in Arms Control".**

21 December 2011

Paul Schulte's Submission to the Iraq Inquiry

Covering Letter

Dear Inquiry Secretariat,

1. I wrote after the opening of the Inquiry, offering to testify on aspects of the verification of prohibited Iraqi programmes, based on my experience as Director of Proliferation and Arms Control in the Ministry of Defence, and ex officio UK Commissioner on the UN Special Commission for Iraq (UNSCOM), and, later, the UN Monitoring, Verification and Inspection Commission (UNMOVIC), between 1997 and 2002. In that role I had observed the Security Council in special session, participated actively in wider UN committee work on the future of international engagement in Iraq, and consistently pressed a common British position , regularly developed with the Mod and FCO and the Intelligence Agencies, and instructed by my own extensive professional experience in the verification of arms control and disarmament, dating back to the development of the Managed Access inspection arrangements which I had originally proposed for what became the 1992 Chemical Weapons Convention.

2. You declined the offer of spoken testimony, but asked me to send in a written response.

3. I felt the best way to do this was to complete a comprehensive analysis, which has become a draft book chapter, discussed with academic colleagues, for a forthcoming Kings College publication on intelligence and proliferation. It addresses the points I would have

made in person to the Inquiry, but now in the context of wider research material which has subsequently become available.

4. I am therefore sending you an electronic copy of this draft chapter, together with an unclassified paper to which it refers (which presumably you will already have seen among the records provided by the Ministry of Defence) that I wrote, cleared within Whitehall, and discussed with Dr Blix as UK Commissioner in early 2002.

5. I hope the documents will provide some additional evidence, which does not, as far as I can tell, seem to have been fully brought out in the media coverage of the Inquiry, indicating the strength of HMG's reasons to assume, on the basis of persistent Iraqi behaviour, that there were still prohibited programmes or materials in Iraq when the war began in March 2003. It is worth stating that, up to the point that I left for a secondment to Harvard in July 2002, I never heard it seriously doubted amongst the officials and experts with whom I dealt in FCO and MoD , or indeed amongst the long-term UN inspectors with whom I came into contact in New York, or on visits to Saddam's Baghdad , that, while pieces of evidence might be individually questionable, and it was by no means clear that illicit remaining programmes necessarily represented an immediate military threat, the Iraqis nevertheless remained in very serious contravention of repeated Security Council Resolutions.

6. Given the controversy which has since surrounded his name, I should perhaps add that, in the Biological Weapons field, this view was also strongly shared by Dr David Kelly, the expert who was my adviser on that subject. The judgements in his posthumous Observer article published on 31st of August 2003 were entirely consistent with our joint experience and our previous discussions on the key aspects of the crisis. *"Although the current threat presented by Iraq militarily is modest, both in terms of conventional and unconventional weapons, it has never given up its intent to develop and stockpile such weapons ... After 12 unsuccessful years of*

UN supervision of disarmament, military force regrettably appears to be the only way of finally and conclusively disarming Iraq....The long-term threat... remains Iraq's development to military maturity of weapons of mass destruction - something that only regime change will avert." This is quite representative of the justifiable climate of suspicion within which I remember that Iraqi verification issues were considered within Whitehall.

7. As I point out in the draft chapter, much of the media commentary on the decision to resort to war seems to have ignored the persistent, unabated, Iraqi refusal to provide any systematic or believable technical narrative, or to allow uncontrolled interviews with technical directors. I hope that my detailed treatment of the significance of this factor might in some small way contribute to a rebalancing of public understanding of who was to blame for the violent culmination of the 1991-2003 Iraqi Compliance Crisis. I appreciate that this will be only one aspect of the comprehensive picture which the Inquiry is intended to create, but it could be of some importance to the emotions of the wounded and bereaved, and to the national memory of the conflict.

8. Looking ahead, my chapter, which is consistent with long-term UK positions over the satisfactory implementation of arms control and disarmament, also draws attention to the wider, implications for British or UN policy in similar future disputes. If (perhaps partly as a result of misunderstanding and distorted memory of the issues underlying verification in Iraq) the international community were to give up any serious expectation of obtaining technically coherent answers from states whose programmes provoke grave international concern, the world's prospects of controlling the uses of enormously promising but potentially threatening technologies, like nuclear power, genetic engineering, advanced synthetic chemistry and nanotechnology would be seriously damaged. Those global prospects would have been

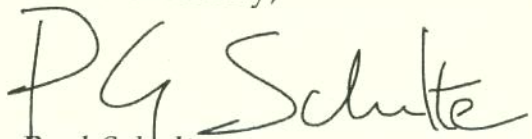
lastingly - perhaps decisively - prejudiced, if , in early 2003, after more than a decade of Iraqi-choreographed verification melodrama, and the stern final warning of UN SCR 1444, the world had witnessed an exhausted, knowingly inconclusive, and, consequently, almost certainly temporary, UN accommodation with Saddam's regime. Whatever relief and public diplomatic rapture might have greeted such a deal, it would have been silently judged, inside intelligence agencies and foreign and defence ministries, as successful Iraqi defiance of the regime's full disarmament obligations. (Had I still remained in post as UK Commissioner on UNMOVIC, I suspect that I would have had no intellectually reputable professional choice but to support such an interdepartmental conclusion about the degree of Iraqi cooperation offered in the months before the war.) Whether avoiding this deliberately ambiguous and unavoidably far-reaching outcome was worth a war, how far other factors were decisive in the decision to fight, and whether the resultant conflict and occupation were as well timed, conducted, or resourced as they could have been, I leave for others to argue. But ensuring effective and conscientious international compliance with arms control and disarmament was announced as the British Government's objective throughout the Iraq Crisis. It could not then have been, and should not now be, a negligible consideration - though it seems in danger of being systematically overlooked in public discussion of the decisions taken in 2003.

9. I would be happy to provide any additional technical or historical clarifications of these arguments within my power, although I do not think I have any further factual details about the period which are not now incorporated in the draft chapter. I understand that official evidence sessions have ceased but would be more than happy to talk in whatever degree of detail you would like, on or off the record.

10. On somewhat different, but still Iraq - related subjects, I volunteered to go out to Baghdad once the war had begun, and became the senior British defence civilian in the Coalition Provisional Authority between February and July 2004, and, later, first Head of the Interdepartmental Post-Conflict Reconstruction Unit (now the Stabilisation Unit) between September 2004 and December 2005, and have vivid recollections of the problems of governmental coordination apparent from those 2 posts.

11. I understand that the Inquiry has generally chosen not to take oral testimony from anyone below the 2 Star (Undersecretary or Major General) diplomatic, civil service, or military levels. This seems to me surprising. The Inquiry has been running since 2009, still without any set date for completion. That could have allowed - and could still allow - a great deal of time for the illuminating or corroborating detail which I know a number of my former colleagues would have be able to contribute. I would urge you to consider expanding your number of witnesses to accommodate them. But if you remain insistent on restriction by seniority, I can point out that, in my CPA role, I had a local acting 2 star FCO rank.

