Nuclear Learning in Multilateral Forums

Gill, Amandeep Singh

Awarding institution:
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Nuclear Learning in Multilateral Forums

Amandeep Singh Gill

Thesis submitted in fulfilment of the requirements for
a degree of Doctor of Philosophy

to

King’s College London
University of London

2016
Abstract

The thesis asks if governments "learn" about nuclear weapons in dialogue with other governments and how new areas of nuclear learning such as nuclear security emerge and get consolidated in multilateral forums. A model of nuclear learning is proposed bringing together insights from the fields of sociology of knowledge, organisational learning, decision-making, policy learning and international relations. This model, which integrates power among other explanatory factors, is tested against evidence from nuclear history and from the current practice of nuclear negotiations. The outcome builds on the efforts of Joseph Nye in the 1980s to examine nuclear learning in the bilateral Soviet-U.S. context, updates and extends nuclear learning to the multilateral field and underscores nuclear security as a new area of nuclear learning in its own right.
Acknowledgments

This research project would not have taken off without the encouragement of Lynn Eden, David Holloway, WPS Sidhu and Anand Narasimhan. It could not have been sustained without the support of my supervisors, Professor Wyn Bowen and Sir Lawrence Freedman. And it would not have reached fruition without the understanding of my wife, Ashma, daughter, Bani, son, Ujjay and mother, Harbans. Finally, I want to acknowledge the contribution of my fellow nuclear learners, many of whom generously shared their experience and insights and showed incredible sympathy for my struggle to balance work and research.
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<tr>
<td>ABM</td>
<td>Anti-Ballistic Missile</td>
</tr>
<tr>
<td>ACDA</td>
<td>Arms Control and Disarmament Agency</td>
</tr>
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<td>ADA</td>
<td>Atomic Development Authority</td>
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<tr>
<td>AEC</td>
<td>Atomic Energy Commission</td>
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<td>ATT</td>
<td>Arms Trade Treaty</td>
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<tr>
<td>BTWC</td>
<td>Biological and Toxin Weapons Convention</td>
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<tr>
<td>CWC</td>
<td>Chemical Weapons Convention</td>
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<tr>
<td>CCW</td>
<td>Convention on Certain Conventional Weapons</td>
</tr>
<tr>
<td>CD</td>
<td>Conference on Disarmament</td>
</tr>
<tr>
<td>CFE</td>
<td>Conventional Forces in Europe</td>
</tr>
<tr>
<td>CPPNM</td>
<td>Convention on the Physical Protection of Nuclear Materials</td>
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<td>CTBT</td>
<td>Comprehensive Nuclear Test Ban Treaty</td>
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<tr>
<td>DPRK</td>
<td>Democratic People’s Republic of Korea</td>
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<td>ENDC</td>
<td>Eighteen Nation Disarmament Committee</td>
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<tr>
<td>FMCT</td>
<td>Fissile Material Cut-Off Treaty</td>
</tr>
<tr>
<td>GCD</td>
<td>General and Complete Disarmament</td>
</tr>
<tr>
<td>GICNT</td>
<td>Global Initiative to Combat Nuclear Terrorism</td>
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<tr>
<td>HEU</td>
<td>High-Enriched Uranium</td>
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<tr>
<td>IAEA</td>
<td>International Atomic Energy Agency</td>
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<tr>
<td>ICBM</td>
<td>Inter-Continental Ballistic Missile</td>
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<tr>
<td>ICSANT</td>
<td>International Convention on the Suppression of Acts of Nuclear Terrorism</td>
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<td>IED</td>
<td>Improvised Explosive Device</td>
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<tr>
<td>IND</td>
<td>Improvised Nuclear Device</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>INF</td>
<td>Intermediate-range Nuclear Forces</td>
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<td>IPPAS</td>
<td>International Physical Protection Advisory Service</td>
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<tr>
<td>ITDB</td>
<td>Incident and Trafficking Database</td>
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<tr>
<td>ISIS/L</td>
<td>Islamic State of Iraq and Syria/the Levant</td>
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<td>ITWG</td>
<td>International Technical Working Group</td>
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<tr>
<td>MTCR</td>
<td>Missile Technology Control Regime</td>
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<td>NAM</td>
<td>Non-Aligned Movement</td>
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<td>NATO</td>
<td>North Atlantic Treaty Organization</td>
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<td>NEST</td>
<td>Nuclear Emergency Search Team</td>
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<td>NNWS</td>
<td>Non-Nuclear Weapon States</td>
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<td>NSAs</td>
<td>Negative Security Assurances</td>
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<td>NTI</td>
<td>Nuclear Threat Initiative</td>
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<td>NRC</td>
<td>Nuclear Regulatory Commission</td>
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<td>NSG</td>
<td>Nuclear Suppliers Group</td>
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<td>NSS</td>
<td>Nuclear Security Summit</td>
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<td>NPT</td>
<td>Treaty on the Non-Proliferation of Nuclear Weapons</td>
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<tr>
<td>OEWG</td>
<td>Open-Ended Working Group</td>
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<td>OSART</td>
<td>Operational Safety and Review Team</td>
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<tr>
<td>PALs</td>
<td>Permissive Action Links</td>
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<tr>
<td>PAROS</td>
<td>Prevention of an Arms Race in Outer Space</td>
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<td>PNE</td>
<td>Peaceful Nuclear Explosion</td>
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<td>PSI</td>
<td>Proliferation Security Initiative</td>
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<td>PTBT</td>
<td>Partial Test Ban Treaty</td>
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<td>RDD</td>
<td>Radiological Dispersal Device</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<td>ROK</td>
<td>Republic of Korea</td>
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<td>SDI</td>
<td>Strategic Defence Initiative</td>
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<td>START</td>
<td>Strategic Arms Reductions Treaty</td>
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<td>TNDC</td>
<td>Ten Nation Disarmament Committee</td>
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<td>UK</td>
<td>United Kingdom</td>
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<td>UN</td>
<td>United Nations</td>
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<tr>
<td>UNDC</td>
<td>United Nations Disarmament Commission</td>
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<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
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<tr>
<td>UNGA</td>
<td>United Nations General Assembly</td>
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<tr>
<td>UNSC/R</td>
<td>United Nations Security Council/Resolution</td>
</tr>
<tr>
<td>UNSCEAR</td>
<td>UN Scientific Committee on the Effects of Atomic Radiation</td>
</tr>
<tr>
<td>U.S.</td>
<td>United States</td>
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<tr>
<td>USSR</td>
<td>Union of Soviet Socialist Republics</td>
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<tr>
<td>WMD</td>
<td>Weapons of Mass Destruction</td>
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Chapter 1

Introduction

Not ideas but materials and ideal interests directly govern men’s conduct. Yet very frequently the “world images” that have been created by “ideas” have, like switchmen, determined the tracks along which action has been pushed by the dynamics of interest.

Max Weber

The research question underpinning this thesis is the role of multilateralism in international learning on nuclear weapons related policies. While there could be several approaches to studying change in international policy, this thesis seeks to explore the explanatory power of the learning model of change. The field chosen for applying this model is nuclear weapons related policy.

Since nuclear weapons entered the international arena in 1945, governments have struggled to manage the political and security dilemmas surrounding these weapons in the backdrop of shifts in politics, science and society. National political, diplomatic and scientific elites have learnt about nuclear weapons including possibly through interaction with elites from other countries. While learning has been applied to international regimes on economic development, environment and trade, there has been insufficient study of the what and how of nuclear learning in multi-player forums. Nuclear learning has been studied so far in either a country-specific or a bilateral context; the prime examples being Joseph Nye’s study of learning in the Soviet-U.S. context in the early 1980s and Emmanuel Adler’s 1992 study of the role of the U.S. arms control community in learning within the U.S. and bilaterally with the Soviet Union. This needs extension to the multilateral context with solid case studies, which also showcase new areas (such as nuclear security) and new actors (such as China, India and Pakistan) in nuclear learning. Conceptually, the historian’s perspective of nuclear learning in any context - national, bilateral or multilateral - needs to be supplemented with a practitioner’s perspective so that system and process can be integrated in a single model of
learning. Further, cognitive notions of learning need to be expanded to embrace intention and force. Instead of a dichotomy of ‘powering’ and ‘puzzling’, a model of learning needs to integrate power into the international construction of knowledge.

There are at least three reasons why such study is important. One, in an interdependent world issues are increasingly amenable only to multilateral solutions. Nuclear weapons – the subject of this thesis - are one example but there are others such as climate change. Thus, we have no choice but to study multilateral learning today. Two, shared learning may be a more durable and powerful form of learning than solitary learning. In other words not only is the study of multilateral learning unavoidable it may even be desirable. A third possible benefit could be that such an approach sidesteps the ideological dichotomies – realism versus liberalism, structure versus process, rationalism versus reflectivism - often seen in political science debates by taking a long term, learning-centred view of change.

Thus, learning could help reframe nuclear weapons related problems in a relatively agenda free (historical) and realistic (practice-based) manner facilitating their resolution. This is extremely topical. The Conference on Disarmament (CD), the world’s single multilateral disarmament negotiating forum, is unable to implement its negotiating mandate on any of the items on its agenda. It is increasingly difficult to maintain consensus on the goals of the Non-Proliferation Treaty (NPT) at its review meetings. The relevance of these forums, often derided as talk shops, is also under threat from a number of parallel forums that have sprung up to address perceived political urgency for action in the nuclear arena. These parallel forums, often outside of the UN framework, include not only regional initiatives such as the Six Party talks on the Democratic People’s Republic of Korea (DPRK) and the E3+3 talks on Iran but also broader cross-regional initiatives such as the U.S. led Nuclear Security Summit (NSS) process. Is there a method in the proliferation of the upstart

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forums? Are they addressing a real need for learning which the more mature forums are unable to deliver?

This introduction begins with a review of the literature relevant to nuclear learning. This is followed by a section on methodology. A way to think about nuclear learning is proposed first in the methodological section. The research question and the theoretical model to study it is described thereafter. The various steps in the research, including the selection of case studies to test the model, are then outlined. The introductory chapter concludes with a summary of the chapters that follow.

Literature Review

Based on existing studies, nuclear learning can be seen as a subset of international learning - learning by individual states, by two states in a dyad or by more than two states interacting in a system. Nuclear learning rose briefly to prominence in the late 1980s and early 1990s (Nye, 1987; Tate, 1990; Adler, 1992) as part of a broader scholarship on learning in international relations and in international organisations (May, 1973; Etheredge, 1985; March & Olsen, 1989; Breslauer & Tetlock, 1991; Ernst Haas, 1990; Peter Haas, 1992; Wendt, 1992; Khong, 1992; Levy, 1994; Reiter, 1996; Leng, 1983, 2000; Knopf, 2003, 2012). The latter includes studies of learning or adaptive governance in international regimes on development, environment and trade (Mitchell, 1994; Eising, 2002; Cooney & Lang, 2007).

The starting point for studying nuclear learning is the 1987 article “Nuclear Learning and US-Soviet Security Regimes” in which Nye explored the U.S.-Soviet relationship for evidence of learning in and outside of security regimes. He began his article with a question that remains fundamental even though the mid-1980s certainties of the Cold War have faded away. Will stable nuclear deterrence last forever? Nye’s conceptual framework of learning was both time (pre-Reykjavik Cold War period) and scope (bilateral Soviet Union-U.S.) limited. Adler’s 1992 study of the role of the U.S. arms control community in nuclear

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learning within the U.S. and bilaterally with the Soviet Union added a significant dimension to Nye’s inductive analysis. Even though the U.S. epistemic community is no longer the sole arbiter of the global nuclear learning agenda, the work of Adler provides important signposts for marrying (as this thesis does) the historical approach of Nye with a practice-based approach.

More recently, there has been an attempt to apply the concept of nuclear learning to South Asia. However, like the Nye article this too is a study of a bilateral equation – Soviet Union-U.S. in small caps, if you will. What individual states such as China or the U.S. (in case of DPRK) learn through nuclear interaction has also been examined (Johnston, 1996 and Tang Shiping, 2006; Harnisch, 2001) but these studies appear to be more cases of adaptation to a changing context rather than of deeper learning.

A number of broad historical studies of nuclear weapons development programmes as well as policies in the U.S., Soviet Union/Russia, U.K., France, China, India, Israel and Pakistan are also available (Freedman, 1981; Bundy, 1988; Lewis & Xue, 1988; Holloway, 1994; Talbott, 1979, 2004; Cohen, 1998, 2010; Perkovich, 1998; Shahid-ur-Rehman, 1999; Alagappa, 2008; Salik, 2011). While these studies are often limited to a national or bilateral perspective they may still offer insights into nuclear learning when put ‘together on the table’. This could be the approach taken, for example, in a different context in the Cambridge History of the Cold War project (Leffler, Westad, 2010). However, the absence of a rigorous model of nuclear learning is a major impediment to such a fusion of data; the widely varying political and theoretical perspectives of the studies, which impacts on their comparability, is another.

Studies of near misses in nuclear conflict such as the Cuban Missile crisis or the less public crisis around the Able Archer exercise have showcased a kind of learning centered on command and control (national) and nuclear risk reduction measures (bilateral). This subset (Forsenko, 1998; Kennedy, 1999; Allison, 1999; Dobbs, 2009 and Bracken, 1983; Blair, 1985,

6 Feroze Hassan Khan, Ryan Jacobs and Emily Burke (Eds), Nuclear Learning in South Asia: The Next Decade, Naval Postgraduate School, June 2014.
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1993; Carter, 1987; Sagan, 1993; Gregory, 1996; Born, 2010) is quite mature even though studies on the application of such learning to newer nuclear states keep appearing. 

Another set of studies relates to ‘dis-possession’ or unilateral disarmament of the kind seen in post-apartheid South Africa or post-Soviet Union Ukraine (Reiss, 1995; Steyn, 2007). These studies though useful are limited to a single state, which was moreover not interacting regularly or independently in multilateral nuclear forums prior to the disarmament decision. The nuclear learning (or ‘un-learning’) aspect is less evident also because of the dramatic political development that preceded the disarmament decision. A further set of studies – explicit or implicit restrictions on use of nuclear weapons (Tannenwald, 2007) - is more tantalising from the perspective of nuclear learning but remains to be investigated from a multi-player perspective.

In all of the above studies of ‘less than multilateralism’, there are several questions that remain insufficiently explored. Why do multilateral forums keep being set up if the real locus of learning is elsewhere? Is the notion of nuclear learning limited to introducing new possessors to lessons learnt by the superpowers in their Cold War competition? In other words is there a pool of shared knowledge ‘out there’ that newer players simply access or are the sorcerer’s apprentices brewing their own knowledge? Again, is bilateral learning in a dyad independent of what happens to or among other nuclear powers? Further, what happens when the ‘deterred’ is not a single state – the case of British, French and Indian deterrents - or not even a state at all (Al Qaeda or the Islamic State in Iraq and Syria (ISIS))? These questions underscore that theory based on existing literature cannot accommodate the complexities of nuclear learning in the current nuclear age with at least eight possessors of nuclear weapons, a number of evolving deterrence relationships, differentiated constraints on the nuclear behaviour of the possessors and the advent of the non-state actor.

Multiplayer learning as a distinct type of nuclear learning has not been studied so far despite the current reality of a multiplayer nuclear order. Such study requires a model.

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7 Michael Cohen, When Nuclear Proliferation Causes Peace: Leaders and the Psychology of Nuclear Learning, forthcoming.

The work on nuclear security builds on the existing literature (McPhee, 1973; Blair & Brewer, 1977; Schelling, 1982; Campbell, Carter, Miller and Zraket, 1991; David Fischer, 1997; Graham Allison, 2004; Bowen, 2004; Byman, 2007; Levi, 2009; Richelson, 2009; Schlosser, 2013) but expands the work so far on multilateral knowledge construction on nuclear security (Carmona, 2005; Jankowitsch-Prevor, 2005 & 2008; Gehr, 2007; Bowen, Cottee & Hobbs, 2012) to a contemporary forum, the Nuclear Security Summit (NSS) whose history is recounted for the first time.

The assessment of nuclear learning in the case studies and in the concluding chapter builds on the existing literature on multilateral summits such as the climate change conferences as “field-configuring events” (Lampel and Meyer, 2008; Hardy and Maguire, 2010; Schüssler, Rüling and Wittneben, 2013), extends it to a new contested policy field and identifies the drivers of change and stasis (“field-maintenance”).

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8 There have been calls recently for studying nuclear learning at the international level and for identifying mechanisms that promote shared learning; Jeffrey Knopf, The Concept of Nuclear Learning, The Nonproliferation Review, 19, 1 (2012), 79-93.
Research Methodology

Thinking about nuclear learning

The idea for the thesis came from the researcher’s experience with nuclear negotiations in bilateral and multilateral forums. Change or learning in the area of nuclear arms control and disarmament could arise from systemic changes in the political and security firmament of nuclear weapons or generational changes in the mindsets of the ideologues and practitioner of nuclear arms control. It could take birth inside a powerful nuclear player and then seep into that player’s bilateral nuclear relationships or it could be co-constructed in a bilateral channel and then extended into other relationships. It could also be sparked in a multiplayer setting with ideas snowballing into knowledge that no single player may have completely foreseen at the outset of the engagement.

Whether it is silent (mimetic) learning by observation, coerced learning by direction from outside (‘Do as we tell you’), or shared learning, the following definition of nuclear learning can be considered as an aid to conceptualisation without prejudice to any particular pathway:

_Nuclear learning is the durable and directed rethinking by governments, governmental organisations and international organisations of their political views regarding nuclear weapons, related materials and technologies._

Possibly, such learning could involve evaluation of expectations against outcomes and adjusting of strategies so that they better align expectations with what is possible, or better achieve desired outcomes. However, even though such evaluation and adjustment is a form of change, it is not learning. What matters is not tactical adjustments in behaviour but a kind of _puzzling_ that leads to an ideational _reframing_ with consequences for behaviour that could be tactical as well as strategic. Some specific indicators of such learning could be 1) conceptual sharpening under probing and challenge, 2) policy compromise or adjustment.

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under uncertainty about outcomes, 3) development of new ideas and shared understandings, 4) putting into practice of policy compromises or new ideas and understandings and 5) abandonment of old notions and positions. Given the nature of nuclear weapons, such learning can only be international – in the company, implied or actual of other States, and is best pursued in a durable and directed manner multilaterally. Within multilateral forums, such learning is more about ideas than about a specific instantiation.10

What is it about multilateralism that lends itself uniquely to learning? Much like school classrooms, multilateral forums are an essential element in learning today. States can learn at ‘home’ or in the ‘street’ but it is only at ‘school’ that they develop a better appreciation of diverse interests, the ripple effects of individual actions and the benefits of cooperative work. The presence of other, often contending States, the existence of a shared purpose, common rules of procedure and participation in sovereign equality give a unique character to multilateral forums. Learning progresses from ‘I know that I know’ to ‘I know that you really know’ to ‘You know that I know’ and ‘We know that we know’. There is a compelling basis for such learning: in a complex and interdependent world, the powerful have the incentive of seeing their peers equally constrained while the meek have the satisfaction of ceding sovereignty willingly and equally. Even if political views do not change and there is no learning, participation in multilateral forums allows States to assimilate new information and be seen at home and abroad as international actors of consequence, thus keeping alive the possibility of future learning.

Research Question

The principal research question this thesis explores is whether multilateral forums are a distinct source of nuclear learning in addition to national and bilateral channels of learning. Do governments learn by engaging in nuclear forums such as the NSS or these are just talk shows that occult the real ‘theatre of knowledge’11 which resides in bilateral or

10 However, one should be cautious in artificially separating process from substance in multilateral forums where process hides substance and substance progresses on the back of process. Understanding the diplomatic process is often necessary to delineate the progress of ideas in such forums.
11 The term is owed to Giulio Camillo’s 1530 manuscript Theatro della Sapientia.
national settings? Additionally: what features in and around these forums seem to facilitate shared learning? Have these forums helped create new areas of nuclear knowledge beyond those forged during the Cold War? The research questions that underlie the thesis are also practical questions that practitioners grapple with in bilateral and multilateral forums today in a complex and interdependent world.

Conceptual Model

The theoretical model proposed in Chapter 2 conceptualises international learning as a ‘three-table’ game played in the public, policy and diplomatic spheres. Knowledge affects action across three inter-linked spheres of learning: 1) a Public Sphere populated by policy or epistemic communities, 2) a Political Sphere dominated by domestic political aggregators and deciders, and 3) a Diplomatic Sphere dominated by international actors such as leaders or negotiators in foreign policy forums. The motive force for knowledge construction is provided by power in the form of intention, influence, selection or discipline. With this force, knowledge spirals into international forums and comes alive in ‘performances’ in these forums. The forums – bilateral or multilateral - that constitute the Diplomatic Sphere are like a ‘stage’ for the play and replay of ‘ritual’ or dialogue that embodies and symbolically articulates learning. Following Simon Harrison, it is seen that the ritual of dialogue in these forums also includes the power relationships inherent in learning and the staging process is merely a temporary and provisional resolution of power struggles.12 Further, following Heclo, it is seen that both ‘puzzling’ and ‘powering’ are underway simultaneously. Discourse and practice too overlap and in certain cases (such as nuclear arms control) are practically indistinguishable. Knowledge accumulates over successive iterations of representational activity and the ‘theatres of talk’ and ‘theatres of knowledge’ cannot be separated from each other.

Knowledge is not reified in this model but is rooted in concrete activity nor do the three spheres necessarily imply any hierarchy in terms of where knowledge is constructed. The fundamental process that constitutes learning at each level is iteration of script (S) and performance (P) through which discourse gets modified incrementally or paradigmatically

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(O); both constitute learning depending on context and learners’ expectations. Dominant knowledge entrepreneurs or communities help channel learning in intended directions and supply episodic and systemic power for institutionalisation of knowledge. Practice helps develop expertise for continued performance of new knowledge-embedded action, and dialogue, in the presence of contending others, is essential for fostering new insights within and beyond the reigning learning paradigm.

Data collection and analysis

The qualitative case study method was adopted to frame data collection and analysis. This method is particularly useful in the learning context. The behaviour of the learners, especially past learners, cannot be manipulated nor can we completely separate context from the phenomenon under study. Further, in multilateral forums directed change is slow and when it does occur it is often attributed to other modalities (changes in bilateral relations or domestic politics). A long and broad sweep therefore becomes necessary. Both historical study - the origin and evolution of an idea, and the anthropological analysis of its practice - its ‘rituals’ and ‘artifacts’, need to be deployed. This can best happen in a qualitative case study context. The thesis therefore relies on case studies of select nuclear forums, including interviews with informers regarding process and outcome.

Given the expanse of nuclear history, the case studies needed to be bound. This is similar to the development of inclusion and exclusion criteria for sample selection in a quantitative study. An example of the inclusion criteria used in this thesis is: Were leaders directly engaged in the nuclear forum being studied? Finally, instead of a single case study with embedded units (the four Nuclear Security Summits alone), two or more case studies can be deployed in parallel to bring out variation in outcomes with changes in contexts, this being similar to multiple experiments in quantitative science.

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The nuclear forums for testing the research questions were identified from a spectrum of multilateral nuclear forums ranging from exclusive forums of nuclear weapon possessors to universal membership UN bodies. Two sample case studies were carefully selected from a broad historical sweep of the nuclear age from 1946 to the present: the negotiations at London and Geneva on general and complete disarmament over 1954-63 in the Sub-Committee of the Disarmament Commission, the Ten Nation Disarmament Committee (TNDC) and the Eighteen Nation Disarmament Committee (ENDC) as well as the NSS process from inception to apogee over 2009-2016. This fulfils an essential condition for rigorous qualitative research and closely tracks the precedent of policy learning studies such as Heclos’s 1974 study of social security policies in Britain and Sweden.

A set of criteria was used for choosing these forums. One was selective and restricted membership. For this a cut-off of less than a quarter of UN membership was chosen. It is worth noting that for a mature idea being incorporated in a legally-binding regime governments often choose an entry into force criteria of around 1/3rd of the UN membership so as to give the requisite momentum to the norm in terms of legitimacy and institutionalisation. A similar, perhaps slightly lower, numerical criteria may be desirable at the ideational step prior to this. A related characteristic was the presence of key nuclear players – all or nearly all of the weapons possessors – as well as the presence of a significant number of non-nuclear weapon states to provide the ‘grit’ or glue for holding nuclear dialogues together and to supply the dialogic-tension needed for generation of knowledge. The ENDC being the first such forum and the NSS the latest became logical choices. The next criteria was the involvement and interest of political leaders in the nuclear knowledge being constructed. In addition, the forums were matched for rapid iteration of process (1954-57, 1958-61 and 1962-64 for the Sub-Committee/TNDC/ENDC;
Nuclear Learning in Multilateral Forums

2009-2016 for the NSS). Finally, the selected forums had to have a broadly shared idea at the start of the process based on which learning could begin in an iterative process. In other words, the forum needed to fit a purpose, however imperfectly. A comprehensive approach to disarmament and international control was this idea for the first case study, just as nuclear security against the threat from non-state actors was for the second.

Apart from rigour, another reason for using multiple case studies from different times in nuclear history was to allow changes in the areas of nuclear knowledge construction over seven decades of nuclear learning to emerge. This can be an important additionality to the existing research in the area of nuclear learning.

The next step in the study was the gathering of data on the forums selected for study. This was done through a survey of documentation pertaining to their history, processes and output as well as semi-structured interviews with officials and experts with experience of their working.²⁰ The research questions identified initially were used to partially structure the interviews. The interview questions were subsequently tweaked as required. The aim was to tease out the concrete experiences of the interviewee with the creation of a forum, its working at a critical juncture or its output. Iterations of scripted process in these forums (e.g. resolutions, reports and Communiqués) too were examined in regard to specific areas of learning such as general and complete disarmament, partial measures for reducing nuclear dangers, nuclear testing, nuclear security and restrictions on use of nuclear weapons; both adoption and abandonment of positions were studied.

While the objective of the interviews may seem only to be to look for evidence to support theory, the idea is also to try and capture the informants’ experience in theoretical terms thus helping build theory.²¹ Rather than impose a theoretical model early in the research on the informants, the researcher lets their practice speak and allows room for

²⁰ In case of the ENDC, given the passage of time both autobiographical accounts and interviews with practitioners in ENDC’s successor forums such as the CD were also used.
²¹ Dennis A. Gioia, Kevin G. Corley and Aimee L. Hamilton, ‘Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology,’ Organizational Research Methods, 16 (1), (2013), 1-17.
new concepts to emerge. The theory posited at the outset gets tweaked as the research progresses. The result is theory grounded in practice.\(^\text{22}\)

Data analysis was carried out in two sweeps; the first within the case study and its sub-units (Sub-Committee, TNDC and ENDC for the first, and the four Nuclear Security Summits in 2010, 2012, 2014 and 2016 for the other) and the second across the forums in light of the conceptual model of the thesis. The 1\(^{st}\)-order analysis allowed identification of themes and categories in terms of the informants’ worldview and the particular historical context of a case study, while the 2\(^{nd}\)-order analysis permitted a look at a deeper structure of aggregates and larger narratives.\(^\text{23}\) The conceptual model was tweaked at this stage as necessitated by the emergent data structure, which was also reviewed in the light of existing theory and literature to evaluate if something new had emerged.

Chapter Summaries

Chapter 2 \textit{Nuclear Learning in Multilateral Forums: A Conceptual Framework}

The conceptual model links international learning back through policy learning to individual learning, which allows us to get the locus of learning right (who or what learns) and account for the role of domestic politics. Power and self-interest are not excluded either, retaining a major advantage of neorealist approaches. At the same time the three-level approach proposed in the model avoids the unitary actor problem associated with parsimonious neorealist models. Neither the state nor the international system is reified as an overwhelming reality; man is at the heart of all these three levels as the real locus of learning. Further, neither discourse nor practice gets read out of learning in this model – the ‘talk’ walks and the ‘walk’ talks.

\(^\text{22}\) Grounded theory research can be pursued in various ways but there are a few common characteristics in all these methodological approaches – openness throughout the study, immediate analysis after data collection, comparing data components across cases, careful selection of participants and modification of questions asked as data collection progresses, reaching theoretical saturation when fresh insights from participants dry up, and finally, presentation of a set of related concepts in a coherent whole. Alexandra Sbaraini, Stacy M. Carter, R. Wendell Evans and Anthony Blinkhorn, ‘How to do a grounded theory study: a worked example of a study of dental practices’, \textit{BMC Medical Research Methodology}, 2011, 11:128.

\(^\text{23}\) Gioia & Hamilton, 6-8.
Conceptually, the thesis builds on the work of Heclo and Nye. It adopts a similar stance on the cognitive nature of learning but places greater emphasis on contingency and practice. Again while following Nye on the role of regimes in institutionalising nuclear knowledge, it focusses equally on forums *ad hoc* or institutional where knowledge comes alive in policy performances. It builds on Heclo’s approach of using broad and long-term case studies in following the same idea under construction in different forums but then uses second order analysis across the forums to tease out *inter alia* the drivers of learning. Thus, it emphasises learning as a dependent variable in addition to its role as an independent variable in policy change. The thesis follows Knopf on the importance of the study of shared learning and Nye on delineating different areas of nuclear knowledge shared by States. However, it provides a detailed model for studying international learning and suggests what could promote shared learning.

Chapter 3  *The Birth and Practice of Multilateral Nuclear Learning, 1945-64*

This chapter sets the stage for the examination of nuclear learning in multilateral forums by describing the early history of ideas that persist even today in these forums. Three forums are deployed for this purpose, including the Eighteen Nation Disarmament Committee (ENDC) set up in March 1962. The path to the ENDC was paved by the Sub-Committee of the New-York based Disarmament Commission consisting of Canada, France, the Soviet Union, the U.K., and the United States, which met between May 1954 and September 1957. Its membership reflected the substance of the negotiating geometry decided in the very first resolution of the UN General Assembly that set up the Atomic Energy Commission (AEC) in January 1946, but its working provided a bridge to the new geometry reflected in the ENDC.

The ENDC inherited the partial learning of the first decade and a half of nuclear weapons. It formalised in diplomatic terms the parity between the Soviet Union and the U.S., which the very public thermonuclear testing had established by 1955, and it brought together all the four nuclear weapons possessors of that time, including France (de jure) and a limited number of allies and neutrals, under Soviet-U.S. chairmanship. Most significantly, it
started work on the basis of a set of principles agreed by the Cold War titans in September 1961 and under explicit and continuous encouragement from leaders. Over two years, it grappled with comprehensive disarmament schemes on the one hand and a set of collateral measures on the other. As the first idea proved again to be unachievable, as nuclear weapons began to spread outside the Euro-Atlantic context and as the Cuban crisis underlined the immediate priority of preventing nuclear war, the learning track switched inexorably to partial measures.

In terms of the model of this thesis, a study of the ENDC and its predecessors reveals the emergence of three distinct spheres of learning and strong links between the policy sphere, the foremost centre of nuclear learning, and the public and diplomatic spheres. Within the U.S., the Arms Control and Disarmament Agency (ACDA) was formally established through an Act of Congress in 1961 to formulate and coordinate policy; it had links up and down the policy chains and direct access to negotiators. This was the culmination of attempts going back to 1947 in both the U.K. and the U.S. to set up policy aggregating forums dealing with nuclear weapons. Internationally, multilateral summitry emerged as an important adjunct to bilateral meetings on nuclear issues in the diplomatic sphere and developed substantive and procedural links to standing UN forums; the interplay between the July 1955 Geneva summit and the Sub-Committee of the Disarmament Commission is a case in point. Events such as the radioactive fallout from the Castle Bravo test in 1954 and the Cuban Missile crisis in 1962 fueled public interest in nuclear policy. The international cohort of scientists that first galvanised the Manhattan Project became post-1945 one of the major sources of public ideas on control and elimination of nuclear weapons; it was joined in the mid-1950s by a group of multilateralists from countries such as Canada, India, Sweden, Burma and the United Arab Republic that had short communication lines to leaders such as Nehru of India as well as access to the media. An international epistemic community of experts began to emerge. Within the U.S., the so-called Cambridge Approach solidified nationally in 1960 the notion of “arms control” and presaged the extension of this idea into the bilateral (U.S.-Soviet) and the multilateral

The very public international interest in nuclear weapons also reinforced the theatrical aspect of some of the bilateral and multilateral engagements on nuclear policy. This continues till date, to wit, the subaltern rhetoric in and around the Open-Ended Working Group (OEWG) on nuclear disarmament in Geneva\(^\text{27}\) as well as the official rhetoric around G7 meetings in Hiroshima in spring 2016.\(^\text{28}\)

\section*{Chapter 4 \ A history of the idea of nuclear security, 1945-2009}

The idea of nuclear security precipitated out of the broader area of nuclear command and control and non-proliferation over three distinct phases. In the first phase (1972-77), nuclear security was synonymous with physical protection of nuclear material and facilities. In the International Atomic Energy Agency (IAEA), a semi-formal set of recommendations for physical protection of nuclear material were formulated by a group of experts in 1972. In the U.S., the Energy Reorganisation Act of 1974 split the Atomic Energy Commission into two entities and the new Nuclear Regulatory Commission (NRC) began to focus exclusively on regulatory requirements for safety and for safeguarding materials and facilities against theft, loss, diversion, sabotage and criminal intrusion. Acts of international terrorism such as the 1972 Munich Olympics attacks and speculation in books such as John McPhee’s \textit{The Curve of Binding Energy} about improvised nuclear explosive devices helped consolidate the idea in the policy sphere. Policy learning began to be reflected in IAEA guidance and resolutions as well as guidelines for nuclear suppliers. U.S. led the way and it was an American suggestion of 1974 that led to a two year negotiation over 1977-79 in the IAEA on a draft Convention on the Physical Protection of Nuclear Facilities, Materials and Transports.

\begin{itemize}
\item \textsuperscript{27} Mia Ganderbereger and Ray Acheson, ‘Countries which “Value Nuclear Weapons for Their Security” undermine progress in Nuclear Disarmament: The OEWG Report’, \textit{Global Research}, 6 August 2016; Rod Lyon, ‘Is the World Creeping Towards a Ban On Nuclear Weapons?’, \textit{The National Interest}, 5 August 2016. The OEWG, an \textit{ad hoc} forum in Geneva set up by a UN Resolution, has been shunned by the nuclear armed states and driven by a coalition of NGOs and non-nuclear weapon States.
\end{itemize}
However, it took the collapse of the Soviet Union for nuclear security to emerge out of the narrow confines of physical protection and capture publicly the attention of leaders. A policy initiative in the U.S. Congress (the Nunn-Lugar Act) propelled practical engagement between Moscow and Washington on enhancement of nuclear safety and security measures, which then spiralled up into a multilateral forum at the Moscow Summit on Nuclear Safety and Security in April 1996. The next leap in knowledge construction took place after the 9/11 attacks in 2001 and the revelations about the A Q Khan proliferation network in 2002. The knowledge fields of international terrorism and counter-proliferation extended into the existing field of policy measures on physical protection and illicit trafficking and nuclear security emerged as a distinct area of nuclear knowledge. New legal instruments such as the UN Security Council Resolution 1540, the 2005 International Convention on the Suppression of Acts of Nuclear Terrorism and the 2005 amendments to the 1980 Convention on the Physical Protection of Nuclear Material (CPPNM) filled the normative gaps exposed by these developments. Practice too adjusted; for one, the community of practitioners became more diverse as the field expanded. New forums of practice began to emerge too such as the Proliferation Security Initiative (PSI) in 2003 and the 2006 Global Initiative to Combat Nuclear Terrorism (GICNT), which presaged the future NSS.

Chapter 5  The 2010 Nuclear Security Summit: Realising a forum for nuclear learning

The 2010 Summit in Washington was an initiative of U.S. President Obama. He built on the patchwork of responses of his predecessors and proposed a leaders-led platform for pursuing nuclear security. It would have been natural for leaders to talk broadly about nuclear issues but the Obama team kept the focus within the room narrowly on the prevention of nuclear terrorism. Obama’s call for securing all vulnerable nuclear material within 4 years further narrowed the focus to weapons usable HEU and separated plutonium. The U.S. did not want to start an easy conversation (simple learning) on radiation dispersal devices or RDDs, which would have shifted the focus away from the more challenging conversation (complex learning) on HEU and separated Plutonium.29

29 Interview 15.1.
The NSS process was broadly patterned on other international summits with senior level Sherpas leading inter-disciplinary teams to negotiate outcome documents. However, the Sherpa community soon developed the attributes of a knowledge community; the rigidities of the disarmament and arms control practitioners were loosened somewhat by the injection of experts from other fields such as intelligence, law enforcement and nuclear energy. A flatter hierarchy of communication and novel ways of knowledge construction such as ‘gift baskets’ were used to bypass the slow, and lowest common denominator approach of broader membership multilateral forums. Primacy of national responsibility became the key to stitching together the Summit Communiqué and the Work Plan of nuclear security measures attached to it. A pragmatic focus on practice-rich, simple learning as opposed to idea-rich, more complex learning helped fructify specific nuclear security measures such as HEU-conversion in Mexico, get new players such as China, India and Pakistan to take on more responsibility for nuclear security and mainstream an essentially U.S./G8 idea on minimising HEU fuel and repatriating spent HEU fuel into an international best practice. Attention and resources began to flow to IAEA’s long-established programmes on nuclear security.

Chapter 6  
The 2012 Nuclear Security Summit at Seoul

The path to the 2012 Seoul Summit was beset with two challenges – a backlash from nuclear security conservatives against expanding the Washington agenda and the sudden catapulting of nuclear safety to the first rank of nuclear issues with the Fukushima disaster. A September 2010 paper authored by the U.S. sought to build on the Washington outcomes by fleshing out the broad pledges from the Summit and by proposing a mechanism to track implementation based on national reporting. Priority areas were identified for further action: countering nuclear smuggling, information-sharing on illicit trafficking, establishing a global norm on HEU minimisation and addressing insider threats. In parallel, U.S. began to engage select NSS participants bilaterally, in particular on HEU minimisation, which touched sensitive nerves. New commitments and formalised reporting were strongly resisted by several NSS participants and many contested ideas were pushed into the domain of ‘gift baskets’, like-minded islands of high-ambition states on the margins of the NSS process. Likewise, a debilitating clash of perspectives on the need for civil nuclear energy because of
the nuclear accident at Fukushima Daiichi was avoided by a focused discussion on the nuclear safety and security interface at the U.N. in New York and then at the Summit in Seoul.

The Seoul Summit also led to a modest expansion in the geographical coverage of the NSS with six more countries joining the original forty-seven; more consequential was the expansion in institutional participation with Interpol joining the preparatory process. Preparatory meetings were hosted by countries other than the usual suspects expanding the circle of stakeholders on nuclear security.

It became clear at Seoul that President Obama’s 4-year deadline for securing vulnerable material would have to be flexibly interpreted even with regard to the easiest piece – civilian HEU. Progress was more tangible on the threat assessment related to radioactive sources. The multilateral conversation demonstrated that an overwhelming majority of NSS participants worried as much if not more about the tens of thousands of rad sources around the globe as it did about weapons usable material. Germany supported by its EU partners took the lead in bringing radioactive sources on par with HEU and separated Plutonium at Seoul. The equal emphasis on rad sources was a decisive step in the ‘learning’ of nuclear security as distinct from nuclear non-proliferation.

On the practice side of the ledger, issues such as transport security, cyber security and counter-nuclear smuggling gained prominence at Seoul. A clear set of sub-issues on nuclear security began to emerge by the time of the Seoul Summit as participants reported on national actions or as they joined other participants in championing a specific subject through Gift Baskets. This too was a decisive development in the ‘learning’ of nuclear security.

Chapter 7    The 2014 Nuclear Security Summit at The Hague

2014 was supposed to be the last Summit in the process. The Dutch hosts set about the preparations accordingly. They articulated six substantive areas for progress: materials minimisation and consolidation, enforcement of legal instruments, use of IAEA services and
peer reviews, increased transparency on nuclear security measures to convey an assurance nationally and internationally, security of radioactive sources, and enhancing industry involvement. In addition, they came up with a new approach for enhancing Summit interactivity and for engaging leaders through a policy discussion on a hypothetical nuclear terrorism scenario. Finally, they started a discussion on how to carry forward the ‘nuclear security mission’ beyond 2014.

Just as it had done in 2010, the U.S. contributed to this discussion through a non-paper, which highlighted the need to capture the best attributes of the NSS process in “more lasting vehicles”. While it supported the central role of the IAEA - underlined by the first IAEA ministerial conference on nuclear security held in July 2013 – U.S. wanted a broader follow-up, including in the U.N., Interpol and the review meetings of the relevant Conventions. As the U.S. ‘puzzled’ on follow-up and a cut-off for the NSS process, it caught many participants by surprise when it announced another Summit in 2016. It also began work on a statement of purpose for a ‘core group’ of NSS participants to defend and push learning on nuclear security in the post-Summit phase.

The old issue of security of nuclear weapons and military material was discussed under a new title, ‘comprehensiveness’. The NGOs in particular argued that there was a ‘gap’ in the global nuclear security architecture on the more than 80% of the nuclear material that was in military programmes. Possessors needed to be more transparent with regard to the measures they were taking and their responsibility needed to be spelled out clearly. While their official sympathisers within the NSS wanted to frame the discussion narrowly in terms of material, the proponents of nuclear disarmament before nuclear security wanted the discussion to be truly ‘comprehensive’. In the end, the Summit could not move beyond the Washington compromise on security of military materials being a national responsibility; the disarmament advocates too had to console themselves with a gift basket statement that called for nuclear security to be articulated within the international community’s broader efforts to promote disarmament and non-proliferation.

Overall, the 3rd Summit continued the progress marked at Seoul on minimisation of material and ratification of nuclear security conventions. The scenario-based discussion was
successful in engaging the leaders emotionally and the positive experience directly inspired a cross-border exercise on nuclear security in Latin America. The 35-nation ‘excellence’ statement led by the three Summit hosts took the concept of gift baskets to the level of a shared policy platform over and above the NSS consensus. It pushed the limits of a politically-binding process without a formal verification and follow-up mechanism.

Chapter 8  Coming Full Circle: the 2016 Washington Summit

Russia made it known at the outset in October 2014 that it would no longer participate in the NSS process. Through a non-paper circulated to all participants, it criticised the attempt of the three NSS Chairs – the U.S., the ROK and the Netherlands - to assume a steering role for themselves. It also lambasted the new preparatory process U.S. wanted to put in place through five Working Groups chaired by pre-selected NSS participants to draft Action Plans for the UN, IAEA, Interpol, GICNT and the G8 Global Partnership. Russia and some others saw this as bypassing the Sherpas and intruding on the institutional mandates and independence of international forums. Process issues – the bane of any mature multilateral forum - dominated the first few months of the preparations. It was not until the meeting of Sherpas in Thailand in February 2015 that a compromise was reached on how to prepare for follow-up in relevant multilateral institutions once the NSS process came to an end.

The evolving terrorism threat impacted the 2016 Summit profoundly. Since 2014, ISIS had expanded its reach, chemical weapons had been used by non-state actors in the Syria-Iraq theatre and terror attacks had taken place on European cities. The discussion on the threat assessment over the working dinner on March 31 as well as the scenario-based policy discussion on April 1 was as much about nuclear security as it was about counter-terrorism and counter-radicalisation. Security of radioactive sources, a minor issue at the beginning of the process, was now centre stage. Again, if physical protection of nuclear material and facilities was the main focus till the 3rd Summit, the human dimension was now as important. Interpol’s presence underlined that dimension as did the emphasis on information sharing and intelligence cooperation on traffickers and terrorists.
The evolving security landscape also impacted perceptions of post-2016 follow-up. Formally, the Summit ended without a recommendation for another meeting but the Indian Prime Minister suggested keeping alive the possibility of another Summit in 2018 albeit with a broader focus on WMD Terrorism. In the interim, in President Obama’s words, NSS participants were to use their “voices, votes and voluntary contributions” to promote the five Action Plans and the “network of experts” created through the Summit process was to be preserved through the Contact Group set up by a gift basket. Small group follow-up on intelligence sharing and counter-radicalisation was also put on the table and the IAEA invited leaders to send Ministers to its second international conference on nuclear security in December 2016. Finally, China and India underlined their support for ambition in follow-up by joining the trilateral ‘excellence’ paper circulated as INFCIRC/869 at the IAEA. As an older stakeholder stepped back, and another went into a domestic political transition, new actors in nuclear knowledge construction stepped forward to refresh the learning process.

Chapter 9 Conclusion: The Past as Future of Nuclear Learning

Since the advent of the nuclear age, a number of multilateral nuclear forums, from the UN Atomic Energy Commission of 1946 to the UN Open-Ended Working Groups on nuclear disarmament of 2013 and 2016, have emerged in parallel with national and bilateral channels for discussions on nuclear issues. While not the focus of this thesis, such forums also include the IAEA, the NPT Review Conferences, ad hoc arrangements such as the Nuclear Suppliers Group (NSG) as well as small group diplomatic forums such as the Six Party Talks on DPRK. A dynamic ‘ecology’ of nuclear forums that respond to felt needs for management of nuclear weapons related issues has thus been a hallmark of the nuclear age. This is natural given the global nature of the impact of nuclear weapons and the close link of nuclear weapons policies with broader issues of international peace and security.

Based on an assessment of the historical and anthropological evidence from the two case studies, the thesis concludes that governments indeed learn in multilateral settings in

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30 Interview 11.6. Dutch PM Rutte also referred to the possibility of another Summit should the need arise; Remarks by President Obama and Prime Minister Rutte at Opening Session of the Nuclear Security Summit, 1 April 2016 available at www.obamawhitehousearchives.org
31 Interview 11.6.
accordance with the proposed model. Further, nuclear security has emerged as a new area of nuclear learning despite some continued overlap with the broader area of nuclear control and non-proliferation from which it started to precipitate out in stages with the collapse of the Soviet Union and the 9/11 attacks. This adds a sixth area - Nuclear security against the threat from non-state actors - to the five areas of nuclear knowledge listed by Nye in 1987: Destructive power of nuclear weapons; Control problems; Proliferation; Arms race stability; and Deterrent forces. A few areas of nuclear knowledge are under construction although they are struggling to find the right forum. These include the (re)framing of nuclear disarmament, a throwback to the discussions on general and complete disarmament in the first nuclear age, and restrictions on the use of nuclear weapons.