Yours sincerely,



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Responsibly Disproving Non - Compliance:

The Case for Normalising a Technical Accountability Obligation in Arms Control and Non-Proliferation [i]

I. INTRODUCTION

Intelligence and the verification of non-proliferation are intrinsically but controversially related. Countries suspected of proliferation will attract inevitably intelligence attention from other, usually non-Allied, states. Resultant assessments in those countries will emerge from information collection techniques at their disposal, including human intelligence (HUMINT), signals intelligence (SIGINT) and image intelligence (IMINT), and will be informed by the technical knowledge available from any past or present national weapons development programmes. For treaties relating to nuclear, biological or chemical WMD, or delivery systems, the background evidence unearthed and expertly interpreted by national intelligence authorities (NIAs) is a major resource for fact driven international verification, a process now generally conducted by international agencies or organisations, sometimes called international verification organizations (IVOs) such as the International Atomic Energy Authority (IAEA) and the Organisation for the Prohibition of Chemical Weapons (OPCW)[ii]. Success in this process is essential to the continued credibility of the non-proliferation regimes. In 1991, when first faced with disarming Iraq, Dr Hans Blix , then Director General of the IAEA, insisted that the interaction of national intelligence with investigations by international organisations was nothing to be ashamed of: " *[the IAEA) cannot be expected to find undeclared nuclear activities unaided. Member states have given the agency vital assistance in development of and training in equipment, detection technologies (such as sensors and satellite imagery) and so on. But more is needed in the area of information-sharing. States have substantial information, including intelligence ("national technical means") and data on nuclear-related exports (encompassing both items supplied and items denied). ....Detecting undeclared nuclear activities – or providing credible assurance of their absence – requires an active partnership between them and the IAEA and states, and to the extent possible with relevant industry sectors as well.* [iii]

But following up such sensitive data sits uneasily with the truth that arms control and disarmament treaties rest on trust, the diplomatic expectation that the assurances of sovereign states should be respected, and the historical practice that they should be able to insist on defining whatever secrets are essential to maintain their national security. Indeed those states facing compliance investigations will almost automatically insist that accusations of illicit programs are false and that any probing to resolve compliance disputes is intended to undermine legitimate secrets.

The most publicised verification method for WMD-based treaties is On-Site Inspection, dramatically emphasised by the media as capable of finding smoking guns. This paper proposes that a complimentary, powerful - perhaps sometimes indispensable - yet largely overlooked factor for the success of future arms control and non-proliferation efforts is the international highlighting , cultivation, and strengthening of a general Technical Accountability Obligation (TAO). The technical accountability obligation can be defined as:

'A widespread normative international expectation that Governments in whose territory there is a programme raising proliferation concerns , whether or not formally in the state sector, should take responsibility for ensuring the investigation and presentation of a plausible technical explanation of past design , acquisition or production decisions , engaging fully with focused international expert questioning, which should, nevertheless, preserve legitimate (usually commercially sensitive) areas of confidentiality."

The case for increasing the importance of this obligation flows logically from the objectives of international agreements to prevent or reverse the spread of dangerous technologies. [iv]Technical accountability can be primarily operationalized through focused expert international technical questioning (in US government terminology, "*compliance discussions*"). Conscientiously discharged technical accountability - acceptance of state responsibility to discuss seriously others' fears of non-compliance with treaty obligations - can help resolve suspicions about ambiguous programmes without threatening legitimate secrets outside treaty obligations. Although currently overlooked , or even, as for example in the case of Iran, generally overlooked ,[v] technical accountability is a prime example of the means which may have to be willed if widely agreed, and ritually restated, disarmament goals, such as WMD Free Zones and Global Nuclear Zero are ever to be achieved.

The potential effectiveness of technical accountability can be illustrated by the role that it has played in a number of arms control treaties and processes.

II. A RECENT, STILL DIVISIVE CASE STUDY: IRAQ 1991-2003

The most instructive, yet largely misunderstood or forgotten, example is that involving Iraqi WMD. The 1991-2003 Iraq Compliance Crisis can be construed in many ways, but was certainly a test case for international arms control. This consideration, with the complex technical judgements it raised over verification, was however, often overshadowed by diplomatic rivalry, fears over American hegemony, and moral dispute over the acceptability of international coercion through sanctions or military action. Because of Iraq's record of serial aggression, and its actual use of WMD (chemical weapons, especially nerve gases against Iranian forces, and, uniquely, its own population) Security Council Resolution 687, adopted by the UN on April 3, 1991, imposed uniquely strong obligations on Iraq, not just to disarm but to cooperate in disarmament. This further raised Iraq's significance as a test case. Saddam had accepted unprecedented obligations, as a condition of ceasefire after losing an unprecedented war against the international community, brought on by his refusal to relinquish his conquest and absorption of Kuwait. If, nevertheless, it proved impossible to ensure Iraq was convincingly disarmed of WMD and missiles to deliver them , could any other states realistically be compelled to reveal, and then, if necessary, give up their suspected programmes in almost certainly less pressured future circumstances, with much weaker obligations to cooperate?

UNSCR 687 imposed simple prohibitions of complete classes of weapons and production infrastructure:

- Nuclear

-Biological

-Chemical

-Missiles with ranges over 150 km

It is worth noting that this avoided complex verification issues over numbers and types, of the sort which might have been faced in voluntary negotiated reductions.

UN Disarmament Requirements on Iraq

The UN Commissions entrusted with disarming Iraq, the United Nations Special Commission (UNSCOM) and the United Nations Monitoring, Verification, and Inspection Commission (UNMOVIC), differed considerably in political constraints and operating style. [vi] Yet in order to implement the repeated intent of the Security Council that Iraq should be disarmed of WMD, both Commissions, as any IVO would have to do, demanded Iraqi cooperation in:

-Establishing a Full Understanding of Past Prohibited Programmes, through

-Full Final and Complete Declaration (FFCD)

-Provision of Documentation

-Truthful and Wide Ranging Interviews with previous technical authorities

-Access to Sites for inspection to check Iraqi statements

-Ongoing Monitoring and Verification (OMV) arrangements (e.g. by installing video cameras in chemical factories)

Obstacles to Disarmament in Iraq

Several features of the long struggle to enforce Iraqi disarmament seriously inhibited UN efforts. Early (and explicitly forbidden) Iraqi destruction and hiding of material soon after the 1991 War was perhaps most pernicious and far-reaching. But other methods of obstruction included repeated and evidently misleading FFCDs, which failed even to take account of counter information which the UN had already quoted.[vii] Saddam deliberately created what might be designated "Verification Melodrama", involving famous stand-offs over access for OSI: over so-called Sensitive Sites in Presidential Palaces, amid continuous accusations of intrusion and spying. He set up a Concealment Operations Committee (COC) was set up to guide Iraq's efforts to conceal proscribed items and capabilities from the UN inspectors, directed by his son, Qusay.[viii] His regime also refused to furnish documents - though this was partially overcome by unexpected UN seizures of computer hard drives. These disputes over physical access fixated, and eventually bored, international opinion, leaving little attention for the more technically complex and less tangible issue of testing the Iraqi technical narrative.

The Three UNSCOM Technical Evaluation Meetings (TEMs) of 1998 and Their Results

As an apparent escape from the deadlock, Technical Evaluation Meetings were unexpectedly proposed by Tariq Aziz, the Iraqi Deputy Prime Minister, to Richard Butler, Chairman of UNSCOM, in December 1997. After initial uncertainty, witnessed by the author, they were accepted by the UN side and conducted in early 1998, in Baghdad in February for the Chemical (VX nerve gas) and, separately, Missile Areas; in Vienna in March for the entire BW programme. Internationally convened panels of technical experts, including Russians and Chinese, talked their Iraqi counterparts through their narratives and compared them with the evidence, reaching damning judgements of technical plausibility. It is worth quoting from the resultant reports at some length to show the detail which international experts went into, and the confidence with which they were able to judge the Iraqi narrative and supporting evidence inadequate.

A) VX Nerve Gas

"4. Conclusion of Evaluation

4.1. The Iraqi declaration portrays a successful research effort which failed to be scaled up to production quantities. The major difficulty facing the UNSCOM international expert team was their assessment that no full disclosure on the subject of VX has yet been made by the Iraqi side. As a result of this, in the team's expert opinion, there is no credible technical reason why Iraq should fail in the production of VX.

4.2. In the evaluation of the R&D capabilities with respect to VX, the Iraqi side has demonstrated their understanding of four major synthesis routes, yet have no credible technical justification for not successfully scaling up two of these routes. It is assessed that they had no significant difficulty in analyzing, identifying and carrying out structural studies of all of the relevant compounds.

4.3. In evaluating the ability of Iraq to carry the production of VX successfully to the industrial scale, it is important to note that Muthanna State Establishment (MSE) had, since late 1984, been operational in industrial scale organophosphorous synthesis, using more difficult processes than are involved in the production of VX. Scaling up operations were carried out on all CW-related processes in MSE except VX, according to the Iraqi side. This is incompatible with the scale of the research effort on VX, stated by Iraq to have included six or seven separate research teams.

4.4. Accordingly, the UNSCOM international expert team concludes that Iraq was capable of producing significant quantities of VX before January 1991. This may have been as much as 50 to 100 tonnes of VX, albeit of an uncertain quality. Currently, the team assesses that Iraq has the know-how and process equipment, and may possess precursors to manufacture as much as 200 tonnes of VX.

4.5. Turning to the subject of weaponisation, it was stated by the Iraqi side that weapons were qualified for CW use by conducting general testing, rather than an agent-specific test. This means that existing munitions suitable for CW use and known to the Commission could have been used for VX. Progress and achievements in the binary VX weaponisation programme are unclear. The UNSCOM international expert team did not have enough information on the VX weaponisation issue, and the Iraqi side did not provide any further technical details, in order to reach any specific conclusion.

4.6. The Iraqi side continues to exhibit a lack of transparency in certain areas. There is a marked reluctance to clarify any aspect of the relationship between Iraq's primary CW production site, the Muthanna State Establishment (MSE) and the Military, including military requirements for CW weapons and the doctrine for use; no verification of the directives placed on MSE by the Military Industrial Commission (MIC) and other authorities is possible; no verification of events between late 1988 and early 1991 is possible; Iraq's accounts of the lack of sealing up of the VX process are not credible; no constructive discussion was possible on the subject of the dispersal of key production facilities from MSE. The Iraqi side continues to assert that no further documentation is currently available in Iraq.

4.7. As a result of deliberations carried out by the UNSCOM international expert team during the preparatory phase of the TEM, a dedicated sampling team was tasked by the UNSCOM international expert team during the execution of the TEM to collect information in key areas in order to support the verification process.

4.8. It is clear that the capability to produce VX was regarded as being of the utmost importance to Iraq in 1987 and beyond. Iraq's unilateral destruction of VX essential components and materials, coupled with the denial until 1995 of attempts to produce VX at an industrial scale can only reinforce that view. Therefore, the retention of a VX capability by Iraq cannot be excluded by the UNSCOM international expert team."[ix]

B) Missiles

"Main Conclusions

38. ... the team puts on record the following main conclusions and comments:

a. Through the TEM and other inspection activities, important progress has been achieved in the overall accounting of proscribed missile warheads. Findings from the re-excavation of warheads remnants have provided valuable data for analysis and evaluation. The team has not found the level of verification achieved so far to be satisfactory. Further work is required.

b. Less progress has been achieved in the accounting of Iraq's declared special warheads for chemical and biological weapons.

c. Issues that were raised by the team related to the warhead material balance and accounting such as duplicate counting, warhead destruction activities and warhead markings, need to be fully resolved to enable the establishment of a solid and verifiable material balance in the warhead area.

d. The Commission still needs to obtain a full picture of Iraq's warhead production. The team believes that Iraq's warhead production and acquisition records are the best way to ascertain relevant facts.

e. Issues for clarification raised by the team relevant to warhead design and testing are important to obtain a full technical understanding of Iraq's achievements in warhead related activities.

f. The team's experts consider that they would have benefited more in their evaluation work, if factual answers had been provided by the Iraqi side rather than explanations of various degree of probabilities that were difficult to assess in a scientific and objective manner. [x]

C) BW

"5. CONCLUSION

5.1 A technical evaluation of Iraq's FFCD was undertaken by the international experts using all the available information as well as Iraq's explanations and clarifications. No additional confidence in the veracity and expanse of the FFCD was derived from the TEM. Iraq did not provide any new technical information of substance to support its FFCD.

5.2 Iraq's FFCD is judged to be incomplete and inadequate. The information presented by Iraq does not provide the basis for the formulation of a material balance or a determination of the structure and organisation of the BW programme. This is required for effective monitoring of Iraq's dual capable facilities.

5.3 The construction of a material balance, based primarily on recollection, provides no confidence that resources such as weapons, bulk agents, bulk media and seed stocks, have been eliminated.

5.4 The organisational aspects of the BW programme are not clear and there is little confidence that the full scope of the BW programme is revealed. Additional aspects, such as the existence of dormant or additional BW programmes, remain unresolved.

5.5 The TEM identified to the Iraqi delegation the depth and extent of the experts' concern about Iraq's biological FFCD.

5.6 The responses by Iraq revealed that their delegation was not prepared to tackle the issues in the technical detail demanded by the process. They did not grasp the opportunity offered. The attitude of Iraq as evinced by the TEM toward the discussions was disappointing and shows no change since 1995.

5.7 Iraq, however, recognized the need to improve its FFCD and promised to do so. If this BW TEM results in a significant improvement of the Iraq's declaration, the FFCD, then this is a positive outcome.

5.8 The present report has been jointly prepared by all team members, unanimously approved, and adopted on 01 April 1998."[xi]

Perhaps because of the intrinsic lethality and complexity of the BW area, a further report was made to the Security Council in January 1999 after an additional experts review in the summer of 1998.

" Both the Vienna TEM [in April] and the experts' review in Baghdad [in July] concluded that Iraq's biological FFCD is an inadequate document for verification purposes. The FFCD does not provide a coherent or comprehensive account of Iraq's BW programme and lacks any supporting framework such as descriptions of planning, objectives, policy and organizations involved. The experts found that much of the information collected by the Commission to verify the FFCD in fact contradicts statements therein, particularly the evidence regarding weaponization, the quantity of agents produced and the media balance. The hundreds of interviews that the Commission has conducted with Iraqi officials also fail to provide a comprehensive account and even allowing for errors of memory, often contradict the account in the FFCD "[xii]

Consequences

The TEMs were a now forgotten success for Arms Control, amounting to 3 triumphs of professional neutrality over anticipated politicisation. Saddam had miscalculated: temporarily at least, the TEMs cut through the Verification Melodrama. They enabled intelligence – both amassed by UNSCOM itself and provided to the UN by friendly states - to be leveraged, through deep and internationally spread technical expertise, into policy conclusions and public diplomacy. There was a short-term effect on informed international public opinion. Iraq suffered a setback in its attempts to have its narrative accepted and sanctions lifted. Frustrated that his initiative had proved counter-productive, Saddam broke off cooperation with UNSCOM later that year and insisted that Iraq would not accept UN verification while sanctions continued. But the implications of the TEM findings were apparently forgotten in the later stages of the crisis.

UNMOVIC and UNSCR 1441

During an early meeting of the Commissioners appointed to UNSCOM's successor, UNMOVIC, during the period when Iraq was refusing to accept UN inspectors, Dr Blix, the Chairman, requested ideas on how Iraqi cooperation could be defined in case it was ever again offered. As UK Commissioner, I responded with a think piece in 2002, partly to re-establish the importance of the TEMs, which were already being forgotten. It argued that attention should shift from judging degrees of physical access to sites to provision of a plausible and falsifiable technical narrative:

-were accurate and checkable details provided?

-were unrestricted interviews allowed?

- and was OSI being blocked?

The paper cited the difference between German Authorities in 1919 -25 (relentlessly obstructive in frustrating Anglo-French efforts to impose the conditions of the Versailles Treaty prohibiting its ownership of tanks, submarines and aircraft) and 1945 (broken backed and genuinely unable to investigate and collate information) as polar examples of responses to imposed disarmament. During its compliance crisis, Iraq was characteristically insisting that it was in a 1945 situation, although this was suspected of masking 1919-style behaviour. Yet there was a recent, positive and entirely relevant historical precedent. South African efforts in the 1990s proved that it was possible to demonstrate nuclear disarmament to international satisfaction - by giving provable technical explanations backed by evidence and access.