The evidence examined also shows that there are limits to multilateral nuclear learning. The ENDC example shows that the absence of key players (France, China) can hobble knowledge construction. The NSS example shows that learning speeds up when the idea fits the forum and then plateaus out with successive iterations of practice to await another ‘re-foruming’. Apart from the limits shown up by the case studies, the peculiar characteristics of multilateral forums as distinct from characteristics of organisations commonly described by organisation theorists (such as the preponderance of technical rationality) also imply caution in the application of learning to multilateral nuclear forums. For example, since politics dominates over technical rationality, different players inside multilateral forums may have dramatically different visions of what is to be learnt despite lip service to the idea under examination. While the weapons possessors may consider learning to live with the bomb (theirs) as nuclear learning, the have-nots may consider learning not to live with the bomb (every one’s) as real learning. Even among the possessors, and as illustrated by both the ENDC and the NSS, learning may be differential because of time, technology and politics. For all of them, it may be more incremental than paradigmatic in view of the hardwiring of nuclear policy into the workings of political, bureaucratic and military elites.

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32 A dramatic example albeit in an informal setting is recounted by William Epstein, UNSG’s representative to the ENDC in Geneva, in The Last Chance: Nuclear Proliferation and Arms Control, (The Free Press, 1976), 101-102.
33 Figure 9.1 on page 278.
34 The latter can be seen as a reframing of the first area of nuclear knowledge construction cited by Nye.
Regardless of its limits, multilateral learning, even when it is not as dramatic and rapid as learning inside a national system or bilaterally between two international actors, is fundamental to the legitimisation and institutionalisation of knowledge constructed nationally, bilaterally or in small groups. Further, multilateral knowledge construction is essential not only for buy-in by newly emerged actors such as China and India but it is also dictated by the interconnected nature of the challenges that need to be addressed today. This is as true of the field of nuclear weapons as it is of trade, outer space, cyber security and climate change. To take the example of nuclear security, an A Q Khan operating through countries such as Malaysia and the UAE, not exactly the heavyweights of the nuclear order, ended up undermining nuclear security for the larger system. Thus, we must all know that we know.

Finally, the thesis points to factors that facilitate shared nuclear learning. These include:

1) direct involvement of leaders;

2) reframing and ‘re-foruming’ of existing ideas, which speeds up learning within old paradigms;

3) safe and permissive dialogic spaces permeated by relatively objective interdisciplinary communities of practice, which foster insights beyond existing paradigms;

4) well-constructed forums that link idea generators to decision-makers through policy communities in an iterative learning spiral;

5) power differentials and a moderate level of conflict inside forums that helps move ideas through the learning spiral.
Given the rise of parallel forums alongside the established machinery, the NSS and the OEWG on nuclear disarmament being prime examples⁵⁵, it remains to be seen to what extent fluidity in form or the availability of a sense of structural alternatives would impact shared nuclear learning in the future. Discussions in such forums could hold important clues to emerging areas of nuclear learning, in particular evolving perceptions about possession of nuclear weapons and a possible framework for pursuing nuclear disarmament.

*Annexes*

Annexed at the very end of the thesis are a set of primary documents that illustrate important moments in learning on nuclear security.

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⁵⁵ The OEWG and the 2017 nuclear ban negotiations it spawned are *sensu stricto* outside the traditional triad of disarmament machinery composed of the CD, the First Committee of the UNGA and the UN Disarmament Commission. Part IV of the Final Document of the First Special Session of the General Assembly devoted to Disarmament (1978), A/S-10/4.
Chapter 2

Nuclear Learning in Multilateral Forums: A Conceptual Framework

A model for studying multilateral learning is proposed in this chapter. Insights from theoretical perspectives on learning at the level of individuals, organisations and governments are brought together in the model, which conceptualises a ‘spiral’ of learning from knowledge construction by individuals in policy communities to policy aggregation in national organisations and finally to policy performance by governments internationally. International forums are seen in this model as overlapping “theatres of action” and “theatres of knowledge” with learning emergent in the iteration of scripts and performance by interacting governments. Compared to other theoretical models of international learning, the innovative elements of the model include first, the integration of historical and anthropological perspectives so that learning can be studied through the lens of practice; second, a recognition of the role of power in learning; third, a clear role for domestic policy learning as part of the learning ‘spiral’.

The terms ‘learning’ and ‘knowledge-construction’ are used synonymously through this chapter. In everyday parlance, learning is seen to implicate more of a process whereas knowledge is seen more as a product, ‘possessed’ by individuals or commonly ‘known’ or ‘possessed’ by the public. Learning and knowledge are also seen commonly as belonging both to the domain of concrete activity as well as an abstract realm, independent of specific instantiation. However, when examined from a variety of perspectives - cultural-historical\textsuperscript{36}, cognitive-developmental\textsuperscript{37}, sociological\textsuperscript{38} or philosophical\textsuperscript{39} - knowledge is seen as


inextricably linked with activity or the practice of everyday life. Despite the apparent, and perhaps linguistically reinforced, process/product dichotomy between learning and knowledge, both turn out to be ongoing representational activity, with significance and value only in the context of social activity and interaction and not an abstract realm outside the individual and his/her social context. Even if the social nature of knowledge construction gets momentarily obscured and knowledge is reified, the act of knowledge performance (its use or recall, say in a multilateral forum) is inherently context-dependent, social and interactive.

Learning as individuals

Knowledge activity in individuals, from infancy to adulthood, parallels the growth of knowledge over human cultural history from the concrete to the abstract. Non-theoretical learning occurs largely in the child’s daily experience as a member of the family and the local community; a child’s significant others interact with him in the zone of joint action that is in advance of what the child can manage alone – the Zone of Proximal Development (ZPD) to use Vygotsky’s term. Systematic instruction at school then leads students to adopt a ‘meta’ stance to their participation in primary activities and, on that basis, to begin to engage in theoretical knowing.40

Just as it does with the cultural-history of man, language, in particular written text plays an important role in the individual’s shift to theoretical knowing. As the learner moves from a family setting to an educational setting and eventually to a work setting, language becomes the primary means by which learning happens - simultaneously as well as sequentially from learning language to learning about language and learning through language.41

Halliday maintains that all human learning is essentially semiotic in nature. In other words it is the process of making meaning. Given that the prototypic human semiotic is language, language is the essential condition of knowing, the process by which experience becomes knowledge. Learning is language-learning. It is the acquisition of discourse - text that is operational in the environment or practices that systematically form the objects of which they speak. Dialogue or conversation with others becomes key not only to the maintenance of subjective reality (‘I know that they know’ and ‘they know that I know’) it also helps modify it constantly. In this manner learning begins to rely more and more on language as a means of ongoing representational activity and making meaning. Practice and discourse follow each other in a dance of learning.

Learning in society

The conceptualisation of knowledge as ongoing representational activity is helpful in understanding that knowledge cannot be separated from the practice of everyday life. It is also not frozen into one particular aspect of the knowledge activity but is rather ‘distributed’ over the human ‘producers’ of knowledge, the mediating artifacts they use, their discourse and the knowledge activity or practice itself. Like Heisenberg’s electron, it cannot be pinned down to one specific location and it says as much about the experimenter as it does about itself. Thus representational models such as the electron are not just a model or an objectification of the external world but they also reveal the modeller in an ongoing dialectic with the external world.

This is the starting point for the sociology of knowledge. As Berger and Luckmann put it, knowledge is at the heart of the fundamental dialectic of society; it “programs” the channels in which externalisation produces an objective world, which is internalised again as

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42 Halliday, 94.
45 Practices involve speech acts too and cannot be thought outside of discourse. Therefore we must be careful with the dichotomy of discourse and practice, which may erroneously bring to mind the classical mind/action dichotomy (Ryle’s ‘Ghost in the machine’ analogy while criticising Descartes). Discourse and practice are as intimately related as learning and knowledge.
objectively valid truth in the course of socialisation. Knowledge about society is thus a realization in the double sense of the word, in the sense of apprehending the objectivated social reality, and in the sense of ongoingly producing this reality.\(^{46}\)

Not only is knowledge produced socially, it is also transmitted that way. Social facts, chiefly sign systems, the most important being language, become the carriers of knowledge. Language, as a social fact, provides the means for objectifying new experiences and adding them to the stock of existing knowledge; it plays a critical role in this socialisation even as it itself is a received social fact. Institutions such as the family, the church and the school, again as social facts, serve as transmission belts of knowledge. Roles, which play an important part in the institutional order, help us perceive the acting self and the acting other not as unique individuals but as types (loving father, strict teacher) and also to reflect back on a social performance with a part of the self objectified as the performer of the action (loving father hugging child, strict teacher disciplining delinquents).

As these objectifications accumulate, an objectivated stock of knowledge common to a collectivity of actors say -- nuclear arms control specialists -- comes into being. Depending on the collective importance and complexity of this knowledge it may need to be reaffirmed through symbolic actions or rituals which further serve as knowledge transmission aids. The collectivity as an institution with its assemblage of ‘programmed’ actions is like the libretto for a play; the knowledge embedded in it needs to come alive through the reiterated performance of prescribed roles by living actors. Neither drama nor the institution exists empirically apart from this recurrent realisation.\(^{47}\) The theatres of action and knowledge overlap and knowledge is ceaselessly emergent in practice.

**Dialogue as learning**

Dialogue is key to affirming social reality as well as producing it in an ongoing fashion. Socially, discourse and practice are inseparable. This dialect has been ignored by learning theorists but has long been an area of focus for linguists and philosophers.

\(^{46}\) Berger and Luckmann, 66.  
\(^{47}\) Berger and Luckmann, 75.
Habermas argues, for example, that because participants in normal speech acts must strive towards a consensus about something in the world under pressure for decisions in everyday life where we must agree to coordinate our actions – the analogy with governments in multilateral forums is hard to miss - their speech acts take the form of validity claims open to criticism, which demand recognition not because of habitual linguistic practice but because they invoke a transcendent and universal rationality. These claims to uncoerced universality generate learning processes, which “unfold an independent logic that transcends all local constraints, because experiences and judgments are formed only in the light of criticizable validity claims”. Habermas believes like Marx and Weber that rationality is the main characteristic of modernity and learning operates with the logic of rationality continuously sifting out the irrational from both language and the “lifeworld”, making tradition less determinant in ordering people’s thoughts and practices. For him there is no conflict between learning and rationality and in fact societal development is a learning process animated by communication based on rationality, convergence and consensus.

In contrast with Habermas an alternative view lays more emphasis on contingency, freedom and retention of differences in a dialogic quest for shared meaning. Michel Foucault, one of the foremost proponents of this view, believes that we create ourselves as works of art not in splendid isolation but dialogically; not reducing oneself to the other or the other to oneself but creating one’s life within the possibilities that emerge at the edge as one comes face to face with fragments of other alternatives in the dialogic space. We thus learn or create ourselves neither ex nihilo, nor in the light of a universal reason we must simply accept and follow, but instead through “an exercise in which extreme attention to what is real is confronted with the practice of a liberty that simultaneously respects and violates it”. The reality in the present is neither negated nor embraced unquestioningly but is grasped with such mindfulness that it can be altered at the same time “through a

49 Habermas, The Philosophical Discourse of Modernity, 205.
historical analysis of the limits that are imposed on us and an experiment with the possibility of going beyond them".  

Despite the apparent differences, neither the rationality centred approach of Habermas nor the contingency driven ethos of Foucault denies the reality of learning. Not only do they both stress learning but they also place the accent on the central role of discourse in learning whether it is a discourse that drives inexorably toward consensus via rationality or a discourse that constantly reinvents itself in practice without completely denying what we already know.

Sometimes a shift in discourse can occur dramatically ahead of changes in practice. Michel de Certeau recounts how Roman ritual specialists called fetiales used to precede the execution of military or civil action vis-à-vis a non-Roman territory in three centrifugal stages. By physically moving from inside the territory of the Roman empire to the frontier and then inside the other political unit, and by telling stories in each succeeding locus, they created the field necessary for military or political activity. Stories went in a “procession ahead of social practices to open a field for them”; the “rite, a narration in acts, precedes the historical realization”. As the new practice is being adopted, the established practices are altered. These alterations are large enough for the practice to fit into the new domain, but not so large that it may no longer serve as conduit between that domain and the domain from which it was extended in the first place. As the new practices are institutionalised and naturalised, they produce their own stories of how things should be; the new practice begins to ‘speak’.

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51 Foucault, ‘What is Enlightenment?’, 38.
52 Foucault looks at discourse as “a violence that we do to things” or “a practice we impose upon them”. For him it is in this practice that the events of discourse find the “principle of their regularity”. Michel Foucault, L’ordre du discours, trans. Rupert Swyer (Paris: Editions Gallimard, 1971).
Learning in organisations

The idea of learning, familiar to laymen and philosophers for centuries, took a positivist turn in the late 19th and early 20th centuries with experimental studies of animal and human behaviour. A typology of learning emerged with categories such as classical or respondent conditioning\(^{55}\), instrumental or operant conditioning\(^{56}\) and cognitive learning\(^{57}\). The conceptual leap from individual learning to learning by groups or organisations happened in the post-Second World War period as the study of organisational behaviour, public administration and management rapidly developed. The organisational learning field emerged out of the study of organisational practice as well as the study of decision making under conditions of uncertainty and limited calculative rationality. Herbert Simon was one of the first to challenge the notion of an omniscient rational economic man taking decisions on the basis of pure rationality and theorise about organisational learning.\(^{58}\) He wrote in 1953:

> “When we observe these same processes in the short run, and particularly at a moment of large and rapid shift, we recognize that environmental forces mold organizations through the mediation of human minds. The process is a learning process in which growing insights and successive restructurings of the problem as it appears to the humans dealing with it reflect themselves in the structural elements of the organization itself.”\(^{59}\)

Lessons are conserved - in members' memories, in policies, procedures and documents; like all history they are not experience themselves but interpretation of experience. Members of an organisation share interpretative frames – stories, myths, beliefs and paradigms – which are applied to experience on an ongoing basis. Learning occurs within this structure of meaning; what is learned is often influenced less by history than by the frames applied to that history. As new members come in and old go, as the organisation addresses and solves problems of daily survival, learned competencies are

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\(^{57}\) Cognitive learning – changes in cognitive maps, latent learning, insights and imitation - is more directed and intentional compared to say classical conditioning and is of greater interest therefore to educationists.


maintained through socialisation and control much like an individual’s social ’culture’. Within such a framework, organisations are seen as learning by “encoding references from history into routines and cultures that guide behavior in the pursuit of shared goals”.

An influential model of organisational learning, which seamlessly connects individual learning to organisational learning, is the 4I framework. It identifies strategic renewal as the phenomenon of interest in organisational learning and rests on four premises: there is an inherent tension between new learning and using what has been learned (exploration versus exploitation); organisation learning is multi-level – individual, group and organisation; these levels of learning are linked by four social and psychological processes: intueting, interpreting, integrating and institutionalizing; and cognition affects action and vice-versa. The 4I’s feed-forward exploration across the three levels of learning while exploitation is fed-backward across the same levels. In this inter-locked chain of transmission, intueting and interpreting take place at the individual level, interpreting and integrating at the group level and integrating and institutionalising at the organisation level. Dialogue and joint action are crucial to the development of shared understanding during interpretation and integration, which overlap across levels to tie them together. Learning gets transferred from individuals to groups and becomes embedded in the institution. Institutionalised knowledge-artifacts or culture then come to impact individuals and groups in a loop. Throughout this dynamic process, understanding guides action but action also informs understanding. In other words, and as seen earlier, the theatres of knowledge and action overlap.

An attempt has been made to integrate organisational politics and learning using the 4I’s framework. Power in this model is taken as both episodic – discrete, strategic political acts initiated by self-interested actors – and systemic or diffused through the organisation.

63 Crossan et al.
Ideas that get successfully moved through the stages of interpretation and integration benefit from the application of episodic power by either the originators or their allies at the group level. While episodic power can help legitimate learning and integrate it into group activity, it is insufficient for its institutionalisation, for which systemic power is required. Systemic power then returns to impact individual intuition closing the learning loop. A schematic of this framework, adjusted to the framework of this thesis is proposed below. The manner of propulsion of ideas shifts after the first two stages; this is underlined by the shift from ‘dialogue/discourse’ to ‘discourse/practice’. Further, the use of KB(t) and KB(t+1) underlines that knowledge construction is an iterative exercise.
**Figure 2.1**: A visual representation of a power-integrated, iterative 4Is learning spiral
Although strictly speaking all learning happens in individuals, a central tenet in the conceptual treatment of organisational learning today is that there are higher order processes at work. This is implied in the use of terms such as ‘organisational intelligence’ or “learning organisations” where new and expansive patterns of thinking are nurtured.66 It is also reflected in models that contrast incremental and transformational change, for example, the single-loop versus double-loop learning model of Argyris and Schön.67 Even at the risk of reification, organisational learning is taken to be more than just an aggregate of individual learning with what an individual learns dependent on what is already known (or believed to be known) by other members of the organisation, the information available to the organisation from the environment and the cognitive ‘culture’ of the organisation and its ecology. The ecological structure creates 'cultures' or 'software' that mediates learning along with the hard data of encoded experience.68 These myths or cultures are created and sustained through the working of particular professions, policies, laws and public opinion relevant to the output of the organisations. They are used by organisations to legitimate themselves and their goals. The parallel with nuclear forums operating in a larger nuclear ecology is obvious.

Organisations have also been viewed as systems of interconnected (individual) roles, with roles looked at in terms of prescribed decision premises for individuals – how to reason about problems and decisions that face them, where to look for appropriate and legitimate information premises, what techniques to use in processing these premises et cetera.69 This is akin to the sociological view of roles as mediators of specific segments of a common stock of knowledge, bringing such knowledge to life on an ongoing basis through reciprocally typified behaviour. Following on, a powerful way of looking at change in organisations is to conceive them as a community-of-communities.70 This brings in the essential role of practice or working in learning and innovation. Traditional organisation training views learning and practice as separate in line with society’s traditional view of knowledge as abstract. Lave

\[\text{67 Chris Argyris and Donald Schön, Organizational learning (Reading, MA: Addison-Wesley, 1978).}\]
\[\text{68 An example of an ecological approach to organisational learning inspired by evolutionary biology can be seen in Michael T. Hannan and John Freeman, ‘The population ecology of organizations’, American Journal of Sociology, 82 (1977), 929-964.}\]
\[\text{69 Simon, 126.}\]
\[\text{70 Brown and Duguid.}\]
and Wenger challenged this with a practice-based view of learning as “legitimate peripheral participation” in “communities of practice”.\(^{71}\) This “learning-in-working” as Brown and Duguid call it is about becoming an “insider” in a communal context and not about acquiring abstract knowledge. Learning is facilitated by being at the periphery of practice, by postponing “closure” in world-views, by facilitating communication among learners, by viewing noncanonical practice based on story-telling and story-swapping sympathetically,\(^ {72}\) and in general by giving latitude to communities of practice. The parallel with Foucault and Michel de Certeau is hard to ignore.

**Learning within States**

Organisational learning is a natural extension of individual learning. There is value in describing some phenomenon in terms of organisations and their parts than in terms of individuals who inhabit those parts: “There is nothing more surprising in the existence of these phenomena than in the existence of phenomena that make it convenient for chemists to speak about molecules rather than quarks.”\(^ {73}\) Extending Simon’s analogy, a certain molar quality is required for the study of learning as we go further up the scale to the level of a state, which can be seen as an organisation of organisations. This is the challenge social scientists faced in the 1970s and 1980s as they began to apply the concept of learning to domestic policy making and foreign policy. This they did in the face of a significant theoretical bias in favour of approaches that focused on social phenomenon that could be quantified and measured.\(^ {74}\)

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72 Orr has described how technical reps and specialists step outside of formal manuals and use converging story-telling to diagnose faults in a machine. These stories are then passed around in the practice community to be re-enacted or further modified in similar situations. J. Orr, ‘Narratives at Work: Story Telling as Cooperative Diagnostic Activity’, *Field Service Manager*, 1987, 47-60; and J. Orr, *Talking about Machines: Social Aspects of Expertise*, Report for the Intelligent Systems Laboratory, Xerox Palo Alto Research Centre, Palo Alto, CA, 1987.


74 It is like a cosmologist leaving the formation of stars out of his conceptual speculation because he cannot experiment with their birth.
The alternative explanations of policy change prevailing then were as follows. First, policy change could result from socioeconomic changes which force policy makers to respond whether in a Marxian or a corporatist sense. Second, policy shifts could be seen as a response to interest-group pressure or conflict among individuals or groups representing diverse interests, with outcomes depending on the initial preferences of actors weighed by power, and mediated by negotiation, coalition building et cetera. Third, policy evolves with little regard for outside forces due to the internal workings of the government. Everyday bureaucratic compromises shift due to a change in administrative elites or due to the intervention of elected leaders after competitive elections that replace one cohort of political activists whose preferences have gelled together through common experience with another one with a different set of preferences. This corresponds roughly to the domestic politics model in international relations.

In a seminal study of 90-years of income maintenance policies in Sweden and the UK, Hugh Heclo argued that more is at work in non-revolutionary policy-making than isolated ‘makers’ of policy responding to vectors of political pressure, and changes in relations of power are not sufficient explanations for changes in policy.

“Politics finds its sources not only in power but also in uncertainty – men collectively wondering what to do. Finding feasible courses of action includes, but is more than, locating which way the vectors of political pressures are pushing. Governments not only “power” (or whatever the verb form of that approach might be); they also puzzle. Policy-making is a form of collective puzzlement on society’s behalf; it entails both deciding and knowing.”

Heclo does not read out power from social learning; indeed he says that power considerations are important and dominate the public mind when ‘action’ is seen to be taken during ‘crises’. However, like the proverbial iceberg most policy development is settled prior to or outside the substantial exercise of power and political interaction itself constitutes a process of social learning expressed through policy. Heclo also does not discount the inner workings of governments or the contribution of competitive politics to social change but adds important correctives to these notions, including the idea of policy

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middlemen and change agents who straddle internal developments and foreign experience as well as social groups and institutions of power. Further, the responses mediated through policy middlemen and inter-institutional relations shade into the third and probably most pervasive manifestation of political learning: the impact of previous policy itself. Policy invariably builds on policy, either in moving forward with what has been inherited or amending or repudiating it.76

Much of the time, policy resembles classical conditioning or respondent behaviour. Policy makers may not exactly salivate like Pavlov’s dogs but there is a great deal of conditioned behaviour in their responses.77 Once implemented, a technique such as social insurance becomes the “natural” policy response for other types of income risk.78 In learning terms the original stimuli get generalised and policy makers tend to respond to new situations by analogising.79 This accounts for the incrementalism so pervasive in policy. In addition to classical conditioning, there is instrumental or operant conditioning; reinforcement is paired not with the stimulus but is dependent on the type of response emitted. What is learnt depends on what one does in addition to the original stimulus and the internal set. Inherited policy not only creates analogies but through its environmental output sets in train many of the stimuli for future policy making. Learning is thus historical in both a classical conditioning sense (the past determines the present policy response in a knee-jerk, analogising manner) as well as in an instrumental conditioning sense by providing the stimulus for future policy decisions.80 The former might explain policy continuity better while the latter could account for policy change.

Learning also covers a variety of analytical levels – policy diffuses internationally, policy learning occurs at the group level within organisations and in between at the meso-level in domestic societies at large. Each level impinges on the other with national policy contingent on influences from both national subunits and international examples.81 Heclo

76 Heclo, 315.
77 Ibid.
78 Ibid.
80 Heclo, 316.
81 Heclo, 307.
argues that over the history of policy development, no particular group, party or administrative organ captured a monopoly of influence on any policy and no one device of electoral determination, party competition, interest group pressure or bureaucratic politics provided “the” technique of policy making. In this ‘longitudinal’ plurality, actual policy development follows a piecemeal, ad hoc, and largely unplanned learning process through a play of power and puzzlement.

This notion of political learning with a multiplicity of causes and a variety of levels is a useful corrective – much like the organisational learning corrective to the rational decision making model - to the notion that there is something called “the” policy process and that this can be salami-sliced into a series of stages in which policy is treated as a matter of rational problem solving by a collective ‘decider’ analogous to an individual decider. Instead Heclo uses the image of a maze for social learning:

“where the outlet is shifting and the walls are being consistently repatterned ; where the subject is not one individual but a group bound together; where this group disagrees not only on how to get out but on whether getting out constitutes a satisfactory solution; where, finally, there is not one but a large number of such groups which keep getting in each other’s way.”

A similar social learning approach has been taken by Peter Hall in examining economic policymaking in Britain from 1970 – 1989 but with nuances relevant to nuclear learning. He defines social learning as “a deliberate attempt to adjust the goals or techniques of policy in response to past experience and new information”; learning is indicated when policy changes as a result of such a process. Hall extends Heclo’s insights including by suggesting a more complete account of the role that ideas play in the policy process. The framework of ideas and standards that specifies the goals and instruments of policy, the discourse and terminology that is comprehensible to the actors involved, or in Hall’s words the “policy paradigm” needs to be understood. According to him such paradigms are most likely to be found in fields where policymaking involves some highly

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82 Heclo, 319.
83 Heclo, 308.
84 Peter A. Hall, ‘Policy Paradigms, Social Learning, and the State: The Case of Economic Policymaking in Britain’, Comparative Politics (April 1993); also paper of the same title presented in 1988 to the International Political Science Association, Washington, D.C.
technical issues and related body of experts; examples include arms control, environmental regulation and energy policy.

First and second order changes in the settings of policy instruments or the instruments themselves can be seen as “normal policymaking” much like Kuhnian “normal science” whereas third order changes to the overarching goals that guide policy in a particular field reflect a “paradigm shift” marked by radical changes in the overarching terms of policy discourse.\(^8\) The movement from one paradigm to another “is likely to involve the accumulation of anomalies, experimentation with new forms of policy, and policy failures that precipitate a shift in the locus of authority over policy and initiate a wider contest between competing paradigms”\(^9\).

Hall’s translation of Heclo’s insights into a policy framework finds an echo in Paul Sabatier’s study of changes in U.S. air pollution control policy.\(^10\) He sees policy learning as long term, multi-level and occurring in policy subsystems and not specific government institutions such as traditional notions of ‘iron triangles’ of administrators, legislators and interest groups.\(^11\) Within the policy system, Sabatier assumes that policy actors can be aggregated into a number of advocacy coalitions composed of people from different groups and organisations who share a set of normative and causal beliefs and who often act in concert. An intermediate level of conflict between policy coalitions facilitates learning. Learning is also facilitated by the existence of authoritative and relatively ‘depoliticised’ communication fora which force competing policy coalitions to address each others’ findings. As seen later this is an important explanation for differential learning across nuclear forums such as the IAEA or the CD.

\(^{85}\) Hall, 281-284.
\(^{86}\) Hall, 285-286. This recalls the single-loop versus double-loop learning model of Argyris and Schön and the adaptation versus learning distinction used by Ernst B. Haas in his study of international organisations.
\(^{88}\) *Ibid*, 131.
Learning among states

The previous sections have moved conceptually through a spiral of learning from individual learning to organisational learning and from organisational learning to policy learning, highlighting learning concepts and concerns that stay relevant even as the level of analysis changes. Foreign policy change can be seen as a special case of policy learning. In the international system, as in an organisational ecology or a policy ecosystem, States learn to survive and thrive in an uncertain and often threatening environment. Over millennia of empires and especially three century and a half of the Westphalian system, States have learnt that standing armies, customs and border guards, foreign trade, stable international boundaries, domestic order, alliances and even neutrality contribute to their wellbeing. Ideas about governance and statecraft have diffused across national boundaries and have been adapted or readapted. Sometimes the process is violent as states are conquered or colonised but even when it is not, power plays a prominent role; states tend to follow the example of a successful hegemon and adopt not only its ways of doing but also of framing problems and visualising solutions. Even declining states (ancient Greece for example) end up infecting rising hegemons with their ways of thinking and doing. Processes of mimetic, normative and coercive learning are at play as States interact with each other and adjust their policies towards others and on the issues that engage them.

As in the domestic policy arena, both changes in ideas and in incentives drive international learning. Further, new policy builds on the old in an analogising manner as also by providing the stimulus for future policy. Again as in the case of organisational learning, learning endures even though policy makers and implementers come and go. Lessons get conserved in the institutions dealing with foreign policy, to wit the records, background notes and talking points of Foreign Ministries; they seep into public memory through books and mass media and lodge themselves in the memories and beliefs of leaders and other opinion makers. Across borders, learning gets distributed over the knowledge makers – politicians, diplomats and soliders – who deal with each other on a routine basis, their mediating artifacts – the bilateral summits, dialogue structures, military exercises et cetera


90 The historical impact of the French and American revolutions on participatory democracy for example.
they engage in, and the practice of bringing ingrained knowledge to life at every ongoing interaction – the formulaic expressions (‘natural allies’, ‘shared values of democracy’), the speeches and the talking points tweaked every so slightly for each meeting. There is a diplomatic dance of practice and discourse, propelled by power and by habit embedded in stories about how things are done.  

Just like organisational learning, the origins of the theorising of international learning lie in dissatisfaction with classical rationality as a way of looking at decision making. Learning was, however, first framed narrowly as the application of past experience to decision making as “a useful short cut to rationality”. Studies of international learning focused on how decision-makers form their beliefs and how the past drives their decision-making. This is the ‘big man’, ‘big event’ view of international learning rooted in psychology and focused narrowly on perceptions of ‘decision-makers’ within a state.

Alternatively, learning was framed in terms of game-theory or decision making models such as Bayesian updating, which try to predict how decision-makers learn as data piles up and causality estimates shift in the light of self-experience, policy experience of other states or repeated crises bargaining with another state. States as ‘players’ learn to maximise their ‘pay-offs’ or utility by making the right moves. Games come to settle at ‘focal points’, which bear a strong relationship to ‘common experience’ or common knowledge; famously Thomas Schelling gives the example of how a husband and wife find each other at a shopping mall using such common knowledge. Third, organisation theory has also been applied to view institutions not only as passive arena for politics but also as active shapers

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of political choices. In this vein, international relations theorists have focused on the ‘qualitative’ content of multilateralism going beyond mere structures and international institutions have been conceptualised as arenas for socialisation. An interesting variation in the socialisation approach to political change is the concept of ‘norm entrepreneurs’. Individuals or states with a strong notion of what is right lead in setting norms of behaviour, persuade others to join a norm cascade, which then gets internalised. In this model, the three stages of norm emergence, norm cascade and internalisation are driven by varying motives such as altruism, esteem, search for legitimacy and conformity under social pressure. The social constructivist approach of Ernst and Peter Haas is also in the same historical tradition.

Ernst Haas has speculated on multilateral learning in international organisations using the World Bank, UNESCO and UN peacekeeping as examples. Haas proposes three models of organisational change – ‘incremental growth’, ‘turbulent nongrowth’ and ‘managed interdependence’ based on a broad-brush study of the working of these three institutions. He views international organisations sympathetically as designed to solve problems that require collaborative action for a solution; both adaptation and learning drive change on the lines of the single-loop versus double-loop learning hypothesis. Haas sees learning as change in both means and ends (for a policy outcome), and the formation of fresh nested problem sets on the basis of new consensus knowledge that gets developed with the help of epistemic communities.

100 Ernst B. Haas, When Knowledge is Power: Three Models of Change in International Organizations, (Berkeley: University of California Press, 1990).
101 The term was originally used by Foucault but in line with his Habermas like worldview, Haas uses it in the sense given to it by Holzner and Marx - “those knowledge-oriented work communities in which cultural standards and social arrangements interpenetrate around a primary commitment to epistemic criteria in knowledge production and application” (Burkhart Holzner and John H. Marx, Knowledge Application (Boston: Allyn & Bacon, 1979).
The learning model of Ernst Haas may appear analogous to some aspects of policy learning. For example, organisational output leads to international outcomes which feedback into member state positions. Further, the international coalitions of states which exert power in international organisations are “often expressions of coalitions of interests at the national level, both bureaucratic and societal” and which therefore interact with domestic coalitions. However, his model assumes that the dominant coalitions know at the start where they want to take the international organisation and learning is just a matter of adjusting the means to that end or reimagining the underlying assumptions to reflect a new means-ends relationship known a priori. This is a far cry from Heclo’s maze analogy. Further, empirically speaking, a superficial focus on the output of specific multilateral forums leaves out a rich mass of evidence related to the evolution of the ideas (not the specific institutions) being studied - economic development, international cultural and educational diplomacy, peacekeeping - in the broader international system. Haas also fails to provide a conceptual explanation for how epistemic communities infect international organisations with knowledge and how domestic coalitions interface with international coalitions.

To an extent, Peter Haas has filled one of the gaps in Ernst Haas’ study of international learning by defining epistemic communities differently and outlining the role they “play in articulating the cause-and-effect relationships of complex problems, helping states identify their interests, framing the issues for collective debate, proposing specific policies, and identifying salient points for negotiation.” These communities are not outside of the power play of learning since “control over knowledge and information is an important dimension of power” and “the diffusion of new ideas and information can lead to new patterns of behaviour and prove to be an important determinant of international policy coordination”. Epistemic learning occurs within “the amount of flexibility available for reflection and understanding in the face of power and structure”. Foreign policy learning occurs “as a process by which intellectual innovations (which epistemic communities help

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102 Haas, 19.
103 Haas, 18.
105 Ibid.
106 Ibid. This recalls Bakhtin’s idea of dialogic space.
produce) are carried by domestic and international organizations (in which epistemic communities may reside) and are then selected by political processes to become the basis of new or transformed national interests”.

This focus on the role of epistemic communities in international learning offers a useful way to bring in domestic politics into international learning. In the words of Emmanuel Adler:

“The relevance of my study of the arms control epistemic community for understanding international cooperation lies in the notion that domestically developed theoretical expectations which were created by a national group of experts and were selected by the U.S. government as the basis for negotiations with the Soviets became the seed of the ABM partial security regime.”

The approach of Peter Haas and Adler is an excellent way to thread the domestic to the international and link knowledge to power. Nonetheless there are some conceptual gaps. First, it is almost as if power and ideas are condemned to reside in different places. In real life, the epistemic community is not the only actor learning in international interactions. Far more consequential is the learning of leaders, who are not just the locus of power; they puzzle too. Second, it seems as if in this approach the process itself or the competing discourses it carries have little role in learning. In reality, ideas mutate as they meet resistance and as competing ideas are co-opted. The practice of an idea in the presence of others – the essence of a community of practice often with very different ideas about the same notion as opposed to an ideal community with shared ideas about that notion– itself creates possibilities for change. Further, just as the earlier critique of Ernst Haas has underlined, the idea is always bigger than its particular institutional embodiment; a broader, historical approach is essential to discern the changes in the underlying idea going beyond a specific institutional insantiation. Finally, the unique historical role of the American arms control community in the 1960s, 1970s and 1980s should not blind us to the significant evolution in the manner of co-construction of nuclear knowledge that has taken

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109 Here Nye fares better since he takes a historical approach to tease out broad and conceptually stable areas of learning, which can then be connected to specific regimes.
place since then. U.S. ideas and for that matter jointly developed Russian-U.S. proposals on arms control have lost the power that they had prior to the end of the Cold War and the notion of a monolithic arms control community is hard to sustain today. There are other pitfalls too of a learning approach that relies heavily on an expert community; if knowledge-construction becomes the monopoly of an over-professionalised epistemic community it can lead to policy persistence with ideas gaining the status of orthodoxy through institutionalisation.110

To sum up this section, as noted in Tetlock’s impressive survey of learning in U.S. and Soviet foreign policy, there is “no single way of looking at learning” and “much depends on one’s disciplinary orientation”.111 A survey of learning in 1994 cautioned against an attempt to construct an analytically distinct ‘learning model’ of foreign policy change and instead advocated a focus on integrating learning processes into ‘more comprehensive’ theories of foreign policy by clarifying in particular the interaction between learning, domestic politics and external events and processes.112 It is as if a warning sign had been hung post the work of Nye, Adler and Peter Haas over 1987-94 – thus far and no further.

Conceptualising international learning today

Why should we opt today for learning as a construct to study foreign policy change and how can we pick up from where Nye, Adler and Peter Haas left off two decades ago?

There could be many reasons to to persist with learning as a conceptual approach to foreign policy change.113 From the lens of practice, the most important is the explanatory power of learning. To take an example, if one were to look at the negotiation of the CTBT as simply the institutionalisation of the norm of non-testing under pressure from a norm

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110 Adler and Haas (1992).
113 Jeffrey Knopf lists normative grounds for doing so in ‘The Importance of International Learning’ (2003), which also provides a vigorous critique of Jack Levy.
entrepreneur, one would lose valuable insights into the differential learning of the various participants in the CTBT-making exercise and how that continues to reverberate in nuclear negotiations today. A learning approach insures that the inherent complexity of change in large systems of systems is not lost in a quest for theoretical elegance. What use is theory if it bears little resemblance to the everyday practice of international relations.

Further, learning can bridge the agency/realism versus structure/idealism divide; it can help explain both stability and change. In a learning situation, agency works within and on structure just as structure limits and challenges agency. As socially-constructed knowledge is brought alive continously in practice and discourse, shared meanings and institutions are preserved. At the same time, each iteration introduces a slight variation, a delta, as the social context evolves and as the incentives of the knowledge practitioners evolve. Change arrives through the inter-play of power and puzzling: each challenge from circumstance, each contestation, each prospect of selection among competing alternatives provides an opportunity for learning.

Learning also helps avoid a reliance on the intramental unseen and unheard – beliefs and cognitions – as the substratum of change. The focus instead is on the seen and the said. This fits in well with the post-structuralist change in focus from embedded meaning to engagement with text and the so-called ‘practice turn’ in theory in the first years of the 21st century. Whether you take reality to be determined by an inherent rationality (as a behaviourist or an economist) or by the inter-subjective play of roles and identities (following a sociological approach), it is practice that makes rationality and social knowledge come alive. Conceptually, however, learning goes beyond practice. It takes into account the shadow of the future on the present; it implicates practice in the light of an uncertain future. It avoids the value judgment involved in distinguishing tactical intra-paradigmatic adjustment (the domain of the doer) and strategic change (the domain of the thinker) and sidesteps the discourse/practice dichotomy.  


If learning is accepted as a valuable conceptual approach to change, what view of learning suits IR study the best? The previous sections have highlighted some of the deficiencies in seeing international learning exclusively as a dialect between the past and the present. Unsurprisingly, a similar weakness afflicts organisational learning research, which still seems focused on change in knowledge that occurs as a function of experience and that manifests itself in changes in cognitions, routines and behaviour. Adding an intra-mental element, whether through a focus on individual beliefs or cognitive evolution in a wider sense does little to enhance the analytical value of learning framed with reference only to the past. Even when a social constructivist inspired view of learning is applied to international organisations, the role of discourse in the practice of these organisations gets overlooked, thus snapping the link of learning with the individual learning of practitioners and with the domestic politics of the systems they represent. Further, constructivism as conceived hitherto appears to occult the power-puzzling dynamic that social learners deploy as they confront an uncertain future from the perspective of an ineffectual past.

Instead learning is best viewed as co-construction of knowledge at the ‘edge of practice’, in other words, the space for action between the experience – felt or imagined - of the past and the uncertainty of the future. Viewed in this manner, learning is both rational and pre/post-rational: we anticipate what we will focus on and we look back and stir our supposedly rational knowledge base with each experience. Emotionally and socially we act as hard realists while in actual practice we compromise and co-construct knowledge as we go along. The past has no power without being implicated in the present and the present alone can freeze us into inaction. Both paradigmatic and incremental change constitute learning and generational shifts can be better appreciated by taking a historical view from the perch of present practice. This is because knowledge is simultaneously transmitted and reaffirmed through symbolic acts and roles; it needs to come alive each time in the

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116 Jack S. Levy, ‘Learning and Foreign Policy: Sweeping a Conceptual Minefield’, *International Organization*, 48, 2(1994), 279-312. Levy is representative of this view of learning, which he defines as a change in beliefs, skills or procedures as a result of experience.
performance of these acts and roles. Such an approach can explain both change and stability without recourse to the magic of beliefs or any one of the three tyrannies of power, reason or culture.

A model of international learning

Using the rich insights from policy learning as well as from the fields of individual and organisational learning about the co-construction of knowledge, it is possible now to pick up the thread from where Nye, Haas and Adler left off and propose a learning-based conceptual framework for studying foreign policy change. This model also draws upon the work of social anthropologists such as Goffman, Geertz, Appadurai and Harrison on ritual and social dramaturgy, that of Berger, Luckmann, Habermas and Foucault on the social construction of meaning as well as the work of de Certeau, Swidler, Schatzki, Neumann and others on the interplay of discourse and practice. Along the lines of the modified 4Is framework of organisational learning, knowledge can be conceptualised as affecting action across three inter-linked levels of learning in international relations:

1) a Public Sphere populated by policy or epistemic communities,

2) a Political Sphere dominated by domestic political aggregators and deciders, and

3) a Diplomatic Sphere dominated by international actors such as leaders or negotiators in international policy forums.

The fundamental process that constitutes learning at each level in this model is iteration of script (S) and performance (P). Discourse (S) embodying the current state of knowledge construction is reiterated at each interaction (P) that compels a recall of that knowledge. Through this iteration in the presence, actual or implied, of others, discourse gets modified incrementally or paradigmatically (O); both constitute learning depending on
the learners’ expectations and their conception of ‘social time’.\textsuperscript{118} Knowledge and action build on each other in this learning framework with power in its various forms - intention, influence, selection, domination and discipline - providing the motive force through the three levels.\textsuperscript{119}

Intention and influence applied by the originators move ideas through the stages of interpretation and integration at level 1. Selection by dominant individuals and groups then works to narrow alternatives at levels 1 and 2; in other words dominant leaders or institutional interests channel learning in intended directions. Institutionalisation of learning whether domestic or international requires sustained application of episodic power to overcome resistance as well as the use of systemic power, including through epistemic communities, in a disciplined manner to embed new ideas into the system. Practice and discourse in a heraldry sense too are important at this stage; practice helps develop the expertise for continued performance of new knowledge-embedded action and discourse, particularly discordant and conflicting discourse, is essential for fostering new insights within and beyond the reigning paradigm.

Perceptions of external events (not the events themselves) feed back into all the levels, and the lessons learnt percolate back up. Vicarious experience is part of the feedback as learners contemplate events or performances which they were not participants in.

Neither discourse nor practice gets read out of learning in this model. This is most apparent at level 3 in the Diplomatic Sphere, where discourse is the most entangled with practice, whether of international negotiations or national action designed to influence international learning. Power and self-interest are also not excluded from this framework, preserving the major advantage of the neorealist model. At the same time a three-level approach helps avoid the unitary actor problem associated with parsimonious neorealist approaches. The state or the international system is not reified as an overwhelming reality; man is at the heart of all three levels as the real locus of learning. International learning is linked back through policy learning to individual learning, which allows us to get the locus of

\textsuperscript{118} John Ruggie, ‘Social time and international policy’, in: Persistent Patterns and Emerging Structures in a Waning Century, ed. by Margaret Karns (New York: Praeger, 1986).
\textsuperscript{119} Modified from Lawrence et al.
learning right (who or what learns), delineate the course of learning through the three levels of analysis and account for the role of power in learning outcomes.

Further, unlike cooperation oriented models focused on international regimes, domestic politics is also not read out in such an approach. In fact the domestic ‘table’ is very much part of this three-level learning game in synch with Putnam’s characterisation of international politics as a “two-level game” with smart learners anticipating the reciprocal effects of moves on the two tables.\(^{120}\)

In this model, the international forums – bilateral or multilateral - that constitute the Diplomatic Sphere can be seen as a ‘stage’ for ‘ritual’ or dialogue that incorporates and symbolically articulates learning in an iterative fashion. Following Simon Harrison, we can see that the ritual of dialogue in these forums also incorporates power relationships in a field and re-forms these intentionally during the staging process, which is merely a temporary and provisional resolution of power struggles.\(^{121}\) Both puzzling and “powering” are going on simultaneously; discourse and practice too overlap and in certain cases (such as nuclear arms control) are practically indistinguishable. These forums are thus simultaneously ‘theatres of talk’ and ‘theatres of knowledge’ and knowledge emerges in iterations of practice.

\(^{120}\)Robert Putnam, ‘Diplomacy and Domestic Politics: The Logic of Two-Level Games’, *International Organization*, 42 (1988), 427-460. Putnam studied the 1978 Bonn summit of the major Western economies and concluded that key governments adopted policies different from those they would have pursued in the absence of international negotiations, i.e. they learned, but they did so only because a powerful minority within each government favoured those policies on domestic grounds. The outcome could not have been forecast by either a purely domestic politics based analysis or an international cooperative analysis. A two-level game metaphor with ‘reverberation’ between the domestic and international tables seems to have more explanatory and predictive power. Putnam touches on but does not elaborate a possible third-level that of the ‘chief negotiator’ who may have his own preferences and motives.

Table 2.1: A Model of International Learning

<table>
<thead>
<tr>
<th>Level 1. Public Sphere</th>
<th>Nature of learning process</th>
<th>Characteristics of the learner</th>
<th>Characteristics of the process, drivers and outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Iteration of discourse that evolves in interaction with others and in light of feedback from perception of external events related to the policy area.</td>
<td>Knowledge communities that are fluid in makeup and meeting venue, informal but with access to formal mechanisms, national but with possible international allies, official and non-official (journalists, parliamentarians, academics, serving/retired scientists, foreign policy and defence bureaucrats); energy and engagement varies with crises and policy windows.</td>
<td>Setting the terms of discourse, defining problem areas and solutions. Learning moves through exercise of influence and selection; projecting legitimacy, expertise and access to other international actors is part of the power play. Learning outcomes are embedded in public discourse and indirectly in policy documents.</td>
</tr>
</tbody>
</table>

| Level 2. Political Sphere | Iteration of discourse and policy practice that evolves in interaction with others and in light of feedback from perception of external events related to the policy area as well as from Level 3. | Policy selectors/aggregators in national bureaucracies, inter-agency forums, senate/parliament committees, cabinet ministers, heads of government; nature of accountability, notion of policy time, and relatedness to outcome vary. | Political needs both domestic and international, fit with past policy, and institutional memory dominate learning; hidden role of personal and bureaucratic/institutional interests. Learning propelled by selection and coercion; however, systemic power important for institutionalisation. Learning outcomes embedded in formal policy documents – confidential or public. |

| Level 3. Diplomatic Sphere | Iteration of discourse and practice that evolves in interaction with others and in light of feedback from perception of external events related to problem area as well as vicarious experience of other actors and of other forums. | Policy executors/International actors - leaders, diplomats and negotiators at bilateral or multilateral forums, also actors ‘off-stage’ say at missile or nuclear testing sites. Degree of epistemic involvement with issue may be low, effect of outcome on domestic and international constituencies may be a more important consideration. | Consistency and continuity in discourse, discipline and skill in performance and perception of outcome dominate learning. Role for influence as well as dramatic or coercive force. Learning outcomes embedded in international agreements or national perceptions of international events, both of which in turn impact practice. |
Choosing a suitable field for testing this model is important. Equally important is the level of analysis. For the latter, the ‘edge of practice’ or level three of the proposed framework offers the best vantage point. This is where action imprinted discourse reaches its epitome in a tension and potential rich dialogic space.