Blix said that he "almost completely" agreed. But he felt it too "sensitive" (presumably too likely to cause dispute amongst Commissioners who had different national approaches about what would amount to adequate cooperation from the Iraqis) to table. I accepted his judgement of political prudence, but shared the paper with French and US colleagues, who were positive about the approach. Whether by coincidence or some form of causation, this concern was re-emphasised in the next UN Resolution, UNSCR 1441, passed on 8 November 2002, spelling out Iraq's "final opportunity to comply with its disarmament obligations". Operative Paragraph IV stated that:
"*...false statements or omissions in the declarations submitted by Iraq pursuant to this resolution and failure by Iraq at any time to comply with, and cooperate fully in the implementation of, this*

resolution shall constitute a further material breach of Iraq's obligations." Its implications for effective verification were later summed up by Geoffrey Forden, UNMOVIC's Chief of Multidiscipline Analysis: "*This resolution significantly strengthened UNMOVIC's rights by erasing the complex web of "modalities" that had grown over the inspection process during the past decade. It also gave Iraq one final chance to prove to the international community that it had disarmed. One step in this last chance was the requirement of new, narrative-style declarations."*[xiii]

The Adequacy of Cooperation in the Run-Up to the War: Verification Melodrama, Ambiguity, and their Results

But the *Final* Iraqi narrative designated "Currently Accurate, Full and Complete Declaration" (CAFCD) elicited in December 2002 made no significant improvement on its predecessors (It was, light-heartedly, but quite accurately, labelled "The Longest Suicide Note in History"). "It contained, if anything, even less information" than preceding FFCDs[xiv]. Iraq had gone through the text and "systematically removed any names of people involved in past programmes. In their place, the Iraqis had substituted phrases such as "the names will be given on request to UNMOVIC in accordance with para. 7 of SCR 1441". These were not the actions of a country trying to do everything it could to convince the world it had disarmed"[xv]. Nor were any major improvements proposed by UNMOVIC, which would have facilitated technical accountability, such as unrestricted interviews in a neutral location like Cyprus, agreed by the Iraqis to improve UNMOVIC's ability to cross question Iraqi technical staff.[xvi] In some ways, this was a paradoxical moral relief to UNMOVIC staff, according to Geoffrey Forden, who later stated that he had been "concerned about the UN's track record for safeguarding people in similar situations. It is now known, from newspaper interviews with former Iraqi scientists after the end of major combat that Saddam had ordered anyone who agreed to interviews outside Iraq to be killed." [xvii]

Evidently, even faced with war, Saddam once again chose to refuse the easiest and, at that stage (given the amount of accumulated factual data which could be cross checked and corroborated) the most powerful methods of proving cooperation and compliance: providing a convincing CAFCD, simply allowing his officials to enter serious technical discussions with UNMOVIC specialists in which they could be seen to tell a truthful story , or setting up an intelligence back channel to the UN, or, as his principal antagonist and eventual nemesis, the U.S. to address the same issues. That refusal to enter dialogue along any of these possible channels was an indication of continued defiance, which necessarily deprived him of any possibility of correcting the mutual misunderstandings of intent which seem in retrospect to have characterised U.S.-Iraqi relations between 1990 and 2003 [xviii]. But Saddam's concurrent promise of improved cooperation on OSI appeared nevertheless to be aimed at avoiding an impending war (whose likelihood he grossly underestimated) and ending the compliance crisis by exhaustion . This would lift the sanctions and yet leave valuable international uncertainty about continued possession of WMDs - useful for internal and external deterrence against rebellion or Iranian attack, until Iraqi WMD capability had been recreated, as was Saddam's privately expressed intent[xix]. It would also, though this might not have been of direct interest to him, have indicated that the disarmament test case had been decided negatively and the world could not reliably expect to disarm other future proliferators under almost any conceivable circumstances.

Dr Blix stated, and still argues,[xx] that despite still limited Iraqi cooperation UNMOVIC, under his chairmanship, could have discovered the true state of Iraqi WMD, so that war might have been avoided. The US and UK did not agree, and , whatever other judgements and motivations were involved in their controversial decision to resort to war, Saddam's refusal to move on the other dimensions of verification, at least played a part in their doubts about Iraqi compliance. Events proved that they were themselves relying upon what proved to be faulty intelligence interpretations of what is now disclosed to have been bizarre and contradictory Iraqi behaviour. Such suspicions, whether or not exaggerated, are unlikely to be avoidable when a state under investigation for non-compliance chooses to turn the process of verification into a melodrama of defiance alternating with wronged innocence, while persistently refusing, for over a decade, to provide a convincing technical narrative. (In a 2004 TV interview, for example, Dr Blix admitted that, despite his own increasing scepticism, *"at the time of the occupation we could not have said, excluded, that there still were weapons of mass destruction; it was only a little later I think that that conclusion, I think, was clear."*[xxi])

Saddam's may not be the last regime to bring disaster upon itself by refusing genuine technical accountability, perhaps through its own internal dysfunctions, lack of reality-based, conscientious, central control, and confusion of intentions[xxii]. (There is also of course the repeatedly raised, and not entirely buried, possibility that the Iraqis *did* still possess some prohibited materials or systems at the beginning of the war, but that this was moved into Syria[xxiii])

Selective Global Memory Loss after the Coalition Invasion

Blix's judgement that, with more time, he could have sufficiently established confidence in Iraq's disarmament to avoid war was repeated, and vividly remembered. The persistent Iraqi refusal to address the other dimensions of verification and give an adequate general technical account of its past programs was forgotten, or its implications were overlooked, in the general distaste for the American and British invasion of March 2003, astonishment at the non-discovery of prohibited items, and horror at the tragic aftermath of insurgency and internecine war.

III. OTHER PRECEDENTS AND INSTITUTIONAL POSSIBILITIES FOR STRENGTHENING ACCOUNTABILITY OBLIGATIONS

But this historical distortion can be corrected and need not prevent future progress. Consultative arrangements already exist in most formal arms control treaties to institutionalise specific accountability obligations. In many cases resultant consultations (often deep behind-the-scenes) have been successful in achieving whatever progress has defined the field.

1972: The Antiballistic Missile (ABM) Treaty established the Standing Consultative Commission (SCC) to handle treaty-related compliance and implementation issues in the SALT 1/ABMT Regime .

> **"Article XIII**
>
> *1. The Parties shall establish promptly a Standing Consultative Commission, within the framework of which they will:*
> *(a) consider questions concerning compliance with the obligations assumed and related situations which may be considered ambiguous;*

(b) provide on a voluntary basis such information as either Party considers necessary to assure confidence in compliance with the obligations"

The SCC was the arena of a long-running dispute over the design and intended purpose of radar arrays. The United States raised the issue of the large early warning radar under construction near Krasnoyarsk (though known to the Russians as the Yeniseysk-15 radar) in the autumn 1983 SCC session .This installation was roughly 800 kilometres from the nearest Soviet border and so apparently violated the1972 Treaty (which stipulated that any radars of that type be sited on national peripheries, looking outward). "On 23 October 1989, Foreign Minister of the Soviet Union Eduard Shevardnadze conceded that the Krasnoyarsk radar was a violation of the 1972 Anti-Ballistic Missile Treaty. According to Shevardnadze "We investigated the station for 4 years.... The whole truth did not become known to the country's leadership right away." Retired General Votintsev, Director of the Soviet National Air Defense Forces from 1967 to 1985, subsequently publicly stated that he was directed by the Chief of the Soviet General Staff to locate the ... radar at Krasnoyarsk despite ...recognition ... that [this would] ...be a clear violation of the 1972 Treaty; and that Marshal Ustinov, Soviet Minister of Defense, threatened to relieve from duty any Soviet officer who continued to object to the construction of a large-phased array radar at Krasnoyarsk. "[xxiv] The radar installation was closed and effectively demolished. This therefore counts as a successful outcome for a prolonged - and resented - insistence upon technical accountability, although opinions differ about the significance of the infraction, and the US has of course since withdrawn from the ABM Treaty.

1987: The Intermediate Nuclear Forces (INF) Treaty established the Special Verification Commission (SVC) in Geneva has been an important mechanism to avoid disputes like those in the ABM Treaty.

1990: The Conventional Forces in Europe (CFE) Treaty established the Joint Consultative Group (JCG) in Vienna, to

-Resolve ambiguities and differences in interpretation

-Consider measures that enhance the Treaty's viability and effectiveness

-Resolve technical questions

-Look into disputes from the Treaty's implementation.