For the former, the field of nuclear arms control and disarmament is a tempting target even though international learning could be equally usefully studied in the context of trade negotiations\textsuperscript{122}, energy policy\textsuperscript{123} and environmental regimes\textsuperscript{124}. It is easier to delineate the three levels of learning in the nuclear field and policy-making is relatively more immune to societal processes compared say to economic policy. The number of forums for the study of practice too is relatively finite. Importantly, the field offers the typical characteristics of practice driven by ‘theory’ in the sense of socially constructed models of dealing with the world. As noted by Adler “the science of nuclear strategy has no empirical reference points and data banks, it cannot be falsified and is, in this sense, “imaginary”’ and “its validity and power as a conceptual basis for international cooperation” will depend on shared meanings and expectations arrived through dialogue, domestic political selection, mutual international agreement and subsequent practices of governments.\textsuperscript{125}

The proposed three-level learning spiral needs an updated tool kit if it is to be used to study nuclear learning. Nye’s methodolgy for testing learning was historical study, even if it was somewhat selective in terms of the developments highlighted. A history driven approach is important; learning is a cumulative process, a dialect between the past and the present. The observer must understand historically what led to the existing social base of knowledge – knowledge producers (nuclear forums, actors) and artifacts (regimes) included – that is poised to shift. However, since the learning process is essentially iterative modification of discourse, nuclear learning must also be studied from the perspective of


current practice. An observer must stand at the edge of current practice and examine the discourse of the learners (governments) bubbling up from their social base (current state of nuclear knowledge) as they uptake meaning in the face of uncertainty through social activity (dialogue in nuclear forums).\textsuperscript{126}

While the model can be applied to both bilateral and multilateral learning, its first logical test is in a multi-state forum going through regular and rapid iterations. A multiplayer forum allows us to test for the social construction of knowledge while regular iterations allow us to look for learning in layers atop the historical base of knowledge. Learning can thus be studied through a triple lens so to speak – what knowledge base was embodied in the act of creation of the forum (the genesis of the script or S), how did the process evolve (iteration of the script S or its performance P), and what was the modification of script or performance as reflected in the substantive or procedural outcome ($\Delta S/P$ or O). In doing so, the historical approach to the genesis and evolution of learning forums is combined with an anthropological approach including by interviewing select informers regarding discourse and practice.\textsuperscript{127} A focus on discourse allows meaning to be studied without having to focus on the specific beliefs or thoughts of actors, the invisible “never said”.\textsuperscript{128} At the same time, a focus on practice moves “attention from conscious ideas and values down to the physical and the habitual”,\textsuperscript{129} allowing a bottom-up approach to knowledge production, which does not leave out the tacit knowledge, the ruses and improvisations that come into play in everyday actions.\textsuperscript{130} The dramatic nature of violence that nuclear weapons can wreak makes it even more obvious than most other areas of knowledge construction that “communication and action are so closely intermeshed that they cannot be conceptually distinguished”.\textsuperscript{131}

\textsuperscript{126}This is not unfamiliar. Bakhtin and Foucault have taken literary and scientific oeuvres as apogees of practice and studied them as dialogue or discourse; Certeau has done so for more mundane activity. Neumann has recently used such an approach to examine diplomatic practice.

\textsuperscript{127}Such a combined approach was taken for a study of commodities during a year-long dialogue between historians and anthropologists in 1984; Nancy Farriss in Arjun Appadurai (Ed.), \textit{The Social life of things: commodities in cultural perspective} (New York: Cambridge University Press, 1986).

\textsuperscript{128}Foucault, \textit{The Archaeology of Knowledge}.


\textsuperscript{130}De Certeau.

Applying theory to practice

In this Chapter, it is seen that human learning is essentially the acquisition of discourse or text that operates in a particular context. In society, social institutions become the carriers of knowledge and social roles bring this knowledge alive in daily practice. Stocks of knowledge common to a collectivity of actors, say nuclear negotiators, accumulate over time and are reaffirmed in regular performances. It is impossible to separate the theatre of knowledge from the theatre of action and knowledge accumulates over layers of practice. The only real learner is the individual but knowledge is spread across social institutions and artifacts. In organisations, each of which is a collectivity of actors and their interactions, learning proceeds from ideas to institutions driven by episodic and systemic power. Communities of practice play an important role in organisational learning. States, which can be looked at as organisations of organisations, ‘learn’ policy in specific areas of practice as they puzzle collectively on behalf of the society they encadre and as they respond to power pressures from within and without. Crises, periods of leadership change and other shifts multiply opportunities for policy learning.

Internationally, States come together in policy forums – bilateral or multilateral - that deal with specific areas of knowledge-construction and practice. Their daily or episodic interactions are managed by communities of practitioners, which are answerable to domestic institutions and leaders who bridge various national communities of practice. Multilateral forums are a special category of international policy forums. They are a ‘theatre’ with actors and audiences; the scripts, performances and the engagement with the audience evolves over time. Performances are propelled by habit, power and new ideas, which are successful when they infect and modify stories about how things are done in a particular field. International outcomes feedback into State positions completing the learning loop.

How to apply theory to practice? Bennet and Howlett have looked at some conceptual and methodological difficulties in investigating learning given the complexity of the subjects, objects and effects of learning. After noting that learning is overtheorised and underapplied, they counsel adopting a methodology similar to that of Heclo; namely the
intensive long-term examination of a few comparable cases, including through archival work and elite interviews with key informants.\textsuperscript{132}

In the next six Chapters, the conceptual model developed in this Chapter will be applied to a set of multilateral nuclear forums: meetings of the Sub-Committee of the Disarmament Commission and the ENDC over 1954-1964 in Chapter 3 as well as the four Nuclear Security Summits held over 2009-2016 in Chapters 4-8. The history of the ideas underpinning these forums would be examined to determine the knowledge base (S), in particular of the key players, for the practice of nuclear negotiations in these forums. This examination would include the domestic underpinnings of S, the policy discussions and communities relevant to the construction of this knowledge base, and its spiral up to the diplomatic sphere. Next, the iterations of knowledge recall and performance in these forms would be examined for evidence of modifications in script and performance ($\Delta S/P$). The historical analysis will be supplemented with a focus on practice, through interviews, particularly on the NSS, and a survey of credible autobiographical evidence, particularly in case of the older forums. Contestation among the various S/Ps coming together in the forums, the reasons for resistance to learning pushed by norm entrepreneurs as well as differentiation of knowledge construction within an area of learning over time would be part of the examination. Higher level conclusions about the validity of the conceptual model, emergence of new areas of learning, factors that facilitate or thwart learning as well as shifts in the paradigms that channel nuclear learning would then be attempted.

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Chapter 3

The Birth and Practice of
Multilateral Nuclear Learning, 1945-1963

This Chapter describes the origins of international nuclear learning and its evolution in multilateral forums in the two decades since nuclear weapons were first used. The broad contours were set over 1943-45, in particular through elite policy formulation in the U.S., and U.S. engagement with three of its wartime allies – the UK, Canada and the Soviet Union, over seven months from May-December 1945. Thereafter, as the concertation of the war years gave way to the confrontation of the Cold War, there were three serious attempts at shared nuclear learning in three different forums: the Atomic Energy Commission from 1946-1949, the Sub-Committee of the Disarmament Commission from 1954-1957 and the Eighteen Nation Disarmament Committee (ENDC) from 1961 until 1964 when the multilateral nuclear learning track shifted resolutely from comprehensive disarmament ideas to collateral measures. Leaders’ engagement was critical whenever learning progressed. Learning was also shaped by the geometry of discussions and non-nuclear weapon states gained prominence in nuclear discourse over time. Above all, it was shaped by technology, the elephant in the multilateral room, as nuclear testing and the development of powerful delivery systems rearranged the landscape of learning.

International nuclear learning started even before the UN put nuclear weapons related matters formally on its agenda in 1946. The science that led to the bomb was itself remarkably international in origin.133 Experimental discoveries and theoretical insights criss-crossed Europe from the early 1900s to the late 1930s and each understanding built on the previous one. An international cohort of scientists – British, Danish, French, German, Italian, Irish, Hungarian, Polish and later Russian and American co-constructed the theoretical underpinnings of atomic energy in a frenzy of intellectual exchange and collaboration. The

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bomb had already been hinted at in popular literature. Based on speculation by Frederick Soddy on the immense destructive power locked up inside the nucleus, H G Wells had published in 1914 his *The World Set Free* in which atomic bombs destroy entire cities. As war clouds gathered over Europe in late 1938, very few people realised the momentous import of the discovery of nuclear fission. One of them was the Hungarian Jewish scientist Leo Szilard who began to warn colleagues about the need to maintain secrecy about work on nuclear fission. This heralds the first act of nuclear learning: *an awesome weapon could be built with nuclear physics and this knowledge was not for everyone.*

Szilard worried incessantly about Germany developing an atomic weapon first and in addition to his efforts to promote self-censorship, or what would be called intangible controls today, he also undertook what could be termed as the first attempt at export control of a tangible material, namely uranium from Belgian Congo. He then teamed up with Eugene Wigner and Edward Teller to get Einstein to write to President Roosevelt in August 1939 about the possibility of a uranium bomb.  

The decisive step in this direction was taken by Roosevelt on 9 October 1941 when he authorised Vannevar Bush to go ahead with building the bomb. The second act of nuclear learning was thus to see the atomic bomb as a usable military weapon to win the war or, after it became clear by end 1944 that the German effort to build the bomb had completely floundered, to shorten it and minimise casualties. As Bundy recounts, there was very little doubt among those in charge of the Manhattan Project that once the bomb was ready it would be used. General Groves, who was in charge of building the bomb, was also put in charge of planning and executing its use as Chair of the Target Committee. Even though the decisions to build the bomb (1941) and to use it (1945) were taken by different Presidents, they were seen to be part of the same logic.

In hindsight it can be argued that there was little understanding then of the destruction such a weapon could wreak on cities, and of the dividing line between war-fighting conventional weapons and war-deterring weapons of mass destruction. However,

an equally important role in the decision to use nuclear weapons was played by the normality induced by a long-drawn global war. Strategic bombing (‘the bomber will always get through’) of cities in the name of destroying war-potential had become acceptable by the end of the Second World War and tens of thousands had been killed by the firebombing of Dresden and Tokyo even before the atomic bombs were dropped without warning on Hiroshima and Nagasaki. As DeGroot notes: “The Blitz was the beginning. Nagasaki was the end.” and despite the certain knowledge about the failure of the Nazi effort in 1944 “The Bomb was a weapon in search of a role.”\(^{137}\) To a considerable degree, this still remains the case. Learning on the role of nuclear weapons is still partial, differentiated (across possessors) and not subject to the rigours of practice in a forum.

Concertation with allies – the failure to move from bilateral to multilateral nuclear learning

Not only the war effort but also the project to build the bomb required close cooperation among the allies. However, having absorbed the initial learning about nuclear weapons the U.S. was not inclined to be as forthcoming with sharing the fruits of this collaborative effort as others, in particular the U.K., would have liked. The Hyde Park conversation of June 1942 between Roosevelt and Churchill on collaboration and joint sharing of results with regard to ‘tube alloys’ did not yield immediate results for the British; in fact some restrictions were placed in December 1942 limiting interchange to areas where the British had already worked (gas diffusion) and denying it in others (plutonium and weaponisation).\(^{138}\) The British pressed again in July 1943 this time clearly stating their desire for a postwar deterrent against ‘the threat from the East’ by Russia or Germany and threatening to launch an independent programme in case the U.S. did not oblige.\(^{139}\)

The result was the Quebec Accords of 19 August 1943 under which the British not only got full collaboration in the Manhattan Project but also reciprocal undertakings of non-


\(^{138}\) Bundy, *Danger and Survival*, 102.

use and prior consent before use against a third party.\textsuperscript{140} Significantly, the U.S. and Britain agreed not to share nuclear information with third parties except by mutual consent. From its emergence in the scientific community five years earlier, the idea of controls on nuclear technology and materials had evolved into the idea of an exclusive club of state possessors of nuclear weapons technology. In terms of the model of this thesis, nuclear learning in the area of non-proliferation spiralled up from the public sphere to the diplomatic sphere and was institutionalised in an international forum, albeit of two players.\textsuperscript{141}

In Truman’s words:

“The atomic bomb is too dangerous to be loose in a lawless world. That is why Great Britain, Canada, and the United States, who have the secret of its production, do not intend to reveal that secret until means have been found to control the bomb so as to protect ourselves and the rest of the world from total destruction.” \textsuperscript{142}

What this first multilateral concertation on nuclear policy did not settle was the related aspect of sharing of information about the existence of the bomb and its impending use (as opposed to sharing information on technology) with allies not participating in the Manhattan Project (Russia, France and China) with a view to obtaining their cooperation on international control of atomic energy after the War. The proposition for shared learning was that all the major powers that either possessed or could possess nuclear weapons must come together to control their spread and use regardless of their political differences. As far as we know, the idea arose in the scientific community.\textsuperscript{143} This is not surprising given their pre-bomb positive experience with international collaboration and given the ethical qualms of an influential number among them. Unofficially, it was Niels Bohr who pushed the idea in Washington and London much to the annoyance of Churchill.\textsuperscript{144} Churchill persuaded

\textsuperscript{140} Peter Hennessy, \textit{Cabinets and the Bomb}, (Oxford University Press for the British Academy, 2007), 7.
\textsuperscript{141} Canada, the host of the Quebec Conference, was not party to the nuclear understanding; it was an ‘audience-actor’ in terms of the model of this thesis. The Quebec accord in many ways presages the NPT.
\textsuperscript{143} Roosevelt’s views on international policy aspects of nuclear weapons are unclear from the existing literature.
\textsuperscript{144} Bundy; 113-126. Bohr met Churchill on 16 May 1944 and Roosevelt on 26 August 1944 to argue his case. The South African statesman Jan Smuts shared the views of scientists such as Bohr, Szilard and Rotblat. He too tried unsuccessfully to convince Churchill to broach the subject of international control with the Soviets. Another attempt was made in June 1945 when a group of scientists from Chicago gave the Franck report to the Interim Committee chaired by Stimson and argued for a technical demonstration rather than actual use
Roosevelt to continue to treat the matter as of the utmost secrecy and the latter did not raise it with Stalin at Yalta. When Truman did mention the impending use of the bomb to Stalin in July 1945 at Potsdam, it was almost in telegraphic terms.

Thus, in terms of the conceptual model, an attempt at multilateral nuclear learning failed to take off despite strong connections between the public and policy levels. One can only speculate what would have happened if the bilateral Quebec Agreement had been multilateralised with the Soviets; a certain view of nuclear weapons centered on deterrence and a stronger non-proliferation norm could have taken root at the outset. There was no multilateral learning on either use or control; the question of what use for nuclear weapons – sole purpose of nuclear deterrence or the broader purpose of war prevention and termination - has endured as has the tension between two approaches to control – a control in secret by a few possessors of nuclear knowledge who want to maintain their lead or international control involving some form of relinquishing of nuclear knowledge.145

Institutionalisation of nuclear policy-making and the beginning of nuclear discourse

Till Roosevelt’s death, nuclear policy-making was ad hoc and in small groups of scientists, soldiers and politicians. A degree of institutionalisation was attempted thereafter.146 An Interim Committee was formally set up in May 1945 under Secretary of War Stimson to consider policy implications of the impending use of the bomb.147 It was this forum that dealt with the question of international control even though Stimson and the new Secretary of State Byrnes remained wary of reaching out to the Soviets comfortable in General Groves assessment that they were twenty years behind on the bomb.148 This

\textit{without warning, which in their view could diminish prospects for international cooperation after the war. The Interim Committee’s Scientific Advisory Panel, however, saw no alternative to direct military use and prioritised prevention of war as compared to the elimination of nuclear weapons. The remarkably prescient political insights in the Franck report including the inevitability of proliferation and an armaments race absent international control failed to go up the learning spiral.} 

145 Eishenhower’s Atoms for Peace proposal of 1953 or the subsequent debates over nuclear sharing within NATO.
146 In terms of the schematic of the previous chapter, this was a shift from ‘dialogue’ to ‘discourse’.
147 Bundy, 68-69.
determination to keep the lead by avoiding technical questions from the Soviets was reinforced by Churchill and key voices in Washington in the Senate and the military. In fact, while scientists like Bohr, Szilard and Rotblat were focused on turning the horror of the bomb into a forcing device for world peace, and had the support of some politicians like Commerce Secretary Henry Wallace, by then the majority of policy makers were being tempted by a political and diplomatic role for the bomb in post-war affairs and were willing to only make a rhetorical concession to international control.

If there is one forum where nuclear policy was first consolidated for public articulation, it is the Interim Committee. The Committee was advised by a Scientific Advisory Panel composed of Compton, Fermi, Lawrence and Oppenheimer. It drafted Truman’s first statement on nuclear weapons after Hiroshima and it also put together the Smyth report that described the story of the bomb from 1940-45 for release thereafter. This is nuclear learning in the policy sphere in terms of the model of this thesis, and what was pushed down into the public sphere or up into the diplomatic sphere was consolidated first at this level, a practice that continues to this date.

The bomb entered the international public scene spectacularly on 6 August 1945. “It is an atomic bomb. It is a harnessing of the basic power of the universe….a rain of ruin from the air, the like of which has never been seen on this earth.” The destruction of Hiroshima and Nagasaki in August 1945 heralds the next act of nuclear learning namely public knowledge of the destructive effects of nuclear weapons and the related element of theatre in nuclear policy. Despite an outpouring of commentary and analysis there was very little criticism of the decision to use the bomb and the atomic destruction of 1945 met with

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149 Bundy, Danger and Survival, 123-128.
150 Ibid, 137-138, 145-146, 151-152, 154-155 and 157. Naturally, it was the Chief Diplomats – Byrnes, Bevin and Molotov - who were more convinced of the politico-diplomatic utility of nuclear weapons. Initially, like Stimson, Prime Minister Attlee wanted a political approach to the Soviets on international control as an “act of faith” but Byrnes, and more importantly Churchill was dead against and the initial UK position on international control through “joint action” by the three major powers turned into a recourse to the newly-born UN.
152 This ‘factual learning’ as Knopf calls it would be consolidated fully with the megaton blasts at testing sites in the Pacific and in Semipalatinsk from 1954 onward. The element of theatre would be further reinforced with crises such as the Cuban missile crisis.
overwhelming public approval in the U.S. Further, there was hardly any public interest in the immediate aftermath on the issue of international control. Nonetheless, from that moment on decisions on nuclear weapons would have to contend with public opinion. The concluding part of Truman’s statement in which he promised to make recommendations to Congress on domestic and international control of atomic energy signalled that the era of absolute secrecy on atomic policy was over. Nuclear discourse had entered the public arena and had begun to mesh with the practice of nuclear weapons.

The birth of multilateral nuclear learning

Once the bomb became public, the U.S. turned its attention more resolutely to the problem of control. Measures for domestic control and a consolidation and build up of the atomic arsenal proceeded in parallel. Internationally, Truman’s approach was to see the U.S. and its allies as trustees of the bomb and to find means to control the bomb before the secret got out. One influence on him was Stimson, the outgoing Secretary of War, who was also a channel for the ideas of scientists like Oppenheimer on international control. Stimson urged Truman on September 12 to make an approach to the Soviets and not “merely continue to negotiate with them, having this weapon rather ostentatiously on our hip”. However, Truman’s cabinet was divided when it met on September 21 or when subsequent policy memorandums came in. Acheson was one of those who supported Stimson’s central concern that a policy of exclusion could not last and in fact could damage trust with the Soviet Union. The future Secretary of Defence Forrestal argued on the other hand that the secret was the property of the American people and the Russians could not be trusted. The discussion was leaked to the New York Times and in the public perception Stimson’s idea of a political approach to the Soviets on the bomb got mixed up with the notion of sharing of secrets. Commerce Secretary Wallace, who argued passionately for full

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153 Bundy describes how Truman received no questions on the subject of nuclear weapons and foreign policy in four extended press conferences over August and September 1945. Bundy, Danger and Survival, 136.
154 Ibid, 133.
155 Memorandum by Secretary of War, Henry L. Stimson in Foreign Relations of the United States 1945 Vol. 2 (Washington, D.C.: GPO, 1971), 40-44. The cowboy allusion was perhaps to the negotiations underway then in London with Molotov on post-war arrangements. Opinion is divided on whether Byrnes did try to use the bomb for diplomatic effect.
scientific exchange without sharing techniques became the fall guy with Congress reacting fiercely to the “Wallace plan”. Groves on the other hand got quoted approvingly about the need to hold the secret of the bomb until all other nations have demonstrated their anxiety for peace.156

In terms of the model of this thesis, this demonstrates another failure of nuclear learning in the coupling between level 1 and level 2; a particular way of framing international control lost out. The idea that prevailed is captured in Truman’s special message of 3 October 1945 to Congress on atomic energy. The message proposed Congressional action on domestic controls, including security regulations, but it is the international section that is important here.

The hope of civilization lies in international arrangements looking, if possible, to the renunciation of the use and development of the atomic bomb, and directing and encouraging the use of atomic energy and all future scientific information toward peaceful and humanitarian ends. The difficulties in working out such arrangements are great. The alternative to overcoming these difficulties, however, may be a desperate armament race which might well end in disaster. Discussion of the international problem cannot be safely delayed until the United Nations Organization is functioning and in a position adequately to deal with it.

I therefore propose to initiate discussions, first with our associates in this discovery, Great Britain and Canada, and then with other nations, in an effort to effect agreement on the conditions under which cooperation might replace rivalry in the field of atomic power.

I desire to emphasize that these discussions will not be concerned with disclosures relating to the manufacturing processes leading to the production of the atomic bomb itself. They will constitute an effort to work out arrangements covering the terms under which international collaboration and exchange of scientific information might safely proceed.157

The last paragraph is significant as it shows Truman’s accord with the senators and the soldiers (as opposed to the scientists) over the need to protect and prolong U.S. monopoly as long as possible. The main lines of nuclear policy were thus set and the U.S. was ready to take them up with others that might not share those views.

The first step was concertation with the allies through a Summit meeting of Truman, Attlee and King on 10 November 1945 in Washington. It was Vanevar Bush’ memorandum for Secretary Byrnes which became the centre piece of the U.S. position. The memo argued for a three-stage approach: technical cooperation, development of safeguards including surprise inspections, and finally a ban on the bomb – any premature “outlawing of the bomb” would be unrealistic and dangerous - and called for a Commission under the aegis of the UN to develop this approach.\textsuperscript{158} The UN was still popular among Americans, especially senators and scientists. Unsurprisingly this was also the case for the Canadian delegation which included the young Lestor Pearson, a committed and distinguished multilateralist.

The question of a direct political approach to Russia was, however, more problematic for Britain where despite his electoral loss Churchill still loomed large in the thinking at Whitehall. Just as Bush did with his memorandum, Attlee brought the different strands of thinking together on international control in a memorandum on The Atomic Bomb dated 28 August 1945. Attlee and his Ministers pursued a twin-track approach in late 1945 – hoping for international agreement while hedging against failure with decisions for the construction of a plutonium production reactor.

Attlee’s memorandum is remarkable for its terse capture of home truths about nuclear weapons: \textit{deterrence} (“The answer to an atomic bomb on London is an atomic bomb on another great city.”), \textit{monopoly} (“The most we have is a few years start. The question is what use are we to make of that few years start.”), the \textit{need to engage} Russia in joint action (“The only course which seems to me to be feasible….is joint action by the U.S., U.K. and Russia based on stark reality.”) and the essential \textit{role of UN} or multilateralism in the control of atomic energy and in the banishing of war (“The new World Order must start now. The work of the San Francisco Conference must be carried much further.”)\textsuperscript{159}. Another home truth that Attlee’s memorandum failed to mention was captured in an official internal paper ‘International Control of Atomic Energy’ produced prior to the Summit. The paper concluded that the Soviet Union would produce its own bomb in less than five years, France would be among the principal competitors and no international agreement that seeks to

\textsuperscript{158} Bush-Byrnes Memorandum, November 5, 1945, in \textit{Foreign Relations of the United States 1945 Volume II}, General: Political and Economic Matters [Document 26].

restrict the freedom of any of the major powers to produce atomic weapons was likely to succeed. The report noted the possibility of atomic bombs being restricted to the Big Five before stating in the manner of Kenneth Waltz that it was better to leave all nations free to make bombs if they want and to seek control of use and not production. This was a first stab at multilateral restrictions on use rather than possession or production but it did not pass muster with Attlee. When George Kennan argued similarly in a memorandum in January 1950 in favour of no-first use of hydronen bombs, his view too was rejected by Truman. By then, the terms for use of nuclear weapons had already been enshrined in a formal policy document in the U.S.

Thus, two spirals of domestic learning on nuclear weapons (the U.S. and the UK) came together at an international forum, which had another participant (Canada) that was not pursuing nuclear weapons but was likeminded and supportive of international control.

The 15 November 1945 Washington Declaration contains the seeds of nuclear knowledge on international control of nuclear weapons that persist to this date. At its heart was the recognition that nuclear weapons constitute a “means of destruction…against which there can be no adequate military defence, and in the employment of which no single nation can in fact have a monopoly”, but there existed “the possibility of international action to prevent the use of atomic energy for destructive purposes” through “effective, reciprocal, and enforceable safeguards acceptable to all nations” for “control of atomic energy to the extent necessary to ensure its use only for peaceful purposes”. The Declaration proposed a UN Commission to “proceed by separate stages” beginning with scientific exchange, followed by development of controls and finally “the elimination from national armaments of atomic weapons and of all other major weapons adaptable to mass destruction”.

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161 The 1925 Geneva Protocol had already attempted a no-first use norm in the area of chemical and biological weapons.

162 NSC 30 of September 1948 referenced in *Foreign Relations of the United States 1948 Volume I, Part 2, General; The United Nations [Documents 43, 46]*.
A month later, Soviet buy-in for this scheme was obtained through a meeting in Moscow between Byrnes, Bevin and Molotov. Nuclear issues were at the fag end of the agenda and got reduced to a discussion on procedure in the UN Commission thus effectively burying the idea of a political, policy-centered approach to the Soviet Union before going to a UN setting. The Soviet Union insisted that while the six-member Commission (the Permanent five plus Canada) could be established by the General Assembly it would report to the Security Council and be accountable to it. It helped that the UK too was in favour of such an approach. Great power concertation or discussion in a universal forum? Consensus or voting? What was perhaps more important then, and may even be now, was political understanding among the key actors which the authors of the U.S. approach – Stimson and Bush – originally wanted but which got subordinated to multilateral procedure. Instead of turning to each other at a crucial juncture in nuclear learning, the key actors turned to the UN.

The first attempt at nuclear learning in UN forums

The General Assembly at its very first meeting in London on 24 January 1946 adopted the draft approved in Moscow and institutionalised the ideas of international control as well as the elimination from national armaments of atomic weapons. Set up by the UNGA but accountable to the Security Council, the Commission, however, did not begin meeting till 14 June 1946. The U.S. took the lead in substantive preparations; most of it at level 2 with the interface with level 1 carefully controlled. A five-member committee was set up under Deputy Secretary of State Acheson to formulate policy on the international control of atomic energy; a board of consultants was appointed under David Lilienthal to assist the committee. The board’s physicist was Oppenheimer and his imprint was visible on the final Acheson-Lilienthal report of March 1946.

163 Bundy, Danger and Survival, 157-158.
165 Record of Conversation between Bevin and Byrnes at Moscow, 17 December 1945, Foreign Relations of the United States 1945, Volume II, General: Political and Economic Matters [Document 232].
166 The bilateral-minilateral-multilateral dynamic is a recurring theme in nuclear learning.
The U.S. was ready to go to the diplomatic sphere and Truman appointed Bernard Baruch as chief U.S. negotiator on the advice of Byrnes. The so-called Baruch plan that was finally proposed on June 14 at the first meeting of the AEC was almost completely the Acheson-Lilienthal report with one significant exception – punitive enforcement for violation which could not be subject to Security Council veto. Oppenheimer’s focus was on the technical and the institutional, in particular the ‘Atomic Development Authority’ with global control over the nuclear fuel cycle, while Baruch focused on what would be saleable politically in view of strong views about maintaining U.S. monopoly and the growing mistrust of the Soviet Union. The Soviet response was delivered by Andrey Gromyko on June 19 in the form of a draft convention prohibiting the production and use of atomic weapons and providing for the destruction of all atomic weapons within three months of its entry into force. The Soviet Union insisted thus on a ban on possession, production and use as the first step and denounced the dilution of great power veto and attempts at foreign control of Soviet national economy, which in their view the ADA implied.

The Commission’s first report to the Security Council, which reflected substantively the Baruch Plan, was adopted by a vote of 10 to none with 2 abstentions (Poland and the USSR) on 30 December 1946. Divergences remained stark in the discussions throughout the year, particularly on three aspects: the stage at which nuclear weapons should be prohibited and international control established; the principle of international ownership or control of atomic energy activities, including research; and the application of the principle of unanimity in the Security Council on questions of violations. The idea of control captured most these fundamental differences. For the Soviets (indeed also for the French), the word ‘control’ meant to check and to verify while for the Americans it also meant ownership as in their view inspections alone would not ensure compliance.

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167 Bundy, *Danger and Survival*, 162. Bundy also speculates that the case for international control might have been more persuasive if instead of Baruch, the Canadian McNaughton had made it, 150.
169 Dupuy and Hammerman, 308-312.
The Commission’s third and final report adopted on 17 May 1948 by a vote of 9 to 2 (Ukraine and Soviet Union) recognised that it had reached an impasse and could not prepare a treaty on the control of atomic energy. It recommended suspending negotiations in the Commission till its permanent members found through prior consultations that there existed a basis for agreement. The U.S. attempt to get parts of the three reports of the AEC approved through a vote by the Security Council in June 1948 was vetoed by the Soviet Union and the Council then adopted a procedural Canadian draft resolution transmitting the reports to the General Assembly. As advised by Truman, Baruch had stood ‘pat’ as had Gromyko. The U.S. protected its monopoly and the Soviet Union its options. There was no understanding of shared perils and effectively no negotiation. The AEC thus failed at shared learning.

The London Talks (1954-57)

The locus of learning moved for a while out of the multilateral setting with the ending of the U.S. nuclear monopoly in 1949. A nuclear arms race began with the two sides matching each other with nuclear tests of increasing yield. Formally speaking, the AEC did not meet after 29 July 1949 and it was dissolved in 1952 by UNGA Resolution 502 (VI), which created the Disarmament Commission. The Disarmament Commission was plagued by the same divergences seen in the AEC. However, there was an opening in late 1953 and early 1954 brought about by the end of the Korean war and change of governments in the U.S. (Eisenhower) and the Soviet Union (Malenkov and Khrushchev). A Sub-Committee of five powers “principally involved” in disarmament – Canada, France, Soviet Union, UK, U.S. – was set up by the Commission on 19 April 1954 following a call by the General Assembly for setting up such a sub-committee to seek “in private an acceptable solution”. A key role in

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173 Truman to Baruch, July 10, 1946, box 65, Baruch Papers, Princeton University Library.
176 Resolution 715 (VIII) of 28 November 1953. This was just before Eisenhower’s Atoms for Peace speech of 8 December 1953 in which he proposed that Governments “principally involved” should begin making joint contributions from their stockpiles of fissionable materials to an international atomic energy agency with details to be worked out in private talks supposed to take place in the Sub-Committee of the Disarmament Commission. Eventually, this learning took place in a separate channel in Vienna.
the setting up the forum was played by Jules Moch of France; some of the middle powers – Yugoslavia, India and Australia – also contributed even though they could not join as members.\footnote{Bechhoefer, 207-210.}

In this shift, technological developments and their perceptions played a role as important as political changes. As fissile material stockpiles grew, it became clear that the notion of absolute international control over fissionable materials would be difficult to implement. Even the Soviets began to admit by 1955 that leaving a small percentage of material out from the scope of international inspections could have profound consequences. Complete international control and ownership over nuclear facilities began to appear utopian even to U.S. allies such as Canada and France.\footnote{Joseph Levitt, \textit{Pearson and Canada's Role in Nuclear Disarmament and Arms Control Negotiations 1945-1957} (McGill-Queen's University Press, 1993).} Further, another notion central to the Baruch Plan – punishment for violation – no longer made sense with regard to the Soviets, which now possessed in equal measure the bombs that posed a credible threat of punishment. A third aspect was the spread of technology. With the U.K. having joined the atomic club in 1952 and France on the verge of doing so, comprehensive plans for disarmament and international control now had to contend with the complexities brought about by additional possessors.

The engagement itself was driven by high-level political interest. As over-optimistic estimates of the U.S. nuclear lead over the Soviets evaporated, Eisenhower began to worry about the failure of deterrence and the possible end of Western civilisation.\footnote{Interview 6.} This imperative for disarmament had to be weighed against the erosion of U.S. conventional strength because of post-War demobilisation, which meant increased reliance on nuclear weapons to offset conventional weakness.\footnote{Secretary of State Dulles announced the new doctrine of “massive retaliation” on January 12, 1954 and the test of a 15 Mega Ton thermonuclear bomb at Bikini atoll followed on March 2, 1954.} A complex, somewhat contradictory disarmament and arms control strategy began to take shape: there was a need to shift away from the Baruch Plan towards partial measures such as a test ban and limited inspections to forestall surprise attacks yet engagement had to start within the reigning paradigm, which demanded a discussion not only on total prohibition of nuclear weapons under strict

\footnote{Bechhoefer, 207-210.}
\footnote{Joseph Levitt, \textit{Pearson and Canada's Role in Nuclear Disarmament and Arms Control Negotiations 1945-1957} (McGill-Queen's University Press, 1993).}
\footnote{Interview 6.}
\footnote{Secretary of State Dulles announced the new doctrine of “massive retaliation” on January 12, 1954 and the test of a 15 Mega Ton thermonuclear bomb at Bikini atoll followed on March 2, 1954.}
international control but also conventional disarmament. The drive and political ambitions of Harold Stassen, former Minnesota Governor and Eisenhower’s special representative, added to the mix. Stassen wanted to take Nixon’s place as Eisenhower’s running mate for the second term by delivering an early harvest; he also understood the growing public concern with atmospheric testing and felt at the same time that ‘opening up the Soviet Union’ would appeal to Republicans.\textsuperscript{181} Soviet and French concerns about the rearming of Germany, the contrary U.S. push on security structures in Europe as well as the alarm in Western Europe and among the non-aligned on thermonuclear bombs added to the political interest in progress on disarmament.\textsuperscript{182}

The Sub-committee convened in London on 13 May 1954 and explored the possibilities of agreement through 157 meetings on the margins of the UN till September 1957.\textsuperscript{183} The history of the London talks and of negotiations till 1964 in its successor forums as well as the role played therein by the dramatis personae is well documented.\textsuperscript{184} The following paragraphs recapitulate the key developments from a learning perspective also taking into account interviews with two direct participants.

The talks convened in private on 13 May 1954 with no fixed agenda or plan of work. The inventive Moch suggested a procedural device, ‘agreements subject to reservation’ to keep things moving along.\textsuperscript{185} Given the comprehensive review taking place in Washington, the instructions of the U.S. representative were broad.\textsuperscript{186} The Soviet representative Jacob Malik came straight to the point when he asked Patterson if the U.S. was still wedded to the Baruch Plan; the answer was obvious but Patterson indicated flexibility and the exploration began.\textsuperscript{187}

\begin{thebibliography}{99}
\bibitem{} Interview 17.
\bibitem{} Levitt, 154-155, 166-168.
\bibitem{} The United Nations and Disarmament 1945-70, 51.
\bibitem{} Bechhoefer, 212-213.
\bibitem{} Patterson said “Mr. Malik has forcibly pointed out to us that there is no point in discussing the details of a control organ until we know what the organ is going to control. I find this reasonable enough.....we have not – and I repeat “not” a fixed position on the United Nations Plan.” U.N. Doc. DC/SC.1/PV.9 (May 25, 1954), 5-12.
\end{thebibliography}
Till the London talks, the U.S. had focussed on steps preparatory to disarmament such as establishing a system of international control while the Soviet Union had maintained that the starting point was a ban on nuclear weapons. The first to shift was the Soviet Union. After initially rejecting an Anglo-French joint proposal of 11 June 1954 for disarmament in three stages, the Soviet Union accepted it as a possible basis for compromise.\(^{188}\) The plan enshrined three crucial principles: various measures of reduction, prohibition and disclosure and verification had to be linked together to ensure enhanced security of all parties at all stages; transitions from one stage to the next were to be automatic based on ability of the control organ to verify the next stage; and measures prohibiting WMD were to be subdivided among use, manufacture and possession and take effect at different stages. The use of nuclear weapons except in defence against aggression in accordance with the UN Charter was to be prohibited at the outset.\(^{189}\)

The U.S. did not oppose the Anglo-French plan when it was presented in 1954 and in fact co-sponsored a UN resolution incorporating the plan.\(^{190}\) This was more of an administrative holding position as in 1955, as part of a comprehensive review and following the appointment of Harold Stassen as Eisenhower’s Special Assistant on disarmament, it placed a reservation on all previous U.S. positions, including the Baruch Plan.\(^{191}\) While this removed a long-standing irritant with the Soviet Union, it also took away the Plan’s call for the elimination of nuclear weapons.\(^{192}\)

When the Sub-committee convened again in London for its second session in 1955, the Soviet Union came up with a detailed and comprehensive stage-wise disarmament programme on 10 May thus cementing the French conceptual innovation of inter-linked stages underpinned by balance and international control.\(^{193}\) While the Soviet position on international controls being subject to veto did not change, the programme called for a

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\(^{188}\) The United Nations and Disarmament 1945-70, 51-52.
\(^{189}\) Ibid, 51.
\(^{190}\) Bechhoefer, 289.
\(^{191}\) Ibid, 256-269.
control agency to ensure implementation, including through inspections and ground control posts on the basis of reciprocity.\textsuperscript{194} It called for discontinuing nuclear testing as one of the first measures. Further, for the first time since the beginning of the disarmament discussions, the Soviet Union accepted the idea of a significant reduction in conventional armaments before any action to prohibit nuclear weapons.\textsuperscript{195} Significantly, the Soviet Union did not insist on immediate destruction of nuclear weapons but called for a ban first on their use.\textsuperscript{196} This was natural from the Soviet perspective given that the U.S. was no longer willing to commit to total nuclear disarmament.

On the U.S. side, despite Eisenhower’s support, Stassen was restrained by the sceptical Secretary of State Dulles and the scientific and military establishments from presenting a U.S. proposal yet. Dulles also moved to narrow the room for independent play by two of the U.S.’ Western allies by joining them along with Canada in submitting a memorandum which repeated in general terms the French-British plan of the previous year.\textsuperscript{197} In particular, he sought to hem in Moch whom he suspected of building bridges to Soviet positions.\textsuperscript{198}

This multilateral exploration was punctuated by the first post-war engagement of leaders on disarmament issues through the Geneva summit of France, Soviet Union, the UK and the US in July 1955 to discuss the German question and disarmament. The summit was thrust on the reluctant Americans by their British and French counterparts. The international alarm over thermonuclear tests added to the pressure to come up with proposals with both “drama and substance”.\textsuperscript{199} Eisenhower’s national security bureaucracy resisted anything dramatic but his special assistant, Nelson Rockefeller, convened a group of eleven academics and officials led by W. W. Rostow of the Centre for International Studies of MIT at Quantico, Virginia to come up with ideas. This is how the idea of mutual aerial

\textsuperscript{194} The United Nations and Disarmament, 1945-1970, 55-57.
\textsuperscript{195} Bechhoefer, 291.
\textsuperscript{196} Dupuy and Hammerman, 373-378.
\textsuperscript{197} The United Nations and Disarmament, 1945-70, 55.
\textsuperscript{199} W. W. Rostow, Open Skies: Eisenhower’s Proposal of July 21, 1955 (Austin, University of Texas Press, 1982), 5.
inspections put forth by Max Millikan of MIT bubbled up to the policy level.  

Despite Dulles’ dislike for “quickies”, Eisenhower embraced the idea, ran it past Eden at a breakfast meeting on July 20, and sprang it on the Soviets on July 21; the formal response from Bulganin was polite while the informal one from Khrushchev dismissive. However, the summit directed the Foreign Ministers to continue the discussion and forwarded the four disarmament proposals before it, including the U.S. proposal for aerial inspections and exchange of locations and blueprints of military installations, to the Sub-Committee. The summit had succeeded in creating a relaxation in tensions known as the ‘Geneva spirit’.

When these four proposals were consolidated in a UNGA resolution on 16 December 1955, they were joined by India’s proposal regarding suspension of nuclear tests and an “armaments truce” or freeze. A new set of actors was beginning to influence nuclear discussions. Simultaneously, a new nuclear forum combining control and the promise of cooperation was beginning to take shape in Vienna with the post-Stalin Soviet leadership deciding to join the negotiations on the Statute of the IAEA in July 1955. The newly assertive non-possessors were both the subject of these negotiations and a participant therein.

The Sub-Committee’s work engaged the political leadership in all the five participants. Eisenhower wrote to Soviet Premier Bulganin on 1 March 1956 assuring him that the U.S. focus on surprise attack was not meant to detract from reduction of armaments and would in fact lead to that. Further, he outlined the U.S. ‘cut-off’ proposal of stopping production of fissionable material for nuclear weapons after a date to be agreed. As the Sub-Committee convened for its 1956 meetings, Stassen followed-up with a proposal on force-levels that combined the Soviet ground-control-post proposal and the U.S. open-skies proposal into one inspection system. Eisenhower and Bulganin exchanged

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200 Bundy, 297.
201 Rostow, 4-10.
205 Bechhoefer, 282.
206 Eisenhower’s letter to Bulganin of March 1, 1956 in Dupuy and Hammerman, 381-383.
letters again in June and August 1956. When discussions moved to New York, the neutrals added to the pressure on both sides by presenting proposals on cessation of testing and prohibition of further use of fissionable material for military purposes.\(^{207}\) The stage was getting set for shared learning.

In November 1956, the Soviet Union developed further its proposal of March 1956 on reduction of forces in Europe and said that it was prepared to accept the ‘open skies’ proposal for aerial inspection of a sector in Europe that extended 800 kilometers to either side of the line dividing NATO and Warsaw Pact countries.\(^{208}\) Collateral measures such as removal of nuclear weapons from Germany were to accompany a testing of the inspection system, underlining the growing Soviet concern on proliferation and German rearmament.

The U.S. also moved from its all or nothing approach. It no longer insisted on a comprehensive control system and was willing to consider a partial inspection system. Stassen presented a plan that proposed dealing independently with disarmament and inspections provided the nuclear shield was not weakened at the outset.\(^{209}\)

As the Soviet and American positions loosened up, the French delegate Jules Moch positioned himself between the two extremes of ‘no arms control without inspection’ and ‘no inspection without arms control’ of the Super Powers and pushed for ‘arms control and inspection’.\(^{210}\) He played a key role in wearing down Soviet opposition to aerial inspections.\(^{211}\)

Engagement was maintained despite Soviet suppression of the Hungarian uprising and tensions over the Anglo-French attack on the Suez Canal. As the Sub-Committee convened on 18 March 1957 for its last and most intense session, the negotiations became more purposeful and the agenda shifted from general exchange of proposals to a more systematic exploration of issues. In consonance with the Moch formula, items such as

\(^{207}\) For example, Yugoslavia and India’s proposal of July 1956 to the Disarmament Commission.

\(^{208}\) This later became known as the Rapacki Plan after the Polish Foreign Minister.


\(^{210}\) Interview 6.

\(^{211}\) Bechhoefer, 379-381.
nuclear testing, nuclear disarmament and conventional disarmament were dealt with one by one so that areas of agreement could be consolidated. Although differences remained, the U.S. and the Soviet Union began to narrow some gaps as the subjects dealt with in their respective comprehensive plans began to resemble each other. A combination of iterative engagement backed by leaders, shifts in power within the Western alliance and a keenly watching audience of neutral states was leading to learning.

This was the period when cessation of testing precipitated out of disarmament discussions as a partial measure in its own right. While the U.S. linked cessation of nuclear testing to cut-off and establishment of effective control, the Soviet Union argued that the hazards of testing made it imperative to separate the problem from general and complete disarmament (as a partial measure). French sympathies lay obviously with the U.S. After the Easter recess, the Soviet Union shifted partly and said that it was willing to accept international control over cessation of testing through control posts in territories where testing was taking place. Mindful of the audience outside, the West welcomed this but asked for technical discussions to elaborate control measures while the U.S. showed flexibility on suspension of tests for a specified period of time prior to the installation of a control system. There was no flexibility, however, on the linkage with cut-off.

The boundaries of the divide on another issue, use, also became clearer. The Soviets made comprehensive disarmament proposals on 30 April 1957, incorporating their November 1956 disengagement plan for Europe. These included renunciation of use of nuclear weapons to kick in at the outset along with measures for the reduction of armed forces and conventional armaments. Cut-off, which the U.S. continued to insist on in ‘specific ratios’ by ‘agreed quantities’ in ‘successive increments’, would not commence

213 Goodby says that Eisenhower believed that the Baruch Plan was not dealing with the current issue of increasing numbers of nuclear weapons in the hands of Russians and worried about the possibility of failure of nuclear deterrence. Something had to be done to modify the situation and take up partial measures. That learning process really caught hold because Eisenhower, a famous general as well as a President, gave it credibility.
214 Goodby describes how he kept the Indians informed through V C Trivedi (later India’s chief NPT negotiator) and accompanied Stassen once on an impromptu visit to the Indian High Commissioner’s to brief her while the Indian Prime Minister Nehru was visiting. Interview 6.
215 Bechhoefer, 352.
216 Bechhoefer, 354.
untill much later.\textsuperscript{217} Weiler describes how the 1954 French-UK proposal’s provision on renunciation of use except in defence against aggression went through a significant modification in 1955 with the Soviets responding in the same year with two iterations of their own. Bulganin then wrote to Eisenhower in September accepting the Anglo-French idea that renunciation of use would take place not immediately but at a certain point in the disarmament plan when significant conventional reductions had taken place and nuclear weapons production had been halted.\textsuperscript{218}

The test ban and non-use issues were linked to what Stassen called the “fourth country” problem (non-proliferation) and a denuclearised inspection zone with control posts in Europe. Stassen’s idea of an air and ground inspection zone in Central Europe focused on the division between Eastern and Western Europe and seemed to Konrad Adenauer to be perpetuating the division of Germany.\textsuperscript{219} Dulles who was sympathetic to Adenauer’s concerns wanted to tie any inspection zone to a Soviet commitment to the reunification of Germany. As Stassen pressed for a response to the Soviet April proposals at a meeting of the NSC in Washington on 25 May, the compromise was that any proposal for a European denuclearised zone must be a European initiative.\textsuperscript{220} Further, Eisenhower agreed that nuclear weapons be used only in self-defence.\textsuperscript{221} Stassen’s idea of a 12 month suspension of testing was accepted but conditioned on a cut-off of fissile material production.\textsuperscript{222} Fearful that the fragile Washington consensus might unravel and the Soviets might walk out of the talks, Stassen forced the pace on his return to London and prepared to share with the Soviets an “Informal Memorandum”, which while being more conservative

\textsuperscript{217} Weiler (1986), 9; Dupuy and Hammerman, 413.
\textsuperscript{218} Lawrence D. Weiler, No first use: a history, Bulletin of the Atomic Scientists, 39, 2 (1983). From this indirect negotiation, the two moved to a bilateral discussion only in 1957 when Stassen proposed that nuclear use could be restricted as part of a package on the first-stage except in case of conventional attacks which could not be halted by conventional forces. The Soviets showed interest in continuing discussions even while rejecting the Stassen formula. A subsequent Western proposal of 29 August 1967 used a slightly different formula compared to the 1954 proposal but still allowed the possibility of use in response to situations of individual or collective self-defence.
\textsuperscript{219} Interview 6. The zone was drawn so that there would be equal distances from the dividing line between the two Germanies. Adenauer saw this as ratifying the indefinite division of Germany. The zone also violated Moch’s principle of no inspection without disarmament.
\textsuperscript{220} Robert E. Matteson, Harold Stassen: His Career, the Man, and the 1957 London Arms Control Negotiations (Desktop Ink, Minnesota, 1993), 43.
\textsuperscript{221} Ibid, 48.
\textsuperscript{222} Ibid.
than the NSC discussions of May 25 fuzzed the critical issue that each partial measure was linked inseparably to others.\textsuperscript{223}

Stassen’s handing over of the “Informal Memorandum” to Zorin without explicit confirmation of the May 25 decisions and without sufficient prior consultation with the allies provided Dulles the perfect excuse to rein him in.\textsuperscript{224} Negotiations continued and the Soviet Union even responded to the repudiated Stassen memorandum through an aide memoire on June 7 and a complete proposal on June 14, which accepted for the first time control posts on Soviet territory to verify a test ban. However, for all practical purposes the London talks were now headed towards an anti-climax. At a critical juncture in June, Eisenhower let Teller, Lawrence and others persuade him that the test ban should be put off because of the urgency of developing a “clean” bomb.\textsuperscript{225} Further, he deferred to Dulles’ assessment of the political situation with respect to the allies, two of which were already upset over their strongarming on Suez,\textsuperscript{226} and asked Stassen never to make another move without going to Paris, then Headquarters of the North Atlantic Council; thus, from June 1957 onwards, everything Stassen did had to be multilateral by edict.\textsuperscript{227}

As Dulles forced a closing of ranks and hardened the U.S. position, the Soviets too fell back on rhetoric. Zorin saw the Western proposals of August 2 (Working Paper on Inspection Zones) and August 29 (Working Paper: Proposal for Partial Measures of Disarmament) as a rejection of the Soviet overtures and an attempt to exploit areas of clear Soviet weaknesses (e.g. fissile material production).\textsuperscript{228} Despite an intense and substantive exchange, the Sub-Committee concluded its work on a bitter note with the Soviet Union criticising not only the Western proposals but also the composition of the Sub-Committee (4 NATO members and the Soviet Union) that placed it at a disadvantage.\textsuperscript{229}

\textsuperscript{223} Matteson, 48-49.
\textsuperscript{224} Matteson, 47-71; Tal, 99-109; Interviews 6 and 17.
\textsuperscript{225} Matteson, 58.
\textsuperscript{226} Bechhoefer, 333.
\textsuperscript{227} Interview 6. Ironically, while undermining multilateral learning within the Sub-Committee, this misstep helped multilateralise the nuclear conversations in NATO.
\textsuperscript{228} Thomas Schoenbaum in Paul F. Diehl and Loch K. Johnson (Eds), Through the Straits of Armageddon: Arms Control Issues and Prospects, (University of Georgia Press, 1987).
\textsuperscript{229} The Soviet Union had unsuccessfully proposed at the outset in April 1954 adding the People’s Republic of China, Czechoslovakia and India to the Sub-Committee. Bechhoefer, 209-210.
The immediate fallout of the collapse of the London talks was felt at the General Assembly in September-November 1957; the Soviet launch of Sputnik and the successful testing of an ICBM reinforced the sombre mood.\textsuperscript{230} Despite attempts to enlarge the Disarmament Commission and resuscitate the Sub-Committee by countries such as Mexico, Japan, India and Yugoslavia, the Soviet Union refused to participate any further in the forum.\textsuperscript{231} The Sub-Committee would be the last attempt to prepare agreement in the great power format of the War period (minus China). The next serious effort at multilateral nuclear learning would not happen before 1961, and the ensuing ENDC discussions of 1962-64 would mirror in many ways the substantive exploration in the Sub-Committee over 1954-57. Unlike 1945, when U.S. first reached an understanding with the U.K. and Canada and then approached the Soviet Union, this time, however, the multilateral engagement would be preceded by bilateral agreement between the Soviet Union and the United States and would be led jointly by them. Further, the geometry of engagement would shift irreversibly away from a bipolar setting to a mixed setting; the audience would begin to engage with the actors on stage and off stage as the spread of technology and political autonomy continued.

Even though in terms of concrete outcomes, the five-party London talks were a missed opportunity, they are significant in the history of nuclear learning. First, it was a true multilateral discussion; the French and the British inside the room and the Germans outside were significant actors in the evolution of the negotiations and their eventual unravelling.\textsuperscript{232} The time Stassen tried to be too bilateral, he had to back off although it was not so much an attempt to bypass the allies as it was to foreclose changes in policy in Washington.\textsuperscript{233} Apart from the North Atlantic discussions in Paris, another multilateral interface was provided at the UNGA where the Sub-Committee’s report was formally discussed and reflected in resolutions. Neutrals such as India used the opportunity to push the idea of a test ban. Second, the dynamic between the domestic and the international tables was dramatically at display in London. The generational change in Soviet leadership, the stature and credibility of Eisenhower, even the European Socialist-style independence of Jules Moch created

\textsuperscript{230} Bechhoefer, 414.
\textsuperscript{231} Ibid, 425.
\textsuperscript{232} Apart from Adenauer’s concerns about the perpetuation of Germany’s division, Macmillan had his own concerns about the impact of too early a test ban and a cut-off on the U.K. deterrent. Harold Macmillan, \textit{Riding the Storm 1956-59} (Macmillan, London, 1971), 300-302
\textsuperscript{233} Interview 6.
opportunities for international learning. Stassen broke new ground procedurally with his use of two techniques – advancing personal ideas without committing the U.S. officially and informally, off-the-record bilateral sessions with the Soviets. Third, in terms of substance, the iterative give and take of proposals and the absence of an audience for posturing created possibilities for adjustment. The Soviets and the Americans moved away from frozen positions of the late 1940s. The Soviet Union dropped its earlier insistence on a ban at the outset to focus instead on renunciation of use of nuclear weapons in the first stage along with reductions in the field of conventional armaments. Its position on international verification also shifted as it accepted (conditionally) setting up of control posts on the ground, including for verifying the cessation of testing. Its June 1957 proposals relegated prohibition and elimination of nuclear weapons to a best endeavour clause and become a set of inter-linked partial measures. For its part the U.S. abandoned the Baruch Plan and its earlier insistence on control before disarmament. Moch’s incantation ‘no disarmament without control and no control without disarmament’ captured this dynamic. As a result, absolute notions of verification and disarmament would soon move to the background. Thus, despite Stassen’s personal failure on the step-by-step approach, the idea survived. The next few years would in fact entrench the step-by-step arms control paradigm starting with the first three partial measures (Hot Line Agreement, PTBT and non-placement of nuclear weapons in outer space) concluded in 1963 during Kennedy-Khrushchev administrations and leading to the NPT by 1968.

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234 Matteson.
235 Goodby says that the notion ‘arms control’ was yet to be invented when Stassen was appointed. Interview 6.
### Table 3.1 Nuclear learning in the London Talks 1954-57

<table>
<thead>
<tr>
<th>Type of shift</th>
<th>Evidence of learning in Sub-Committee</th>
<th>What was learnt? Or not learnt?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Abandonment of position</td>
<td>U.S. quietly gave up the Baruch Plan while the Soviet Union abandoned its insistence on immediate and complete prohibition (Soviet 1 June 1954 proposal on non-use and not prohibition in advance of control; Soviet comprehensive proposal of 10 May 1955 and Stassen’s proposal of 19 March 1956 with separate parts dealing with disarmament and inspections).</td>
<td>Mutual deterrence had taken root and nuclear disarmament could not be achieved at one stroke. A perfect system of verification could not be built in existing political and technical circumstances. First substantive but unsuccessful exploration of non-use.</td>
</tr>
<tr>
<td>2. Policy compromise or adjustment/ sharpening of concepts</td>
<td>U.S. understood the need to present substantive disarmament proposals so as to gain propaganda advantage with regard to Europeans/Neutrals. Towards the end, Stassen’s failure underlined that concertation with allies on matters nuclear was now essential. Soviet 14 June 1957 proposal showed willingness to accept limited control posts for verifying non-testing and a limited verification zone to prevent surprise attacks.</td>
<td>Public opinion/political context needed to be taken into account in pursuing disarmament. No change, however, in fundamental strategy of seeking military advantage through disarmament/arms control. A measure of international control was necessary for forward movement. No change in Soviet view of secrecy as a strategic necessity or U.S. failure to see it as such.236</td>
</tr>
<tr>
<td>3. Development of new ideas and shared understanding</td>
<td>Jules Moch/UK-France ideas of inter-linked stages with control proceeding automatically in parallel with disarmament overcame impasse over what came first – disarmament or control; likewise idea of national control over nuclear facilities to be monitored internationally sought to overcome impasse over international ownership and control. Both Soviet Union and the U.S. gradually embraced these ideas. Soviet Union agreed to separate testing from GCD. U.S., for tactical reasons related to Stassen’s political needs and growing public opinion against radioactive contamination, began to prioritise non-testing agreements or announcements.</td>
<td>Disarmament measures and international verification need to be developed in stages through technical work and development of mutual trust; transitions between stages act like political and security sanctuaries for main players. In view of the accelerating arms race as well as the spread of nuclear technology, partial measures were needed to regulate the competition and to prevent nuclear war and proliferation. Verification bar still set high by U.S. and allies for a testing agreement; link with cut-off persisted.</td>
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236 Interview 17.
The German question brought nuclear sharing and non-dissemination to the forefront. French dilemmas regarding its own deterrent, which partially hinged on a first stage package deal, emerged. 237

Nonproliferation important as a measure on its own; Link between progress on disarmament and non-proliferation. First chance to restrict number of nuclear weapon States through such progress missed.

4. Putting into practice of policy compromises or new ideas/understanding

None.

A non-governmental agreement was reached only in May 1986 to demonstrate feasibility of verifying a comprehensive test ban; Joint verification of a nuclear test took place in 1988 at Nevada; 238 Satellite reconnaissance opened up with SALT treaties; Open Skies Treaty concluded in 1992 and flights started in 2002.

Transitioning to the ENDC – TNDC and the McCloy-Zorin agreement

The period from 1958-1961 was a barren but essential interlude especially for the U.S. to reconstruct policy from the shambles of 1957. 239 A series of technical discussions on testing started in July 1958 with equal participation from both camps; another meeting of experts was held on surprise attack with a similar geometry. 240 Eisenhower and Khrushchev also agreed that a conference of the three states that had tested weapons should be held in Geneva in October 1958 to work towards a treaty on cessation of tests. The importance of the technical conferences lay not only in rebuilding confidence but also in moving discussions towards specific elements that would need to be reflected in treaties. 241

It took a while to restablish a negotiating forum and when it happened it did not last very long. The Ten Nation Disarmament Committee (TNDC) was an ad hoc forum set up by a decision of the Foreign Ministers of France, the Soviet Union, the U.K. and the U.S. (the Big

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239 Interview 17; the disarmament structure in Washington virtually collapsed with the abolition of Stassen’s White House office.
Nuclear Learning in Multilateral Forums

Four) at Berlin in August 1959 “to consider disarmament matters”.242 The Soviets unhappy at their experience of the Sub-Committee insisted on parity between the socialist and the capitalist blocs. Therefore the TNDC like the Surprise Attack Conference before it had five members each from NATO (the U.S., the U.K., France, Canada and Italy) and the Warsaw Pact (the Soviet Union, Bulgaria, Czechoslovakia, Poland and Romania). It was outside of but linked to the UN through reporting and convened in Geneva in March 1960. It examined two proposals: a Soviet plan in three stages for general and complete disarmament as well as a U.K. proposal (subsumed later in a five-nation Western plan) for a disarmament process in three balanced stages, including setting up of an International Disarmament Organization, ban on placement of weapons of mass destruction in outer space, agreement to stop production of fissionable material for use in weapons, suspension of testing and measures to prevent surprise attack. The Soviet proposal flowed from Khrushchev’s UNGA address of 18 September 1959 on general and complete disarmament, which led to a renewed interest in comprehensive proposals.243 The Western ‘plan for general and complete disarmament in a peaceful world’ was in effect a proposal for a non-nuclear set of measures in the first-stage and the ultimate phase-three goals on nuclear elimination were vaguely worded; it also proposed a security mechanism for preventing aggression and preserving world peace and security through an organisation linked to the UN.244 Before the Conference adjourned at the end of April, the Western powers presented on April 26 a “statement on conditions” for disarmament which outlined some general principles that should govern disarmament.245 A new Soviet paper also proposed some “basic principles” of GCD, providing little detail.246 Negotiations on such principles would have to wait for the McCloy-Zorin talks.

The Conference ended in acrimony on 27 June 1960 when the Eastern bloc withdrew in the wake of the U-2 incident, which had also led to the collapse of the Paris Summit of the four-powers in May and a possible visit by Eisenhower to Moscow in June for which the

244 Weiler (1986). The French were now opposed to cut-off; they also split from their allies on the issue of delivery systems, which they wanted abolished at the outset.
245 Bechhoefer, 543.
246 Weiler (1986).
talks had recessed. The Soviets and their allies accused the West of avoiding discussions on general and complete disarmament while the West accused them of avoiding the question of preliminary measures and control. With this the era of multilateral disarmament discussions in a bipolar setting came to an end.

French entry into the nuclear club, the development of ICBMs and the absence of a negotiating forum added urgency to the susbequent discussions between the Soviet Union and the U.S. after the election of President Kennedy. Consideration of the disarmament question at the UN was put on hold during the spring of 1961 as the two superpowers announced that their private consultations were continuing. Led by John McCloy and Valerian Zorin respectively, the US and the Soviet Union met in Washington, Moscow and New York in June, July and September 1961 and agreed on a Joint Statement containing principles for multilateral negotiations on disarmament.247 The Statement papered over differences on two fundamental issues – U.S. reservations on complete elimination and Soviet reservations on application of verification measures to retained forces (as against forces removed). Nonetheless, it was significant as the first agreed bilateral document on disarmament between the superpowers.248 Even the exchange of letters between McCloy and Zorin on the disagreement on verification was useful in clarifying where each party stood.249

After it was reported to the UN, a draft resolution submitted by India and sponsored by Ghana and the United Arab Republic requested the two to also reach agreement on the composition of a negotiating body so that negotiations could begin without delay.250

247 *Documents on Disarmament*, United States Arms Control and Disarmament Agency, 1961, 439-441. Weiler (1986) and Interview 17; Weiler describes how the ice was broken at the crucial meeting in New York.
248 These talks and the principles arrived therein were an essential bridge between the bilateral and the multilateral (see Footnote below) even though some such as Goodby viewed them as a distraction from the test ban talks (Interview 6).
249 Arthur H. Dean, *Test Ban and Disarmament: The Path of Negotiation*, (New York: Harper & Row for the Council on Foreign Relations, 1966). Dean is quite explicit in mentioning the U.S. aversion to bilateral talks on disarmament with the Soviets (“these crucial issues had to be worked out in a forum much larger than bilateral meetings”) and the U.S. view of the Joint Statement as a “device” for later multilateral talks. Dean, 30-31.
250 This may already have been the subject of bilateral negotiations. Interview of Helmut Sonnenfeldt, a member of McCloy’s delegation, by Charles Stuart Kennedy in July 2000, Foreign Affairs Oral History collection, U.S. Association of Diplomatic Studies and Training, available on [http://adst.org/2016/01/ stopping-the-madness-through-arms-control-and-disarmament/](http://adst.org/2016/01/ stopping-the-madness-through-arms-control-and-disarmament/)
The ENDC was formally set up by a unanimous resolution of the UNGA moved jointly by the Soviet Union and the U.S.\textsuperscript{251} The resolution welcomed the McCloy-Zorin “Statement of Agreed Principles” of 20 September 1961 and recommended that negotiations on general and complete disarmament should be based on those principles. It also recognised that all States have a deep interest in disarmament negotiations and endorsed the agreement on a Disarmament Committee of 18 members, including eight non-aligned countries.\textsuperscript{252} Thus, for the first time there was both an agreed basis for disarmament negotiations as well as an agreed forum where to conduct those negotiations. Again for the first time and based on a suggestion from India and Canada, the Chairmanship of the ENDC was to be held jointly by the U.S. and the Soviet Union.

At the same time in 1961, the first year of the Kennedy presidency, an extensive reassessment of U.S. positions took place. Kennedy wanted his advisers “to pull the various parts of policy together into a coherent whole” and “to seize opportunities and not to be afraid of modifying proposals in the light of scientific advances and of changing political circumstances”; above all he wanted results.\textsuperscript{253} The review led to Kennedy’s speech of September 25 at the UNGA in which he presented a three-stage program for general and complete disarmament that would form the basis of U.S. positions in the ENDC.\textsuperscript{254} The review also accelerated the establishment of a forum for domestic policy aggregation on nuclear arms control and disarmament. The Arms Control and Disarmament Agency (ACDA) was set up in 1961 through an Act of the U.S. Congress.\textsuperscript{255} For three and a half decades, it brought together officials from different agencies in a three-level pyramid of committees and backstopped negotiations in nuclear forums.

\textsuperscript{251} UN GA Resolution 1722 (XVI) of December 20, 1961.
\textsuperscript{252} Brazil, Burma, Ethiopia, India, Mexico, Nigeria, Sweden and the United Arab Republic.
\textsuperscript{253} Dean, 7-8.
\textsuperscript{254} Dean, 25-26. Dean describes how the internal opposition to the Kennedy speech was overcome; an argument that worked was cutting down the propaganda returns that the Soviet Union was reaping as an advocate of GCD.
\textsuperscript{255} The Arms Control and Disarmament Act (P.L. 87-297, 75 Stat. 631) of September 26, 1961.
### Table 3.2 Nuclear learning in TNDC and McCloy-Zorin talks 1958-61

<table>
<thead>
<tr>
<th>Type of shift</th>
<th>Evidence of learning</th>
<th>What was learnt? Or not learnt?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy compromise or adjustment</td>
<td>U.S. brought into the TNDC the notion of an international security machinery linked to the UN for maintenance of peace and security in addition to the control organ to verify disarmament. Kennedy speech of 1961 developed this further and added the ideas of a U.N. peace force and development of international law. Setting up of ACDA (in continuatation of mechanisms such as the Interim Committee).</td>
<td>Nuclear disarmament can occur only under conditions of international peace and security. No agreement on control organ or security mechanisms; notion of “conditions” for disarmament remains controversial.</td>
</tr>
<tr>
<td>Development of new ideas and shared understanding &amp; their implementation</td>
<td>Western and Soviet proposals on basic principles of GCD in the TNDC in 1960. A new focus at the TNDC by the French on elimination of delivery systems in the first stage, viewed sympathetically by the Soviets. While not agreeing to elimination, U.S. proposal of September 1961 suggested that specific categories of strategic delivery vehicles and weapons for countering such vehicles be reduced to agreed levels.</td>
<td>An agreement on basic principles might facilitate negotiations on disarmament. TNDC failed to sustain the discussion on basic principles, which was concluded in the McCloy-Zorin talks and then reintroduced multilaterally in the ENDC. New technologies for delivering and countering offense require a separate effort to maintain strategic stability pending nuclear disarmament. Failed completely in the multilateral setting (TNDC/ENDC) but pursued successfully bilaterally in the START talks and the INF treaty. Yet to be brought back into a multilateral forum.</td>
</tr>
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256 ACDA was actually set up on a temporary basis by the outgoing Eisenhower Administration.
257 This was not merely a tactical response to French/Soviet proposals but the result of a conscious and intense internal review, including a panel on strategic delivery systems chaired by Donald Ling of which Weiler was the secretary. Interview 17.
258 Weiler (1986), 14, describes briefly the ideational pathway from the 1961 proposal to the 1969 strategic arms limitation talks.
The Eighteen Nation Disarmament Committee (ENDC) – 1962-64

The ENDC convened officially in Geneva on 14 March 1962. Arthur Lall in his study of the first two years of the ENDC attributes three factors to the birth of the ENDC. First, the ‘over-development of the thermonuclear weapon’ and realisation by both Kennedy and Khrushchev that the nature of modern weaponry required serious negotiations. Second, the emergence of the non-aligned as a pressure group in the seven years from 1953-54 onward. The debates on disarmament ceased to be arguments between the East and the West by the winter of 1960 when none of the draft resolutions at the UNGA could be passed despite the tradition hitherto that at least one of the Western drafts would be adopted. Lall believes that this refusal of the majority to back any of the two camps pushed the U.S. and the Soviet Union to make bilateral moves which resulted in the agreement on the principles for disarmament. The third factor was political will in both super powers. In the U.S. there was bipartisan support for efforts toward safeguarded disarmament. Arthur Dean, the first leader of the U.S. delegation to the ENDC and his successor, William Foster, the Director of ACDA, were Republicans as was John McCloy. Kennedy also picked up from where Eisenhower had left off on cessation of testing and added to that his own conviction that a test ban would be a major instrument in preventing acquisition of nuclear weapons by other countries that had not tested yet.

Another contributing factor that Lall only hints at was the transformation of mutual perceptions of scientists and other experts of the two Cold War adversaries as a result of meetings of the UN Conferences on Peaceful Uses of Atomic Energy (since 1955), the Board of Governors of the IAEA in Vienna and those of the Pugwash Conferences on Science and World Affairs. Bertrand Russel and Albert Einstein issued a Manifesto in London on 9 July 1955 that led over time to a community of disarmament activists in the West; this community developed links with scientists and other knowledge-makers across the iron

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260 Interview 6.
Atmospheric testing and the arrival of a vocal majority of decolonised countries at the U.N. further expanded the circle of public discussion on nuclear weapons policy. The learning in the public sphere began to push through into the policy sphere and it became important for the Cold War protagonists to appear reasonable before an audience of domestic and global elites horrified by the prospect of thermonuclear war.

The rules of procedure of the ENDC provided for a concurrent examination of the primary objective of reaching agreement on general and complete disarmament in plenary sessions as well as proposals on measures aimed at lessening of international tensions, consolidation of confidence among states and facilitating general and complete disarmament in meetings of a committee of the whole. These latter so-called collateral measures moved centre-stage over time and soon were the subject of one of the two main meetings of the ENDC each week. This division of labour also prevented progress from being held hostage by an impasse over broad proposals.

In terms of the core problem addressed by the ENDC, the U.S. delegation headed by Arthur Dean presented an outline treaty titled “Basic Provisions for GCD in a Peaceful World”, which fleshed out the September 1961 Kennedy proposal. It provided for a 30% across the board cut in each of the three stages of the plan to the armament mixes of the two sides – with the significant exception of nuclear warheads but not their delivery systems in the first stage - without disturbing the existing military pattern. While the first two stages were to be of three years each, the last stage was to be completed as promptly as possible. The Soviet draft treaty on GCD under strict International Control tabled in March 1962 called for radical and drastic measures in the first stage itself, including complete elimination of the means of delivery of nuclear weapons and foreign bases. The Soviet draft was modified subsequently to allow retention of a number of strategic offensive and defensive systems in the first two stages, and to permit the U.S. idea of a 30% cut in each stage. Differences on conventional systems also narrowed as for the first time in general

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262 ENDC/1 dated March 14, 1962.
disarmament talks, an article by article reading took place and some preambular language of a GCD treaty was agreed.\textsuperscript{265}

Both draft treaties provided for a three-stage disarmament process but the U.S. plan proposed retaining nuclear weapons for a longer time and also added the notion of “in a peaceful world” to GCD elevating this reference in the preamble of the Agreed Principles to a virtual condition for GCD. There were some partial measures embedded in the two drafts, particularly U.S. proposals on non-dissemination of nuclear weapons and a test ban in the first stage, which were to separate out later and lead to the NPT and the PTBT respectively.

The U.S. plan also proposed a verified cessation of the production of fissionable material for nuclear weapons and the transfer of agreed quantities of weapons grade U-235 from past production to peaceful uses in the first stage. U.S. further proposed that transfer of fissionable material between States should be under agreed safeguards to be worked out with the IAEA. This led predictably to the Soviets attacking the U.S. priority of cut-off as tantamount to establishment of control over the atomic industry, which would be unrealistic without a prohibition on nuclear weapons and measures to eliminate them. Zorin put it as “control without disarmament, or control over armaments” in a throwback to the debates in the AEC and the London talks.\textsuperscript{266}

The Soviet plan, apart from applying agreed cuts to nuclear weapons in the first stage itself and the complete elimination of their delivery systems (in line with the views of a significant non-participant, France)\textsuperscript{267}, proposed their complete elimination in the second stage under the supervision of the International Disarmament Organization as against the American plan which placed emphasis on gradual reduction by agreed percentages and on transparency measures. This proved unrealistic and by end-1963, the Soviets proposed that the two could keep nuclear weapons (but only on their territories) and certain connected defensive systems till the end of the disarmament process even while insisting that

\textsuperscript{265} Weiler (1986).
\textsuperscript{266} ENDC/PV. 29, dated May 2, 1962, 46-47.
\textsuperscript{267} Klein, 236.
manufacture of nuclear weapons should cease in the second stage. After insisting in 1962 on the complete elimination of delivery systems in the first stage, the Soviets moved in late 1963 to amend their own plan to provide for the retention till the end of agreed and limited numbers of ICBMs and ABM systems. Gromyko’s speech announcing this was welcomed by U.K. Foreign Secretary Hume and a number of other ENDC countries at the General Assembly; Hume said significantly that the move “incidentally illustrates the value of discussions in Geneva”. The Soviets also indicated in 1963 that they could accept on-site inspections of missile pads in connection with the Gromyko proposal.

The U.S. moved to reduce differences on nuclear reductions somewhat by accepting a 60/40 asymmetry in reductions of stockpiles and proposed draft treaty language for Stage I measures. However, the U.S. remained concerned that reductions in delivery systems would play to Soviet strength in conventional systems and inter alia constrain the development of the U.S. Polaris system; it therefore proposed a freeze on strategic delivery and defensive systems based on President Johnson’s letter to Khrushchev of 18 January 1964. Gromyko criticised the proposal as not being disarmament at all. The earlier obstacle of what came first – disarmament or verification, was now whether a freeze should precede elimination or vice versa. Efforts to set up a Working Group to move to negotiations remained unsuccessful and 1964 ended up being the last year of discussions on general disarmament.

With regard to verification, the Soviets first totally rejected international inspections as ‘legalised espionage’ but said later in early 1963 with respect to their proposal for missiles to be retained after the First Stage elimination of the means of delivery that they would agree to verification in situ of the retained missiles. This was reiterated in early 1964 when the Soviet delegate Tsarapkin said that during the existence of the ‘nuclear umbrella’ (i.e. retention of some nuclear delivery systems as disarmament progressed) strict control

268 A. Gromyko’s statement of September 19, 1963 in the General Debate, Records of the 18th Session of the UN General Assembly.
269 Records of the 18th Session of the UN General Assembly, General Debate, October 1, 1963.
271 Ibid.
272 ENDC/120 and President Johnson’s reply dated January 18, 1964 to the letter dated December 31, 1963 from Chairman Khrushchev available on http://www.presidency.ucsb.edu/ws/?pid=26002
over it should be established which would be applied at the launching pads from the beginning of the Second Stage itself.\footnote{ENDC/PV. 163, dated February 4, 1964.} This incremental learning in the GCD discussions would come in handy later in bilateral arms control agreements.

**Partial measures (Hot Line, test ban)**

The rules of procedure of the ENDC required the two Co-Chairmen to consult with each other and other delegations to facilitate the formal and informal work of the Conference. These procedural meetings, two or three times a week, soon evolved into probing of substance. Lall states that it was at such meetings that the idea of a direct communication link between Washington and Moscow was first mooted and was then fleshed out at technical sessions arranged by the two delegations;\footnote{Interview 17. The idea may have also occurred to Thomas Schelling in 1961: Eric Schlosser, *Command and Control, Nuclear Weapons, the Damascus Accident, and the Illusion of Safety* (Penguin Books, 2014), 275.} the technical communications failure during the Cuban missile crisis that forced Kennedy and Khrushchev to broadcast some of their messages publicly imparted urgency to the discussions. Weiler, who was the delegation coordinator for the U.S. for these negotiations, recalls that the idea may have originated in a paper on CBMs written by Gerald C. Smith as Director of Policy Planning Staff but the spark for the negotiations might have come from a reference to such a measure in a Soviet statement at the ENDC after the Cuban missile crisis.\footnote{Dean (1966), 15.}

In the first three months or so of the ENDC’s existence, a tripartite sub-committee (Soviet Union, UK and U.S.) took over the the earlier test ban conference discussions. The non-aligned saw this as a continuation of the fruitless debates among the nuclear powers since 1958 and wanted to join in to change the dynamic. The resumption of atmospheric testing by the Soviets in August 1961, the recrudescence of differences on verification in view of Soviet reversion to the so-called “troika” proposal, enhanced public pressure including a Pugwash Statement on nuclear test detection of September 1962, which conceded an idea proposed by Soviet scientists that inspections could be considered on the basis of a “request” by the international control organ,\footnote{“The Hot-Line Agreement” of June 20, 1963 signed by Charles Stelle and S. Tsarapkin as Acting Representatives of the U.S. and the Soviet Union respectively to the ENDC.} opened a space for multilateral work. Regardless of what factors are considered most pertinent in this shift – pressure of public
opinion, push by the neutrals or differences among the nuclear three - the issue of a test ban came to be discussed at a weekly meeting of the ENDC plenary.\textsuperscript{278} The tripartite discussions were supplemented by informal meetings between the Soviets and the Americans without notes and record, which had evolved with the blessings of U.S. allies from the original Indian-idea of informal meetings to which any member of the ENDC might come to discuss any relevant problem.\textsuperscript{279}

For the non-aligned a nuclear testing ban was a touchstone of the sincerity of the nuclear powers to seek agreements in the field of arms control and disarmament. However, the Soviet Union and its allies wanted to focus on general and complete disarmament as per the agreed purpose and procedures of the forum. The West asserted that an international control system was necessary to police a test ban in all environments and not just underground, which the Soviets flatly rejected. The deadlock on testing knitted the non-aligned, who had come to the table as individual countries, into a group.\textsuperscript{280} A small drafting committee of India, Ethiopia and Sweden was set up and prepared the scheme that became known as the eight power memorandum of 16 April 1962.\textsuperscript{281} Lall says that the proposal differed from stated Western positions by restricting the scope of international controls solely to doubtful underground events, thus not going much further than the Kennedy-Macmillan proposal of 3 September 1961 to Khrushchev to end atmospheric tests without a system of controls. At the same time by admitting the need for a certain degree of on-site inspection, to be implemented by an ingenious system of national invitation to an International Commission (preferably nonaligned), the proposal conceded the substance of a basic Western principle. Neither the U.S. nor the Soviet Union, however, wished the proposal to be presented but the eight governments had already approved the memorandum and they went ahead.\textsuperscript{282} On April 19 and 20, Zorin and Dean respectively reacted formally to the proposal with Zorin saying that they were willing to study it as a

\textsuperscript{278} Unlike Lall, Dean, for example, downplays the role of the non-aligned and attributes progress on test ban to Kennedy’s leadership and sustained engagement by the U.S. despite Soviet attempts to frustrate negotiations.
\textsuperscript{279} Dean, 36-43.
\textsuperscript{280} Lall, 20-21.
\textsuperscript{281} ENDC/28, dated April 16, 1962.
\textsuperscript{282} Lall, 21.
basis for further negotiations and Dean stating that they accept it as a basis for discussion on a non-exclusive basis.\textsuperscript{283}

For the next five months, the test ban memorandum was debated. Lall says that this was negotiation in its essence: an intricate, sustained probing of the possibilities of the situation, an exploration to the limits. The Soviets realised in this debate that their rejection of on-site inspection on their territory till there was general and complete disarmament was not supported by the non-aligned. Lall believes that the public and private urgings of the non-aligned played a part in the Soviet shift announced on 9 May 1962 when Zorin said “....previously we spoke of rejecting any inspection whatsoever, but now we say this inspection is admissible on a voluntary basis ....we agree that it will be possible in individual cases to invite scientists, members of the International Commission, to ascertain \textit{in loco} the nature of events that are in doubt.\textsuperscript{284}” Subsequent Soviet statements were even more forthcoming and the Polish representative Manfred Lachs said on August 15: “The memorandum speaks of invitation. The Soviet Union says, “We shall invite.” ”\textsuperscript{285}

Similarly by refusing to agree with the West that the international control system should be capable of monitoring a weapons test in all four environments, the eight played a part in getting the U.S. and the UK to rethink their position on the scope of international control.\textsuperscript{286} On the heels of the Soviet rethink, the U.S. and the UK proposed on 27 August 1962 two treaties for a test ban: a comprehensive treaty in which there would be on-site inspections in respect only of doubtful underground events and another treaty to ban tests in the atmosphere, outer space and under water without any international control.\textsuperscript{287} Despite his scepticism about the role of the neutrals, Dean acknowledges that “It was a combination of a process of scientific change and political re-evaluation on our side, and a patent willingness to study Soviet proposals objectively, that made possible our new suggestions in August 1962 for a partial nuclear test ban.”\textsuperscript{288} The arrow of learning linking the Soviet rethink and the U.S. re-evaluation is patent.

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{283} ENDC/PV. 24, dated April 19, 1962, 10 and ENDC/PV.25, dated April 20, 1962, 24.
\item \textsuperscript{284} ENDC/PV.35, dated May 9, 1962.
\item \textsuperscript{285} ENDC/PV.70, 13.
\item \textsuperscript{286} Lall, 23.
\item \textsuperscript{287} ENDC/58, dated August 27, 1962 and ENDC/59, dated August 27, 1962.
\item \textsuperscript{288} Dean (1966), 22.
\end{itemize}
\end{footnotesize}
After the UNGA endorsed the eight-nation memorandum on 6 November 1962, Khrushchev wrote to Kennedy on December 19 proposing a test ban on the basis of two or three on-site inspections a year in the territories of each nuclear power.\textsuperscript{289} This shift in the positions of the two sides in the summer of 1962 eventually became the foundation for the partial test ban treaty which was finalised in tripartite talks in less than a year on 25 July 1963.\textsuperscript{290}

The comprehensive ban idea on the other hand would languish for three decades. In the ENDC, the non-aligned felt that the numbers game, whether there should be ten, seven, six, five or less inspections per year, could be overcome and made another attempt at a joint proposal. Their suggestion was to fix the number of inspections for a period of five or seven years at between thirty-one and thirty-five and not fix them on a yearly basis. However, this time the two sides were informed of the details of the plan before it was approved by the governments of the eight non-aligned delegations and successfully demarched capitals to thwart its tabling, arguing that they themselves were likely to reach agreement on a comprehensive test ban.\textsuperscript{291} According to Lall, this failure to table a compromise proposal in April 1963 turned out to be a critical mistake. When the two sides reached the point of failure, there was no face-saving, official alternative that the two sides were obliged to consider. The Soviets, who throughout the discussions believed that the actual negotiating position of the U.S. was two or three inspections per year and not seven (in February 1963)\textsuperscript{292}, backed away from any quota of on-site inspections. The result was not a full test ban but only a partial one. The situation with regard to inspections was of course much more complex than just numbers, the area covered by an on-site inspection for example was also a factor in Soviet calculations, but an opportunity was lost, which did not arise again for three decades.

\textsuperscript{290} Goodby, 54-69.
\textsuperscript{291} Lall, 24-26.
\textsuperscript{292} Dean (1966) explains his version of this misunderstanding in 40-42, 49-50 and 52-53.
The ENDC is significant in the history of nuclear forums and its birth itself captures a degree of nuclear learning since the failure of the the AEC. First, it was the first post-war permanent, standing negotiating forum on disarmament issues in Geneva, away from the hurly burly of politics on the East River, thus drawing a bridge back across the UN Charter to the Disarmament Conferences of the early twentieth century. Second, it was designed to be a representative but a limited membership forum. Given the global consequences of nuclear war or even nuclear testing, a nuclear learning forum needed buy-in from a select number of non-nuclear powers both allied and non-aligned. This was both a practical and political necessity, practical because numbers were essential to get UN endorsement and legitimacy for such forums and political because if the then incipient control or non-proliferation paradigm was to take root the majority of non-nuclear countries needed to participate in its elaboration and become stakeholders. At the same time a full house was perhaps not the best way to forge agreement. Third, it was to have its own rules of working which created opportunities for open-ended dialogue and exploration. A tiered agenda allowed progress where possible and the absence of voting procedures, unlike the GA in New York, meant that the essential stakeholders found the comfort to persevere in a multilateral setting and were also less distracted by propaganda considerations. Finally, it enjoyed a high degree of personal commitment from the leaders of the three nuclear powers represented on it. The ENDC accordingly opened its meetings at the level of Foreign Ministers and the key delegations were led by senior and seasoned negotiators, including Arthur Dean for the U.S. and Valerian Zorin or Vasily Kuznetsov for the Soviet Union.293

On the negative side, despite the enhanced representative character of the ENDC, there was a significant gap in membership. De Gaulle’s France and Mao’s China were not present in the forum. De Gaulle explained France’s disassociation from the Conference in a letter to Khrushchev on 18 February 1962.294 He did not see how the participation of states that did not possess or were unlikely to possess nuclear weapons could lead to positive results.295 Nor did he see value in focusing on cessation of nuclear testing, the main demand of the non-aligned since Nehru put the issue on the General Assembly agenda in 1954. De

293 For an alternative view see Thomas Graham Jr., Disarmament Sketches, 245-246.
295 This sentiment lives on even today. Meetings of the P5 or P5 Plus are partly inspired by it.
Gaulle said, however, that he was ready to join talks among the four nuclear powers for banning and controlling all means of delivery of nuclear weapons. China, which was on the verge of producing nuclear weapons and had not even been invited to join the ENDC, similarly set the bar high by proposing a conference to abolish nuclear weapons. Thus, two of the future five NPT nuclear powers were not interested at this stage in multilateral disarmament negotiations blessed by the two superpowers.

Substantively, the deadlock on the core issue of the GCD plan resulted in pushing both sides in the direction of the measures on the periphery and in principle agreement “that as many restrictions as possible should be placed on the emergence of new members of the Atomic Club” multilaterally while some limits could be imposed bilaterally on their own nuclear competition. Non-proliferation was soon solidly on the agenda of the Geneva forum in the form of proposals on test ban, non-dissemination of nuclear weapons and transfer of fissionable material under safeguards. Programs of urgent measures placed before the Conference in 1964 by the two sides – the U.S. on January 21 and Soviet Union on January 28 – dealt almost exclusively with collateral measures with the exception perhaps of the Soviet proposal to eliminate all bomber aircraft. The abandonment of GCD plans in particular by the Soviet Union post-1963 was “a solid indication that the Soviets now accept the fact that armaments have moved definitely into the nuclear era, and that there is no simple and drastic way of putting the clock back.”

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297 Lall, 38.
298 ENDC/PV. 157, 11-12.
299 ENDC/PV. 160, 5-10.
300 Lall, 42.
### Table 3.3 Nuclear learning in the ENDC 1962-64

<table>
<thead>
<tr>
<th>Type of shift</th>
<th>Evidence of learning in ENDC</th>
<th>What was learnt? Or not learnt?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Abandonment of position</td>
<td>GCD plans abandoned by early 1964 after presentation of detailed proposals, clause-by-clause examination and some closing of gaps in position. Several collateral measures for Stage I picked up for separate pursuit (test ban, non-dissemination, ban on nuclear weapons in outer space).</td>
<td>No simple way to put the clock back on nuclear weapons and a tactical device (Agreed Principles) could not transcend strategic aspects of the arms race, which needed to be managed as a priority.</td>
</tr>
</tbody>
</table>
| 2. Policy compromise or adjustment/sharpening of concepts | A verifiable ban on testing in all 4 environments was not achievable; a limited test ban on atmospheric testing was. U.S. did not push hard enough for a comprehensive ban due to internal and external opposition but several aspects of verification clarified nationally and bilaterally; Soviet Union came to accept some type of on-site verification in principle. | There were political and non-proliferation gains from a ban on atmospheric testing without compromising nuclear deterrence.

Kennedy and Macmillan sent a joint message to Khrushchev on 6 February 1962 suggesting that the three leaders accept “a personal responsibility for directing the part to be played by our representatives in the forthcoming talks” and that their Foreign Ministers concert in advance of the opening of the talks.  
Khrushchev agreed and said in his letter of 10 February 1962 to Kennedy and the leaders of all other ENDC members that the new forum should have high level political direction and not be reduced to “debates between bureaucrats”. |
| 3. Development of new ideas and shared understanding | A standing negotiating forum with tiered dialogue in formal plenaries, meetings of the committee of the whole and informals facilitated bilateral contact and exchanges. A new bilateral-multilateral dynamic seen on collateral measures e.g. nuclear risk reduction, discussions in ENDC, tripartite and bilateral formats on test ban as well as discussions in the committee of the whole and bilaterally on the war propaganda resolution. | A limited membership forum with both nuclear and non-nuclear powers, with its own rules of procedure and independent of UN’s day to day politics can facilitate nuclear negotiations and maximise chances for breakthrough. |

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303 Dean (1966), 83, has a frank listing of the benefits of a PTBT.
Test ban memorandum by the 8 non-aligned influenced negotiating dynamics among the nuclear powers. Bridging proposals forced Cold War protagonists to think of compromises say on the issue of international control.

At the same time, such a forum can create an illusion of progress by containing pressure for negotiations while an arms race continues. Absence of France (de facto) and China (de jure) was a major lacunae.

Disarmament negotiations become less brittle when they involve less neutrals; their buy-in necessary for success of non-proliferation paradigm.

4. Putting into practice of policy compromises or new ideas and understandings

<table>
<thead>
<tr>
<th>Action</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot Line Agreement for direct communication at the level of heads of government agreed and readied for implementation through technical exchanges on June 20, 1963. Limited Test Ban Treaty signed in Moscow on August 5, 1963. Resolution Against the Placing of Nuclear Weapons in Space approved by UNGA on October 17, 1963.</td>
<td></td>
</tr>
<tr>
<td>Bonfire of bombers by the U.S. and Soviet Union under international inspection, a symbolic act, could not be agreed and carried out.</td>
<td></td>
</tr>
</tbody>
</table>

Conclusion

This chapter has described multilateral nuclear learning from 1945 to 1964. There were very few restraints on development of nuclear weapons during this period of intense ideological rivalry. Nuclear learning internally was concentrated in the policy sphere and was based on political and bureaucratic appreciation of the nature of nuclear weapons and their perceived political and military utility. Internationally, the most significant learning moments of the era were driven by technology. For example, the testing of multi-megaton thermonuclear devices first by the US, followed quickly by the Soviet Union made it clear to leaders on both sides that no sensible political objective could justify a full scale nuclear war. Eisenhower, the soldier-statesman, imbibed this lesson the best. As this realisation permeated the diplomatic sphere it also extended to a number of alarmed non-nuclear states, which began to use the young UN increasingly as a forum to discuss nuclear weapons. This learning had an important offshoot, which was reinforced by the Cuban missile crisis of 1963. If a full-scale nuclear war would be disastrous it was essential not only to maintain strict control nationally over nuclear weapons but it was also important to
ensure a degree of communication and engagement across international borders. Multilateral forums on disarmament and arms control fulfilled this need for engagement and acted as a safety net when bilateral communication flagged; engagement therein also spawned bilateral and trilateral nuclear learning (the 1963 Hot Line Agreement and the PTBT). Finally, this period saw the exhaustion and eclipse of the idea of general and complete disarmament. The UN Charter itself had downplayed GCD because of the experience of the Great War. Nuclear weapons brought it back for a while but learning could not be sustained despite three attempts in New York, London and Geneva. Nuclear learning would henceforth be largely about living with the bomb and not about living without it.

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In this new war, the enemy seeks weapons of mass destruction that would allow them to kill our people on an unprecedented scale. ..... We’re not going to allow mass murderers to gain access to the tools of mass destruction.

President George W. Bush 305

This Chapter traces the development of the idea of nuclear security. A historical survey of the evolution of nuclear threats, and measures adopted to address those threats, shows that nuclear security first gained prominence in the mid-1970s as physical protection of nuclear material and facilities against malicious acts by saboteurs and criminals. It was seen then as an adjunct to nuclear safeguards designed to prevent proliferation by states. The collapse of the Soviet Union played a decisive role in changing the earlier perception of nuclear security as a ‘lesser’ threat. It developed further as an independent construct once non-state actors demonstrated the intent and the capability to cause mass casualties in 2001. Programmes that started in the U.S. or were co-constructed with Russia played an important role in the consolidation of the idea of nuclear security just like the consolidation of the idea of nuclear nonproliferation in the 1960s.

The priority of control – 1950s-1960s

During the Cold War, the nuclear security threats that governments worried about were sabotage, theft, espionage or loss of control over nuclear weapons to a rogue commander. The nuclear security problem was not seen as distinct from the broader areas of command and control and non-proliferation. The closest in the 1950s and 1960s to what passes for nuclear security today was concerns about deliberate unauthorised action by

individuals that could cause a nuclear detonation.\textsuperscript{306} In 1958, an ex-Royal Air Force officer, Peter George, wrote a novel called \textit{Red Alert} that sold a quarter million copies in the U.S. alone. \textsuperscript{307} The novel describes a rogue American general who launches a nuclear attack on the Soviet Union. Disaster is averted in dramatic fashion when a hydrogen bomb dropped by the one bomber that gets through fails to explode. The novel so impressed RAND analyst Thomas Schelling that he bought and distributed 40 copies to colleagues. \textsuperscript{308} It also inspired two movies – \textit{Dr Strangeglove} and \textit{Fail-Safe} in the same year, 1964.