The problems with the CFE treaty arise less from disputes over compliance, which might have been settled by the Joint Consultative Group, than over high-level political disagreements about provisions and conditions of the treaty: specifically Russia's insistence that the obligations is accepted in Istanbul as preconditions for CFE revision have become so unfair and unreasonable that it has been forced to suspend participation in the Treaty [xxv]

Chemical and Biological Arms Control

In general, sharing of national intelligence information on misuse of chemical and biological technology happens sometimes, should be encouraged wherever possible, but cannot be expected ever to be easy, particularly when national collection and analysis abilities inevitably differ widely

and commercial advantage might be at stake. Resolving concerns about questionable chemical or biological activities in private or allegedly private entities within other states, or about suspected state-sponsored programs, will always have to take its place among contending national and diplomatic priorities. Demanding explanations or remedial action from the responsible governments should certainly be discretely pursued, but will usually have costs in terms of political relationships and potential commercial contracts. There will be no single best way of making these approaches. They might be handled confidentially through intelligence channels or discrete diplomatic demarche, or publicly by blacklisting dubious firms or public action either in the Security Council or possible structures that may develop from the BWC. It is very likely, however, that diplomacy will benefit from joint action with like-minded states. Discrete tip-offs to firms or universities about the risks of association with countries or enterprises about which concerns have been expressed but not dispelled can also be important and effective.

Private sector firms and investors should receive incentives to become increasingly important potential monitoring and enforcement actors. These functions could be encouraged and strengthened, perhaps by legislation or legal action to generate precedents that bring out the potential liability costs of involvement with questionable government contracts or shady firms. Due diligence and reputational risks should be increasingly important considerations for the international biotechnology industry.

Etel Solingen's work on Nuclear Logics [xxvi] convincingly highlights the importance of a government's desire to integrate into the global economy as a major determinant of its choice of nuclear acquisition or abstinence. CBW capabilities are almost always a lesser priority than nuclear ones. It would therefore be highly desirable to raise the trade and other economic costs of refusal to resolve international anxieties about specific biotechnology activities or the adequacy of national standards of regulation.

Achievements, Possibilities and Blockages of Technical Accountability in the Biological and Toxin Weapons Convention (BTWC) 1972

There is no established IVO in the Biotechnology field, though there is a BWC Implementation Support Unit .But Article V envisages consultation and cooperation taking place:

"through appropriate international procedures within the framework of the United Nations and in accordance with its Charter" (Article V).

Since the Convention does not define "appropriate international procedures", participants in the BW Review Conferences agreed that such procedures should include the right of any party to request that a "consultative meeting", open to all parties, be convened promptly at expert level . [xxvii]

The most dramatic international incident addressed within the BWTC was the uncovering of the large-scale Soviet offensive BW programme. Following the defection of the Russian scientist Vladimir Pasechnik , a Trilateral US /UK /Russian BW confidence building process between American, British and Russian officials and technical experts[xxviii][xxix] led to the 1992 US/UK/Russian Statement on Biological Weapons [xxx] in which Russia admitted it had had previously set up an offensive BW programme, and that the 1979 Sverdlovsk Anthrax Incident, which killed 69 people,

had occurred due to a release from a military facility[xxxi] rather than contaminated meat , as had originally been claimed. A trilateral process with mutual inspections was initiated but ceased in 1994, and has not since been revived. Accountability over Russian bio scientific activities relevant to BW has remained severely limited, although Russia has paid no political or economic price for this, with Western attention focused instead on financial aid to induce biologists and biotechnologists in Russia and CIS countries to redirect their research toward evidently peaceful and commercial purposes.

The annual US State Department Arms Control compliance report is probably the most specific and transparent document published in the world on verification. It necessarily guardedly refers to focused technical questioning or: "compliance discussions". In relation to the BTWC the official US "*Finding*" for the Russian Federation in 2011 [xxxii] is that

"Available information during the reporting period indicated Russian entities have remained engaged in dual-use, biological activities. It is unclear that these activities were conducted for purposes inconsistent with the BWC. It also remains unclear whether Russia has fulfilled its BWC obligations in regard to the items specified in Article I of the Convention that it inherited.

Compliance Discussions

Discussions again took place during the reporting period in multilateral fora, and between the United States and Russia, regarding Russia's compliance with the BWC. Russia maintained that it is in compliance with the Convention."

Evidently here, as elsewhere, Russia's fulfilment of its technical accountability obligation has not yet unequivocally convinced the US of its compliance.

Nor has Iran's:

"Finding

Available information indicated Iran continued during the reporting period to engage in activities with potential dual-use BW applications. It remained unclear whether any of these activities were prohibited by the BW.

Compliance Discussions

Issues relating to Iran's potential dual-use BW activities continued to be raised during the reporting period in multilateral channels."

In this case, however, it is apparent that the US has not managed to conduct bilateral compliance discussions with the Iranians. Given the state of relations between the two countries, and Iran's refusal to enter into satisfactory technical discussions with the IAEA in the nuclear area, this is unsurprising.

The much more positive wording of the finding and description of compliance discussions for India stands in significant contrast.

*"**Finding***

Information available through the end of 2010 did not indicate that India is engaged in activities prohibited by the BWC. India has continued efforts to strengthen its export control of biological materials.

Compliance Discussions

The United States and India continued during the reporting period to discuss issues relating to transfer of biotechnology and to pursue cooperative activities relating to customs and export control reform."

And there is a similar positive tone, even for Gaddafi's Libya in its last months:
"Compliance Discussions

During the reporting period, no issues were raised between the United States and Libya regarding Libya's adherence to its BWC obligations or December 2003 biological weapons-related commitments."

Technical Accountability Requirements in the 1993 Chemical Weapons Convention

There are far-reaching possibilities in the treaty text for exercising technical accountability in addition to the controversial possibility of challenge inspections:

-Article IX. Consultations, Cooperation and Fact-Finding

1. " States Parties shall consult and cooperate, directly among themselves ..., or through the Organization or other appropriate international procedures,...on any matter ....relating to the...Convention. "

4." A State Party shall have the right to request the Executive Council to obtain clarification from another State Party on any situation ...which gives rise to a concern about its possible non-compliance ...

The Executive Council may call on the DG to establish a group of experts ... to examine all available information and data... [and] submit a factual report to the Executive Council...

If the ....concern of a State Party about possible non-compliance has not been resolved within 60 days ...it may request a special session of the Conference."

Despite these possibilities, have been no challenge inspections and little publicly reported exercise of technical accountability in the chemical field under the treaty. This may be because, in current diplomatic circumstances, it is not only impracticable to try to launch Challenge Inspections. Calling for Consultations, or Fact-Finding or Expert Groups would be politically costly and there is no effective norm of accountability which would reliably impose significant political or economic costs on states of concern which refused to cooperate.

Nevertheless, bilateral, and occasionally trilateral, technical consultations on compliance questions have been conducted. Some have succeeded in dispelling suspicions. But while others have not encountered satisfactory cooperation, they have attracted little international attention even when publicised. The pattern disclosed in the US State Department 2011 Compliance Report on CW, once again the most comprehensive single public document assessing compliance and cooperation in verification, is illuminating:

*"**Iran***
Finding
Based on available information, the United States cannot certify whether Iran has met its CWPF declaration obligations, destroyed its specialized CW equipment or retained an undeclared CW stockpile.
Compliance Discussions
On the margins of OPCW EC meetings in 2001 and 2004, the United States engaged the Iranian delegation about Iran's CWC compliance. The outcome of the discussions did not completely resolve any of the issues.

Russia
Compliance Discussions
The United States has engaged in numerous exchanges with Russia regarding a number of compliance issues in 2002, 2003, and 2006, during which the United States discussed the accuracy of Russia's CWC declaration.
In 2006 and again in 2010 the United States reiterated its proposal to hold expert-level consultations, but, as of July 2010, Russia had not yet agreed to renew such consultations.

Once again the much more positive judgements of Chinese compliance contrast strikingly:

"China

Finding

The United States assesses that China has made an accurate declaration in relation to its historical CW program, including CW agent production and disposition. The United States will continue to engage China on whether it should have declared a Schedule 1 chemical produced as an intermediate in the manufacture of a pharmaceutical. (U)

Background

The Convention entered into force for China on April 29, 1997. In its initial declaration, China declared former CW-related facilities and activities and current activities not prohibited under the Convention. The United States has since resolved its concerns about historical CW production and disposition.