Concerns about accidents related to nuclear weapons led to a focused effort in this period to incorporate safety features into nuclear weapons, which also made unauthorised access difficult. John Foster at Lawrence Livermore, Harold Agnew at Los Alamos, and Bob Peurifoy and Bill Stevens at Sandia Laboratories were among the pioneers in these efforts that led by 1962 to an early version of the Permissive Action Links (PALs) that reduced the possibility of an unauthorised detonation by a saboteur or madman. \textsuperscript{309} Despite initial reluctance by the armed forces, PALs were adopted during the Kennedy Administration per National Security Action Memorandum 160 in 1962; additional efforts to enhance control such as the “secure container concept” followed. \textsuperscript{310} A scathing report to Kennedy from a December 1960 inspection tour of NATO facilities in Europe by a Congressional Joint Committee on Atomic Energy played an important role in security enhancements. The report highlighted lacunae in physical protection measures and NATO custody control of nuclear weapon systems at NATO bases in Europe.\textsuperscript{311}

\textsuperscript{306} Fred Charles Ikle in collaboration with Gerald J Aronson and Albert Madansky, \textit{On the Risk of an Accidental or Unauthorized Nuclear Detonation} (RAND RM-2251, October 15, 1958). Ikle’s study was one of the first to focus on the insider threat especially from individuals with psychiatric disorders as well as the political consequences of an accidental or unauthorized detonation. The study advocated the incorporation of technical safeguards such as ‘combination locks’ into nuclear weapons (the later ‘PALS’) and special selection and supervision procedures for persons handling nuclear weapons.

\textsuperscript{307} Peter Bryant (Peter George), \textit{Red Alert} (New York, Ace, 1958, 1st Edition).


As the Cold War arsenals mushroomed in the 1960s, civilian applications of nuclear power also expanded rapidly. Following Eisenhower’s Atoms for Peace speech of 8 December 1953, the Soviet Union and the U.S. competed in helping new nations set up nuclear energy programmes. From May 1955, when the U.S. concluded the first agreement for cooperation in the peaceful uses of atomic energy under the Atomic Energy Act of 1954 with Turkey, to 1959, 42 such agreements were concluded. The USSR concluded nuclear co-operation agreements with 26 countries by 1968. Such agreements included supply of research reactors and fuel, including High Enriched Uranium, for them. The first commercial nuclear power plant, a 5MW graphite moderated light water cooled reactor, was set up in Obninsk in the Soviet Union in 1954 and was followed by a British reactor in 1956 and an American reactor in 1957. There was a worldwide expansion in the number of facilities using nuclear material and the number of people working in such facilities. In the U.S., the Atomic Energy Act of 1954 introduced civilian uses into the charter of duties of the Atomic Energy Commission (AEC), which began to formulate regulations and licensing procedures for the safe operation of nuclear reactors.

The IAEA, in some ways the international projection of the U.S. AEC’s role on civil safeguards and standards, began to take shape largely as a Western project in view of the initial Soviet hostility to the idea. The post-Stalin Soviet Union joined the negotiations on the IAEA Statute in July 1955 weeks before the First Geneva Conference on Peaceful Uses of Atomic Energy from 8-20 August 1955. The Conference played an important role in promoting the peaceful uses of nuclear energy and international scientific cooperation through the IAEA for this purpose. In this new climate of internationalism the eight-nation (U.S., the UK, France, Australia, Canada, Belgium, South Africa and Portugal) negotiations on the IAEA statute were expanded in 1956 to include the USSR, Brazil, India and Czechoslovakia. Agreement was reached on the Statute, which codified the IAEA’s role as

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316 Fischer, 32.
a ‘receiver, distributor, broker and safeguarder of nuclear material’. \(^{318}\) Apart from elaborate provisions dealing with safeguards on fissionable material, the IAEA Statute also referred to establishment of standards of safety for protection of health and minimisation of danger to life and property, and to provide for the application of such standards. \(^{319}\)

However, the history of the IAEA or that of the four Geneva Conferences on the peaceful uses of atomic energy from 1955-1971 shows that nuclear security was not a distinct concept or even a distinct concern during the two decades after the Atoms for Peace speech. Concerns remained focused on control - through safeguards to ensure peaceful uses - and on safety hazards and accidents up to the early 1970s. This was true also of arms control both bilateral and multilateral. During the first ‘golden age’ of nuclear arms control from the negotiation of the PTBT in 1963 to the finalisation of the NPT in July 1968, it was the state actor alone that held centre stage. The NPT, which entered into force in 1970, did not specifically refer to the security of nuclear material and facilities. Article I obliges nuclear-weapon State Party to the Treaty not to transfer nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly, to “any recipient whatsoever” while Article II obliges non-nuclear-weapon State Party to the Treaty not to receive such transfers “from any transferor whatsoever”. \(^{320}\) It is possible that the treaty drafters thought that ‘recipient/transferor’ could cover non-state actors but it is more likely that they meant States whether party to the treaty or not.

Further, Article III requires the application of IAEA safeguards on all source or special fissionable material in all peaceful nuclear activities in non-nuclear-weapon States party to the Treaty. The focus again is on state activity pertinent to acquisition of nuclear weapons. Specifically, the intent of Article III was to prevent diversion by a state of nuclear material to military purposes and not its theft by an insider or an outsider. \(^{321}\) The text of the standard NPT safeguards agreement (INFCIRC/153), finalised by the Safeguards Committee of the

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\(^{319}\) Article II. A.6. of the IAEA Statute. Also relevant are Article XII.A.2. and Article XII.A.6. on observance of and compliance with health and safety measures.

\(^{320}\) Treaty on the Non-Proliferation of Nuclear Weapons, circulated as IAEA document INFCIRC/140.

IAEA in 1970, called for a system of accounting for and control of all nuclear material subject to safeguards. Each state was to determine how to establish and run this system, which was focused on control for the facilitation of safeguards and not nuclear security even though it would end up having a positive impact on the latter.

Nuclear security crystallises as physical protection in Vienna: 1972-1977

Before 1972, neither national systems nor international forums like the IAEA or the NPT had explicit requirements for physical security of material and facilities in peaceful use. Material and facilities on the strategic side were of course protected physically but against the actions of a hostile state. It was probably a mix of safety requirements and the need for material accounting for the purpose of preventing diversion domestically or during imports and exports that led to the first guidelines for physical protection of nuclear material. The IAEA came out with a booklet called “Recommendations for the Physical Protection of Nuclear Material” in June 1972 based on the work of a group of experts appointed by the Director General early that year. For three years, this booklet existed as a ‘Grey Book’, not even a formal IAEA document with an INFCIRC number. It became IAEA Document INFCIRC/225 in 1975 and since then has been revised five times in 1977, 1989, 1993, 1997 and 2011. It has always remained a guidance document even though the IAEA began to include its requirements for physical protection in some legally-binding bilateral safeguards agreements in the late 1970s.

In the U.S., increasing concerns over the overlap between the developmental and regulatory roles of the AEC among other things led the Congress to pass legislation to split the AEC in 1974 into the Energy Research & Development Administration (ERDA) focused on nuclear weapons related issues and the Nuclear Regulatory Commission (NRC) focused on nuclear safety. The Act created in the NRC the post of Director of Nuclear Material Safety

322 Para 7 of “The Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons” (INFCIRC/153).
323 It is not clear, however, if the guidelines were a reflection of the physical protection measures that the U.S. had already put in place or if they were a mélange of international experience. It is also not clear how much of a link there was with the emerging safeguards structure.
and Safeguards for discharging functions related to licensing and regulation involving all facilities and materials associated with the processing, transport, and handling of nuclear materials, including the provision and maintenance of ‘safeguards’ against threats, thefts, and sabotage of such licensed facilities, and materials. The post was also entrusted with the review of standards of safety and ‘safeguards’ as well as preparation of contingency plans for dealing with threats, thefts, and sabotage relating to special nuclear materials, high-level radioactive wastes and nuclear facilities resulting from all activities licensed under the Atomic Energy Act of 1954.\textsuperscript{324} The NRC began to strengthen regulatory requirements for what it called \textit{safeguarding} of nuclear material against theft, loss or diversion as well as ‘safeguards’ against criminal intrusion of nuclear facilities. In this context it formulated guidelines for transportation of nuclear and radiological material, for the physical protection of nuclear sites and for minimum quality standards for a nuclear facility’s security personnel.\textsuperscript{325}

The U.S. AEC’s split into the NRC and the increasing regulatory focus on ‘safeguards’\textsuperscript{326} happened at a time when existing public concerns about radiation safety and nuclear weapons related accidents were beginning to overlap with growing apprehension about the activities of terrorist groups, including the killings of Israeli athletes by Palestinian terrorists at the 1972 Munich Olympics.\textsuperscript{327} The 1974 Act called for assessing the need for and the feasibility of a security agency for the performance of the ‘safeguards’ function and a report to Congress on this within a year by the NRC. A bomb hoax in May 1974 in Boston when an extortionist threatened to detonate a nuclear bomb in Boston unless a $200,000 ransom was paid led the Ford Administration to set up the Nuclear Emergency Search Team (NEST) to respond to emergencies involving lost, stolen or diverted nuclear weapons and nuclear or radiological material.\textsuperscript{328} Personnel from AEC run nuclear weapons labs among others were assigned responsibility as part of NEST for “search and identification of lost or stolen nuclear weapons and special nuclear materials, bomb threats, and radiation dispersal

\textsuperscript{324} Sec. 204 of the Energy Reorganization Act, 1974.
\textsuperscript{325} “Improved nuclear security proposed”, \textit{Science News}, Vol. 112, No. 3 (Jul. 16, 1977), 38.
\textsuperscript{326} In quotes so as to distinguish this notion from that of IAEA safeguards.
\textsuperscript{327} The adoption in 1973 of the UN Convention on the Prevention and Punishment of Crimes against Internationally Protected Persons illustrates this renewed concern.
threats." Hand held and airborne detection systems as well as equipment to identify and disarm or disable clandestine devices involving nuclear or radioactive material were developed for the NEST teams.

1974 was also the year when journalist John McPhee’s book about the physicist and nuclear weapons designer Theodore Taylor was published. Taylor was in a minority of nuclear professionals who believed in the immediacy of a nuclear terrorism threat. He was convinced that a crude nuclear bomb could be easily assembled. He and McPhee went around several nuclear sites in the U.S. and listed gaps in nuclear security and nuclear material transportation. McPhee’s book, published first as an article in the New Yorker, also describes a thought experiment by Taylor about an improvised nuclear explosive device that could be built using commonly available industrial equipment and pilfered fissionable material. The book did for nuclear terrorism what Red Alert did for command and control issues a decade earlier i.e. make it a mainstream topic of concern.

Interestingly, Taylor worked in the late 1960s in Vienna as a consultant on safeguards to the IAEA. Following the adoption of the largely voluntary guidance contained in INFCIRC/225 in 1972, the IAEA began to study the need for a binding Convention on physical protection. The effort received a boost with Secretary of State Kissinger’s address to the UNGA of 23 September 1974 when he urged the IAEA to draft an International Convention for enhancing physical security against theft or diversion of nuclear material with specific standards for protecting materials in use, storage and transfer. The U.S. also highlighted the issue at the first NPT Review Conference in 1975; however, the NPT Review Conferences from 1975 onward have merely noted in passing the evolution of physical protection measures without playing any substantive role in knowledge construction on nuclear security.

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Outside the NPT, the guidelines of the Nuclear Suppliers Group (NSG) circulated as IAEA document INFCIRC/254 contain in Para 3 the requirement of ‘effective physical protection’ to prevent unauthorised use and handling of all nuclear material and facilities identified by the Group’s ‘trigger list’. The levels of protection were agreed by the suppliers taking into account international recommendations chiefly INFCIRC/225. While the implementation of physical protection measures was to be a national responsibility, the levels of protection on which those measures are based needed to be agreed between supplier and recipient. Like for some of the safeguards agreements of the 1970s, levels of physical protection identified in IAEA’s non-binding guidance became binding in the context of bilateral supply arrangements.

The idea of nuclear security was consolidated all but in name when the IAEA General Conference resolution of 26 September 1975 set out clearly for the first time the rationale for measures on physical protection of nuclear material. Preambular paragraphs b) and c) of the resolution (GC(XIX)/RES/328) state:

Conscious of the potential hazards to the health, safety and welfare of the public and to the environment that could arise from interference with nuclear facilities or the unauthorized use of nuclear materials as a result of acts of theft, vandalism, terrorism and hijacking,

Mindful of the urgent need to minimize the possibility of sabotage of nuclear facilities and of clandestine or overt theft or of unauthorized use of nuclear materials by assuring the physical protection of nuclear facilities and of nuclear materials during storage, use or transit, and

The resolution, while noting that physical protection measures were the responsibility of national authorities, urged IAEA member states to review and strengthen these measures to ensure that they are effective against the ‘full range of potential threats’ and endorsed the IAEA’s efforts to assist member states upon request and to keep the 1972 guidance document up to date. Then in June 1977, DG IAEA circulated a U.S. draft “Convention on the Physical Protection of Nuclear Facilities, Materials and Transports” to member states for their comments. A two-year negotiation 332 culminated on 28 October

332 The negotiation took place at the IAEA headquarters in Vienna in a Meeting of Governmental Representatives over four sessions— 31 October-10 November 1977, 10-20 April 1978, 5-16 February 1979 and
1979 in the Convention on the Physical Protection of Nuclear Material (CPPNM), which was opened for signature on 3 March 1980.

The Convention, which took eight years after the negotiations to enter into force in 1987, provided the first general framework for international cooperation on protection, recovery and return of stolen nuclear material i.e. all isotopes of uranium and plutonium in all chemical and physical forms. It also detailed for the first time undertakings on criminalisation of specific offences involving nuclear material as well as prosecution or extradition of alleged offenders and assistance in related criminal proceedings. With regard to standards for physical protection, its scope, however, remained narrowly focused on control and physical protection of nuclear material in international transport and it was not till an amendment was adopted in 2005 that the Convention’s obligations extended comprehensively to domestic transport.\(^{333}\) The Convention’s provisions on prior notification of expected international transfers and agreement on transfer of responsibility build on pre-existing requirements in safeguards agreements. The additionality is that exports or imports of nuclear material require assurances that the material will be protected at levels specified in Annex I to the Convention.\(^{334}\)

To sum up, the idea of nuclear security was born in this phase though it was called ‘physical protection’ in the context of the IAEA, the NPT and the NSG, and ‘safeguards’ in the context of U.S. domestic law and policy. Two public spheres of learning merged as this happened: pre-existing concerns about accidents and control related to nuclear weapons and newer concerns about interference with nuclear facilities or the misuse of nuclear material due to theft, vandalism, terrorism and hijacking (a ‘full range of threats’ as noted in the GC resolution of 26 September 1975). A group of international experts convened by the IAEA DG from 1972 onward played a key role in framing the voluntary guidance on physical protection contained in INFCIRC/225. The move to the policy sphere happened on the back

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\(^{334}\) INFCIRC/274/Rev.1., 1 May 1980.
of existing learning related to the IAEA’s role in nuclear safeguards and safety. The NSG guidelines related to physical protection introduced an explicit element of power into the equation, accelerating learning on physical protection of nuclear facilities and of nuclear material during storage, use or transit. The Energy Reorganization Act of 1974 played a similar role domestically in the U.S. The step up to the diplomatic sphere was consolidated with the CPPNM, which turned the guidance contained in INFCIRC/225 into a legally binding obligation for states party to the CPPNM but only in so far as international transport was concerned. The Convention, an initiative of the United States, sought to mirror U.S. national practice on physical protection internationally even though unlike IAEA safeguards, implementation of physical protection measures, remained a national responsibility. This aspect of learning on nuclear security has endured till date. So has the importance of U.S. leadership.

Nuclear security as a new form of ‘arms control’: 1991-1996

Thomas Schelling wrote in 1982 that, “Eventually we may need a domain of strategy for coping with these lesser nuclear threats, coming from either national governments or non-governmental organizations.” 335 At that time, however, he saw little use in distinguishing such a strategy from the broader non-proliferation strategy – “the best way to keep weapons and weapons-material out of the hands of non-governmental entities is to keep them out of the hands of national governments.” 336 When Nye postulated his five areas of bilateral nuclear learning in 1987, nuclear security was not one of them. This thinking began to shift with the collapse of the Soviet Union.

On 27 September 1991, a month or so after the 19-21 August 1991 coup attempt in


336 *Ibid.* The debate about one strategy or two persists; see: Daniel Byman, “Do Counterproliferation and Counterterrorism Go Together?” *Political Science Quarterly*, Vol. 122, No. 1 (Spring, 2007), 25-46. Byman’s answer is that in some cases they could but in other cases they are better pursued separately. Politics both domestic and international is a key intervening variable. While the George W. Bush administration saw the two strategies as one (Iraq for example), the Obama administration has sought to emphasise their distinctive nature (Iran and the NSS process). Similarly, counterterrorism and counterproliferation goals have been in tension with regard to Pakistan.
Moscow, President George H. W. Bush - in what came to be called Presidential Nuclear Initiatives or PNIs - announced the elimination of all ground-launched short range nuclear weapons and the withdrawal of all tactical nuclear weapons from surface ships and submarines. Thus all theatre nuclear weapons such as nuclear artillery shells were withdrawn from Europe for elimination by executive decision after quick consultations with key NATO allies including France, Germany and the U.K. This was a unilateral gesture meant to motivate the Soviet Union to do the same as its collapse sparked concerns about loss of control over nuclear weapons. Having spoken to both President Gorbachev (of the USSR) and President Yeltsin (of Russia), President George H.W. Bush specifically called upon the Soviet Union to reciprocate these measures in his speech. He also proposed joint technical cooperation on the safe and environmentally responsible storage, transportation, dismantling, and destruction of nuclear warheads; enhancement of arrangements for the physical security and safety of nuclear weapons and improvement of nuclear command and control arrangements to provide more protection against the unauthorised or accidental use of nuclear weapons.

While the speech by the U.S. President summarises well the concerns and the policy actions inspired by those concerns of summer 1991, it is worth underlining that by early September these concerns were shared by many other leaders in the G7, in particular President Mitterand of France. These concerns also went beyond the Executive Branch in the U.S. Former U.S. Senator Sam Nunn describes a meeting with President Gorbachev just after the latter’s release from house arrest during the coup. Nunn asked Gorbachev about the command and control of Soviet nuclear forces during the coup attempt and felt that Gorbachev’s answers were not convincing enough. This concern about ‘loose nukes’ intersected with Nunn’s longstanding concerns about weaknesses in command and control, especially of tactical nuclear weapons, in both the Soviet Union and the U.S. He teamed up with his fellow democrat Les Aspin, Chairman of the U.S. House Armed Services Committee, to propose redirecting some fiscal year 1992 defence funds to provide humanitarian and

338 Frederic Bozo, Mitterand, the End of Cold War, and German Unification (Berghahan Books, 2009, English-language edition), 382.
technical assistance to the Soviet Union for safe transportation, storage, and dismantling of nuclear weapons, retraining for Strategic Rocket Forces officers et cetera.

The first attempt failed but Nunn then joined forces with the Republican Richard Lugar, senior member of the Senate Foreign Relations Committee to champion nuclear security assistance to Russia.340 This coincided with the release of a study by a team of Harvard analysts led by Ashton Carter.341 The study provided analytical heft to the political arguments of Nunn and Lugar by detailing how the breakup of the Soviet Union posed a considerable proliferation threat and by outlining a “new form of ‘arms control’ to stop it: joint action by the two former Cold War opponents against the common danger”.342 Nuclear security was packaged as a new form of a traditional Cold War policy instrument for advancing national security. The study also brought more specificity to the general term ‘loose nukes’ by describing challenges related to security of weapons usable material and components using a broader notion of nuclear security familiar to practitioners today. Bernstein and Wood describe how a 19 November 1991 briefing on the study turned into an impromptu drafting session for what eventually became the Nunn-Lugar legislation adopted on November 25, and which President Bush signed into law on 12 December 1991, just as the Soviet Union began to finally dissolve on December 8.

This has to count as one of the quickest spirals up the nuclear learning curve from the public to the policy sphere. The initiative’s lucky run continued when the Democrat William Clinton was elected President in 1992 and three of Nunn-Lugar’s dramatis personae – Les Aspin, William Perry and Ashton Carter – were appointed as Secretary, Deputy Secretary and Assistant Secretary of Defence respectively.343 In terms of the conceptual model of this thesis, the learning embedded in the initiative got institutionalised through the application of systemic power. Carter began to implement and coordinate Nunn-Lugar

343 DoD Directive 5111.5 of 6 July 1993 appointed Carter as Assistant Secretary of Defence (Nuclear Security and Counterproliferation).
activities through the nuclear security and counterproliferation office using an initial funding of $400 million from the Pentagon’s Operations and Maintenance accounts.

The focus of the Nunn-Lugar program slowly expanded to take in measures to prevent unauthorised access to nuclear facilities, monitoring and detection of nuclear material, consolidation of material, border security measures, retraining and employment for former weapon scientists et cetera. Funding was also slowly placed on a more assured footing. The procedural device of a CODEL or Congressional Delegation to oversee monitoring allowed the program’s bipartisan leadership to engage the political leadership of the Newly Independent States (NIS) and overcome bureaucratic resistance. The parallel with the future Nuclear Security Summit process is evident.

At this stage while it is evident that nuclear security as a new and urgent form of ‘arms control’ had been ‘learnt’ in the U.S. policy establishment it is worth asking if despite the initial post-1991 spurt in learning within the G7 as well as in the Russia-G7 context nuclear security learning had seeped across bilaterally to Russia and broadly to other nations in a sustainable manner? Nunn-Lugar continued to have problems of access to Russian nuclear sites. This U.S. DOD run initiative and related initiatives like the Nuclear Cities Initiative (NCI), Initiatives for Proliferation Prevention (IPP), and the International Science and Technology Centre (ISTC) often got bogged down in bureaucratic turf battles, Russian suspicions, and disputes over funding and the extent of private sector participation.\textsuperscript{344} As the Russian nuclear establishment recovered from the chaos and economic decline associated with the collapse of the Soviet Union, it began to resent U.S. assistance and conditionalities for such assistance tagged on by a sometimes equally resentful U.S. Congress.\textsuperscript{345} Programmes underpinned by economic incentives fared better, the prime example being the HEU Purchase Agreement of 1993 whereby excess Russian weapons grade HEU was downblended and shipped to the U.S. for use in nuclear power


\textsuperscript{345} ibid.
This became a powerfully evocative way of cooperatively reducing a nuclear security threat while promoting the peaceful use of nuclear energy.

Internationally, the U.S. could claim some success in convincing G7 partners and other allies to share some of the assistance burden. The ISTC was able to attract additional funding from EU, Japan, Norway and the ROK. This presaged the future Global Partnership of the G8. As journalistic accounts - some fanciful others evidence based - of theft and smuggling of nuclear material from the former Soviet Union and bordering countries spread, the IAEA set up in 1995 its Incident and Trafficking Database (ITDB). The exclusively domestic focus of the CPPNM began to be modified, even if voluntarily, in international practice. The decision to set up the ITDB was taken pursuant to a September 1994 resolution of the General Conference of the IAEA ‘Measures against the illicit trafficking of nuclear material’. The resolution asked the DG IAEA to intensify IAEA activities supporting member states in combating illicit trafficking and to prepare proposals on data related to incidents of illicit trafficking and the field of physical protection of nuclear material. The resolution is a significant landmark akin to the 1975 GC resolution on physical protection and the IAEA’s highest political decision-making body has been adopting such a resolution every year since 1994.

The ITDB began to record incidents of illicit trafficking of nuclear and other radioactive material based on information provided voluntarily to it by IAEA member states and international organisations such as Interpol. These incidents range from illegal possession, attempted sale and smuggling to unauthorised disposal of material and discovery of orphaned radioactive sources, technically speaking ‘material outside of regulatory control’. The IAEA Secretariat started to analyse trends in illicit trafficking and identify characteristics that could help prevent the misuse of material. In parallel, a 1995 Conference on Nuclear Smuggling at the Lawrence Livermore National Laboratory (LLNL) led to the emergence of the G8’s Nuclear Smuggling ITWG, which has since been spearheaded by LLNL and the Joint Research Centre of the Institute for Transuranium Elements at

Karlsruhe in Germany.\textsuperscript{348} The ITWG exploited the relatively less political and more scientific nature of the IAEA’s work to inject ideas like nuclear forensics into the mainstream of nuclear security discussions in the Agency.

While multilateral knowledge construction on nuclear security progressed in technical and exclusive forums, the political forums for nuclear dialogue remained skeptical of the need to focus distinctly on nuclear security. Further, as the name of the office headed by Ashton Carter suggests, counterproliferation and nuclear security were still seen together and the former still trumped the latter. This was particularly so with the problem of nuclear weapons stationed in the Soviet successor states of Ukraine, Belarus and Kazakhstan. The challenge of coaxing these countries into joining the NPT as non-nuclear weapon states and withdrawing or dismantling the nuclear weapons capabilities on their territory enveloped the nuclear security problem till 1994. In other words, nuclear security learning still remained masked as part of broader learning on nuclear control and nonproliferation.

Decision 2 on Principles and objectives for nuclear non-proliferation and disarmament of the 1995 NPT Review and Extension Conference contains no specific and distinct reference to nuclear security except noting in its para 18 on nuclear safety and related measures that all states should observe standards and guidelines in nuclear materials accounting, physical protection and transport of nuclear material.\textsuperscript{349}

At the UN, the negotiation of an International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT) had been recommended by the UNGA, on the basis of a report by the UN Secretary General, in 1996 in order to supplement the existing international instruments related to international terrorism.\textsuperscript{350} Negotiations started in February 1998 on the basis of a draft text proposed by Russia (in 1997) in the Ad Hoc Committee of the 6\textsuperscript{th} Committee of the UNGA set up by resolution 51/210 in 1996 with the participation of the IAEA. Russia presented the draft as a ‘pre-emptive instrument’ and as a

\textsuperscript{348} This was the name used for the Group from 1995 till 2010 when it began to be called the Nuclear Forensics International Trafficking Working Group S Niemeyer & L Koch, \textit{Historical Evolution: A Technical Viewpoint}, IAEA-CN-218/117, paper presented at the International Conference on Advances in Nuclear Forensics: Countering the Evolving Threat of Nuclear and Other Radioactive Material out of Regulatory Control, 7-10 July 2014, Vienna.

\textsuperscript{349} NPT/CONF. 1995/32 (Part 1)

\textsuperscript{350} Resolution A/51/210 of 17 December 1996.
cooperative alternative to unilateral measures against terrorism.\textsuperscript{351} Russia was driven equally by the desire to distinguish itself politically from the U.S. approach to terrorism and by genuine concerns about the threat posed by radical groups such as the Chechens who had shown interest in the use of radioactive sources for terror attacks. It was also keen to present a broader set of concerns in contrast to the U.S. focus on loose nukes in the former Soviet space.

While there was broad measure of support for the value-add presented by the draft, some states felt that the issue could still be handled by strengthening one or the other of two existing instruments— the 1980 CPPNM and the 1997 Convention on Terrorist Bombings. Some among the Non-Aligned Movement such as Egypt and Pakistan expressed concern about the language in the Preamble, Article 1 (Definitions) and Article 4 (Scope). The negotiations meandered till the 9/11 attacks due to lack of interest from key countries such as the U.S. and lukewarm support from the IAEA, which had concerns regarding the Convention’s possible overlap with CPPNM.

The partial learning on nuclear security in the mid-1990s is captured nicely in the outcome of the Moscow Summit on Nuclear Safety and Security of 20 April 1996.\textsuperscript{352} The Declaration places the Summit in the context of the end of the Cold War and political and economic reforms in Russia leading to possibilities for cooperation in the fields of nuclear safety and security. For the first time at the level of a Summit, there was a specific focus on the security of all nuclear materials, including material resulting from the dismantling of nuclear weapons, and a specific programme on preventing and combating illicit trafficking in nuclear material was agreed. This of course presages the NSS process but with one crucial difference: issues of nuclear nonproliferation and disarmament, including the NPT, CTBT and FMCT were treated as part of a larger constellation of nuclear issues at the Summit while they would be consciously kept out in the NSS. An important aspect of the Moscow Summit was the underlining of the joint Russia-U.S. lead on nuclear security, similar to the parallel but coordinated approach to the NPT in the 1960s.\textsuperscript{353}

\textsuperscript{351} Statement to the Ad Hoc Committee by Sergey V Lavrov, 11 November 1998.
\textsuperscript{352} http://www.g8.utoronto.ca/summit/1996moscow/declaration.html accessed on 14 May 2014.
\textsuperscript{353} The idea continued into the joint co-chairing of the Global Initiative to Combat Nuclear Terrorism (GICNT) set up in 2006.
To sum up, the term nuclear security was born in this phase.\textsuperscript{354} A dramatic event – the collapse of the Soviet Union - seeded rapid learning on nuclear security. The policy space expanded with the participation of academics (Carter study) and parliamentarians (Nunn-Lugar), which drove learning from the public to the policy sphere. The rebranding of physical protection and related issues as ‘nuclear security’, its positioning in the policy space as a ‘new form of arms control’, which recalled the cooperative approach to nonproliferation of the 1960s, and the conjunction with the insecurities in the post-Soviet Union geography widened the international learning channels beyond the IAEA’s physical protection forums of the previous phase (1972-77). New technical forums like the ITWG and new channels of communication like the ITDB began to ‘routinise’ nuclear security measures and cooperation in Vienna. A new learning channel was created at the UN in New York with the commencement of negotiations on the ICSANT even though learning was slow as the established fields of international law on terrorism (in New York) and of physical protection of nuclear material (in Vienna) resisted a merger. The 1996 Moscow Summit and the Nunn-Lugar Congressional Delegation (Codel) meetings with the leaders of the former Soviet republics presaged leaders-driven nuclear security forums of the future. High level political intention and the related publicity helped enhance funding and legitimacy. Overall, a distinct learning spiral took shape connecting the public sphere visibly and sustainably to the international sphere through an expanded policy sphere. The significant learning of this phase is captured in documents such as the Nunn-Lugar Act of 1991, the IAEA General Conference Resolution of 1994 and the Moscow Summit Declaration of 1996.

Mass terrorism becomes reality: 2001-2006

The 11 September 2001 attacks on the U.S. can be considered the third inflection phase for nuclear security (after 1972-77 and 1991-96). Quite apart from forcing a rethink about the extent to which terrorists could go to inflict mass casualties, the attacks led to a

\textsuperscript{354} In the U.S. the term moved from the public sphere to the political sphere with the creation of the new post of ASD (Nuclear Security and Counterproliferation) in 1993. It entered the diplomatic sphere in 1996 with the Moscow Summit.
renewed focus on the intentions and capabilities of groups such as Al Qaeda which had previously shown interest in weapons of mass destruction. The conflation of the 9/11 attacks with the Anthrax attacks in the U.S. spread fear that the next attack might involve nuclear material or facilities. Nuclear regulators and facilities scrambled to update physical security measures and factor in, for example, the possibility of an aircraft or an explosives laden boat or truck ramming into a nuclear facility or an IND being smuggled into a port through a container. In April 2002, the U.S. AEC created the office of Nuclear Security and Incident Response to serve as the focal point for AEC’s nuclear security activities. The US NRC began to require upgraded nuclear security measures such as Design Basis Threat (DBT) and force-on-force security training. In June 2002 at the Kananaskis Summit in Canada, the G8 launched the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction; the G8 also committed to raise US $ 20 billion for this. Funding for IAEA’s nuclear security budget went up thirty-times from a measly US $ 1 million in a few months. The IAEA also set up the Nuclear Security Fund (NSF) in 2002 to garner and channel voluntary funding for its nuclear security programmes. Further, the arms control sceptical George W. Bush Administration gave up its initial suspicion of the Clinton era cooperative threat reduction programmes with Russia and began to restore flagging funding for them.

Internationally, there was a deliberate and selective focus on states that could assist non-state actors in obtaining material for dirty bombs or INDs and help them execute an attack. Saddam Hussein’s Iraq became the public focus of this imagined nexus in 2002-3 even as information began to emerge of a more real and insidious threat that had been spreading out from Pakistan to DPRK, Iran and Libya since the late 1980s. The clandestine proliferation activity led by A Q. Khan eerily resembled some of Ted Taylor’s thought experiments. A network of companies and individuals in more than thirty countries put together uranium enrichment centrifuges and parts, shipped them around and collected payments, and threw in nuclear weapons designs almost on a whim to preferred

customers.\footnote{ElBaradei describes how the Libyan deputy prime minister of science and technology was given two white shopping bags with the designs for a nuclear weapon by A Q Khan with the remarks “You might need this in the future.”} Between the state and the isolated individual or group was the network, and international efforts at safeguards and control had missed out completely on this meso-level source of nuclear insecurity. National and international organisations scrambled to plug the gap.

A Q Khan’s proliferation activities highlighted a particular gap in WMD security and non-proliferation, namely absence of restrictions on trade in ‘related material’ – material, equipment, parts and components, knowhow and technology – that could help a determined state or non-state actor develop and deliver a nuclear weapon or device piece by piece. None of the existing treaties covered such items nor were they controlled effectively by \textit{ad hoc} export control regimes such as the NSG. They were slipping through gaps in trade controls. Even when the states concerned had information about such trade, they lacked the authority to stop or interdict shipments. Post 9/11 the U.S. took a decision that a legally-binding international agreement would take too long and would not deliver the robust standard they were looking for. Instead it put together a ‘coalition of the willing’ – a Core Group of 11 participants – and announced the Proliferation Security Initiative (PSI) through a speech by President George W. Bush in Krakow, Poland on 31 May 2003. The six PSI interdiction principles announced on 4 September 2003 contain a basic commitment to undertake “effective measures” for interdicting the transfer or transport of WMD, their delivery systems, and “related materials” to and from “states and non-state actors of proliferation concern”.\footnote{Statement of Interdiction Principles, White House Fact Sheet, September 4, 2003 available on https://www.state.gov/t/isn/c27726.htm} The non-state actor was now firmly at the same level of concern as states interested in developing nuclear weapons. Further, albeit controversially, a nonbinding voluntary arrangement to fill gaps in legal norms related to nuclear security had come into being.\footnote{Emma Belcher, \textit{The Proliferation Security Initiative Lessons for Using Nonbinding Agreements}, Working Paper, Council on Foreign Relations, July 2011.}

Multilaterally, the most significant response post 9/11 was the UN Security Council Resolution 1540 adopted on 28 April 2004 under Chapter VII of the UN Charter, which
makes it binding on all member states of the UN.\[^{359}\] In a debate on 22 April 2004 that preceded the adoption of the resolution, nearly a third of the UN member states spoke on the draft text.\[^{360}\] While hardly anyone questioned the intent of the resolution, a number of speakers expressed concerns about its impact on existing treaties, the priority of nuclear disarmament, national sovereignty, and established processes of international law making. Pakistan said that acquisition and use of WMD by non-state actors was much more difficult and much less likely; the existing treaty regime could address the risk while the proposed Committee for follow-up could end up harassing states. In contrast, Russia, one of the co-sponsors with U.S. and France, said that they were not seeking to supersede global disarmament and non-proliferation treaties and the resolution highlighted the evolution of international cooperation in the non-proliferation field. Many others justified the resolution as an exceptional measure designed to plug gaps in the existing treaty regimes and to address a clear and present danger. Canada articulated the objective succinctly, namely, to criminalise (through domestic law) the trafficking of weapons of mass destruction in the light of a new security environment; Republic of Korea captured another important related intent: a universal system of export controls (going beyond regimes such as the NSG) to prevent illicit trafficking in sensitive items and technologies.\[^{361}\]

Resolution 1540 adopted eventually by consensus captures and codifies some important dimensions of international learning on nuclear security. Notably, preambular paragraph 8 expresses grave concern at the risk that non-state actors may acquire, develop, traffic in or use nuclear weapons and paragraph 9 terms the threat of illicit trafficking in nuclear weapons as adding a new dimension to the issue of proliferation of such weapons. Operative paragraph 1 closes the loophole of NPT’s Article I by demanding that States refrain from providing any form of support to non-state actors that attempt to develop, acquire, manufacture, possess, transport, transfer or use nuclear weapons. Operative paragraphs 2 and 3 close the gaps in NPT Articles I, II and III on national laws and measures to prevent the proliferation of nuclear weapons, including by establishing controls over related materials. In addition, Operative paragraph 2 aims to plug the gaps in the IAEA-

\[^{359}\] Even though a UN General Assembly resolution “Measures to prevent terrorists from acquiring weapons of mass destruction” tabled by India had already been adopted in 2002 by consensus.
centered legal regimes, notably the CPPNM, with regard to accounting and physical protection of nuclear items as well as on border controls and law enforcement efforts to detect, deter, prevent and combat illicit trafficking and brokering in such items.\textsuperscript{362}

In the UNGA, in addition to India’s 2002 non-binding resolution on Measures to prevent terrorists from acquiring WMD\textsuperscript{363}, negotiations on the ICSANT picked up steam. A key reason was the changed attitude of the U.S., which was focused earlier on other instruments and agencies for combating nuclear terrorism.\textsuperscript{364} When the Working Group negotiating the text met in October 2001 there was a new urgency. A number of countries (Cuba, Egypt, Pakistan and the U.S.) withdrew their amendments to the existing text and the Convention was adopted by the UNGA on 13 April 2005.

The Convention embodies significant learning on nuclear security, embedding nuclear terrorism solidly in the web of international legal instruments on terrorism and using a broader definition of nuclear material and facilities than the CPPNM, which is restricted solely to civilian material and facilities. The Convention brings more specificity to the nuclear terrorism threat by defining a ‘device’ as any nuclear explosive device or any radioactive material dispersal or radiation-emitting device (Article 1). In its Article 2, it defines and criminalises offences related to nuclear terrorism. The Convention obliges States to establish jurisdiction over these offenses, investigate them and prosecute offenders or extradite them (Articles 5, 6, 9, 10, 11 and 13). It also provides for several measures of cooperation, including return of material or devices seized by a state for whom it is not lawful to possess them (Articles 7, 14, 18). The supporters of the ICSANT initiative felt that the UN was the right home for the text since the IAEA Statute prevented the Agency from getting into military material and facilities. While this is so, others worried that the text would entrench possession and use of nuclear weapons, including the distinction between nuclear and non-nuclear weapon states. This debate, which became prominent in the NSS process as the ‘comprehensiveness’ issue after the 2012 Seoul Summit, is still unresolved.

If forums in New York sired UNSCR 1540 and ICSANT in the post 9/11 phase, the IAEA in Vienna served as venue for strengthening the only pre-existing legal pillar of nuclear security - the 1987 CPPNM. However, 9/11 does not seem to have been a significant factor in this development. After it concluded an internal review of the CPPNM in 1997, the U.S. had begun to re-advocate an expansion in the scope of the Convention to include domestic transport and use. In November 1998, Secretary of State Madeleine Albright wrote to the states parties urging that an experts meeting be convened under IAEA auspices to consider specific amendments to the Convention. The letter placed the CPPNM in the context of the “treaty-based nonproliferation framework” and called physical protection measures “the first line of defence against the illicit acquisition of materials for nuclear weapons”.365 However, the U.S. move to achieve better conformity between the provisions of the CPPNM and the evolved norms for physical protection embedded specifically in INFCIRC/225 faced resistance from a large number of states with significant nuclear activities including U.S. allies such as the UK and Germany.366 A significant substantive hurdle was the U.S. push for international review of physical protection measures, which was also to resurface later in the NSS process in 2013 as the idea of ‘building international confidence’ in nuclear security measures.

In 1999, the U.S. took a less ambitious approach to strengthening the international physical protection regime and refocused its proposals on extending the scope of the Convention to address nuclear material in domestic use, storage and transport as well as nuclear facilities.367 Drafting work started in an Open-Ended Group of Legal and Technical Experts in September 2001 and the Group’s report of March 2003 formed the basis for a set of amendments circulated by a group of 24 States Parties in July 2004.368 An Amendment Conference deliberated these amendments from 4-8 July 2005 and adopted by consensus

365 Letter by Secretary Albright to counterparts from States party to the CPPNM, November 1998.
366 “Note from the United Kingdom, France, Germany, Belgium and Sweden”, Annex 2.
367 “Additional Views of the United States of America on Amending the Convention on the Physical Protection of Nuclear Material”, Working Paper 5 of the Informal Open-Ended Expert Meeting to discuss whether there is a Need to Revise the Convention on the Physical Protection of Nuclear Material. This Group of experts from 41 member States was led by Miroslav Gregoric of Slovenia.
368 Report by the IAEA Director General, GOV/INF/2005/10-GC(49)INF/6 of 6 September 2005.
the Amendment to the CPPNM, which was to be known post-Amendment as the Convention on the Physical Protection of Nuclear Material and Nuclear Facilities.\textsuperscript{369}

The Amendment, in force as of May 2016, brings in nine new paragraphs to the preamble to clarify the purpose and intent of the Convention. Physical protection is stated for the first time to be of vital importance for the protection of public health, safety, the environment and national and international security. It is also seen as playing an important role in supporting nuclear non-proliferation and counter-terrorism objectives. While the stated desire is to strengthen worldwide through the Convention the physical protection of nuclear material and nuclear facilities used for peaceful purposes, the amended Preamble also refers to the effective physical protection of nuclear material and nuclear facilities used for military purposes, recognising that such protection is a responsibility of the State possessing such nuclear material and nuclear facilities.\textsuperscript{370} The understanding that such material and facilities are and will continue to be accorded stringent physical protection is stated as well.

The Amendment incorporates twelve Fundamental Principles of physical protection into Article 2A. These include the principle of responsibility for physical protection within a State resting entirely with that State. The Amendment strengthens the role of IAEA in information sharing and international cooperation; it expands the scope of unlawful acts by including the transport of nuclear material into or out of a State without lawful authority as well as an act directed against a nuclear facility or act interfering with its operation when such an act is likely to cause death, serious injury or substantial damage to property or the environment. Activities of criminal or other groups are also brought into the ambit of the Convention. These changes reflect the experience of the international community since the entry into force of the CPPNM in 1987 with illicit activities involving nuclear material.

As the legal pillars of nuclear security were being strengthened in the post-9/11 phase, it became evident that no single existing forum was able to take in all the subject disciplines involved in the practice of nuclear security. A standing forum focused on nuclear

\textsuperscript{369} Ibid. Final Act and Para 1 of the Amendment.
\textsuperscript{370} Ibid. Para 2 of the Amendment.
security alone was needed. The first attempt at creating such a forum was the Global Initiative to Combat Nuclear Terrorism (GICNT) announced jointly by President Putin and President George W. Bush in Saint Petersburg on 15 July 2006.³⁷¹ The GICNT followed the template used for the PSI – a voluntary coalition of the willing, a statement of principles rather than binding legal commitments, and a focus on practical cooperation. However, there were important differences that reflected the learning of the intervening years. Russia was made a co-chair of the Initiative with the U.S. and international agencies such as the IAEA, Interpol and the UN Office on Drugs and Crime (UNODC) were brought in as observers. The criteria for participation were kept simple and included an active commitment to combat nuclear terrorism and an endorsement of the Statement of Principles.³⁷² The GICNT has grown from 13 participants to 88, including China, India, and Pakistan, which are not members of PSI, and has conducted more than 90 multilateral events, including training exercises.³⁷³ Under the Co-chairs it now has an Implementation and Assessment Group (IAG) and the focus is very much on developing national capabilities and building the habits of international cooperation on detecting, preventing, deterring and responding to nuclear security incidents. Accordingly, the IAG has three Working Groups on Detection, Nuclear Forensics and Response and Mitigation.

To sum up, in the post 9/11 and A Q Khan phase, nuclear security could no longer be masked by issues of nuclear nonproliferation and control on the one hand and issues related to conventional terrorism on the other. It had to be addressed as an issue on its own. Further, the non-state actor nexus with state programmes required that deterrence against nuclear terrorism extend selectively to states too. How to deter terrorists from attacking nuclear facilities or using nuclear and radiological material for terror attacks was an old dilemma; in the nuclear forensics and smuggling context attribution and successful prosecution were seen as strengthening deterrence against nuclear terrorism. How to deter states from undermining nuclear security was the new challenge. The August 1998 U.S. attacks on terrorist training camps in Afghanistan and on the pharmaceutical factory in Sudan were directed both against a non-state actor and a state and can be seen as both preventive and deterrent (through punishment) in character. However, the overhang in

³⁷³ Data from GICNT’s official website www.gicnt.org
1998 was very much that of conventional terrorist attacks. With 9/11 and Iraq, this changed irreversibly.\textsuperscript{374}

9/11 also ensured that the learning spiral built up in the post-1991 years became a durable structure. This was particularly true with the consolidation of the legal tripod of nuclear security – 1540, Amended CPPNM and ICSANT. Al Qaeda’s attacks on the U.S. demonstrated that some non-state actors could have both the intention and the reach to use nuclear material and facilities to inflict mass casualties and panic. A Q Khan’s proliferation activity and the links of a few other Pakistani scientists with Al Qaeda underlined the danger that non-state actors could reach into some state structures for nuclear terrorism related material. Further, it became apparent that traditional forums for crafting guidelines and legal instruments for pursuing nuclear security (in Vienna and the UNGA) would not suffice and a new form of flexible institution with willing partners was needed.

It also became important to bring together a range of policy actors, including from law enforcement and intelligence, in these forums to enhance nuclear security cooperation. This was the rationale that led to the PSI in 2004 and the GICNT in 2006. It is worth recalling that this inter-disciplinary aspect was foreseen domestically in the U.S. when the NEST was set up but seeped across to other nations due to work in the IAEA on illicit trafficking and then became institutionalised in the PSI and GICNT. Most importantly, in terms of the conceptual framework of this thesis, both episodic and systemic power was brought to bear during this phase in a series of forums – G8, UNGA, UN Security Council, IAEA, Interpol and regional organisations - to legitimise and mainstream nuclear security work.

\textsuperscript{374} For evidence, see statement by U.S. President George W. Bush on DPRK nuclear test of October 9, 2006 “The transfer of nuclear weapons or material by North Korea to states or non-state entities would be considered a grave threat to the United States, and we would hold North Korea fully accountable of the consequences of such action.”
Table 4.1: Nuclear Security: Evolution of an idea

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<th>Phase 1: 1972-1977</th>
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<td>• Energy Reorganization Act in the U.S.</td>
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<td>• Drafting of IAEA Guidance on Physical Protection;</td>
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<td>• Drafting of CPNNM at the IAEA.</td>
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<td>• Control problem meets terrorism concerns; Munich attacks; Book by Ted Taylor;</td>
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<td>• Nunn-Lugar Act;</td>
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<td>• HEU Purchase Agreement Russia-U.S.; Moscow Summit</td>
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<th>Phase 3: 2001-2006</th>
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<td>• 9/11; Catastrophic terrorism becomes reality; Al Qaeda interest in WMD;</td>
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Chapter 5

The 2010 Nuclear Security Summit:
Realising a forum for nuclear learning

The preceding Chapter described the history of the idea of nuclear security. This Chapter describes the practice of nuclear security in a new forum – the Nuclear Security Summit. The challenge of multilateralising an idea framed in a certain manner by its original proponents in the presence of contending ways of framing that idea comes alive in this survey.

The idea of a summit-level process focused on nuclear security came from President Obama himself. U.S. leadership was crucial for buy-in by the other participants many of whom were sceptical or even suspicious of U.S. intentions at the start. Apart from summoning political will across continents for a global focus on nuclear security, forging a uniform appreciation of the sources of the nuclear security threat was a major challenge. In this context, the goal of securing all vulnerable nuclear material in 4 years was set. A third substantive challenge for the inaugural Summit was keeping the nuclear security discussion insulated from the larger universe of nuclear issues. Process wise, the Sherpas’ meetings turned out to be an effective way of advancing nuclear learning by widening the circle of stakeholders within the participating nations and by helping diffuse good practices across them.375

The learning in the birth of the NSS

Barack Obama’s first foreign tour as senator was with Republican Senator Lugar in October 2005 when they together visited sites in Russia, Ukraine and Azerbaijan related to

375 Sherpas are personal representatives of heads of state/government who prepare diplomatic summits for their leaders just like the Nepalese Sherpas help mountaineers reach the top of Himalayas.
the nuclear and biological weapons security efforts under the Nunn-Lugar programme.\textsuperscript{376} In 2006, he co-sponsored with Lugar a Senate bill that authorised assistance to foreign countries to prevent the proliferation of weapons of mass destruction as well as advanced conventional weapons. Its provisions were made part of a House Bill that passed in January 2007.\textsuperscript{377} During the presidential campaign, he asserted that for him the single most important national security threat was nuclear weapons falling into the hands of terrorists and he underlined his bipartisan effort with Lugar in carrying forward the legacy of Nunn-Lugar. \textsuperscript{378} Thus, despite his successful portrayal of himself as the anti-thesis of his predecessor on most international issues, he showed remarkable continuity with George W. Bush on the idea of nuclear security.

The distinction lay perhaps in his emphasis on a leaders-led political approach to what was till then mostly a technical, almost obscure subject. The Kananaskis G8 Summit of 2002 and the Moscow Summit of 1996 can of course be seen as precursors to the NSS. The difference is that unlike these previous summits the NSS came to be narrowly focused on nuclear security and not nuclear security as part of the larger universe of nuclear arms control and non-proliferation.\textsuperscript{379} Further, it expanded the geographical focus on nuclear security beyond the former Soviet Union. Finally, it sought to position itself as a ‘process’ and not a one-shot event. In his Prague speech of 5 April 2009, President Obama said:

\textit{So, finally, we must ensure that terrorists never acquire a nuclear weapon. This is the most immediate and extreme threat to global security. One terrorist with one nuclear weapon could unleash massive destruction. Al Qaeda has said it seeks a bomb and that it would have no problem with using it. And we know that there is unsecured nuclear material across the globe. To protect our people, we must act with a sense of purpose without delay. So today I am announcing a new international effort to secure all vulnerable nuclear material around the world within four years…… Because


\textsuperscript{377} Introduced in the Senate by Obama on 2 August 2007 as a Bill “To provide for sustained United States leadership in a cooperative global effort to prevent nuclear terrorism, reduce global nuclear arsenals, stop the spread of nuclear weapons and related material and technology, and support the responsible and peaceful use of nuclear technology.” S. 1977 (110th): Nuclear Weapons Threat Reduction Act of 2007.

\textsuperscript{378} For example, Speech to the Chicago Council on Global Affairs, 23 April 2007 available on https://my.barackobama.com/page/content/fpccga/

\textsuperscript{379} The G8 Global Partnership addressed broader issues of non-proliferation, including chemical and biological weapons proliferation, and not just nuclear security. See: Alan Heyes, Wyn Q. Bowen and Hugh Chalmers, The Global Partnership against WMD: Success and Shortcomings of G8 Threat Reduction, The Whitehall Papers, RUSI, WHP 76, 19 October 2011.
this threat will be lasting, we should come together to turn efforts such as the Proliferation Security Initiative and the Global Initiative to Combat Nuclear Terrorism into durable international institutions. And we should start by having a Global Summit on Nuclear Security that the United States will host within the next year.  

According to Gary Samore, the first U.S. Sherpa for the NSS, the idea of having a Summit on nuclear security came directly from President Obama, something he discussed in his campaign speeches. When he came to office, he wanted this campaign commitment to be implemented. However, there was very little specific guidance when Samore started work in February 2009 at the White House. A plan was drafted for approval by the President and key cabinet officials, especially the Secretaries of State and Energy, and the focus from the beginning was on practical steps by a smaller group of countries with significant nuclear facilities and programs. A UN-style meeting was consciously ruled out.

Further, although President Obama had a broad and ambitious arms control agenda, the NSS was kept apart in tactical terms from that agenda. “From the very beginning we saw it (the NSS) as focused on the very narrow issue of preventing nuclear terrorism. And we recognized that in order to make that effective we had to isolate or insulate the NSS from the other outstanding issues - nuclear energy, nuclear disarmament and nuclear nonproliferation. Because we knew that if we tried to mix those other issues with the more technical, narrower issue of nuclear security it would completely defeat the purpose of the Nuclear Security Summit.” Samore takes some credit for keeping the focus of the NSS on the issue “it was invented for, which is to prevent nuclear terrorism” but admits freely that the Summit process has never been fully successful in keeping other nuclear issues outside of the room and it has progressively become more difficult to finalise the Summit Communiqué because of these issues “in part that is because we have made so little progress (on these other elements)”. While Gary Samore sees the success of the NSS process as predicated on keeping overlap with broader issues of nuclear disarmament and non-proliferation to the minimum possible, another influential Sherpa and practitioner sees both safeguards and physical protection as manifestations of the spread of bomb

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380 Remarks by President Barack Obama in Prague As Delivered, Office of the Press Secretary, The White House, April 5, 2009.
381 Interview 2.3.
382 Interview 2.1.
technology and argues for a high degree of overlap. “Early on in the NSS process, we thought about how to factor safeguards in. There was a debate and some people said that safeguards are not about taking stuff out. The NSS process has separated them a bit but the overlap remains. My advice to the U.S. as it takes on the lead for 2016 is that they should bring the overlap back.”

The ‘now you see it, now you don’t’ nature of this overlap is also hinted at in Obama’s invitation letters of September 2009 to the NSS participants wherein he refers back to the non-proliferation discussion at the L’Aquila G8 Summit before outlining nuclear terrorism as the most immediate and extreme threat.

If the underlying idea was to secure all vulnerable nuclear material within 4 years, it was apparent that all countries where such material existed needed to be brought into the process. A narrow list of the relevant materials possessors would have been no more than twenty odd countries. For the 2010 Summit in Washington, the U.S. ended up inviting 47 countries and three international organisations. Apart from the 5 NPT nuclear weapon States, India, Israel and Pakistan were also invited as the focus was on security of materials that existed regardless of the context of their creation. However, possession of nuclear material was not the only criteria – Austria, Bangladesh, Bulgaria, Colombia, Democratic People’s Republic of Congo, Peru, Slovakia, Uzbekistan – did not find a place despite having nuclear power or research reactors; Iran and DPRK, possessors of nuclear material and nuclear fuel cycle facilities but subject to UNSC Chapter VII resolutions were also kept out. The filter at work was whether participants had something constructive to bring to the conversation.

The Seoul Summit added six more countries - Azerbaijan, Denmark, Gabon, Hungary, Lithuania, Romania and one more international organisation, Interpol, to the list. Like-mindedness and geographical balance again seemed to have been the overriding criteria.

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383 Interview 1.
384 Letter dated September 9, 2009 by President Obama.
385 Algeria, Argentina, Armenia, Australia, Belgium, Brazil, Canada, Chile, China, Czech Republic, Egypt, Finland, France, Georgia, Germany, India, Indonesia, Israel, Italy, Japan, Jordan, Kazakhstan, Malaysia, Mexico, Morocco, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Philippines, Poland, Republic of Korea, Russian Federation, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, UAE, Ukraine, UK, U.S. and Vietnam plus the European Union, IAEA and the UN. See list of participants on official website www.nss2016.org/past-summits/2010
386 Interview 15.3.
387 www.nss2016.org/past-summits/2012/
Regardless of the geographical gaps, the NSS process heralded a new global focus on nuclear security. Again, despite the attempt to limit the NSS by and large to the like-minded, the NSS represented a step up from the PSI with its inclusion of countries that did not fully share U.S. thinking on nuclear issues. Most significantly and like the GICNT, by inviting the non-NPT states in, the U.S. signaled that nuclear security was an issue that went beyond the existing non-proliferation regime and required a new cooperative construct straddling the NPT-non-NPT divide.

At the outset the U.S. wanted the NSS to be a regular event though not necessarily an annual one.\textsuperscript{388} The process issue is still an open question. The understanding at the end of the 4\textsuperscript{th} Summit is that there could be future Summits on call and there will be regular follow-up of the NSS understandings in the UN, IAEA, Interpol and the Global Partnership. However, very few people foresaw in 2010 that there would be a 4\textsuperscript{th} Summit in 2016 and that starting 2013 the IAEA would be holding regular Ministerial meetings on nuclear security. The NSS process issue is a perfect example of the powering-puzzling dynamic in learning; no one could have predicted at the outset how it would play out.

The preparatory process for the Summit

To steer the process the U.S. designated a Sherpa (Gary Samore, Special Assistant to the President and Senior White House Coordinator for WMD Counterterrorism and Arms Control) and a Sous-Sherpa (Laura Holgate, Senior Director, WMD Terrorism and Threat Reduction, NSCS), and invited other participants to do the same. Following President Obama’s invitation letters to the leaders of the participating countries and organisations, a preparatory process started on 15 September 2009 at a hurriedly called initial planning meeting in Vienna. A set of 16 Questions & Answers accompanied the invite from the U.S. One defined the overall goal of the Summit as “to come to a common understanding of the threat posed by nuclear terrorism and to recognize that nuclear material, whether in civilian or military use, should not be vulnerable to that threat.” The U.S. also laid down the expectation that “Participants should therefore commit, as responsible stewards of nuclear

\textsuperscript{388} Interview 2.1
material, to reduce the stocks of nuclear material where possible and to protect the remainder of that material to the highest standards.”\textsuperscript{389} The adoption of UNSC Resolution 1887 on 24 September 2009 gave a boost to the U.S. effort. The resolution enshrined President Obama’s aim of security of all vulnerable nuclear material from the risk of nuclear terrorism within four years and expressed support for the convening of the 2010 Summit.\textsuperscript{390}

37 countries were invited to the September 15 meeting in Vienna in addition to the UN, IAEA and the EU. Gary Samore outlined the rationale for the Summit and underlined at the outset its narrow focus as well as the U.S. preference of working with existing institutions and mechanisms. He received strong support from U.S. allies such as Canada, Germany, Japan and Morocco as well as IAEA nuclear security experts led by Director of the Office for Nuclear Security, Anita Nilsson. Nilsson emphasised the complementarity with the IAEA’s work and underlined the distinction between nuclear security concerns and state-centric proliferation concerns. However, some participants appeared sceptical of the need for a Summit on nuclear security or wondered if the subject would be too technical for leaders. Others quizzed the U.S. about the agenda, the participation and the planned outcome. One even questioned if the concept of nuclear security was specific enough for a Summit and if the ambit of nuclear security was not being enlarged.\textsuperscript{391} In parallel to the multilateral meeting, the U.S. started to pursue bilaterals with key countries in Vienna and began to garner ideas and assess points of sensitivity.

After the initial hesitant steps a process slowly took shape.\textsuperscript{392} The Sous-Sherpas met for the first time in Washington on 4-5 November 2009. While the gathering was multilateral and most non-U.S. participants were veteran multilateral diplomats, this was not the usual multilateral forum. There were no formal rules of procedure even though the requirement for consensus was taken as given. U.S. leadership on process as well as substance was not questioned (till Russia broke off in 2014) and the U.S. pursued a series of bilateral dialogues and initiatives with key participants on the margins of the NSS on the

\textsuperscript{389} Annex 3.
\textsuperscript{391} Interview 10.
\textsuperscript{392} Most participants had not decided their Sherpa team when the first planning meeting took place in Vienna on 15 September and there were not enough Chairs for people to sit down at the first Sous-Sherpas’ meeting in Washington on 4 November. Interview 11.1.
objectives of the multilateral process. A three-step process from the Sous-Sherpas to the Sherpas and then on to the Leaders was pursued initially but Gary Samore took charge of a more or less combined Sherpa/Sous-Sherpa discussion at the February 2010 meeting. A number of issues were also resolved over e-mail and in phone conversations outside of the Sherpas’ meetings. The NSS mass e-mails with two-page address lists became a signature device of the preparatory process injecting informality into it and helping build the sense of an epistemic community.

Table 5.1: Schedule of Meetings for the 2010 NSS

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Venue/Dates</th>
<th>Focus on:</th>
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<tbody>
<tr>
<td>First Sous-Sherpas’ meeting</td>
<td>Washington, 4-5 November 2009</td>
<td>Summit format, possible Summit outcomes, Work Plan elements</td>
</tr>
<tr>
<td>2nd Sous-Sherpas’ meeting and first Sherpas’ meeting</td>
<td>Tokyo, 2-3 December 2009</td>
<td>Draft Work Plan, Draft Communiqué concepts, threat briefing, scope of material coverage, material minimisation, fuel cycle approaches, link with NPT pillars, role of participating organisations</td>
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<tr>
<td>2nd Sherpas’ meeting, 3rd Sous-Sherpas’ meeting.</td>
<td>The Hague, 9-11 February 2010</td>
<td>Military material, plutonium management, radiological sources, standards for nuclear security, international obligations and national responsibility, commitment to nuclear disarmament, primacy of IAEA</td>
</tr>
<tr>
<td>Pre-Summit Sherpas’ meeting</td>
<td>Washington, 9 April 2010</td>
<td>Logistics and outcome documents</td>
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It is worth taking a look at the Sherpas, Sous-Sherpas and ‘Yaks’ that ended up forming the core of the epistemic community for the Summit. They came from diverse backgrounds – non-proliferation and international security diplomacy, nuclear energy policy, internal security, intelligence and policy staff from the offices of heads of states and governments. Some key individuals such as Laura Holgate and Joyce Connery had

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393 An example is the negotiations with India over 2009-2010 on setting up a Centre of Excellence. Interview 15.1.
394 Interviews with NSS Sherpas, in particular 15.1.
395 The ‘Yak’ designation was borrowed from the G7 context. Interview 15.1.
experience of working the Cooperative Threat Reduction programmes with the former Soviet States. Others such as the Egyptian Sherpa Sameh Shoukry came from the more traditional disarmament diplomatic field. The Pakistani Sherpa team had representatives from the Army’s Strategic Plans Division (SPD) that deals with nuclear weapons; others were formed almost exclusively of officials from civilian nuclear energy establishments. A number of Sherpas such as Brazil’s Antonio Guerreiro were Vienna-based diplomats dealing with the IAEA. A few teams had cross linkages with NGOs and academics; the U.S. team in particular retained strong intellectual links with the Nuclear Threat Initiative (NTI) throughout the process. The NSS epistemic community also reached into the Harvard group of nuclear security academics and the Princeton-centered International Panel on Fissile Materials (IPFM) through delegations such as the Netherlands. A number of track 1.5 events organised by the Stanley Foundation, NTI and other NGOs allowed ideas to flow back and forth.

The initial slate of substantive issues

The first substantive document ‘Possible Summit Outcomes’ was sent out for feedback by the U.S. on 9 October 2009. The paper had 12 short sections with bullet points. The first subsection titled ‘General’ called for recognizing state responsibility for ‘insuring world-class security of their own nuclear materials’, agree to ‘avoid building up stocks of fissile materials directly usable in nuclear weapons’, and pursue cooperation on ‘measures to secure, monitor, convert and dispose of vulnerable fissile materials’. There were separate sub-sections on some of the existing regimes and initiatives – UNSC Resolution 1540, CPPNM, GICNT and the G8 Global Partnership. There were none exclusively focused on the IAEA, thus underlining U.S. ambiguity on a central role for the Agency in nuclear security. The 1540 sub-section called for defining the terms

396 Interview 11.1.
397 For example U.S. Sous-Sherpa Laura Holgate was Vice President for Russia/New Independent States Programs at the Sam Nunn-led NTI from 2001-2009 before joining the White House; previously she served at the Departments of Energy and Defence, providing in particular policy oversight for the “Nunn-Lugar” CTR program. Source: Official Bioprofile on vienna.usmission.gov
398 Interview 11.1.
399 Annex 4.
400 Interview 11.1.
“appropriate effective” used in the resolution and developing model legislation to help states fulfill their 1540 obligations.  

A sub-section intriguingly titled ‘Nuclear Security Guidelines’ while referring to the IAEA’s INFCIRC/225 guidelines called for adopting a ‘de minimus’ Design Basis Threat concept, an “Equivalent Material Control & Accounting document” and new civil HEU management guidelines.  

These guidelines would be in addition to the Plutonium management guidelines adopted by 9 countries (Belgium, China, France, Germany, Japan, Russia, Switzerland, the UK and the U.S.) in 1997 on the margins of the IAEA and published as INFCIRC/549. The work being hinted at on Nuclear Security Guidelines was therefore both inside and outside of the IAEA.

Enhancing Regulatory Capacity, Increased Security Culture Among Industry Actors, Dedicated Resources to Nuclear Security were listed as separate sub-sections. Measures suggested under these headings included exchange of best practices, establishing safeguards/security-by-design as a new facility standard, support for a robust IAEA Nuclear Security Program budget and developing regional “Centers of Excellence” for training and exchange of best practices. A detailed sub-section on HEU Minimization called for agreement on not constructing new HEU fueled research reactors, conversion of existing ones and removal of HEU spent fuel. Another one on Intelligence Sharing called for regular sharing of threat information while the one on Forensics/Enforcement called for development of forensics libraries and law enforcement collaboration to counter nuclear smuggling.

A dozen or so participants sent inputs and suggestions on the U.S. paper. The Netherlands for example called for the Summit to have both political and practical outcomes, and in the context of the latter suggested making better use of ‘exercises’ for knowledge sharing.  

This idea of inducing habits of cooperation through practical albeit contrived scenario-based exercises was to come up again at The Hague Summit.

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401 Operative Paragraph 3 (a) of UNSC Resolution 1540 calls on States to develop and maintain “appropriate effective” measures to account for and secure nuclear weapons related materials in production, use, storage or transport.
404 Interview 11.1
Based on the feedback to the Outcomes paper, the U.S. started to put together a
draft work plan for the Washington meeting on 4-5 November 2009. As for the political
communiqué, the U.S. hope was for it to flow from the discussions on the work plan and to
make available a draft before the Tokyo meeting. This was a wise course to avoid a
premature discussion on wider political aspects and to keep the focus on the practical and
the technical. 405

The first substantive discussion at Washington on draft ‘Work Plan Elements’
circulated a week in advance showed the following trends.406 While the U.S., Australia and a
number of European participants were keen to strengthen existing mechanisms and
institutions in line with the Summit’s primary motivation to establish the highest possible
standards for protection of nuclear material,407 others including Argentina, Brazil, Egypt,
Indonesia and Pakistan wanted to stay as closely as possible to existing frameworks.408 Even
some of the more forward-leaning NSS participants like Italy wanted no new mechanisms to
be created and wanted international cooperation to deliver an action-oriented agenda. The
limited membership and mandate of some of the existing mechanisms such as the G8 Global
Partnership also posed a problem in this extension effort.409 There was stronger support for
the universal Conventions such as the CPPNM as amended in 2005 and the ICSANT as well
as for the role of IAEA in evolving current guidelines on nuclear security. Early entry into
force of the 2005 Amendment to the CPPNM became a goal for the Summit process early on
as did universal reporting under UNSC Resolution 1540. China, India and Russia showed
willingness to engage on strengthening existing standards and mechanisms while leaving the
primary responsibility for implementation to States. Thus, there was little enthusiasm for
automatic acceptance of IAEA’s IPPAS missions to evaluate adherence to IAEA guidelines. In
the context of Resolution 1540, there was early agreement on “appropriate effective”
meaning the latest version of IAEA’s INFCIRC/225 elaborated at the national level. On HEU
minimisation, the concept found general acceptance although the language itself took a

405 Interview 11.1.
406 Interview 11.1.
407 Opening remarks by Gary Samore, Washington, 4 November 2009, as recalled by a Sous-Sherpa..
408 Interview 11.1.
409 References to the World Institute for Nuclear Security (WINS), a private initiative funded in part by NTI and
supported by the U.S. and UK, faced similar resistance. Countries with active state-supported nuclear power
programmes and/or reactor exports such as France, Russia and India perceived the WINS as a Trojan horse for
an excessively safeguards and nuclear security focused (thus pessimistic) approach to nuclear energy. Ibid.
while to craft given concerns from Egypt, Indonesia and others that the provision contradicted Article IV of the NPT. The same, however, could not be said of the idea of endorsing the Plutonium management guidelines (INFCIRC/549), which India and Pakistan opposed, or of developing a new set of guidelines for HEU management, which France championed. Overall, the Material Management sub-section ran into difficulties because of conflicting views resulting from different fuel cycle approaches, different ways of viewing ‘excess’ material and the perception that ‘elimination’ was aimed at some countries and implicated other forums on disarmament and non-proliferation.\footnote{410}

It would have been clear at the end of the discussion that there was no alternative to a gradual evolution of the nuclear security architecture with a central role for the IAEA. Other political issues also lurked overhead. The information note circulated by the U.S. prior to the meeting stated that the Summit was not directly related to the 2010 NPT Review Conference while noting that nuclear materials whether in civil use or in military use “need to be protected to the highest standards” and that “pursuit of nuclear energy requires diligence and good stewardship of that material”. The last phrase could push the buttons of those steeped in NPT debates. In his opening remarks, Samore therefore made a rhetorical concession to the Summit strengthening the three pillars of the NPT in the run up to the Review Conference. However, Egypt wanted a direct reference to ‘nuclear disarmament’ in the work plan. Thus while there was no explicit language related to the NPT in the discussion draft there was an NPT undercurrent in the discussions, which became explicit in Tokyo.\footnote{411}

**Threat briefing**

From the beginning, the U.S. wanted to start the 2010 Summit with a threat briefing to be followed by 3-4 presentations on ‘solutions’ to address the threat of nuclear terrorism.\footnote{412} Australia agreed to make the threat presentation after an initial discussion with

\footnote{410}Interview 11.1. \footnote{411}Interview 11.1. \footnote{412}Proposed Agenda For The April Nuclear Security Summit For Discussion, Washington, 4-5 November 2009.
the U.S. on the margins of the Vienna meeting in September 2009. The idea of a threat briefing, even a generic one focused deliberately on the less sensitive supply side, led predictably to some defensiveness. When John Carlson, the Australian Sherpa, made an initial presentation at the Tokyo Sherpas meeting on December 3, Pakistan said that instead of a presentation by a participating state, an independent entity, the UN or IAEA, should be asked to make a briefing. Information used should be verified and only recognized information sources such as the IAEA’s ITDB should be used. China too objected to the idea of a threat briefing, and supported by South Africa among others, asked for a background document to be prepared by a group of experts. Russia worried about the Summit turning into a seminar. There were concerns about the content as well; Argentina objected strongly to references to fuel cycle activities as weak links in nuclear security while France questioned references to possible use of Plutonium-rich MOX fuel by terrorists. Germany, ROK and the EU also objected to the exclusion of radiological sources from the threat assessment prompting the Summit hosts to intervene to say that radiological material involved different communities and a different level of impact, and therefore they had decided to keep the focus on weapons usable material. At the end of the Tokyo discussion there was only feeble support (U.S., Australia, UK, Norway and the Netherlands) for a robust threat briefing, the extent to which radiological sources contributed to the threat remained unsettled and there was no appetite for negotiating a third document focused on the threat to nuclear security.

Political correctness meant that eventually no uncomfortable questions were raised in the briefing by Prime Minister Rudd at the Washington Summit. The idea of a regular threat briefing died soon after and was relegated to an NGO report prior to the next Summit. The absence of a shared threat assessment remains a weakness of the NSS

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413 Interview 15.1. The U.S. idea was to close the gap on the Leaders’ lack of awareness of the nuclear security threat and to find a voice and a manner of articulation that would be the most acceptable.

414 This might have been prompted by concerns about possible pressure on Pakistan.

415 Interview 11.1.

416 This was not the case when President Obama held his post-Summit press conference on 13 April 2010; Chuck Todd of NBC News and Jeff Mason of Reuters quizzed him on whether he had confidence in Pakistan’s ability to keep its nuclear material and expertise secure from threats by Al Qaeda and other terrorist groups. Transcript at https://www.whitehouse.gov/the-press-office/press-conference-president-nuclear-security-summit

process. Participants do not agree on which geographies have the most vulnerability to nuclear terrorism, they do not agree on whether a closed fuel cycle reduces the nuclear security risk or augments it, and they also do not agree on the scope and immediacy of the threat posed by radiological sources out of regulatory control in comparison with HEU and separated Plutonium.

A Communiqué and a Work Plan start to take shape at Tokyo

The U.S. sent out a revised Discussion Draft for the Work Plan on 24 November 2009 to be taken up by the sous-Sherpas on December 2 at Tokyo. Simultaneously, Gary Samore sent out a paper titled ‘Communiqué Concepts’ as an attempt to capture for the leaders the high level goals of the Summit and the big themes of the Work Plan. The draft Communiqué language was to be discussed only at the level of Sherpas on 3 December 2009.

These two documents were in a sense the first multilateral iteration from the initial U.S. documents: Possible Summit Outcomes and Work Plan Elements. Discussions on them at Tokyo showed considerable fluidity about the substantive outcomes. Communiqué Concepts had three short introductory paragraphs followed by five sections titled A. Threat and International Legal Foundation, B. International Instruments, C. National Commitments, D. Cooperative Programs, E. Peaceful Uses and Nuclear Security, and two short concluding paragraphs. The second introductory paragraph boldly posited nuclear security as “an essential means to ensure that we can deliver on our international commitments to prevent nuclear proliferation, eliminate nuclear weapons, and ensure access to nuclear technology for peaceful uses.” The concluding section acknowledged the need for continuous improvement for maintaining excellence in the security of nuclear materials, endorsed the Work Plan (to be attached to the Communiqué) as a ‘living document’ to mark progress on commitments to enhance nuclear security and called for the next Nuclear Security Summit

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419 Interview 11.1.
to be held in 2011. 420

Section A affirmed nuclear terrorism as an immediate and extreme threat to global security and the ICSANT as the international legal foundation for global efforts to reduce the risk of nuclear terrorism; the importance of worldwide adherence to the CPPNM and of bringing its amendment into force too was recognised.421 Section B on international instruments stressed the central contribution of the IAEA safeguards system and of States’ systems of accounting for and control of nuclear materials to prevent loss of control, illicit trafficking and unauthorized removal of nuclear materials. The need to implement UNSCR 1540 fully was also noted. In Section C, the principle of state responsibility for the security of their own nuclear materials was acknowledged but placed alongside the need to work cooperatively with the international community. The importance of sound national legislative and regulatory frameworks, adequate human and financial resources and administrative authorities were emphasized. The Section also mentioned a commitment to full implementation of existing undertakings on nuclear security, adding to those an agreement on the minimization and, where feasible, elimination of the use of HEU in research reactors. 422

Section D on Cooperative Programs recognized the value of the GICNT as a forum to enhance cooperation and as a repository of best practices, acknowledged the contributions of the G8-led Global Partnership and encouraged additional programming and sustained funding. The need for capacity building for nuclear security, additional steps to counteract the smuggling of nuclear material and for sharing of threat and forensics information was also recognized. A paragraph on cooperation on measures to secure, account for, convert and dispose of plutonium and highly enriched uranium – the essential ingredients of nuclear weapons, was placed in this Section. The final Section E outlined the assurance that measures to strengthen nuclear security will not hamper international cooperation in the field of peaceful uses and affirmed the role of the nuclear industry in the security of nuclear

421 At Tokyo, participants who were not party to ICSANT or who were leery about ICSANT and CPPNM becoming the basis for assessing compliance with nuclear security requirements tried to water down the references to the two Conventions as the legal basis for nuclear security efforts. Interview 11.1.
materials.\textsuperscript{423}

By and large, the U.S. attempted with this draft to stick to the approach of a narrow focus for the Summit without digressing into broader issues of non-proliferation and disarmament.\textsuperscript{424} At Tokyo on December 3, Gary Samore’s opening statement read in his absence by the U.S. Ambassador to Japan further specified that the Summit would not pre-judge or replace the NPT Review Conference. However, Egypt but also South Africa, Brazil, Malaysia and Switzerland, made forceful references to the NPT being the fount for the right to peaceful uses of nuclear energy, the need for NPT-type comprehensive safeguards, and the necessity of covering military facilities, including naval reactors. Russia and Kazakhstan advocated multilateral fuel cycle approaches while Argentina, Brazil, Egypt and South Africa questioned the relevance of the idea for the NSS. In their view, fuel banks were essentially a non-proliferation concept and their nuclear security value was questionable. South Africa’s Abdul Minty and Egypt’s Sameh Shoukry wanted explicit references to the three pillars of the NPT but warned against turning nuclear security into a fourth pillar. Thus, they asked for deleting the reference in the draft Communiqué to nuclear security as an ‘essential means’ to ensure access to nuclear technology for peaceful purposes. France (and Russia) wanted the references in the draft to a world without nuclear weapons deleted or replaced by the relevant quote from UNSCR 1887 while the Netherlands, Spain and Norway supported the language as it stood and India said that there should be no references to UNSCR 1887, which had diluted existing commitments on nuclear disarmament.\textsuperscript{425} The preceding summary as recalled by a Sous-Sherpa who attended the meeting shows that despite U.S. attempts to control the interface with non-NSS forums, in particular the NPT, the larger nuclear world intruded rudely into the Summit preparations at Tokyo. At one point after a particularly heated discussion during the meeting of sous-Sherpas on December 2 on whether the right to peaceful uses of energy came from the NPT (according to Egypt, Jordan and the Philippines) or predated the NPT (according to India, Brazil and Pakistan), the Indian representative asked the U.S. to clarify the basis for inviting countries to participate in the NSS.\textsuperscript{426}

\textsuperscript{423} Ibid.
\textsuperscript{424} Interview 11.1.
\textsuperscript{425} Ibid. This reflected the divergent views on approaches to disarmament in forums outside of the NSS.
\textsuperscript{426} Interview 11.1.
Again on the scope of the Summit, despite the U.S. reiterating that they had decided to exclude radiological material and wanted to retain a focus on HEU and Plutonium, a number of Europeans stressed the high probability of terrorist use of radiological material and wanted it included. Germany proposed a new paragraph in Section C, which would have participants acknowledge the threat posed by readily available highly radioactive sources and agree to apply appropriate measures within states’ national responsibilities.\textsuperscript{427}

The anxiety with regard to the threat briefing has been mentioned earlier. In the same vein, Pakistan and Egypt asked for a systematic replacement of references to ‘securing nuclear material’ or to ‘nuclear terrorism’ with ‘strengthening nuclear security’.\textsuperscript{428} Pakistan further said that nuclear terrorism should not be seen as region-specific or country-specific. China said that the Work Plan should only refer to nuclear security and not nuclear terrorism while India said that both notions could be retained throughout.\textsuperscript{429}

On material management, while the HEU minimisation and conversion discussion progressed, India, France, Pakistan, and to a lesser degree Russia and Japan argued against references to Plutonium management or disposition while Australia, backed quietly by the U.S., wanted use of separated Plutonium to be brought under international discipline. France was an eloquent spokesman for those relying on closed fuel cycles and said that the most appropriate use of Plutonium was in a new fuel cycle. The focus in the French view should be on nuclear security and on limiting the vulnerability of nuclear materials on a national basis (and not on what fuel cycles were used). India said that while HEU minimisation was being treated differently and rightly so, it could not accept limitations on the use of Plutonium in the civil sector. Further, India and Pakistan wanted the reference to Plutonium management guidelines to be deleted or attributable only to the nine countries concerned.\textsuperscript{430} At a superficial level, it appears that different participants were trying to

\textsuperscript{427}Ibid.  \\
\textsuperscript{428}The objective of asking for this change was to avoid specificity either in terms of the concern or specific measures in response to that concern.  \\
\textsuperscript{429}Interview 11.1.  \\
\textsuperscript{430}Communication received from certain member States (Belgium, China, Germany, Japan, the Russian Federation, Switzerland, the United Kingdom of Great Britain and Northern Ireland and the United States of America) concerning their policies regarding the management of Plutonium, IAEA document INFCIRC/549 of 16 March 1998.
protect their self-interest. However, in learning terms this contention was helping bring out different perspectives on concepts shaped in a particular national or like-minded context, thus creating the basis for a shared understanding about the link between possession of certain types of nuclear material and the threat of nuclear terrorism.

While references to processes based in the IAEA and the UN continued to strengthen as the NSS discussions took more of a multilateral turn, safeguards and nuclear security measures continued to overlap in the discussions in Tokyo on IAEA guidelines and practices. A reference in the draft Communiqué to ‘States’ systems of accounting for and control of nuclear materials’ or SSAC was objected to by Pakistan and India; Brazil and Vietnam too questioned the references to the safeguards system.431

Another overlap on materials in the military and civilian domains sparked an interesting discussion at the meeting of the Sous-Sherpas.432 Russia wanted nuclear material to be defined as per Article 2 of the CPPNM, which limits such material to material in civilian use, storage or transport. Exchange of information on military aspects would be illegal in its view under the NPT. As a warning to the U.S., it also said that it hoped that other NPT nuclear weapon States shared this understanding. Brazil, Chile, Malaysia, Spain, South Africa and the Netherlands opposed this interpretation of nuclear material while Pakistan supported a definition derived from the CPPNM but even narrower in scope. France suggested that the concept of ‘vulnerable’ material could transcend the divide over peaceful versus military use material.433 India said that while security of material in civilian use was an international obligation, this was not so for material in military use, which could be handled as a matter of national responsibility. There was a brief rerun of this discussion at the level of the Sherpas. South Africa asked why only HEU in civilian reactors was being targeted; military facilities using HEU and Plutonium should also be included and unsafeguarded material should not be excluded. Russia retorted that including

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431 The Indian and Pakistani objection stemmed from their being not parties to the NPT and hence not obliged to follow a concept (SSAC) used in the safeguards agreement for non-nuclear weapon States party to the NPT (INFCIRC/153). Brazil and Vietnam’s objection was broader and related to the undermining of the legal and operational separation between IAEA safeguards and nuclear security. Interview 11.1.

432 Ibid.

433 This meant that some military materials could be ‘vulnerable’ to nuclear security threats and others not.
unsafeguarded material would be tantamount to immediate nuclear disarmament.  

The status of participating organisations such as the UN, IAEA and the EU, in particular whether they were observers or active participants with inputs, was raised at Tokyo. The relevance of NATO to nuclear security was questioned by Egypt, Indonesia, China and Russia while South Africa, in the light perhaps of its own experience of prosecuting elements of the A Q Khan network, wanted Interpol to be invited. Egypt voiced a concern shared by some others on the nature of the Summit outcome and its follow-up while Russia asked how leaders would sit through hours of speeches at Washington. The stage was set for the meeting at The Hague on 9-11 February 2010 to bring these diverse perspectives on process and substance together into a consensual package before the Summit. While Gary Samore took charge of the substantive proceedings, the experienced Dutch Sherpa, Ambassador Chris Sanders, set up the meeting with great attention to detail, including by providing ample opportunities for bilateral interactions.  

**Bringing it together at The Hague**

The previous Section has underlined the importance of boundary issues in the first set of meetings. One way the U.S. moved decisively to channel discussions toward consensus was to clarify the interface with broader issues of nuclear disarmament, non-proliferation and peaceful uses of nuclear energy. A non-paper on the distinction between the NSS and the NPT Review Conference to be held that year was sent out in late January 2010 to NSS participants. It reiterated the narrow focus (nuclear materials security) of the Summit and clarified that the Summit was neither intended to yield an international agreement nor would it create any new mechanism or initiative. Instead it would reinforce the principle of states’ responsibility for the security of their nuclear materials and build on existing mechanisms such as the IAEA, Global Partnership and the GICNT.

The U.S. also sent out on 30 January 2010 a draft Communiqué text capturing the

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434 Interview 11.1.
435 Ibid.
436 Annex 5.
participants’ comments on the Chairman’s text of 18 December 2009. The largest number of comments were received on the three paragraphs in the chapeau. The U.S. exercised the Chair’s prerogative in coming out with a revision at the end of the meeting in The Hague. The first paragraph of the chapeau danced around the concern about nuclear security as a fourth pillar by saying that “effective nuclear security practices facilitate the fulfillment of international aspirations and commitments in these areas” (nuclear disarmament, nuclear nonproliferation and peaceful uses of nuclear energy). Thus, from an ‘essential means’ to ensure that commitments in these three areas can be delivered, nuclear security became a facilitator for the fulfillment of aspirations and commitments in these areas. Despite this weakening of the language, the formulation did not survive the journey to Washington. The Communiqué ended up describing the former three as ‘shared goals’ while nuclear security was described as an additional shared ‘objective’. Further, an Indian proposal for describing the Summit as an important step in realizing President Obama’s call for securing all vulnerable nuclear materials within four years, ended up (after a few more amendments) at The Hague as a short chapeau paragraph describing a shared goal of strengthening nuclear security and welcoming and joining President Obama’s call to secure all vulnerable material in four years. This other reference to the shared ‘goal’ of nuclear security too did not survive till Washington although the reference to President Obama’s call did. Likewise, proposals for explicit language on lack of progress in nuclear disarmament fell by the way side.

The issue of an explicit reference to military materials also went through several iterations. The pre-Hague draft mentioned a proposal for both civil and military materials to be explicitly referenced in the first operative paragraph of the Communiqué. Further, there was language in the third operative paragraph on materials that can be used in the manufacture of nuclear explosives without transmutation or further enrichment. This was in the context of minimisation of use and consolidation of location as appropriate. An alternative proposal aimed at turning this into explicit language on ensuring that not only direct use materials but also nuclear weapons, pending their total elimination, are robustly secured, including through minimisation of use and consolidation of location. The issue was hotly debated at The Hague with China, France, India, Russia and Pakistan arguing against

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438 Interview 11.1.
any references to nuclear weapons or military materials as being outside the scope of the NSS. There was no need in their view to parse nuclear material into civil and military, and if required the adjective ‘all’ could be used before nuclear materials so that nothing could be construed as being excluded. However, this was not good enough for those arguing for explicit references to what they felt was a domain with 85% of the relevant material (HEU and Plutonium).

Samore than proposed in mid-February a simple declaratory sentence underscoring the obligation of States possessing nuclear weapons to secure those weapons. The U.S. checked this formulation out with key countries, including the possessors, before sending it out to the entire set of participants as part of the Pre-Decision ‘Ad Ref’ draft dated March 4, 2010. Taking into account feedback from some of the possessors, this was reframed slightly – ‘national responsibility’ instead of ‘obligation’ and ‘nuclear material in those weapons and related facilities’ instead of ‘those weapons’. However, even this simple reference to states possessing nuclear weapons underscoring their national responsibility to maintain effective security of nuclear material in those weapons and related facilities proved to be too controversial. Some participants, in particular Egypt, felt that this amounted to a recognition of the nuclear weapon state status of the non-NPT participants in the NSS. The U.S. then went back to a formulation proposed by the Russian Sherpa Grigory Berdennikov at The Hague. This would reaffirm the fundamental (not ‘national’) responsibility of States, consistent with their respective international obligations, to maintain effective security of all nuclear materials, to include nuclear materials in weapons, and nuclear facilities under their control. It was essentially this formulation - with the slightly awkward ‘to include nuclear materials in weapons’ replaced with ‘which includes nuclear material used in nuclear weapons’ - that ended up in the Communiqué. Despite many attempts to change it in one direction or the other, it endured through the next two Summits.

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439 Interview 11.1.
440 Interview 11.1.
441 Pre-Decision ‘Ad Ref’ draft dated March 4, 2010.
442 Ibid.
443 Ibid.
444 The notion of nuclear weapons ‘related’ facilities was dropped.
The inclusion of the idea of ‘related expertise’ in the first operative para of the Communiqué had led to a lengthy discussion at the Tokyo meeting. The March 4 pre-decisional Ad Ref draft dropped the idea of expertise and instead reaffirmed State responsibility for the protection of security-related information from unauthorised use. This was considered too narrow and thus another iteration was needed to include positive language on preventing non-state actors from acquiring or using for malicious purposes nuclear material related information or technologies. 445

On the issue of radiological sources, the Communiqué draft of February 2010 now included a reference in its last operative paragraph to nuclear material security efforts having value in relation to security of radioactive materials. While satisfied with this addition, Germany wanted to sync the Communiqué language with the Work Plan, a new draft of which was circulated on 26 February.446 It therefore proposed a new para under the nuclear materials section with participating states considering how best to address the issue keeping in mind the Code of Conduct on the Safety and Security of Radioactive Sources as well as further steps to implement the provisions of the Code of Conduct. This suggestion was reflected in the final Communiqué in a general manner without a specific reference to the Code of Conduct.

The Work Plan draft circulated prior to the meeting at The Hague still included a longish preamble as well as a concluding section with a number of alternative formulations and other drafting recommendations.447 The contending alternatives included references to the participating international organisations, to the security of nuclear weapons and of radioactive substances, a definition of nuclear materials akin to the direct usable material definition used in the IAEA, a broad de minimus standard for nuclear security (such as ‘effectively secured’ or ‘robustly secured’ or ‘meet or exceed all international recommendations and standards’), and (in the concluding section) a reference to the Work Plan not conflicting with or altering rights and obligations under the NPT and/or altering the mandate or responsibilities of the IAEA. The concluding section also had a reference to protecting the confidentiality of information shared with another state or an international

445 Interview 11.1.
446 Ibid.
organisation. Overall, there was a difference of view on how to frame the Work Plan – as guidelines for national action, as a checklist of key steps required for nuclear security or as a Guidance Document to be used on a voluntary basis. The discussion on 10 February 2010 showed that the best way forward was to boil all this down to a very short preamble.\textsuperscript{448}

The two key concepts that could not be boiled down further and needed to be reflected somehow were the security of nuclear weapons and consistency with national laws and international obligations. The March 4 Ad Ref text framed the Work Plan as a political commitment by the Participating States (no reference to international organisations), in support of the Communiqué, with applicable portions to be carried out consistent with national laws and international obligations in all aspects of the storage, use, transportation and disposal of nuclear materials (without defining nuclear materials and without a distinction between civil and military materials).\textsuperscript{449} The deal on mentioning material within nuclear weapons in the Communiqué also eased consensus on the Work Plan language.

On the eve of the meeting at The Hague, there were several other pending issues in Section VI of the draft Work Plan focused on peaceful uses and nuclear materials management.\textsuperscript{450} There was a proposal to reaffirm participants’ commitment to make further progress on nuclear disarmament as well as a proposal to refer to rights (including the ‘inalienable’ right to research, develop, produce and use nuclear energy for peaceful purposes) and efforts under the NPT. There were two contested paragraphs on rationalisation of the number of national sites where nuclear material is held and on the Guidelines for the Management of Plutonium. There were also several competing concepts of nuclear material – ‘direct use’, ‘material that can be used for the manufacture of nuclear explosive components’ without further transmutation or enrichment et cetera – in the Section. Finally, there was a paragraph that suggested a right for suppliers to evaluate the nuclear security status of materials being transferred before such materials were used. The issue of rationalisation of sites and consolidation of material holdings was finessed by

\textsuperscript{448} Interview 11.1. This underlines a basic failing of multilateral forums where the default search for the least common denominator circumscribes learning. The slowest learner often determines the pace at which everyone else learns.

\textsuperscript{449} Pre-Decision Ad Ref draft dated March 4, 2010.

having a combined reference to consolidation, where appropriate, of national sites where nuclear material is held. An informal joint demarche by India, France and Japan on the sidelines to the U.S. led to a compromise text on the Plutonium management issue (‘exercise particular care in securing and accounting for separated plutonium, taking into consideration the potential of various forms for use in a nuclear explosive device’).\textsuperscript{451} The various references to nuclear materials were combined into the formulation in the chapeau that highly enriched uranium and separated plutonium are particularly sensitive and require special precautions. The political references to the NPT and to nuclear disarmament were dropped along with the reference to nuclear security evaluation as a condition of supply.

\textbf{Summit dynamics}

The Summit was the largest gathering of heads of state/government in the U.S. since the 1945 San Francisco Conference on the United Nations. There was visible excitement around the (still) new U.S. President and his nuclear agenda. A few days before the Summit, and a year after his Prague speech, President Obama signed the New START treaty with President Medvedev of Russia in Prague on 8 April 2010.\textsuperscript{452} A new Nuclear Posture Review was released the same week.\textsuperscript{453} The Summit thus came at the peak of the Obama Administration’s activity, unilateral and bilateral, on nuclear non-proliferation and arms control. U.S. officials and media called it their ‘nuclear spring’.\textsuperscript{454} Of the 47 countries participating, thirty-eight were represented at the level of heads of state/government.\textsuperscript{455} The Summit started with a meet and greet at 5 pm on April 12. A working dinner followed with the table set for 50 (47 plus the UN Secretary General Ban Ki-Moon, Director General

\textsuperscript{451} Interview 11.1.
\textsuperscript{454} Hendrik Hertzberg, ‘Eight Days in April’, The New Yorker, 26 April 2010, available at \url{http://www.newyorker.com/magazine/2010/04/26/eight-days-in-april}
\textsuperscript{455} Prime Minister Netanyahu of Israel did not attend and there was speculation that this was because of Israeli concerns that Egypt and Turkey would use the NSS to call on Israel to accede to the NPT. See Israeli Premier Cancels Plan to Attend Nuclear Security Meeting in Washington, Ethan Bronner and Isabel Kershner, The New York Times, April 8, 2010.
IAEA Yukio Amano and EU President Von Rompuy). Secretaries Clinton and Chu hosted a parallel dinner for their counterparts.

The pre-Summit working dinner on April 12 was not just an ice-breaking event. The focus was on bringing together diverse views on the threat and its magnitude and seriousness. The French President Sarkozy suggested setting up an international tribunal to deal with government officials that assist terrorist groups with nuclear material and technology along the lines of what was being done for Somali pirates. This led to a lively discussion among the leaders and President Obama summarised it by calling the idea interesting and creative, which merited further discussion. The thinking as articulated by Gary Samore at the post-Summit press conference was that this was one of the ideas the experts would be discussing going forward to the 2012 Summit. However, it sank without a trace.