Additionally there has come to light new information on a spill of the undeclared Schedule 1 chemical nitrogen mustard 2 (HN2) at a pharmaceutical factory. This factory has not been declared.

Compliance Discussions

The United States has since 1998 maintained a dialogue with Beijing that has included discussing the Chinese declaration and the issue of possible undeclared Schedule 1 activities"

It was presumably these compliance discussions which enabled the positive finding to be made despite the apparently questionable nitrogen mustard spill in the undeclared Chinese factory.

Nor is there any indication of anxiety about Libyan chemical intentions:

"Libya

After Libya terminated the contract with the United States in relation to U.S. assistance for Libyan CW destruction in July 2007, the United States has held several informal discussions with Libya, on the margins of meetings of the OPCW, concerning its progress toward destruction of its CW and conversion of the Rabta CWPFs[xxxiii] *"*

The Comprehensive Test Ban Treaty

CTBT is not of course yet in force, but has provisions specifically intended to ensure technical accountability:

> **Article IV**
>
> - **Para 29** : *without prejudice to the right ...to request an on-site inspection, States Parties should, whenever possible, first make every effort to clarify and resolve, among themselves , or with or through the Organization, any matter that may cause concern about possible non-compliance ...*
>
> **-Para 32** : *each State Party may request the Executive Council to obtain clarification from another State Party on any matter that may cause concern about possible non-compliance ....*"

The 1970 Nuclear Non-Proliferation Treaty and the IAEA

The latest September 2011 report of the IAEA on the implementation of NPT safeguards in relation to Iran [xxxiv]stressed that" in Resolution 1929 (2010), the Security Council reaffirmed Iran's obligations to take the steps required by the Board of Governors in its resolutions GOV/2006/14 and GOV/2009/82, including by providing access without delay to all sites, equipment, persons and documents requested by the Agency." (Author's Underlining)

The proposals of the most recent high-level international commission on nuclear non-proliferation and disarmament[xxxv] accepted that nationally provided intelligence can and must assist IAEA investigations in ways which are entirely compatible with, and would enhance, technical accountability through more extensive technical questioning.

Section 9: Strengthening the Nuclear Non-Proliferation Treaty

> *5. All states should accept the application of the Additional Protocol. To encourage universal take-up, acceptance of it should be a condition of all nuclear exports.*

6. The Additional Protocol and its annexes should be updated and strengthened to make clear the IAEA's right to investigate possible weaponisation activity, and by adding specific reference to dual-use items, reporting on export denials, shorter notice periods and the right to interview specific individuals (Author 's Underlining)

7. With safeguards needing to move from a mechanistic to an information-driven system, there should be much more information sharing, in both directions, on the part of both states and the IAEA, with the agency re-evaluating its culture of confidentiality and non-transparency. [9.10–11]

IV. GENERAL IMPLICATIONS FOR MANAGING THE FUTURE OF DESTRUCTIVE TECHNOLOGIES and

Building upon these Treaty precedents and possibilities, the International Community should consciously develop, strengthen, and extend a norm stressing a "General Accountability Obligation" as a significant resource for managing the Nuclear Power Renaissance and the huge long-term risks of biotechnology. We should not lightly ignore the case for creating a global expectation that states embarking on, or licensing far-reaching technical projects should expect:

-to provide an explanatory narrative of controversial or disquieting design choices; and, where concerns remain,

- to explain to international expert fora the logic of questionable features which might lend themselves to production of weaponisable material.

Ideally, this could become an agreed and internationally accepted part of the IAEA's working pattern.

Predictable Objections to Increased Efforts to Insist on Technical Accountability

Objections, however, are to be expected on the following grounds:

--National Sovereignty (in the Iraqi Compliance Crisis this had to be explicitly recognised by laborious repetition of terms like "Sovereignty and Dignity", and painstaking negotiations by senior UN diplomats to set up special access arrangements ("modalities ") for Presidential Palaces, amounting to a brilliant exercise in headline grabbing diplomatic distraction by Saddam's Regime) A more general term for this neuralgic sensitivity might be "Westphalian Opacity" (*'States should not be pressed to refuse to explain themselves, when they indicate this would cause embarrassment or undue tension, even if they have signed Treaties requiring them to do so over weaponisable technologies which profoundly threaten world order")*

-Alleged commercial confidentiality (*"Having to answer questions would benefit commercial rivals"*)

-Practicality: (*"Better to stick to facts rather than intentions in Arms Control'*)

-Denunciations by Proliferators, sympathisers or states resentful of the power and motives of those Western nations attempting to enforce non-proliferation regimes *("attempting to apply an effective TAO would amount to espionage and diplomatic blackmail (backed by implicit unilateralist military*

menaces) beyond any formal NPT, CWC or BWC requirements – rigging the original Treaty bargain, which in the nuclear case, has not been fulfilled by the Nuclear Weapons States , and blocking the spread of 21st-century technologies to the Third World ")

- Realism (blending, perhaps , either into Cynicism or Fatalism), which would judge increased reliance on technical questioning futile , since the NPT, and by extension other WMD treaties, are so undermined by self-interested vetoes on action against suspected proliferators that it is impossible to put any faith in the bodies (ultimately and unavoidably the UNSC) which will review the technical accounting. *"Like trying to reduce civil right violations in the Deep South in the 1930s by urging jury trials but ignoring the certainty that the jury will never be righteous."*

Positive Counterarguments

That mixture of scepticisms is powerful, although inconsistent -and counterarguments immediately suggest themselves:

-Technical accountability works in practice, often quietly and bilaterally, building confidence and removing suspicions,

-A strong understanding of technical accountability could become the non-proliferation equivalent of the powerful and well accepted academic process of Peer Review- the so far grossly under used Gold Standard of Verification.

-It could, and should, be made entirely clear-against predictable misrepresentation- that strengthened expectation is of technical accountability, where programs raise international concerns, did not amount to a requirement to seek authorisation or offer explanations in advance, which would clearly be widely politically unacceptable.

-It would facilitate the global transfer of technology by acting as a further safeguard against misuse in weapons programs.

-It would provide an efficient method for states suspected of proliferation to clear themselves, and increase the pressure of world opinion on those who refuse to.

--It could increase the leverage and awareness of countries without large intelligence collection agencies, but with respected technical experts.

- There is no satisfactory evidence of a significant *economic* downside to accountability: major commercial risks at stake in revealing proliferation-relevant information about the design construction of genuinely non-military nuclear power installations.

The UNSCOM TEMs proved that, under the right conditions, technologists from countries exhibiting a strong diplomatic interest in exculpating the suspect regime , have interrogated aggressively and reported unanimous and well founded conclusions, even in a long running high-stakes compliance crisis .The insufficiently addressed question , then , is how expert investigatory cultures within IVOs can be maintained, strengthened or created which are internationally respected, resistant to political pressure, and able to present and explain their results so that they cannot be ignored or negated by diplomats. It is reasonable to assume that the professionalisation

and corporate morale of the organisation, as well as the reward structures and significance of personal reputation of the technical investigators will be important.

The IAEA Inspectorate, if given the chance, would be capable of taking Iranian or other program directors through sequences of questioning which, drawing on evidence from inspections or intelligence provided by concerned nations, would establish or distant firms the believability of their narratives relating to nuclear activities. (OPCW personnel could be assumed to have similar competence in chemistry, and so could biotechnology experts nominated by the UN Secretary General Sec during a BW crisis) These genuine technical capacities re-emphasise the importance of making it politically realistic for searching technical questions to be raised with some expectation of an answer. Even on the most despairing analysis of the functioning of international bodies, as long as one or two technical investigators are able to put such questions, inadequacies or refusals of response can be noted and passed upwards, even if others were to show no such acuity. At the senior levels, which, in view of the gravity of proliferation issues, will be the Commissioners of UN verification agencies or commissions, the Board of Governors of the IAEA, and, frequently, the Security Council, there may well be self-interested national biases, threatening unjustified vetoes, or stifling necessary judgements.[xxxvi] But the more damning the technical conclusions, the better chance for mobilising political pressure on unanswered non-compliance.

Could a GTAO be progressively introduced without international diplomatic consensus?

Even if international support by consensus for a strict interpretation of technical accountability remains impossible , incentives could also be introduced by like-minded states which, over time, made the obligation more accepted and thus more acceptable;

-in transferring technology, the extent to which technical accountability obligations had been met could become a more or less formal consideration which suppliers' groups could choose to weigh up before deciding on technology transfers and sales to particular states;

-it could be introduced as a factor in increasing numbers of other investment, contractual relationships, and insurance decisions - rendering it simply imprudent to do business with companies and countries that refuse technical accountability;

-it could be insisted on as part of the conditionality for future international development aid decisions, and

-it could be turned a campaigning issue for green or antimilitary groups trying to improve the international responsibility of their government's behaviour (with support from international NGOs)

- Bilateral confidential invocations of GTAO could increase the use of unpublicised, or deliberately classified, back channel conversations involving national intelligence agencies as a means of resolving disagreements over bilateral arms control. Numerous precedents, taken only from US State Department public compliance reports, are cited above, but in practice these possibilities are obviously not confined to America. (Especially in new fields, unregulated by Treaties, such as nanotechnology and Cyber security, this may be the *only* practical method of

raising sensitive concerns: by building many, informal, undisclosed, ad hoc, Joint Consultative Groups)

Technical Accountability- Issues for Further Consideration

Maximising the future effectiveness of technical questioning would require decisions capable of commanding effective international consensus, and sensitive to the between major technical domains (Civil Nuclear Power? Biotech? Chemical Engineering? Nanotech? Cyber?) on:

-Which aspects of design or production are really seriously commercially sensitive?

-Whether the composition of technical evaluation teams be widened, as UNSCOM managed to do for 1998 TEMs, to extend support for the process of accountability: perhaps by including experts from the private sector, and from the developing world?

-Whether protocols can be developed in advance for different technical areas to increase confidence that legitimate commercial processes or secrets would not need to be disclosed during a process of technical account and clarification? (Examination of the issues raised leading to reasoned delimitation of suggested frameworks for *managed questioning* could be a particularly appropriate activity for widely geographically spread consortia of universities and think tanks)

Introducing and Facilitating GTAO: Possible Modalities

A number of models are conceivable for different circumstances:

-Direct appointment of nationally nominated experts by the UN or international agency onto an international technical panel.

-A Commercial Arbitration Model: both sides would appoint arbitrators to choose other experts acceptable to both.

-A "Strikeout" Arrangement, where 1 or 2 members of the investigating panel could be vetoed (this is already an option in the IAEA's work).

-A Lead State or States (often the US) would engage in an informal process of GTAO with a suspected proliferator and report to allies on overall conclusions.

The Best Case

In the best case, stringent technical accountability would become progressively normalised as part of a widely appreciated, benign process of international technical dialogue, rather than being resisted as an anomalous and humiliating inquisition. Discharging the technical accountability obligation would be seen as an important aspect of responsible national behaviour. Refusal would always be questionable and, depending on the circumstances, could become a significant additional indicator of non-compliance. It would, consequently, attract appropriately serious consequences from a united

international community. In this kind of non-proliferation climate, intelligence information would of course remain important to detect and begin action against proliferation .But intelligence resources could be better prioritised to address the less numerous and most significant and continuing illicit programmes, with the additional indicators of refusal, significant omissions or falsehoods, in discharging the accountability obligation.

V. CONCLUSION: WHAT IS AT STAKE

Systematic promotion and widespread acceptance of strong technical accountability is one of a range of normative, institutional and technical innovations without which it may be impossible to contain - or reverse - the spread of Weapons of Mass Destruction, or Weapons of Mass Effect, among and beyond states in the 21st Century. Without greater willingness to challenge Westphalian Opacity, especially while Global Zero remains a credible mobilising vision, it must be deeply uncertain how far international acceptance of technical accountability or other arms control measures or modalities can go.

At the end of his latest, and remarkably optimistic, book Richard Rhodes argues that [xxxvii] *"Where the largest scale instruments of man-made death are concerned, the elements of ... [a new] discipline of public safety have already begun to assemble themselves: materials control and accounting, cooperative threat reduction, security guarantees, agreements and treaties, surveillance and inspection, sanctions, forceful disarming if all else fails."*

The main purpose of this chapter has been to remind readers why a general technical accountability obligation (most effectively applied through focused technical questioning), empowering the investigation of compliance and informed by internationally accumulated or shared national intelligence, needs to be added to be added to that list.

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October 2011

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[i] I am immensely grateful for comments, criticisms, suggestions and assistance from Emma Belcher, Thomas Bielefeld, Ursula Jasper, Pam and Henry Steiner, James Acton, Geoffrey Forden, Henry Sokolski, Andreas

Persbo, and Ian Stewart. Errors, omissions, or unrealistic expectations of the international system are entirely my own.

[ii] For a lucid analysis of the kinds of information available to NIAs and IVOs, and the structural problems of cooperation between them, see James M. Acton "International Verification and Intelligence" (IN THE SAME VOLUME?]

[iii] " Statement by IAEA Director General Hans Blix on IAEA Inspections in Iraq to the US Senate Foreign Relations Committee Washington, D.C., USA 23 October 1991" http://www.fas.org/news/un/iraq/iaea/dgsp1991n06.html

[iv] This is not a philosophical paper, but it is certainly arguable that focused technical discussions, discharging a technical accountability obligation, conducted conscientiously and respectfully on both sides, would constitute , in terms of the discourse ethics associated with Jürgen Habermas ,"an ideal speech situation", in which participants would have equal opportunity to assert or question any factual or normative claim. Given the importance of controlling WMD technologies for the human future, strong technical accountability appears wholly in line with the concern of the Frankfurt School "to link theory and practice, to provide insight, and to empower subjects to change their oppressive circumstances and achieve human emancipation, a rational society that satisfies human needs and powers....Habermas' analysis of communication seeks to provide norms for non-dominating relations to others and a broader notion of reason." [Cambridge Dictionary of Philosophy, pp. 278-79]

[v] For example, the otherwise comprehensive and well informed think piece in early September 2011 by Bruno Tertrais entitled "The 10 Reasons Why We Know Iran Wants the Bomb" http://www.realite-eu.org/site/apps/nlnet/content3.aspx?c=9dJBLLNkGiF&b=2315291&ct=11206139 omits any mention of Iranian refusals to make technical personnel available for focused discussion and questioning.

[vi] see the contrasting books by the second, and last , chairman of UNSCOM and the first chairman of UNMOVIC: Richard Butler, "The Greatest Threat: Iraq, Weapons of Mass Destruction, and the Crisis of Global Security", 2001, and Hans Blix, Disarming Iraq, Pantheon 2004)

[vii] See the speech in December 2002 by Colin Powell , criticising Iraq's "Currently Accurate, Full and Complete Declaration" (CAFCD) http://www.guardian.co.uk/world/2002/dec/20/iraq.usa1

[viii] Dilip Hiro, "Neighbours, Not Friends: Iraq and Iran after the Gulf Wars" (London: Routledge, 2001), p. 49. Quoted in "Rebel without a Cause? Explaining Iraq's Response to Resolution 1441 ", Målfrid Braut-Hegghammer, The Nonproliferation Review 2006, but well-known to exist by UN inspectors

[ix] Letter Dated 8/4/98 from The Executive Chairman of The Special Commission Established by The Secretary-General Pursuant To Paragraph Nine (B) (I) of Security Council Resolution 687 (1991) Addressed To The President of The Security Council

Enclosure I: Report on The Technical Evaluation Meeting on Chemical Warfare Agent VX 12 February 1998

http://www.iraqwatch.org/un/UNSCOM/s_1998_308_TEM.htm

[x] Letter dated 19 February 1998 from the Executive Chairman of the Special Commission established by the Secretary-General pursuant to paragraph 9 (b) (i) of Security Council Resolution 687 (1991), addressed to the President of the Security Council