The first plenary session on April 13 from 0930-1130 hours focused on national actions to secure nuclear material and to counter nuclear smuggling within national territories. India, Ukraine, Kazakhstan and Italy were among the leaders invited to address this session as part of the pre-Summit choreography by the U.S. DG IAEA was the main animator at lunch and spoke about the IAEA’s role and how the Agency was responding to the nuclear terrorism threat. Obama’s mentor on nuclear security, Senator Lugar, was the main speaker at the parallel lunch hosted by Secretaries Clinton and Chu for their counterparts. President Obama then chaired the second plenary session from 1400-1600 hours with a focus on steps that could be taken to strengthen international mechanisms for nuclear security. In both plenary sessions, a number of participants spoke about the steps they were taking nationally to enhance nuclear security as well as to strengthen

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457 He also recalled the U.S. policy (as articulated in the Nuclear Posture Review) of holding states such as DPRK responsible for any such transfers, thus implying that deterrence might be a better response than an international policing mechanism. Press Briefing by Ben Rhodes, Deputy National Security Advisor for Strategic Communications; Gary Samore, Senior White House Coordinator for WMD Counterterrorism and Arms Control; and Laura Holgate, Senior Director for WMD Terrorism, 13 April 2010, transcript available at http://www.whitehouse.gov/the-press-office/press-briefing-ben-rhodes-deputy-national-security-advisor-strategic-communications
international cooperation to combat the threat of nuclear terrorism. The Summit closed out with the release of the Communiqué and the Work Plan.\textsuperscript{458}

There were other important outcomes beside these two documents. The visitors came bearing gifts for the host. As Gary Samore put it in the post-Summit press conference: “Whenever you bring leaders together, there’s a lot of pressure for countries to come to meeting with not just something positive to say but some demonstration of their commitment. And we used the summit shamelessly as a forcing event to ask countries to bring house gifts....... And my prediction is that we are likely to have even more concrete results in 2012; we’ll be able to do better than we did this time because I think we’ve set a pattern -- countries will want to come to the next meeting with even bigger and better house gifts.”\textsuperscript{459}

With the Summit as a decision forcing event, Canada and Chile returned spent HEU fuel to the U.S. while Kazakhstan and Mexico converted HEU based research reactors to LEU fuel and eliminated remaining HEU under their control. Vietnam committed to converting its HEU based research reactor while Ukraine announced that it was removing all HEU from its territory by the next Summit. Belgium, Japan, Norway, New Zealand, Russia and the UK announced financial contributions to the IAEA’s Nuclear Security Fund while Finland, France and the UK invited the Agency’s IPPAS reviews. Argentina, Australia, Georgia and the UK announced their intention to ratify the ICSANT while Argentina, France, Germany and the UK stated the same with respect to the 2005 Amendment to the CPPNM. Argentina, the Philippines, Thailand and Vietnam joined the GICNT. China, France, India, Italy, Japan, Kazakhstan and the UK announced the creation of new centres of excellence for nuclear security training or the incorporation of such a training component into existing schools. Russia ended plutonium production and signed the Plutonium Management and Disposition Agreement with the U.S., which committed both countries to eliminate 68 metric tons (34 each) of plutonium. Russia also provided details of its HEU repatriation programme and announced plans to repatriate fresh HEU fuel from Ukraine, Belarus and the Czech Republic and to take back spent HEU fuel from Ukraine, Poland, Germany, Serbia and Belarus.

\begin{footnotesize}
\footnote{\textsuperscript{458} President Obama's Opening Remarks at the Press Conference on the conclusion of the Summit, 13 April 2010 available on www.nss2016.org}
\footnote{\textsuperscript{459} ibid.}
\end{footnotesize}
Armenia, Egypt and Malaysia passed new nuclear control laws. Argentina, Italy and UAE signed Megaports Agreements with the U.S. to strengthen nuclear materials detection while Canada, New Zealand and Norway announced assistance for programmes to counter nuclear smuggling. Canada, Japan, Kazakhstan, Republic of Korea and Saudi Arabia also announced the holding of meetings or conferences on nuclear security. ⁴⁶⁰

Nuclear learning at the Washington Summit

The NSS was a conceptual extension of a pre-existing set of mechanisms and institutions dealing with physical protection of nuclear materials and facilities. The U.S. took the lead in raising the profile of the threat of nuclear terrorism through a Summit and setting the goal of securing vulnerable nuclear material - defined narrowly as high-enriched uranium and plutonium - worldwide within four years. The assumption was that the means and methods to secure such material were already available and that the main challenge was achieving high-level international agreement among key states to allocate resources and to take action to strengthen nuclear security. Since the goal was multi-year, a process needed to be put in place and insulated from the vagaries of nuclear diplomacy in other forums. Further, the exact implementation needed to be left to states given the sovereignty and national security related sensitivities around nuclear materials and facilities. A soft, social pressure driven, compliance approach virtually dictated itself given the difficulties of achieving agreement on a comprehensive international regime with monitoring of compliance akin to the IAEA safeguards system. The Summit hosts made it clear that the urgency of the threat meant that time and political capital could not be wasted trying to achieve consensus on an international nuclear security regime while practical steps could be taken right way to secure nuclear material and facilities.

Apart from the learning baked into the Summit idea, there is evidence for nuclear learning over the course of the 12 months from the Prague speech to the Washington Summit. As Table 5.2 illustrates, such learning went beyond the routine give and take of multilateral discussions; it encompassed both ideas and practice. Other alternative

explanations such as coercion by a norm entrepreneur or socialisation to norms in pre-existing institutions cannot account for these changes. The NSS was a voluntary gathering without compliance enforcement mechanisms and it was placed outside of existing institutions such as the IAEA which channeled nuclear security norms, such as they were.

There is plenty of evidence for practice-rich learning in the Washington Communiqué and Work Plan and the bilateral and unilateral initiatives announced in conjunction with the Summit. Projects that had been lingering for years, to wit the Plutonium Disposition Agreement with Russia and HEU-conversion in Mexico, were quickly completed and new commitments obtained from a range of countries, including those normally shy of taking on such commitments (India, China and Pakistan). Agreement was reached on minimising the use of HEU in research reactors and repatriating spent HEU fuel. This effectively turned a U.S./G8 initiative into a global best practice. The IAEA’s nuclear security activities got new funding and support and resources were committed to nuclear security training, especially in regions expanding the use of nuclear energy. IAEA’s INFCIRC/225 physical protection guidelines also became the standard for assessing the effectiveness of measures required under the binding UNSC Resolution 1540. Cooperative mechanisms for combating nuclear smuggling got a boost as well.

There were some areas, however, where “puzzling” continued into and beyond 2010. The primary example is process. There was confusion about the frequency of Summits before a two-year rhythm was found manageable and then there was no clarity about how many Summits in all. There were different views about a central role for the IAEA in following-up on the Summit outcomes and some participants continued to harbour hopes of a global architecture if not an international regime for nuclear security. While the U.S. sought to emulate the G20 Summit’s conversational style, it is questionable if most leaders were comfortable getting down to such an informal working style on a technical, often sensitive subject.

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461 Interview 12.
On substance, the NSS continued to puzzle on a common assessment of the nuclear security threat except in a very broad rhetorical sense (‘nuclear terrorism’\textsuperscript{462}). Second, it failed to resolve the issue of the interface between nuclear security and the three ‘pillars’, namely nuclear disarmament, nonproliferation and peaceful uses of nuclear energy. Was nuclear security, as learnt thus far, now a goal on par with those three? Or did it facilitate or contribute to the achievement of those goals? Third, in the debate on whether military material and facilities should be covered explicitly, the NSS could not decide the nature of responsibility of states possessing nuclear weapons with regard to security of their weapons, the materials used in those weapons and related facilities. In fact there was reluctance to even concede this construct for fear of legitimising possession of nuclear weapons by some (nuclear security undermining the bipolar NPT view) or all of the possessors (nuclear security undermining nuclear disarmament). Fourth, the Summit could not break down completely suspicions about functional cooperation and sharing of information to combat illicit trafficking and nuclear terrorism.\textsuperscript{463} Some of the commitments that participants brought to the table were part of ongoing programmes and participants could even be said to have used the Summit to claim leadership on nuclear security.\textsuperscript{464} This was theatre – faux or made up learning, which never disappears completely from multilateral platforms.

Finally, it is legitimate to ask whether the NSS pitched itself too low at birth in terms of nuclear learning ambition. If leaders, particularly of all states possessing nuclear weapons as also states with the capability for producing the materials for such weapons, were to be engaged in such a high profile forum, should the forum not have focused on the broader

\textsuperscript{462} Even this term was too specific for at least two participants. See in particular the national statements of Egypt (“It is our view that nuclear security is not designed to be confined to combat the threat of nuclear terrorism, but in fact encompasses a wide spectrum of criminal threats to be countered, including nuclear terrorism.”) and of Pakistan (“...nuclear security which subsumes measures to combat the threat of nuclear terrorism”).

\textsuperscript{463} The essential reason for partial learning on these four counts was that as a subset of the larger nuclear universe, the knowledge-field of nuclear security could not be completely insulated from the fundamental differences that bedevil nuclear issues. The trust deficits among the nuclear weapons possessors and between weapon States and non-weapon States could not be overcome by this brief engagement on nuclear security.

nuclear threat rather than the highly technical issue of nuclear security?\textsuperscript{465} The counterpoint takes us back to U.S. thinking at the outset about a focused practical approach that did not contradict or usurp existing forums on nuclear learning. The crucial takeaway in terms of the conceptual framework of this thesis is that it is the framing of the idea that determines the boundaries of learning within a particular knowledge construct. Nuclear security was framed narrowly for Washington because the proponents of the NSS process wanted nuclear learning to be pursued within set boundary conditions.

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\textsuperscript{465} Interview 3.

Table 5.2 Nuclear learning in the Washington Summit

<table>
<thead>
<tr>
<th>Type of shift</th>
<th>Evidence of learning in NSS 2010</th>
<th>What was learnt? Or not learnt?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Abandonment of position</td>
<td>Nuclear security is a secondary adjunct to issues of disarmament and non-proliferation to be pursued only in technical forums such as the IAEA where it must be subordinate to other priorities such as promotion of peaceful uses of nuclear energy.</td>
<td>Narrow focus on nuclear security needed for rapid progress. Not everyone in the NSS shared this learning as evidenced by the subsequent comprehensiveness debate.</td>
</tr>
</tbody>
</table>
| 2. Policy compromise or adjustment/   | A strong focus on legal instruments (Amended CPPNM, ICSANT, 1540) achieved early on. IAEA’s central but not exclusive role in nuclear security reinforced. \n
Fundamental responsibility of states to maintain effective security of all nuclear material and facilities under their control reaffirmed. \n
Importance of sound national frameworks, adequate human and financial resources, nuclear security training and culture elevated. \n
Concept of HEU minimisation multilateralised.                                                                                                                                                                                                 | While nuclear security is a national responsibility, it has to be discharged in the light of certain fundamental international obligations and technical guidance. \n
Military material and facilities need to be secured at least as strongly as civilian material and facilities. \n
Nuclear security requires a sustained and comprehensive effort nationally. \n
HEU and Pu require special precautions and civilian HEU use needs to be minimised.                                                                                                                                                                                                 |
### 3. Development of new ideas and shared understanding

A multilateral summit focused exclusively on nuclear security. All three spheres of learning—public sphere (the work of Obama and Lugar in the Senate, campaign debates), policy sphere (the draft plan prepared by Samore and team, debated and approved by key Cabinet-level officials) and the diplomatic sphere (participation and agenda evolved as U.S. engaged others bilaterally) engaged in the development of the idea.

- A process straddling existing forums (IAEA, UN, GICNT) and geographical/institutional divides.
- A timeframe (4 years) to secure vulnerable nuclear material around the world.

High level political attention necessary to promote international cooperation and whole of government approaches to nuclear security.

- Given the nature of the threat, need to go beyond existing technical silos and geographies.
- Urgency of need to reduce vulnerability globally. *Partially learnt.*

### 4. Putting into practice of policy compromises or new ideas/understanding

Joining of international instruments and initiatives; abandoning of HEU based research reactors and repatriation of HEU fuel; setting up of Centres of Excellence for training; programmes to counter nuclear smuggling etc.

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Chapter 6

The second Nuclear Security Summit at Seoul

A follow-on Summit to the Washington NSS was essential for both the institutionalisation and the extension of nuclear security learning captured in April 2010. In the two years to Seoul, challenges to learning came from within – for example from those who felt that the Washington outcome should suffice for the foreseeable time or those who wanted to extend it in directions not imagined by the founders or other participants; they also came from outside – in the form of the Fukushima nuclear accident that suddenly catapulted nuclear safety into the first rank of nuclear issues. In terms of process, Seoul followed the template set at Washington but there was an important innovation in the form of ‘gift baskets’, an extension of the U.S. ‘house gift’ idea. 466 There was a modest expansion of the forum’s geographical footprint and its linkages with industry and academia. As before the Washington Summit, the U.S. took the lead on the substance of the next iteration of the process, and the initial U.S. ideas provide a benchmark for evaluating progress at the end of the iteration.

Follow-up to the Washington Summit was conceptualised by the U.S. along three dimensions: tracking implementation of decisions, outreach to states and institutions outside of the NSS, and exploration of new avenues to add to the Work Plan. 467 Two ways to discuss follow-up of decisions reached at Washington were explored in summer 2010 – a matrix of the April 2010 decisions as a common progress sheet for the participants to evaluate their actions and a voluntarily hosted secure web portal to which participants could upload action taken. Ideas for outreach activities included side events at the UNGA, regional workshops and NGO and industry events. A dozen or so countries responded to a post-Summit letter from Gary Samore on future activities, which the U.S. compiled into a

466 The term - house gifts/gift baskets – was coined by Shawn Gallagher, a member of the U.S. Sherpa team. Interview 15.1.
467 Annex 6.
'food for thought' paper for the first Sous-Sherpa meeting in November 2010 in Buenos Aires. Simultaneously, and in a replay of the successful strategy adopted before Washington, the U.S. started to reach out to select countries bilaterally for deliverables (on the margins) on the key goals for the Summit in 2012.

The meeting calendar in the run up to Seoul reflected an attempt to widen the reach of nuclear security discussions beyond the traditional group of like-minded countries. Three preparatory meetings each were held at the level of Sous-Sherpas and Sherpas (Table 6.1 below). Further, the number of participating countries rose to 53 (at the Summit) and the participating organisations to 4, with Interpol joining the UN, IAEA and the EU during the preparatory meetings themselves.468

Table 6.1: Schedule of Meetings for the 2012 NSS469

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Venue/Dates</th>
<th>Focus on:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Sous-Sherpa meeting</td>
<td>Buenos Aires, 2-3 November 2010</td>
<td>Follow-up to the Washington Summit, reporting, U.S. food for thought paper</td>
</tr>
<tr>
<td>2nd Sous Sherpa meeting</td>
<td>Vienna, 21-25 March 2011</td>
<td>HEU minimisation and guidelines, information and transportation security, illicit trafficking/counter nuclear smuggling, nuclear forensics, nuclear security culture and personnel reliability programs, radioactive sources, outreach.</td>
</tr>
<tr>
<td>3rd Sous-Sherpa meeting.</td>
<td>Seoul, 27-28 June 2011</td>
<td>Draft Communiqué, nuclear security-safety interface, role of IAEA, nuclear security training,</td>
</tr>
<tr>
<td>1st Meeting of Sherpas</td>
<td>Helsinki, 4-5 October 2011</td>
<td>Draft Communiqué, format and status of national reports, Summit organisation and interactivity, HEU guidelines and transparency, ‘unneeded’ material, reference to disarmament, nuclear safety, role of IAEA.</td>
</tr>
<tr>
<td>2nd Meeting of Sherpas</td>
<td>New Delhi, 16-17 January 2012</td>
<td>Draft Communiqué, radiological sources, national reporting, nuclear disarmament, illicit trafficking and nuclear forensics, HEU management and Plutonium.</td>
</tr>
<tr>
<td>Final Pre-Summit Sherpa meeting</td>
<td>Seoul, 23 March 2012</td>
<td>Reference to nuclear disarmament. Gift baskets.</td>
</tr>
</tbody>
</table>

468 [www.nss2016.org](http://www.nss2016.org); Interview 11.2.
469 Interview 11.2-3.
Implementing and extending the Washington decisions

The U.S. ‘food for thought’ paper circulated in early September 2010 to all participants was a powerful and concise attempt to seed new learning for the Seoul Summit; it also offers a benchmark for assessing such learning over 2010-2012. It described the immediate challenge before the NSS as ‘to dissect the Work Plan and translate each pledge into a concrete action’ and the objective for Seoul as ‘to show both tangible progress against the pledges of April 2010 and new concepts to present to the world that can be summarised in headlines and shows that all States have taken their pledges seriously’. The paper proposed a tracking mechanism to measure progress in this move from pledge to implementation. This was to be based on national reporting. Two example constructs were mentioned: standardised self-reports to be loaded to a secure website with real-time accessibility based on a database which could break down each commitment from the Work Plan and identify participants’ activities within each category. The output could be displayed in a matrix as the sum of collective inputs. The alternative was for each country to submit a paper outlining accomplishments to the host of each Sherpa meeting with the host compiling and distributing all papers in addition to a chairman’s summary of progress.

The paper recognized that in addition many Work Plan areas remained broad and were thus ‘further definable with additional dialogue aimed at concrete action’. Accordingly it proposed a few focus areas that may offer ‘the greatest return for dedicated resources’. These included the establishment of counter-nuclear smuggling teams, illicit trafficking information sharing, establishing a global norm on the minimization of HEU, addressing the insider threat through a “hands-off” approach to material, personnel reliability and security culture as well as information security, INFCIRC/225/Rev. 5 and ‘unneeded’ nuclear material. The U.S. also started to move quietly in parallel on the bilateral front on some of these areas. An example was the U.S. goal for South Africa to downblend

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470 Annex 6.
471 Ibid. This describes a classic dialogue-based but directed learning approach. Further, in terms of the conceptual model of this thesis, it represents a deepening of nuclear learning within a field of knowledge-construction.
472 Ibid. This mirrored one of the objectives of the U.S. State Department coordinated Nuclear Smuggling Outreach Initiative (NSOI)’s work hitherto with eight countries: Afghanistan, Azerbaijan, Armenia, Georgia, Kyrgyzstan, Tajikistan, Kazakhstan and Ukraine.
all of its HEU to LEU pursued at the highest level to the Seoul Summit and beyond.\textsuperscript{474} Holding on to this HEU, a legacy of the apartheid South African regime’s nuclear weapons programme, has since then become a symbol of technological and economic sovereignty.\textsuperscript{475}

Addressing illicit trafficking had always been key to strengthening nuclear security. A gap would remain even after locking down all material under state control if material lost to illicit markets in the past remained in circulation. The paper therefore proposed a worldwide surge in counter-nuclear smuggling capability through establishment of dedicated teams to prevent terrorists from acquiring black market materials and through an iterative information sharing process that could lead to more seizures and a consequent deterrent effect on would-be nuclear smugglers.\textsuperscript{476} For a less ad hoc approach to information sharing, the paper proposed ‘an objective international entity to act as a focal point for the synthesis, analysis, and timely dissemination of actionable information’. Such information would include biographical data on smugglers and appropriate no-fly or watch lists to impede their travel. Such an entity might also facilitate the sharing, as appropriate, of nuclear forensic information.\textsuperscript{477}

On HEU, the paper sought to build on the 2010 Summit by suggesting the goal for 2012 of a set of “Guidelines on the Management and Minimization of HEU”, which would seek to combine minimisation of use in civilian applications, robust physical protection and other best practices in the interim, and transparency.\textsuperscript{478} It recalled that the goal of HEU guidelines to be formally proposed to the IAEA has been mentioned by almost all the nine


\textsuperscript{476} Annex 6.

\textsuperscript{477} Ibid. This was a place holder for Interpol.

\textsuperscript{478} Ibid. The U.S. found a good champion on this in France, which had earlier proposed such Guidelines at the Tokyo meeting of the Sherpas in December 2009. France had taken a cautious approach to HEU minimisation during the UNSCR 1887 negotiations, qualifying it with ‘where technically and economically feasible’ and was also known for its opposition to the inclusion of military HEU stocks in the NSS scope. U.S. thought that there would be less opposition to the idea if France were to lead it. In the event this did not change things very much. Interview 4.
signatories to the Plutonium Management Guidelines (INFCIRC/549). The recent progress in conversion, repatriation and down-blending of HEU with entire regions becoming de facto HEU-free zones meant that “Success by 2012 is feasible and the timing is ripe for a move in this direction.” Further, HEU minimisation activities could be organized under one umbrella as an international consortium to avoid duplication of effort and increase the pace of scientific advancement on the use of LEU. In addition, the paper suggested expanding the Work Plan pledge for “the timely removal and disposition of nuclear material from facilities no longer using them” to a positive review by all states of holdings to identify material that falls into the unneeded category, which could then be removed and destroyed through international assistance. 479

To address the insider threat, the paper suggested a mix of technology fixes - moving more processing operations into sealed rooms with remote manipulators, mechanising secure movement within facilities, automatic waste removal systems et cetera - and effective material accounting and control policies as well as comprehensive personnel reliability programs that can recognize potential thieves before they get access to material and changes in behavior once they have access. It proposed a combination of positive security culture reinforcement through schools of nuclear security, reward systems, friendly competition among facilities et cetera as also negative reinforcement mechanisms such as visible security presence and well-publicised penalties for violations. The paper proposed a new focus on information security and suggested keeping security-related technology and tacit knowledge that could aid terrorists steal material or construct a weapon secure within government classified channels. 480

The U.S. goals were reflected in the thinking of the Summit hosts. According to the Korean Sherpa, their main goal for the Seoul Summit was to transform the Washington commitments into practical action. “In this sense, we put our focus on including comprehensive and action-oriented measures in the Seoul Communiqué as well as introducing a voluntary national implementation reporting mechanism to track how the commitments had been implemented. For example, we suggested setting a concrete goal

479 Annex 6.
480 Annex 6.
with a timeframe for HEU minimisation and the entry into force of the 2005 Amendment to the CPPNM.”

Internal resistance and external shock

The first meeting of Sous-Sherpas at Buenos Aires on 2-3 November 2010 debated the ideas in the U.S. food-for-thought paper and other suggestions for the way ahead to Seoul. France and South Africa circulated their observations on the U.S. paper before the meeting while Australia and Jordan presented papers in the form of progress matrices on follow-up to the Washington Summit. Sweden and the U.S. endorsed the idea of a matrix for tracking follow-up while a large number of others opposed the creation of a new mechanism for reporting. As one Sherpa put it: “We thought the Washington Summit was about creating awareness; we never saw it as creating obligations. As soon as people saw the food for thought paper, everyone opened an umbrella. They wanted to freeze the Washington document.”

Pakistan was particularly articulate in its opposition to the tracking of commitments (which would duplicate existing reporting under the GICNT and UNSCR 1540 and burden developing countries), the creation of national nuclear counter-smuggling teams (which would be financially burdensome and which was for national governments to decide), a hands-off approach to materials for tackling insider threats (which would not be technically and financially feasible everywhere, and which was not desirable as material accounting and control was a national responsibility), and the sharing of information on nuclear trafficking through an international entity (which would duplicate IAEA efforts and which was a sensitive issue). The U.S. prepared a paper summarising the discussion on reporting, which acknowledged that ‘tracking mechanism’ insinuated a kind of oversight mechanism and therefore it was better to use ‘follow-up process’ or ‘reporting process’; the format could be tailored to each state’s preferences and include ‘house gifts’ from 2010, Work Plan matrix or National statements with Work Plan chapter headings.

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481 Interview 9.
482 Interview 10.
483 Interview 10; interview 11.2.
484 Proposed Path Forward on Progress Reports, paper prepared by the U.S., November 2010.
The idea of creating HEU free zones and the use of the term ‘global norms’ on minimisation of HEU use also came in for criticism on grounds of straitjacketing the national techno-commercial prerogative for civilian use of HEU. It is worth examining the roots of the resistance to the HEU minimisation push. Use of HEU fuel allows for a compact core and high flux density in research reactors dedicated to medical isotope production. In its first phase, HEU minimisation was about the conversion of existing reactors to LEU fuel. The repatriation, or as one NSS participant put it ‘extraction’ of HEU fuel, – spent or otherwise – back to the United States or Russia was an aspect of it. Countries such as Belgium, Canada, France, the Netherlands and South Africa resented the bilateral push for conversion, which implied transition costs and impacted on isotope price and availability. Extraction was seen as an intrusion on sovereignty and as demonstrating lack of trust in the ability of the target country to keep its HEU secure. Further, when the goal posts on conversion shifted to include non-use of HEU targets in addition to non-use of HEU fuel, the resentment went up further. It was not even a North-South issue since even developed medical isotope producing countries such as Canada, Belgium and the Netherlands thought that the market was being distorted to their disadvantage through the imposition of a technological choice at a most inopportune time. This was the elephant in the NSS room on HEU minimisation.

The Buenos Aires discussions were criticised by some of the more active NSS participants such as Australia, Canada and the Netherlands for being unfocused. Nine areas were subsequently selected for focused attention at the next meeting in Vienna on 21-24 March 2011, which turned out to be one of the rare non-political and in-depth discussion of nuclear security issues in the NSS. The meeting looked at ten areas, nine of which benefited from papers produced by Friends of the Chair (FOCs): information security (the

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486 An NSS participant put it as *Quod lecit lovi, non lecit bovi* - what Jupiter can do, the cattle cannot. Interview 14.

487 With the exception of the OPAL reactor in Australia, all other Mo-99 producing reactors in Belgium, Canada, France, the Netherlands and France used HEU-targets at this time.


489 Interview 14.
UK)\textsuperscript{490}, HEU guidelines (France), transportation security (Japan), illicit trafficking/counter nuclear smuggling (Jordan), nuclear forensics (the Netherlands), nuclear security culture and personnel reliability programs (Russia), radioactive sources (Germany), treaty ratification and model legislation (Indonesia), and coordination (Pakistan). An additional paper was prepared on public outreach. The Co-Chairs (ROK and the U.S.) produced a Summary of Discussions at Vienna on the ten papers. This document showcased the result of the first multilateral iteration of the ideas presented by the U.S. through its food-for-thought paper. While substantial and immediate dilution was avoided through the use of the Friends of the Chair mechanism, it was evident that there were considerable differences in emphasis and approach among the participants and new commitments were being strongly resisted by countries such as Russia, China, Egypt and Pakistan.\textsuperscript{491}

The Vienna meeting took place less than two weeks after the Level 7 nuclear accident at the Fukushima Daiichi nuclear power plant in Japan. A fresh challenge was added to the existing ones: how to maintain focus on nuclear security in the face of growing public and official attention to nuclear safety. The raised profile of nuclear safety because of an external event came at a time when internally inside the NSS radioactive sources were sought to be placed on par with HEU and separated Plutonium as potential sources of nuclear insecurity.\textsuperscript{492}

A single draft outcome document

Prior to the third meeting of Sous-Sherpas in Seoul on 27-28 June 2011, the ROK circulated the first cut of the Draft Seoul Communiqué. The text dated 13 June 2011 had 37 paragraphs and 12 substantive sections besides an introductory part and a concluding section titled ‘Looking Forward’, which proposed an additional Summit in 2014.\textsuperscript{493} The areas discussed at Vienna were retained, in some cases with considerable modifications, and were complemented by four additional areas – ‘Mutual reinforcement of Nuclear Security and

\textsuperscript{490} The UK also hosted a Wilton Park Conference on Information Security in 5-7 September 2011.
\textsuperscript{491} Interview 11.2.
\textsuperscript{493} Draft Seoul Communiqué of the 2012 Nuclear Security Summit (as of 13 June, 2011).
Nuclear Safety and Response to the Sabotage of Nuclear Facilities or Theft of Materials’, ‘Empowering and Reinforcing the Role of the IAEA and Significantly Increasing the Nuclear Security Fund’, ‘Optimizing and Utilizing Centers of Excellence for Training on Nuclear Security’ and ‘Increasing Technical, Legal, and Policy Assistance to Developing Countries and Countries in Transition’. The HEU issue was now part of a section on ‘Secure Management of Highly Enriched Uranium and Separated Plutonium’ while the coordination issue was framed as ‘Coordination and Consolidation of International Nuclear Security Regimes’ with treaty ratification issues wrapped into it.

In its preamble, the June 11 draft reaffirmed a continued sense of urgency with regard to nuclear terrorism and recognized the NSS as a comprehensive and effective forum for discussing nuclear security issues at the highest level. It underlined the two Summits as laying a strong basis for meeting President Obama’s call to secure all vulnerable nuclear material by the end of 2013. To this concept of vulnerable material, it added the notion of ‘unneeded nuclear material’ with a pledge to working towards their elimination as appropriate and consistent with national security considerations. Further, in the light of Fukushima, it called for addressing the issues of nuclear security and safety in an integrated and mutually-reinforcing manner and noted that this would be necessary to ensuring international confidence in nuclear energy.

The Section on materials welcomed the commitment to develop guidelines on HEU management and called for submitting regular reports voluntarily to the IAEA on civilian HEU stockpiles in the interim. End-2013 was mentioned as the deadline for minimisation of the use of HEU fuel, and conversion from HEU to LEU fuelled reactors. The prospect of sharing technology on high-density LEU fuel was highlighted. On separated Plutonium, the draft emphasized the importance of eliminating unneeded nuclear material and improving the management, accountancy, control and protection of the needed nuclear material. The context was both civilian and military stocks of separated plutonium. The Section on the international nuclear security regimes called for the Amended CPPNM to be

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494 Ibid. This was eventually folded into the section on Nuclear Security Culture, leaving 11 substantive sections for the Communiqué besides the preamble and the concluding portions. Interview 11.2.
495 Ibid.
496 Draft Seoul Communiqué of the 2012 Nuclear Security Summit (as of 13 June, 2011).
brought into force by the next Summit in 2014, and for an international conference to be held in 2013 with representatives from relevant nuclear security-mechanisms to promote coordination and cooperation among them. The new Section on radioactive sources called for accession to the ICSANT, national legislation in accordance with the IAEA Code of Conduct on Safety and Security of Radioactive Sources and preparing national inventories of such sources. 498

The new Section on the nuclear safety-security interface highlighted capacity building for emergency response and an integrated approach to facility design and operation in order to address both types of risks. It acknowledged the importance of the issue of sabotage and mentioned stored spent fuel as a source of serious safety and security concerns. 499 The Section on Advancing Nuclear Forensics called for creation of national forensics libraries based on a common approach, cooperation with the IAEA and INTERPOL and sharing of information on a bilateral and multilateral level as appropriate. Security of computer operating systems at nuclear facilities along with other national measures for proper management of sensitive information was highlighted in the new Section on Enhancing Information Security. 500 The Section on Enhancing Transport Security and Increasing Probability of Recovery encouraged sharing of best practices and working towards an international nuclear material tracking mechanism that increases the probability of recovery; separately the need for an integrated transport security framework based on nuclear detection systems and forensics capacities was highlighted. On illicit trafficking and counter-nuclear smuggling, INTERPOL’s role was talked up considerably in the draft (in comparison with the almost non-existent references in Washington), including in facilitating exchange of time-sensitive investigatory information. 501

Overall, the ROK’s June 2011 draft managed to retain the essence of the September 2010 U.S. ideas despite some concessions to the different views expressed in Vienna. The ROK Sous-Sherpa, Choon-hee Hahn, briefed the Seoul-based diplomatic community on 24 June just days before the next meeting of the sous-Sherpas and outlined the broad agenda

499 The issue of sabotage highlights the safety-security interface like no other. This was a smart way to turn the safety concern into a force multiplier for nuclear security.
500 Presaged by the UK-led FOC mechanism on this subject.
for Seoul. The ROK focus would be on first, transforming the political will of the Washington Summit into action and implementing the decisions in the Communiqué and the Work Plan; progress reports by individual participants would therefore be attached to the Seoul Communiqué. Second, efforts would be made to enhance public awareness of the threat of nuclear terrorism, and finally, there would be focus on a ‘new and inevitable’ dimension -- nuclear safety -- and the impact of the Fukushima accident on the future of the nuclear industry and on nuclear security.\footnote{502}

**Old ghosts, new fears**

The meeting of the Sous-Sherpas at Seoul (27-28 June) and the Sherpas at Helsinki (4-5 October) discussed the RoK draft Communiqué. Gary Samore and Kim Bong-hyun co-chaired the Helsinki meeting. The Co-Chairs were keen that participants provide national progress reports to be annexed to the Communiqué as an outcome of the Seoul Summit, and that the Summit start on 26 March 2012 with a Working Dinner to review the progress made since the Washington Summit. However, a number of countries were uncomfortable even with providing voluntary progress reports seeing that as the first step on a slippery slope to formal compliance reporting on what they believed was a national responsibility. Russia insisted on a single Summit document with no attachments while Pakistan said no format should be prescribed for national statements or progress reports. No consensus was reached at Helsinki on the nature and format of these reports.\footnote{503} Separately, the RoK suggested that the Summit discussions be interactive – a theme that would recur in 2014 - and future commitments should also be discussed at the morning session on 27 March 2012. A few participants demurred and asked for continuing the successful Washington model of pre-selected discussants instead of a free-for-all interactive session, which presumably their leaders would be uncomfortable with.\footnote{504}

\footnotetext{502}{Interview 11.2.}
\footnotetext{503}{This ‘powering’ set the stage for further ‘puzzling’ leading to a breakthrough proposal from the Algerian Sherpa agreed at New Delhi. Source: private communication with a Sherpa.}
\footnotetext{504}{Interview 11.2.}
By now, the interface with nuclear safety had become a first order political issue for the 2012 Summit. The ROK made the point that in public perception the two notions were closely linked and that both had a common objective: protection of people and the environment against radiation. However, a majority of countries argued against such a close linkage and were averse to the Summit becoming a forum for participants to pronounce themselves on the merits of nuclear energy itself. Others, including a number of European countries, some of them (Germany, Italy and Switzerland) in retreat from nuclear energy, highlighted the importance of nuclear safety as a condition for moving forward on the nuclear renaissance. Some others such as India said that nuclear safety and security were different in nature and required different responses; if both needed to be indeed looked at together it should be in the context of building public confidence in the future of nuclear energy.\textsuperscript{505} The sharpness of the debate abated as the IAEA provided inputs on the work of its 2009 Joint Task Force on synergies between nuclear safety and security;\textsuperscript{506} the NSS was not the forum to have discovered this interface, it already existed and had been subject to considerable thought. The hosting of a High Level meeting on Nuclear Safety and Security by the UN Secretary General on the margins of the UNGA on 22 September 2011 also diluted the need for the interface to be considered within the NSS. The IAEA played a coordinating role for the meeting, including the preparation of a system-wide study on the implications of the Fukushima accident. The study included a section drafted by the IAEA on the nexus between nuclear safety and security.\textsuperscript{507}

At the superficial level the debate on the safety-security interface seemed to be about the future of nuclear energy post-Fukushima.\textsuperscript{508} However, at a deeper level this was about where NSS participants saw the most catastrophic risk coming from. One group saw nuclear terrorism involving weapons usable material as the most serious threat while another saw the risk as more diffuse and coming almost from almost every part of the

\textsuperscript{505} Interview 11.2.
\textsuperscript{506} The Joint Task Force (JTF) of the Commission on Safety Standards (CSS) and the Advisory Group on Nuclear Security (ADSEC) was set up in 2009 and its report approved by the IAEA Board of Governors in November 2011. It assessed inter alia the feasibility of a single set of standards for nuclear safety and security. See Annex X in “The Interface Between Safety and Security at Nuclear Power Plants”, IAEA Document INSAG-24, August 2010.
\textsuperscript{508} As one European participant put it at Seoul in June 2011: “The nuclear renaissance is over.” Source: Interview 11.2.
nuclear fuel cycle, including the aspect of safety of nuclear reactors and spent fuel storage facilities. Fukushima merely provided an excuse for these differences to be played out on the NSS stage.\textsuperscript{509}

The second substantive issue that remained unresolved at the Helsinki meeting was the French proposal for negotiation of HEU management guidelines in the IAEA as well as transparency on civilian HEU holdings. The idea which built on the Washington understanding on the need for minimising the use of HEU was strongly supported by the U.S. and a number of EU countries. After the initial discussion at Vienna on 22 March 2011 revealed sharp divisions, France came out with a revised non-paper clarifying the voluntary nature of the proposed HEU Guidelines and their limited scope well within the framework of existing IAEA recommendations and technical standards.\textsuperscript{510} The non-paper also underlined the transparency effort involved and its link with non-proliferation commitments and obligations. Further discussions at Seoul in June showed that the proposal continued to be controversial. At Helsinki, France defended its proposal as a legitimate build on the Washington understanding and said that it saw HEU transparency as the beginning of a series of national commitments. However, Russia remained strongly opposed to the French proposal, in particular reporting of HEU stocks,\textsuperscript{511} while China and Pakistan said that HEU guidelines should be drafted at the IAEA.\textsuperscript{512} The discussion remained inconclusive and the U.S., which was keen for progress on the HEU issue at the Summit in Seoul, floated the idea of a smaller group of countries to discuss the issue further on the margins.\textsuperscript{513}

A related issue was the notion of ‘unneeded nuclear material’\textsuperscript{514} and risks associated with separated plutonium in military and civilian stockpiles. India, China, Russia, Pakistan and others criticized the concept of ‘unneeded’ material, which eventually dropped out of the discussions. China, France and India also opposed the reference to risks associated with separated plutonium and India opposed language that sought to highlight risks associated

\textsuperscript{509} Ibid.
\textsuperscript{510} Ibid.
\textsuperscript{511} Annex 7.
\textsuperscript{512} This may be due to the uncertainty about how much HEU has been produced domestically.
\textsuperscript{513} Where according to a former IAEA official the prospects for progress were already low.
\textsuperscript{514} Russia’s categorical opposition ensured that the idea went nowhere. Source: Interview 4.
with storage of spent fuel. The underlying difference continued to be on the nonproliferation and nuclear security implications of open fuel cycle approaches as opposed to closed fuel cycle approaches, and whether less material meant less nuclear security risk and vice versa.

Another unresolved issue was a reference to nuclear disarmament, by now a hardy perennial of the NSS process. At Helsinki, there was a fresh attempt to insert language on nuclear disarmament and the NPT into the draft by South Africa, Egypt, Algeria and Morocco. The U.S. clarified that this issue had been settled at Washington and there was no need to reopen it. It was supported by other nuclear weapons’ possessors - China, France, India, Russia, the UK and Pakistan - who called for maintaining the Washington understanding of a focused approach to nuclear security. At the heart of this debate was the discomfort of key non-nuclear weapon states with the high-level attention being given to nuclear security while NPT related disarmament goals were not receiving the same kind of summit level attention. These states also perceived a sense of discrimination because of what they felt was an excessive focus on the security of civilian nuclear material that they possessed, which exacerbated the already heavy non-proliferation and safeguards burden on them.

With Interpol joining the Summit process, the issue of illicit trafficking and law enforcement cooperation got highlighted in the run up to Seoul. Nuclear forensics discussions in the IAEA had been stuck in a highly technical track for years and the idea of national forensics libraries accessible to the IAEA had little traction. The hope for Seoul after the modest results at Washington was that Interpol would bring a fresh and functional law-enforcement cooperation aspect to the discussion. While the development of national nuclear forensic capacities gained acceptance in the discussions at Seoul and at Helsinki, there was again little support for coordinated international action on nuclear forensics and the Communiqué language on forensics remained modest at the insistence of countries

515 Interview 11.2.
516 Ibid.
517 IAEA has its own core competences, particularly with regard to materials while the Interpol has experience and expertise with regard to the human element in trafficking. Different governance structures and the politics around the two organisations make marrying the two sets of competences difficult; the NSS became a vehicle for better coordinating and communicating their work.
such as China, Russia and Pakistan. Similarly, the U.S. proposal for a structured ‘Counter-Nuclear Smuggling Team’ faced objections on grounds of national specificities with regard to the interface between intelligence and law-enforcement and the need to respect national jurisdiction.\textsuperscript{518}

A bookend for the process issue highlighted at the beginning of this section, namely the reluctance to embrace a soft compliance mechanism to tick off commitments undertaken at Washington, was the proposal for a coordinating Conference in 2013 to consolidate and synchronise various international efforts with regard to nuclear security. At one end of the spectrum was a desire not to reinvent the wheel and stick to the existing mandates and processes of disparate nuclear security instruments and mechanisms while at the other end was the notion, dear to many NGOs, of a cohesive international nuclear security regime with its own compliance mechanism. The hosts had clearly eschewed the latter at Washington\textsuperscript{519} but the former seemed to be a below par effort. There was perhaps a middle path to consolidating a global architecture of nuclear security. Existing and future mechanisms could be held separate yet together through a coordinating effort. The question was whether the NSS could assume this coordinating role in nuclear security governance. This faced resistance. A number of key players such as Brazil, China, Russia, India and Pakistan continued to reiterate strong support for the central role of the IAEA in global nuclear security efforts. Russia in particular remained strongly opposed to a coordinating conference coming out of the NSS concerned that that would undermine the role of the IAEA and the UN.\textsuperscript{520}

\textbf{Progress at New Delhi}

A revised draft was circulated in the inter-sessional period before the Sherpas meeting in New Delhi taking into account the suggestions made by various participants at Helsinki.\textsuperscript{521} The two co-Chairs were keen to resolve all substantive issues during the New

\textsuperscript{518} Interview 11.2.
\textsuperscript{519} Interview 2.1.
\textsuperscript{520} Interview 11.2. Eventually, the IAEA held a Ministerial-level Conference on Nuclear Security in July 2013.
\textsuperscript{521} Discussion Draft dated 17 January 2012.
Delhi meeting so as not to leave any lose ends and to confine the 23 March 2012 Seoul meeting of Sherpas to protocol aspects and the issue of who would chair the NSS in 2014 with no consensus yet on the Netherlands as the next host.\footnote{184}

In the event agreement was reached on all portions of the text except three. One was a reference to the contributions from the parallel events – the Nuclear Industry Summit and the Nuclear Security Symposium of NGOs – while another was a reference to areas of focus for the future development of nuclear forensics capabilities.\footnote{10} However, the most significant outstanding issue was the following text in the preamble:

\begin{quote}
We affirm that full and effective implementation of the non-proliferation regime in all its aspects has a vital role in promoting international peace and security without hampering the peaceful uses of nuclear energy. We are deeply concerned at the continued risk for humanity represented by the possibility that nuclear weapons could be used and the catastrophic humanitarian consequences that would result from the use of these weapons. We, therefore, are committed to the total elimination of nuclear weapons leading to nuclear disarmament and we affirm that the final phase of the nuclear disarmament process should be pursued within an agreed legal framework.\footnote{223}
\end{quote}

The text was introduced at the last minute at New Delhi by South Africa, supported by Brazil, Argentina, Egypt, Indonesia, Norway, Singapore, Switzerland and others. All the five NPT nuclear weapon states, India, Pakistan and several Western Group participants were opposed to this addition. However, South Africa stood firm.\footnote{225} The Co-Chairs as well as the U.S. separately pressed South Africa to accept a compromise text. One suggestion was to delete the South African paragraph and instead strengthen the existing second preambular paragraph with additional language recognizing that the full and effective

\footnote{522} Interview 10.  
\footnote{523} A language fix was found for the bracketed paragraph on the two events to be held prior to and parallel to the Summit by simply noting the fact of their being held. The language on nuclear forensics was finessed with the perennial diplomatic fixer ‘as appropriate’.  
\footnote{525} Interview 11.4; Ambassador Minty proposed the language apparently after approval by President Zuma; he had played a key role in the 1995 Review and Extension Conference of the NPT and was channeling some of the frustration felt by the NNWS. In hindsight the South African proposal was an early signal of the dissatisfaction on progress on nuclear disarmament that manifested after 2013 in initiatives such as the conferences on the humanitarian consequences of nuclear weapons. While there was speculation that the proposal was payback for the push on HEU, this was less of a tit-for-tat for the HEU pressure and more a reflection of South Africa’s position of principle on nuclear disarmament; Interview 4.
achievement of the shared goals of nuclear disarmament, nonproliferation and peaceful uses has a vital role in promoting international peace and security without hampering the peaceful uses of nuclear energy. After consultations between capitals, and some brinkmanship, on 21 March 2012, less than a week before the Summit, the ROK Sherpa proposed a revised formulation on nuclear disarmament using language from UNSC Resolution 1887. This compromise text underlined the need for further concrete steps to create the conditions for a world without nuclear weapons while reaffirming the three pillars of disarmament, non-proliferation and peaceful uses as shared goals. It also prefaced the shared objective of nuclear security with a reference to a commitment to seek a safer world for all. This did not work out either. The issue was finally sorted out in a small group (the ROK, the U.S., Russia, Brazil, South Africa, Egypt and India) at the 23 March 2012 Sherpas’ meeting. The reference to further concrete steps and creating the conditions for a world without nuclear weapons proved to be a bridge too far. However, compromise was reached using the more general language of the Washington Communiqué including a reference to seeking a safer world for all. As noted earlier, there was a tense bilateral South Africa-U.S. component to this multilateral drama centered on South Africa’s stockpile of HEU. This issue also provides an example of multilateral give and take without any substantive learning.