Enclosure II: Report of The Special Commission's Team To The Technical Evaluation Meeting on Proscribed Missile Warheads (Baghdad, 1 to 6/2/98

http://www.scudwatch.org/collection-09

[xi] Letter Dated 8/4/98 from The Executive Chairman of The Special Commission Established by The Secretary-General Pursuant To Paragraph Nine (B) (I) of Security Council Resolution 687 (1991) Addressed To The President of The Security Council

Annex : Report of the United Nations Special Commission's Team to the technical evaluation meeting on the proscribed biological warfare programme (Vienna, 20-27 March 1998)*1

http://www.iraqwatch.org/un/UNSCOM/s-1998-308-TEM.htm

[xii] UNSCOM –Executive Chairman's Report to the Security Council - 25 January 1999

Annex C : STATUS OF VERIFICATION OF IRAQ'S BIOLOGICAL WARFARE PROGRAMME

http://www.fas.org/news/un/iraq/s/990125/dis-bio.htm

[xiii] Geoffrey Forden:" Intention to Deceive: Iraqi Misdirection of UN Inspectors" Jane's Intelligence Review March 2004.

[xiv] Forden, 2004

[xv] Forden, 2004

[xvi] *"Iraq, with a highly developed administrative system, should be able to provide more documentary evidence about its proscribed weapons programmes. Only a few new such documents have come to light so far and been handed over since we began inspections. It was a disappointment that Iraq's Declaration of 7 December did not bring new documentary evidence. ....*

Where authentic documents do not become available, interviews with persons, who may have relevant knowledge and experience, may be another way of obtaining evidence. UNMOVIC has names of such persons in its records and they are among the people whom we seek to interview. In the last month, Iraq has provided us with the names of many persons, who may be relevant sources of information, in particular, persons who took part in various phases of the unilateral destruction of biological and chemical weapons, and proscribed missiles in 1991. The provision of names prompts two reflections:

The first is that with such detailed information existing regarding those who took part in the unilateral destruction, surely there must also remain records regarding the quantities and other data concerning the various items destroyed.

The second reflection is that with relevant witnesses available it becomes even more important to be able to conduct interviews in modes and locations, which allow us to be confident that the testimony is given without outside influence. .... conditions ensuring the absence of undue influences are difficult to attain inside Iraq. Interviews outside the country might provide such assurance. It is our intention to request such interviews shortly. ..."

Executive Chairman Dr Hans Blix: Oral introduction of the 12th Quarterly Report of UNMOVIC to the Security Council 7 March 2003

http://www.un.org/depts/unmovic/SC7asdelivered.htm

[xvii] Forden, "Intention to Deceive" 2004

[xviii] Charles A. Duelfer and Stephen Benedict Dyson "Chronic Misperception and International Conflict " International Security, Vol. 36, No. 1 (Summer 2011), pp. 73–100

[xix] Charles Duelfer, Comprehensive Report of the Special Advisor to the DCI on Iraq's WMD Vol. 1, Transmittal Message, Sept. 30, 2004, p. 1.

[xx] See, amongst his various public statements: *"The political justification given for the Iraq war was above all the contention that Iraq retained or was developing weapons of mass destruction in direct violation of Security Council resolutions. It was the first time a full-scale armed intervention was taken in the name of enforcing the non-proliferation of nuclear weapons. It is unlikely that any other argument could have persuaded the US Congress or the UK parliament authorised armed action. As we know, the evidence was faulty, but the states launching the war ignored the reports of the UN Monitoring Verification and Inspection Commission, which I led, and the International Atomic Energy Authority. "* Hans Blix, "Why Nuclear Disarmament Matters" the MIT press, Cambridge Massachusetts 2008

[xxi] Interview with Jim Lehrer , "Online News Hour "17 March 2004, available , in transcript form and streamed audio, December 2011 at http://www.pbs.org/newshour/bb/international/jan_june04/blix_3-17.html# , retrieved December 2011. Quoted in Keith A Hansen "Intelligence and Proliferation: Lessons Learned" IFRI Proliferation Papers , Issue 38, Summer 2011, page 38, footnote 90, available from Ifri Security Studies Centre http://www.ifri.org/?page=contribution_detail&id=6768&id_provenance=97. Hansen also summarises a passage which is now inaudible on the Internet from this interview as: "*He [Dr Blix] admitted, however, that until about May 2003, inspectors still thought it possible to find evidence of WMD programs*"

[xxii] This is the picture convincingly conveyed in "Rebel without a Cause? Explaining Iraq's Response to Resolution 1441 ", Målfrid Braut-Hegghammer, The Nonproliferation Review, 2006 , 13:1, 17-34

[xxiii] See the compilation and analysis of such claims in Tom Chatfield " Whispers in the Desert " , Prospect Magazine 27th April 2008 — Issue 145
http://www.prospectmagazine.co.uk/2008/04/whispersinthedesert/

[xxiv] http://www.globalsecurity.org/wmd/world/russia/yeniseysk.htm

[xxv] Well described in Anne Witkowsky , Sherman Garnett and Jeff McCausland "Salvaging the Conventional Armed Forces in Europe Treaty Regime: Options for Washington" Brookings Inst March 2010 available at: http://www.brookings.edu/~/media/Files/rc/papers/2010/03_armed_forces_europe_treaty/03_armed_forces_europe_treaty.pdf

[xxvi] Etel Solingen, Nuclear Logics: Contrasting Paths in East Asia and the Middle East, (Princeton, NJ: Princeton University, Press 2007).

[xxvii] First and Second Biological Weapons Convention Review Conferences, documents BWC/CONF.I/10 1980 and BWC/CONF.II/13 1986

[xxviii] Jeannie Gillman "Biological Weapons: from the Invention of State-Sponsored Programs to Contemporary Bioterrorism" Columbia University Press 2005. Chapter 7 " The Soviet Biological Weapons Programme", pages 131-147

[xxix] Dr David Kelly, the highly respected microbiologist working for the British Defence Ministry, played an important part in establishing the overall technical picture by persistent informed questioning of Russian scientists. He later proved equally valuable to UNSCOM and UNMOVIC as a courteously relentless investigator of the Iraqi offensive BW programme. Strengthening technical accountability in future compliance crises will require an international supply of similarly quiet and expert verification virtuosi.

[xxx] http://www.fas.org/nuke/control/bwc/text/joint.htm

[xxxi] R. Roffey, A. Tegnell, F. Elgh , "Biological warfare in a historical perspective ", Clinical Microbiology and Infection Volume 8, Issue 8, pages 450–454, August 2002

http://onlinelibrary.wiley.com/doi/10.1046/j.1469-0691.2002.00501.x/full

[xxxii] US Dept of State: Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments. August 2011 Part III
http://www.state.gov/documents/organization/170652.pdf

[xxxiii] Chemical Weapons Production Facilities

[xxxiv] IAEA GOV/2011/54 2 September 2011 "Implementation of the NPT Safeguards Agreement And Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran" Report by the Director General

http://www.iaea.org/Publications/Documents/Board/2011/gov2011-54.pdf

[xxxv] "Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers " Report of the International Commission on Nuclear Non-Proliferation and Disarmament Gareth Evans and Yoriko Kawaguchi , Co-Chairs December 2009

[xxxvi] See as just one recent example, "Iran "Tricked and Misled" IAEA, Former Official Says" ""When I think about the nuclear activities of certain states, for instance Iran's nuclear program, I have to say that we allowed ourselves to be placated too often. We should have done more than carrying out our inspections. Yes, with hindsight you could perhaps even say we failed," former IAEA safeguards chief Olli Heinonen told Der Spiegel." Global Security Newswire Friday, Oct. 7, 2011 http://gsn.nti.org/gsn/nw_20111007_1664.php

[xxxvii] Richard Rhodes "The Twilight of the Bombs: Recent Challenges, New Dangers, and the Prospects for a World without Nuclear Weapons "Alfred A Knopf, New York, 2010