In contrast, the stage was set for learning on another issue by the time the Sherpas arrived in New Delhi in January 2012. This was the issue of a format for and use of “National Progress Reports” on which no consensus could be reached at Helsinki. While Russia, Pakistan and Egypt had a fundamental problem with national reporting and evaluation, many others were opposed simply because of an overly prescriptive approach. As a Sherpa put it: “The template for the report (prepared by Algeria) was very good but the approach from the floor was not. The ROK was lecturing everyone.” The U.S. realised what was happening and swung into damage control just before the Delhi meeting. As the same Sherpa put it: “When there was no more pressure (later in Delhi) we agreed. It was simple, non-intrusive, a Confidence Building Measure (CBM).” The “National Progress Reports”

526 Interview 11.2.
527 Interview 11.2.
would not be attached to the Summit Communiqué but would be released separately, a practice that became standard for subsequent Summits. 529 Looking back, a Sherpa observed: “There needed to be some accountability but people overreacted to the idea of reporting. The laissez faire reporting arrangement put in place after Seoul has served its purpose well. It is just a demand signal for countries to say something. By and large they have followed the reporting structure proposed by the host.”530

Another significant area of progress at New Delhi was radiological security even though a lot of time was spent finalising the text. There were more than two-dozen interventions in particular with Germany and Argentina pitted against each other on how references to radiological security should be worded.531 As a Sherpa put it: “Until the Seoul Summit, we fought to death; we were playing disarmament versus radiological sources.” While Germany might have seen the additional emphasis on radiological sources as an essential step in a comprehensive approach to nuclear security, others such as the country represented by this Sherpa saw it as a further shift in burden from the eight NSS participants who possess nuclear weapons to others. When agreement was reached in New Delhi on confining language on radioactive sources to one section, the opposition eased. As the same Sherpa put it: “The fight continued in some form into the Ottawa meeting (in October 2013) but we started to see things differently. It was a learning process.”532

At Washington, the U.S. had kept the references to radiological sources to the minimum despite the push by Germany to project radiological material security on par with security of nuclear materials. The argument was that this would make the NSS scope unmanageable given the large number of sources involved and given that the communities involved in radiological sources management were very different. An unstated reason was a shift in focus away from countries with holdings (of HEU and Pu) of concern, which Russia’s wholehearted support of the radiological security issue in 2010 did nothing to dispel.533 The U.S. tempered its opposition in 2011 in the face of persistent efforts by Germany, France

529 Interview 10.  
530 Interview 15.1.  
531 Interview 10.  
532 Interview 10.  
533 Interview 15.1.
and Italy. 534 Once the U.S. came on board, the framing of radiological security as a less ambitious technical issue - a proposal by Belgium for States to include the IAEA Code of Conduct in national legislation was dropped from the draft 535 - was helpful at New Delhi in reducing opposition from developing countries wary of additional burden due to international scrutiny of radiocative sources.

On HEU management, the Russian opposition and possibly the negotiating linkage with nuclear disarmament created by South Africa and others ensured a substantial dilution of the original U.S. idea of September 2010. References to reporting of civil nuclear materials as a transparency measure and the Plutonium Management Guidelines included in drafts up to November 2011 were removed at New Delhi. However, the Washington Summit references to minimisation of HEU use were bolstered with calls for transparency on policies for HEU use and civil HEU stockpiles, even though further action was left to be pursued at the IAEA with the Communiqué calling for development within the framework of the IAEA of options for national policies on HEU management. 536

Apart from radiological sources and voluntary transparency on civil HEU use, other new elements gained greater prominence - information security, transport security, nuclear security governance, assistance to developing countries and Centres of Excellence. The idea of structured counter-nuclear smuggling teams survived in the draft Communiqué as “action-oriented coordination among national capacities” to combat illicit trafficking in nuclear materials, a ledge to be built on later. 537

534 The view from Asia was also similar to that from Germany and France. Li Bin, ‘Nuclear Security Cooperation’, China Daily, 20 March 2012. Li argued that “While U.S. experts worry more about terrorists stealing fissile material for nuclear weapons, experts in East Asia worry more about terrorists dispersing radioactive material and attacking nuclear facilities.”
535 Interview 11.1.
536 Para 5, Seoul Communiqué.
537 Para 9, Seoul Communiqué. Simultaneously, a ‘gift basket’ of 19 countries led by Jordan came up at Seoul and grew over time to include initially reluctant states such as India.
Summit programme and discussions

The RoK made an effort to capture public attention and to reach out to industry and academia through events on the margins of the Summit. A 15-member Eminent Persons Group (EPG) was set up in November 2011 to advise President Lee Myung-bak on the Seoul Summit and to help promote the meeting nationally and internationally. The EPG presented a brief report, which did not offer particularly striking insights into either the substance or the process for the Seoul Summit. Its six recommendations included the holding of a third Summit to provide political impetus at the highest level for strengthening the nuclear security regime and for assessing progress made on the Washington Summit’s 4-year lock-down target.\(^{538}\) The industry meeting prior to the Summit was hosted by Korea Hydro & Nuclear Power Co. (KHN) on 23-24 March 2012 under the banner of ‘The Role of Nuclear Industry in Enhancing Nuclear Security and Safety’; it adopted a Communiqué after considering reports from working groups dealing with ‘Minimization of Civilian Uses of HEU’, ‘Securing Sensitive Information’ and the ‘Nexus between Security and Safety Post-Fukushima’. These themes mirrored the Summit agenda. Simultaneously, a number of NGOs and nuclear security experts met on 23 March 2012 at the Nuclear Security Symposium under the title ‘Innovating Global Nuclear Security Governance’ and considered themes such as ‘Nuclear Terrorism Threats and Nuclear Security Status’, ‘Nuclear Security Challenges and Solutions’, ‘Interface Between Nuclear Security and Safety’ and ‘Global Nuclear Security Governance’. Their work was merely noted in the Communiqué as countries such as Russia, China, Egypt and Pakistan opposed a formal link between the NSS and the work in the non-governmental forums.\(^{539}\)

The Summit programme was broadly on the lines of the Washington Summit with a leaders-only opening dinner on March 26 focused on ‘Review of progress since the 2010 Washington Summit’.\(^{540}\) The main Summit day on March 27 saw a working lunch discussion on the ‘Nuclear Security-Safety interface’, sandwiched between thematic discussions in the morning and the afternoon on ‘National Measures’ and ‘International Cooperation to


\(^{539}\) Source: Interview 11.2. Another Sherpa attributes this to an inbuilt aversion in certain national systems for ‘amorphous forums’ and for mixing up forums and mandates, Interview 4.

\(^{540}\) This was a process innovation to enable learning on the issue of review of commitments.
Enhance Nuclear Security, including future commitments.’ Despite the attempt at interactivity, there was very little spontaneity and the norm was 4-minute prepared speeches by the leaders. The Summit ended with the release of the Communiqué and a press conference by the ROK President. The DPRK nuclear issue, which was of particular interest to the hosts, did not figure on the agenda, because of the narrow scope of the Summit and because of China’s desire to keep it out. However, it did figure in many national statements especially because of the DPRK’s threat of launching a satellite in April 2012 in violation of its commitment not to undertake missile launches. This was akin to the muted presence of the Iran nuclear issue in the margins of the Washington Summit, with the U.S. using the opportunity to canvass support for a new round of sanctions on Iran.

There was considerable focus on national measures and almost every country spoke at the Summit about the steps taken to strengthen nuclear security after Washington. In addition, a number of countries – Algeria, Argentina, Armenia, Australia, Belgium, Brazil, Canada, Chile, China, the Czech Republic, Denmark, Finland, France, Gabon, Georgia, Germany, Hungary, India, Indonesia, Israel, Italy, Japan, Lithuania, Malaysia, Mexico, Morocco, the Netherlands, New Zealand, Nigeria, Norway, Philippines, Poland, RoK, Romania, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, Ukraine, the UK, the US and Vietnam - submitted ‘national progress reports’. Russia submitted a ‘Memorandum’ and Egypt, Jordan and Pakistan chose to make national statements instead of a report. All the reports and national statements were made public during the Summit.  

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541 The ROK and Japan for example
542 Press Briefing by Jeff Bader, NSC Senior Director for Asian Affairs on President Obama’s meeting with Chinese President Hu, 12 April 2010.
<table>
<thead>
<tr>
<th>Area of knowledge-construction/Consolidation</th>
<th>Action reported/announced at 2012 Seoul Summit</th>
</tr>
</thead>
</table>
| International instruments and mechanisms | • Reflection in national law – Indonesia, Nigeria, Malaysia, Spain.  
• Ratification of amended CPPNM – Argentina, Armenia, Brazil, Canada, France, Georgia, Israel, Italy, Malaysia, Mexico, Morocco, New Zealand, Philippines, ROK, Singapore, South Africa, Sweden (decided to ratify) and Turkey (process under way).  
• Ratification of ICSANT - Canada, France, Indonesia, Israel, Italy, Malaysia, New Zealand, Norway, Philippines, the ROK, Singapore, Sweden (for 2013), Thailand and Turkey (process completed).  
• IAEA – Belgium, Canada, China, Denmark, France, Germany, Japan, New Zealand, Norway, ROK, UK and the U.S. (financial contributions), Australia, Finland, France, Romania, Sweden, UK and the US (IPPAS missions), Mexico (IAEA regulatory review), Singapore (joined ITDB), IAEA (international conference in 2013)  
• UN – India (resolution at UNGA)  
• UNSCR 1540 – Saudi Arabia (financial contribution to 1540 Committee), Mexico (programme to build national capacity), Morocco (national report)  
• GICNT – Argentina, Mexico, Philippines, Singapore, Thailand and Vietnam joined while Algeria and Malaysia announced so.  
• Global Partnership – extended at G8’s Deauville Summit in 2011, Kazakhstan became 24th member.  
• Interpol – U.S. contributed $2.4 million to new Radiological and Nuclear Terrorism Prevention Unit |
| Nuclear Security-Safety interface | • Political and programmatic profile – Philippines and the ROK (joint seminar), UN and IAEA (High Level Meeting in New York)  
• National legislation and regulatory framework – Czech Republic, India, Gabon, Georgia, Indonesia, Morocco.  
• Training – Argentina (integrating security into courses on safety). |
| Security of radioactive sources | • Political and programmatic profile – Germany led a group of 24 to champion radiological security  
• Ensuring compatibility with IAEA Code of Conduct - Switzerland  
• Centralized monitoring, Tracking of radioactive sources – Chile, ROK, Vietnam, IAEA, Indonesia  
• National laws/rules/regulatory mechanism – Armenia, UAE, Brazil, Gabon  
• National registry/database – Azerbaijan, China, Hungary, Poland  
• Recovery/Repatriation – U.S. (recovery of over 4000 unneeded radiological sources), France, Nigeria |

| Conversion to LEU, Minimization of HEU use (in research and production reactors) | • Political and programmatic profile – Norway (hosted international symposium on HEU Minamination)  
• Conversion to LEU and repatriation of existing HEU fuel – Belgium, Canada, China, Hungary, Israel, Poland, Mexico, Russia (Vietnam, Ukraine and Uzbekistan added after the NSS to pre-existing programme with US on repatriation of HEU from Russian-origin reactors from 14 countries), South Africa (converted Safari-1 research reactor to LEU and repatriated U.S. origin HEU fuel used in it; converted a commercial Mo-99 production reactor to LEU fuel with US help), Ukraine (repatriated all HEU), Vietnam.  
• Technical and industrial collaboration to convert from HEU to LEU fuel – Belgium, France, the Netherlands and the U.S. Joint Statement on minimization of HEU and reliable supply of medical radioisotopes; Quadrilateral initiative of Belgium, France, the ROK and the U.S. to test high density LEU fuel for Mo-99 production |
| Disposition of Pu | • Return – Belgium (of HEU and Pu to the U.S.)  
• Secure storage – U.S.-Kazakh-UK programme to shut down plutonium producing BN350 reactor in Kazakhstan completed and spent fuel transported to secure storage in Semipalatinsk. |
| Countering illicit trafficking and nuclear smuggling | • National laws and regulations – Spain  
• Border controls and national capacity to detect illicit trafficking – Chile, Germany, Morocco, Norway (assistance to Central Asia), Pakistan, Ukraine (established Radioactive Detection System to secure border crossings and main airports and highways).  
• Port security – China, Indonesia, Israel, Italy, Malaysia, Nigeria, Romania, Philippines, Spain, Thailand, Vietnam  
• Setting up of counter nuclear smuggling team – Jordan  
• Training programmes, exchange of best practices – Algeria, Armenia and China (U.S. assistance), Gabon (French assistance), Poland (hosted counter nuclear smuggling conference with 27 NSS participants, IAEA and Interpol), Turkey (with Bulgaria). |
| Information Security | • Political and programmatic profile – UK 31-country joint statement  
• National strategy, updating of Design Basis Threat - Switzerland (protection against cyber attacks), Finland, Netherlands (made DBT use mandatory on cyber terrorism), U.S. (started monitoring for anomalous behavior on computer networks)  
• International cooperation – UK (hosted a conference) |
| Transport security | • Political and programmatic profile – Japan joint statement with France, ROK, UK and the U.S.  
• National regulations – Philippines |
| Nuclear forensics | • Setting up national laboratory/center or task force – Singapore, Thailand and Spain  
• Improving existing capabilities/Technology development – Australia, Canada, U.S.  
• International cooperation and experience sharing – Australia, Netherlands (launch of a programme in the Netherlands Forensic Institute in 2011 to foster cooperation among nuclear and forensic institutes worldwide), UK, Russia and U.S. (as co-Chairs of GICNT with its Working Group on Nuclear Forensics led by Australia), U.S. |
Learning at Seoul

A total of 58 leaders attended the Seoul Summit, including 34 (of the 53 participating states) at the level of Head of State/Government. Thus, high-level attention on the global threat posed by nuclear terrorism was sustained despite the diversion of public attention to nuclear safety after the Fukushima disaster. Participation also went up at lower levels and meetings of Sherpas and Sous-Sherpas regularly seated 120 or more delegates. The Sherpa format still retained its informal and relatively fast-paced character compared to other multilateral forums.\(^{545}\) Outreach to states and institutions not participating in the NSS was energetic and wide-ranging. Chile, Poland, Nigeria, Morocco, Thailand, the ROK and the U.S. led efforts particularly in their own regions to reach out to the broader international community on the goals of the 2010 Summit Communiqué.\(^{546}\) A Summit process got institutionalised with the decision to hold a third Summit at The Hague in 2014\(^{547}\) and a soft voluntary implementation reporting mechanism in the form of ‘National Progress Reports’ was put in place.

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\(^{547}\) Russia, which was again one of the countries sounded out, felt it could not host the third Summit because of commitments related to winter Olympics.
At Washington, participants had brought individual ‘house gifts’ for the host to add to the Summit menu of agreed deliverables. At Seoul, this practice evolved into ‘collective house gifts’ agreed by like-minded countries outside of the Summit Communiqué discussions.\(^{548}\) The topics covered by these ‘gift baskets’ were ‘Nuclear Information Security’,\(^{549}\) ‘Security of Radioactive Sources’, ‘Activity and Cooperation to Counter Nuclear Smuggling’, ‘National Legislation Implementation Kit on Nuclear Security’, ‘Nuclear Training Centers’ ‘Transport Security’, ‘High-density LEU Fuel Production’, ‘HEU Minimization and Medical Isotopes’, ‘Trilateral Cooperation at the Former Semipalatinsk Test Site’, ‘Outreach Efforts’, ‘Joint Statement on Nuclear Terrorism’,\(^{550}\) ‘Contributions of the GICNT on Enhancing Nuclear Security’ and ‘2012 NSS Deliverable – Global Partnership’. These were all areas where the sponsors felt that not enough progress was being marked collectively inside the Communiqué or where the issues covered were of interest only to a few and the joint statements served to inform the larger gathering.\(^ {551}\) Thus, a third platform for commitments emerged in addition to the Washington Communiqué/Work Plan and the bilateral agreements crafted on the margins of the NSS process by the U.S.\(^ {552}\) This intermediate level allowed relatively faster progress to be achieved within smaller groups despite the risks of dissipation of collective will and creation of a multi-speed NSS.

\(^{548}\) Kim Bong-hyun recalled that the Gift Basket idea emerged out of the Friends of the Chair discussions at the first Sherpa meeting to provide more impetus to the discussions: “We suggested that each member of the Friends of Chair group lead one or more joint statement(s) to pledge their additional commitments in specific area of nuclear security.” Source: Interview 9. Another former Sherpa felt, however, that the idea of gift baskets came originally from the U.S. NGO community (Kenneth Luango of the Partnership for Global Security). Source: Interview 3. There is a grain of truth in both perspectives; the thinking in the NGO community about a framework convention on nuclear security clashed with the official thinking on the futility of such an approach at a track 1.5 meeting organised by the IISS in June 2011. The Gift Basket idea emerged out of this dialect. The fundamental issue for the U.S. was escaping the ‘tyranny of consensus’ in multilateral forums and its thinking evolved to reflect the view that not every single component of a Summit outcome needed to be agreed by consensus. Interview 15.1.

\(^{549}\) The most successful gift basket with 31 adherents; some of the ideas that underpin this statement can be traced back to the attempt in December 2009 at Tokyo to add nuclear knowledge and expertise to the scope of the NSS work, others such as the national practice of international standards related to information security and cyber security in the nuclear domain, were drafted on in 2012.

\(^{550}\) In this Joint Statement, the U.S., the UK and France, consistent with their rights and obligations under the NPT, highlighted their specialized knowledge and capability to diagnose, render safe, characterise and dispose of a nuclear threat device. Such an assertion would have been difficult to carry inside the NSS. It also served a limited deterrent objective.

\(^{551}\) The latter included for example the statements on the GICNT, Global Partnership and Kazakh-Russian-U.S. trilateral cooperation at the former Semipalatinsk site.

\(^{552}\) The RoK did its bit by entering into a cooperation and assistance agreement with Vietnam and the IAEA on tracking of radioactive sources. ‘Republic of Korea, Vietnam, IAEA to pilot radioactive source tracking system’, Press Release, 2012 Seoul Nuclear Security Summit.
There was unambiguous learning on radiological security. The preamble of the Summit Communiqué recognized the fundamental responsibility of States to maintain effective security of ‘other radioactive materials’ on par with a similar responsibility for nuclear material and nuclear facilities. The operative part then introduced a separate section on Radioactive Sources immediately after Nuclear Materials. The section ended up with extensive references to existing IAEA guidance including putting the IAEA Code of Conduct into national practice, establishment of national registers of high-activity radioactive sources, maintenance of control over orphan or disused sources, ratification of ICSANT, national efforts and international cooperation to recover lost, missing or stolen sources et cetera.\(^{553}\) Thus, the threat spectrum, which the NSS addressed, expanded from nuclear material and facilities to radioactive sources as well. This was a significant evolution from Washington and brought the U.S. into sync with its major G7 partners such as Germany and France.\(^{554}\)

The ROK proposal for a working lunch on 27 March 2012 with the participation of the UNSG and DG IAEA to discuss the synergy between nuclear security and nuclear safety proved to be an acceptable way of addressing the political necessity for the hosts and others to take up the issue of nuclear safety. The puzzling on the security-safety interface created an opportunity to enhance focus on facility design, emergency preparedness and the security of spent fuel and radioactive waste; the Communiqué recorded succinctly this learning on coherence between nuclear safety and security efforts, both contributing to maintaining public confidence in peaceful uses of nuclear energy.\(^ {555}\)

There was a sharpening of concepts in terms of practice apart from an increase in the number of practitioners. The count of countries having converted their research reactors from HEU to LEU reached 18 at the Seoul Summit. A total of 530 kg of HEU had been removed from 8 countries since the Washington Summit; this included a total cleanout of all HEU stockpiles from Ukraine (to Russia) and Mexico (to the U.S.). Belgium and Sweden agreed to repatriate separated Plutonium to the U.S. immediately before the Seoul Summit.

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\(^{554}\) When the Washington Summit was proposed in 2009, European intelligence agencies assessed the risk of nuclear terrorism using a nuclear weapon as minimal compared to the risk of a dirty bomb. Interview 4.
\(^{555}\) Para 7, Seoul Communiqué.
A total of 20 additional countries ratified the amended CPPNM while 14 new countries ratified the ICSANT; 18 out of these 34 were NSS participants. The IAEA received new pledges of contributions to its Nuclear Security Fund from Belgium, Canada, Denmark, France, India, Japan, the ROK, Norway, Netherlands and the UK; 4 countries – France, Netherlands, Sweden and the UK – received an IAEA IPPAS mission in the period between the Summits in Washington and Seoul. In addition to the 6 countries that announced at Washington the establishment of ‘Centers of Excellence’ for nuclear security training, 10 more countries revealed plans to do so at Seoul and 6 countries followed through on their Washington pledges to join the GICNT. Overall, the national progress reports submitted showed that of the over 70 commitments made by 32 countries at Washington, nearly all were achieved. Further, 100 fresh commitments were recorded at Seoul.556

The Washington idea of Centers of Excellence – originally mooted in the IAEA in the context of discussions on IAEA’s Nuclear Security Plan - developed further, including in the direction of networking among the Centres. A Joint Statement by 24 participants underlined their intent to collaborate to build a cadre of highly qualified and trained nuclear security personnel as well as to provide scientific support for the detection of and the response to nuclear security events through an international network of such Centres.557

From a narrow angle, many of the examples cited above can be said to be national learning as opposed to or distinct from multilateral learning. However, if we take away the NSS, it is hard to imagine that such steps would have been taken on their own and at this pace. Above all it is hard to imagine that these measures could have been pursued unilaterally along conceptual lines and clusters (such as safety-security interface, countering nuclear smuggling, management of civilian HEU 558, countering nuclear smuggling, information and transport security) that got shaped during the course of the NSS discussions giving them a coherence and power that discrete national steps would not have had.559 The

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558 A significant cooperative initiative announced at Seoul was the Belgium-France-ROK-U.S. joint project to assess the effectiveness of high-density LEU fuel for replacing HEU fuels in high performance research reactors using a centrifugal atomisation method developed by ROK.
fact that many of these measures were presented as ‘gift baskets’ by groups of countries further underlines their multilaterally determined character. Finally, while some of the measures taken in 2010 could be attributed to the desire of the participants to be in the good graces of the U.S. in general and President Obama in particular, by Seoul it became evident that participants were actually getting down to work on their own, including in areas (security of radioactive sources) which the U.S. itself was reluctant to promote.  

The Summit also set some concrete targets collectively. Participants agreed to bring the amended CPPNM into force by 2014 and to announce voluntary actions to minimise HEU by the end of 2013. However, the goal of securing all vulnerable nuclear material globally by the end of 2013 mentioned in the June 2011 draft of the Communiqué dropped out of the final version.

The Seoul Summit further illustrated the challenge of consolidating existing nuclear security regimes into a single global nuclear security architecture. The U.S. epistemic community ‘learnt’ that the IAEA’s coordinating role in the global nuclear security architecture could not be supplanted by the NSS and that there was no alternative to a step-by-step, *ad hoc* construction of a global scheme. Accordingly, the Seoul Communiqué noted the importance of strengthening coordination and complementarity among nuclear security activities and welcomed the IAEA proposal to organise an international conference in 2013 to strengthen coordination among nuclear security related multilateral initiatives. In the same vein, the norm entrepreneurs began to learn that agreement on an objective international entity (such as Interpol) for sharing of actionable information to combat illicit trafficking was impossible at the time and it was best in the light of concerns on sovereignty and intrusiveness to promote Interpol-IAEA coordination.  

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562 This was reinforced from the outside with a Joint Statement by the U.S., the Netherlands, France and Belgium, the latter three the leading producers of medical isotopes in Europe, committing to non-HEU based production processes by 2015 subject to regulatory approvals. The U.S. undertook to supply the necessary HEU targets in the interim and to help recycle or dispose of material from past production.

563 The NSS had a direct influence on the IAEA’s decision to hold the Ministerial-level Conference. Source: Interview 15.1.

564 This learning would continue into the 2016 Washington Summit.
embraced only by those that posed few nuclear security challenges. The ‘gift basket’ idea best illustrated this compromise and underlined that limited-membership initiatives nested inside a multilateral process, itself limited in membership, could generate peer pressure for progress within the larger process.

<table>
<thead>
<tr>
<th>Type of shift</th>
<th>Evidence of learning in NSS 2012</th>
<th>What was learnt? Or not learnt?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Abandonment of position</td>
<td>Nuclear security efforts should be focused only on nuclear material and not radiological material.</td>
<td>Unsecured radiological sources present an equal threat of nuclear terrorism.</td>
</tr>
<tr>
<td>2. Policy compromise or adjustment/sharpening of concepts</td>
<td>Nuclear safety-security interface</td>
<td>An integrated approach to the two say in terms of facility design/operation and emergency response has value. Complete elimination of civilian HEU use would take away a significant vulnerability, pending which there should be transparency and reporting on use. <strong>Only partially learnt; collective 2013 goal diluted to individual voluntary action.</strong></td>
</tr>
<tr>
<td></td>
<td>HEU minimisation and transparency. Sharpening of focus on information and computer security; countering nuclear smuggling and role of Interpol. Coordinating role of IAEA in the global nuclear security architecture.</td>
<td>In view of technological developments, traditional nuclear terrorism threat spectrum needs to expand to include intangibles; locking down vulnerable material would still leave a gap if illicit actors and trafficking not tackled. A compact unified global nuclear security architecture not feasible and it is best to build a loose architecture around the IAEA.</td>
</tr>
<tr>
<td>3. Development of new ideas and shared understanding</td>
<td>Gift baskets.</td>
<td>Certain ideas could be first forged and practiced in small groups on the margins of multilateral forums accelerating progress on substance. A tracking mechanism based on voluntary national reporting could review progress against non-legally binding commitments.</td>
</tr>
<tr>
<td>4. Putting into practice of policy compromises or new ideas/understanding</td>
<td><strong>(Table 6.2)</strong></td>
<td>****</td>
</tr>
</tbody>
</table>
Chapter 7

The Hague Nuclear Security Summit 2014

The Summit at The Hague was marked by meticulous preparation. The hosts took a strategic approach to advancing learning within the NSS, believing as most others did that 2014 would be the last Summit in the series. The Dutch Prime Minister had a decisive impact on interactivity at the Summit. The scenario-based discussion enhanced the leaders’ emotional connect with the issue and consequently whole-of-government learning. The Leaders only Plenary witnessed a conceptual discussion on nuclear security and related aspects. The Gift Basket, almost an adjunct to the formal Summit outcomes at Seoul, became a key vehicle for pushing learning over and above the least common denominator. That this was a double-edged sword also became apparent as the advocates of a broader approach to nuclear security took recourse to a Gift Basket to push for a shift in the learning track to nuclear disarmament.

Getting ready

It was at the Wilton Park meeting on information security in September 2011 that the ROK suggested to the Netherlands that they host the next Summit in 2014. The Dutch in turn discussed it internally and decided to take up the responsibility in November 2011. They took preparations seriously and began by elaborating a strategy note for what they wanted to achieve in 2014 even before the Seoul Summit took place. The strategy document began in the Foreign Ministry but over a period of several months took in inputs

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565 Kelsey Davenport, ‘End of Nuclear Security Summits Mulled’, Arms Control Today, November 2011. Gary Samore was quoted in the article as saying at a 7 October 2011 briefing at the UN in New York that the NSS process could end in 2014 and that the UN and the IAEA could continue nuclear security work thereafter. This reinforced the perception, initially fuelled by the 4-year deadline for securing vulnerable material mentioned by President Obama, that 2014 would be the last NSS. However, in reality, the U.S. had just not made up its mind. The uncertainty continued until the first public reference to the U.S. hosting of the 2016 NSS in President Obama’s Berlin speech. Interview 15.1.

566 Interview 5.
from several agencies including the Nuclear Forensics Institute, the National Coordinator for Security and Counter-Terrorism (NCTV) and the Prime Minister’s Office. Prime Minister Mark Rutte had a profound impact on the organization of the 2014 Summit. When the strategy note reached him, he had just been through the May 2012 Chicago NATO Summit and did not want a repeat. “I don’t want a boring Summit,” was his direction to the Dutch team.\textsuperscript{567} Further, the Dutch decided to target a few areas where they could have the maximum impact and focused not only on what they wanted to achieve but also how they would do so. In their mind, 2014 should have been the last Summit and it was fitting that a lasting legacy be explored.

Multilaterally, in the NSS Sherpa process, preparations for the Summit kicked off at Istanbul on 27-28 November 2012. In line with their strategic approach to the preparations, the Dutch set the dates for the Summit right at the beginning of the process; parallel industry and NGO meetings were also announced in advance.\textsuperscript{568} In view of the Prime Minister’s directive, the Dutch were determined to innovate with regard to the process and started by looking at the format of other Summits such as the G8 and the Commonwealth Heads of Government Meeting (CHOGM) for pointers on enhancing interactivity. A dozen ideas were discussed internally, from the most exotic - staging a play in which the leaders would play roles - to the most mundane, cutting down on the time devoted to national statements through the broadcast of pre-recorded video statements or inviting countries of specific regions to make a single statement.\textsuperscript{569} The two main ideas on interactivity that survived and were then shared with others at Istanbul were a scenario-based discussion\textsuperscript{570} and a leaders-only retreat inside the Summit to get the leaders to drop the crutch of prepared texts. On participation, the Netherlands decided to stick to the list of 53 invitees from Seoul.

The Dutch team handling the preparations included Piet de Klerk, an IAEA veteran with a background in physics, Bart Dal, a regulator and retired coordinator for non-

\textsuperscript{567} Interview 5.
\textsuperscript{568} URENCO took the lead on organizing the Nuclear Industry Summit on 22-23 March 2014 with a focus on three themes – self-regulation, cyber security and handling sensitive material.
\textsuperscript{569} Interview 5. Given the sensitivity of nuclear issues, the idea of regional statements did not survive beyond the Istanbul meeting.
\textsuperscript{570} In addition to an expert-level tabletop nuclear security exercise dubbed @tomic 2014.
proliferation who oversaw the technical aspects of the Summit, Kees Nederlof, a diplomat with a background in non-proliferation and Hans Maurits Schaapveld, who took charge of the logistics. Prior to the meeting at Istanbul, Piet de Klerk, the Dutch Sherpa, circulated an Annotated Agenda for the Sherpas along with a broad sketch of the Dutch plans for the substance of the Summit. Following a review of the Seoul Summit, including the lessons learned from that event, the Dutch proposed a list of six deliverables for the 2014 Summit for the Sherpas to discuss. The first was HEU and Plutonium, where the Netherlands proposed agreeing on “steps to implement commitments related to less stocks, less production, less dependency, concentrated in less countries, less sites and better security.” This area included, with the quiet encouragement of the U.S., the protection of military nuclear material although the Dutch did not mention it explicitly. The second was bringing about the entry into force of the Amendment to the CPPNM, which at that point required 39 more ratifications including that of the U.S. The third was encouraging use of the IAEA IPPAS service and other IAEA services and peer reviews under conditions of maximum transparency. The fourth, a new idea, was to agree on providing internal and external assurances and “agree on possibilities and limitations of transparency related to nations’ legal and institutional framework for nuclear security and its implementation.” The fifth was improving the protection and registration of high-activity radiological sources and discussing the possibility of a legal instrument on the security of such sources. The sixth was involving industry in nuclear security regulation evaluation and consulting it on drafting national and possibly international norms and regulations.

A key issue for the supposedly final 2014 Summit had to be the future of the NSS process in order to preserve a long-term commitment to what the Dutch termed the “nuclear security mission”. In this regard the Dutch raised two options: to continue convening bi-annual or less frequent summits or “to conclude the summit cycle in 2014 and transfer its mission to other instruments or organization(s).” The hosts expressed a

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571 As Project Director for NSS 2014, Schaapveld also led the preparations for the scenario-based discussion.  
572 Para 3.a., Annex 8.  
573 Interview 11.3.  
574 Para 3.d., Ibid. The Chair clarified in a footnote that it was not his intention to promote transparency of regulatory inspections or individual implementation cases.  
575 Para 3.f., Ibid.  
576 Para 4, Ibid.
preference for the latter provided a high-level political commitment could be assured with “permanent awareness of nuclear terrorism” and provided the “process of continuous security improvements” could be in safe hands.\textsuperscript{577} The Dutch reasoning was that the Obama initiative was to accomplish its main task in 4 years; at the same time nuclear terrorism was a global threat that ought to be addressed in a permanent global forum. The hosts also expressed a preference for the IAEA as “the most suitable organization to assume a considerable part of this role” given its “mandate, global legitimacy, structure (Office of Nuclear Security) and tools (Nuclear Security Plan) to carry out the tasks.” Further, IAEA’s tri-annual Nuclear Security Conference could provide “an excellent way to ensure both political attention and technical expertise.”\textsuperscript{578} De Klerk added that the Agency needed to be provisioned with the resources to carry out the activities coming out of the NSS process.\textsuperscript{579}

The Dutch also proposed carrying forward the Seoul innovation of gift baskets, some of which had very specific audiences such as the quadripartite statement on HEU Minimization while others were open-ended. This could be done in their view by extending the scope of the gift basket commitments, making them more concrete and widening the group of supporting NSS countries.\textsuperscript{580} With regard to national reporting, the Dutch proposed an interim Progress Report before the first Sous Sherpa meeting in March 2013 to be followed by a final Progress Report before the NSS 2014 to be published on the website. They had wanted to go a step further than Seoul by broadening the scope of reporting but scaled down their ambition once they found at Istanbul that there was no appetite for it.\textsuperscript{581}

\textsuperscript{577} Para 4, Annex 8.
\textsuperscript{578} Ibid.
\textsuperscript{579} Ibid.
\textsuperscript{580} Para 5, Annex 8.
\textsuperscript{581} Interview 5.
Table 7.1: Schedule of Meetings for the 2014 NSS

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Venue/Dates</th>
<th>Focus on:</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Sherpa meeting</td>
<td>Istanbul, 27-28 Nov 2012</td>
<td>Summit format, new deliverables, post-2014 future</td>
</tr>
<tr>
<td>Sous Sherpa meeting</td>
<td>Vienna, 27-28 Jun 2013</td>
<td>International assurances, industry role, interactivity; draft Communiqué structure.</td>
</tr>
<tr>
<td>Second Sherpa meeting</td>
<td>Ottawa, 2-3 Oct 2013</td>
<td>International assurances; interactivity, post-2014 future; draft Communiqué.</td>
</tr>
<tr>
<td>Third Sherpa meeting</td>
<td>Pattaya, 13-15 Jan 2014</td>
<td>Nuclear disarmament, Plutonium and HEU minimization, post-2014 future; draft Communiqué. Summit preparations, including side events.</td>
</tr>
<tr>
<td>Pre-Summit Sherpa meeting</td>
<td>The Hague, 21 Mar 2014</td>
<td>Logistics of interactivity</td>
</tr>
<tr>
<td>Summit</td>
<td>The Hague, 24-25 Mar 2014</td>
<td></td>
</tr>
</tbody>
</table>

**Process innovation**

Summit interactivity was one innovation that the Dutch were determined to have. By the time of the Vienna meeting in June 2013, the Dutch were ready with a cover note on “Interactivity”. It highlighted three interactive sessions for the leaders – a policy discussion based on a nuclear security threat scenario, a luncheon discussion in three groups and a leaders only retreat. Additionally, the Dutch invited all NSS leaders to prepare their national statements in a televised format. The stated objective was to avoid a lengthy plenary session devoted to national statements, ensure a larger media audience and allow leaders to support text with images and be more comprehensive in their statements. Interestingly, only a few countries (Australia, Canada, New Zealand and the U.S.) explicitly supported the Dutch on an innovative Summit format and in fact a large number spoke in favour of retaining the 2010 and 2012 formats. However, the Dutch PM had decided not to do so and the Dutch Sherpa team persisted with that policy direction. The goal was raising awareness of the threat at the highest level by involving the leaders personally and

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582 Interview 11.3.
583 Annex 11.
emotionally; an unsaid objective was to promote transparency and convey an assurance to a larger audience.  

Over three meetings at Vienna, Ottawa and Pattaya, the Dutch worked hard to convince the sceptics. Many participants were loath to subject their leaders to a ‘game’ played on iPads and some wondered what would be the value-add of a rudimentary exercise. Some others had doubts about the subject matter of the scenario and the three policy decisions required during the unfolding of the scenario on a video screen while a few worried about the anonymity of the choices to be exercised by the leaders and the possibility of unnecessarily raising alarm in the public about nuclear security threats through media coverage of the discussion. Despite a rehearsal with iPads at the meeting of Sherpas in Ottawa, doubts remained and Singapore, Russia and China in fact hinted that the innovative Summit format might impact on participation at the Summit; Russian Sherpa Berdennikov wrote to Dutch Sherpa Piet de Klerk and Russia gave a very critical non-paper on interactivity to several NSS participants just before the Sherpas’ meeting in Pattaya. In the end, however, the leaders, most of whom had no or little experience with such an exercise, seemed to enjoy the experience, which broke the monotony of regular Summits. The Argentine Vice President, who took part, told his team that the exercise looked simple but was helpful in thinking through the three most critical aspects of a nuclear security incident – law-enforcement, communication and international cooperation. This positive evaluation led to the first-ever cross border nuclear security exercise between Argentina and Chile.

With regard to gift baskets, a large number of participants including Germany, the ROK, Japan, the UK and the U.S. stressed their utility at Istanbul while Brazil and India opposed separate public statements on nuclear security measures as they diluted the

584 Interview 5.  
585 Interview 11.3. The letter and the non-paper suggested converting the ‘role-play game’ to a round table discussion.  
586 Ibid.  
587 Interview 10. The exercise “Paihuen” carried out in August 2014 is referred to in the National Progress Reports of Argentina and Chile for the 2016 NSS.
central message of the Summit communiqué.\textsuperscript{588} Despite this opposition, the gift basket idea became mainstream and a new term entered the NSS lexicon – “Gift Basket Holders”.\textsuperscript{589} The Sous-Sherpa meeting at The Hague heard regular presentations from the Seoul Gift Basket Holders on – Treaty Ratification and Model Legislation (Indonesia); Transport Security (Japan); Illicit Trafficking (Jordan); Nuclear Forensics (Netherlands); Coordination and Synergy (Pakistan); Nuclear Security Culture (Russia); Information Security (UK); and Nuclear Training Centers & Support Centers (U.S.). The basket on Radioactive Sources (Germany) was covered separately and prominently. Starting with the Sous-Sherpa meeting in Vienna, participants also began to explore ideas for new Gift Baskets such as a Joint Statement on Promoting Full and Universal Implementation of United Nations Security Council Resolution 1540 (the ROK and Canada) and the eventually controversial Troika initiative of NSS hosts (the U.S., the ROK and the Netherlands) aimed at strengthening the global nuclear security system.\textsuperscript{590} The Chair decided to prepare a matrix of Gift Basket deliverables for the Summit and to maintain and update it. At Pattaya, he even organised a “Gift Basket Market” outside the meeting room with ten stalls peddling information on the proposals on offer.\textsuperscript{591}

The Dutch ideas on tracking of progress on commitments previously undertaken were not different from the U.S. and the ROK ideas prior to the 2012 Summit. They wanted to go beyond implementation as just a buzzword.\textsuperscript{592} However, given the response at Istanbul all they could do was to repackage existing reporting in the form of enhanced but voluntary reporting to the Chair in two steps. The bottom line was that key NSS participants still did not want to endow the Chair or the NSS writ large with any oversight over the implementation of nuclear security related commitments, which were in their view national and voluntary. The implementation discussion then moved into a smaller sub-set of the NSS in a further evolution of the gift basket idea. Starting with the meeting of Sous-Sherpas at The Hague, the U.S., the ROK and the Netherlands as Chairs of the NSS began leading a small group discussion based on some of the 2011 U.S. ideas on implementation. When the group

\textsuperscript{588} Brazil would travel an interesting journey of learning on gift baskets for the 2014 Summit. From strong opposition to separate statements that diluted the message of the Communiqué adopted by consensus, it ended up actually presenting such a statement at The Hague. Interviews 5 and 11.3.

\textsuperscript{589} Interview 11.3.

\textsuperscript{590} Ibid.

\textsuperscript{591} Ibid; also see Piet de Klerk’s interview of October 31, 2013 with Kelsey Davenport and Daniel Horner for Arms Control Today for an idea of the Chair’s thinking on Gift Baskets.

\textsuperscript{592} Interview 5.
met again on the margins of the Nuclear Threat Initiative (NTI) hosted Global Dialogue in Annecy in June 2013, they were joined by the IAEA Sherpa, Khammar Mrabit, who helped them narrow the implementation matrix to the most important existing IAEA guidance documents – NSS 20, 13, 14 and 15.\textsuperscript{593} “Why reinvent the wheel,” was the unassailable argument.\textsuperscript{594}

This effort resulted in the so-called ‘excellence paper’ of 2 October 2013 that was circulated at the Ottawa meeting in the name of the three Chairs as well as Finland, Lithuania, Poland and the UK. The paper had five sets of actions designed to advance an effective and sustainable nuclear security regime: subscribing to the Nuclear Security Fundamentals adopted in 2012 by the IAEA Board of Governors (NSS 20), committing to meet or exceed the intent of each of the recommendations in three of the IAEA guidance documents (NSS No. 13, 14 & 15), ensuring effectiveness of nuclear security regimes and operators’ systems, ensuring the demonstrable competence of personnel accountable for nuclear security, and ensuring continuous improvement of nuclear security through one or more of a number of listed steps.\textsuperscript{595}

The authorship, the subject and some of the quasi-legal language used (‘participating states’, ‘commit’ et cetera) took the paper beyond the ambit of a regular gift basket and raised concerns among some participants of a ‘two speed’ process. However, the U.S. and the other sponsors argued that the NSS was designed for diversity and the paper simply reflected the diversity of views within the process. There was nothing wrong with some countries moving at a speed faster than others and seeking what one Sous-Sherpa termed as “reality changing words”.\textsuperscript{596} France, Russia, China, India, Pakistan, Singapore, Brazil, Argentina and Japan argued that unity of purpose should be maintained and the impression of a ‘Summit within a Summit’ or a ‘Communiqué within a Communiqué’ should be avoided.


\textsuperscript{594} Interview 13.

\textsuperscript{595} Joint Statement on Strengthening Nuclear Security Implementation, circulated as IAEA document INFCIRC/869 dated 22 October 2014.

\textsuperscript{596} Interview 11.3.
An underlying concern was the transformation of IAEA guidance into binding commitments. However, the group of sponsors expanded following another meeting on the margins of the Sherpas’ meeting in Ottawa and two of the initial sceptics, France and Argentina, joined after some minor adjustments to the text. Eventually by the time of the Summit, 35 countries became party to the Joint Statement, which was held up by the Dutch as a concrete outcome of the Summit in so far as 2/3rd of the NSS participants had agreed to implement the IAEA’s guidance on nuclear security.597

In his remarks at the Leaders-only retreat on 25 March 2014, Obama pursued the idea of an inner track for the NSS. He called for the ‘decision-forcing role’ of the Summits to be preserved through a ‘core group’ of nations.598 This was a significant evolution in the U.S. approach from 2010. As one phase of learning within a limited membership group came to an end, the leading norm entrepreneur in that group began to advocate another limited membership group within the larger group to push learning to the next level.

Future of the NSS process

At the Istanbul meeting, a large number of countries including Australia, Canada, Japan, the UK as well China, Russia, Pakistan and the ROK said that they were not in favour of an additional summit after 2014. A few participants such as India and Kazakhstan said they had an open mind keeping in view the need to sustain a high-level focus on nuclear terrorism.599 The U.S., which circulated a Non-Paper on ‘Maintaining Momentum on Nuclear Security After the Summits’ prior to the Istanbul meeting, conveyed that it had not taken a specific decision on the post-2014 scenario. The U.S. Non-Paper began by stating that the question of the appropriate endpoint of the NSS remained open but it was not too early for

598 Interview 11.3.
599 Interview 11.3.
a discussion on how to continue progress achieved in the NSS and to think about “the
development and maturity of processes that can carry forward this momentum.”

The Non-Paper listed key aspects of the success of the NSS process: “personal
attention of national leaders; a focus on tangible, meaningful outcomes; a regular event
that elicits deliverables and announcements; and a forum that builds relationships that can
help advance joint efforts” and went on to discuss how to capture some of these attributes
in “more lasting vehicles” to promote nuclear security progress. The vehicles discussed were
the IAEA International Conferences on Nuclear Security, the meetings of states parties to
the ICSANT as well as the UN and Interpol. The U.S. supported a regular three-year
frequency for the July 2013 IAEA Conference and suggested using that platform also for
reviewing progress on the CPPNM, as amended, under the Convention’s Articles 5 and/or
16. Another platform to highlight progress and share best practices in implementation could
be provided by meetings called under Article 20 of the ICSANT. Finally, the U.S. highlighted
the complementary roles of the UN and Interpol and called for the requisite resources and
authorities for these two institutions to execute their different but related missions in
addition to that of the IAEA.

Istanbul showed, if that was needed, that the IAEA’s central role in nuclear security
had almost universal support and that the July 2013 IAEA ‘International Conference on
Nuclear Security: Enhancing Global Efforts’ was seen as a key stop on the post-2014 nuclear
security follow-up and on making the NSS work more inclusive. There was also considerable
support for the Chair’s suggestion that IAEA IPPAS missions become the international
standard for peer review of nuclear security.

At the next meeting (of Sous-Sherpas) in The Hague on 4-5 April 2013, the U.S.
announced that President Obama was considering an internal note proposing that the U.S.
host a summit in 2016. The Dutch, taken by surprise by the possibility of another legacy

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600 Annex 9.
602 Interview 11.3.
summit, had to readjust their talking points.\textsuperscript{603} The U.S. announcement also led to a natural pause in discussions on the post-2014 scenario and the U.S. too adjusted its talking points on the future of the process. The new U.S. Sherpa, Elizabeth Sherwood-Randall, said at Vienna that nuclear security is never “done” and called for sustaining the momentum through a strengthened nuclear security architecture that should be “comprehensive”, based on international standards, support the identification and recognition of “assurances related to nuclear security”, and encourage “declining stocks of directly usable fissile material”.\textsuperscript{604}

Despite wide spread Summit fatigue, only a few countries (Russia, Egypt and South Africa) expressed doubts on the need for a Summit in 2016. After attempting to have the issue of the next Summit decided at The Hague, the sceptics gave in after the last substantive Sherpas meeting at Pattaya in January 2014 and went along with the reference in the Communiqué to the 2016 Summit being held in the U.S.\textsuperscript{605}

At the Leaders-only retreat on March 25, most Leaders expressed a preference for the IAEA to carry forward the nuclear security agenda after 2016. Pakistan PM Nawaz Sharif, who was invited by Dutch PM Rutte to lead off, said that Summits could not be held in perpetuity. There was no need for parallel mechanisms or treaty regimes and the IAEA Ministerial Conferences at 3-year intervals would be the means to provide political will to sustain the focus on nuclear security. Japanese PM Abe added that a highly motivated country could host a Summit when needed while Egypt said that 2016 should be the concluding Summit and it was time for the issue to be relegated to an international organisation, namely the IAEA. German Chancellor Merkel said that it would be useful to take stock in 2016 and in a certain number of years transfer the responsibility to the IAEA. A Summit could perhaps be held in 2020. This tied in with Kazakh President Nazarbayev’s suggestion for Summits every four years and his offer to host one in 2020. While saying that

\textsuperscript{603} In a speech prior to the meeting at The Hague, Secretary-General Renee Jones-Bos of the Dutch Ministry of Foreign Affairs had said on 25 March 2013: “And – probably – the grand finale will be in The Hague.” https://www.nss2014.com/sites/default/files/documents/speech-nss-translated-definitief.pdf

\textsuperscript{604} Remarks by Dr. Elizabeth Sherwood-Randall, Nuclear Security Summit Sherpa Meeting, June 28, 2013, Vienna.

\textsuperscript{605} Interview 11.3; South Africa was the last holdout and the relevant paragraph 35 of the draft Communiqué at the end of the meeting in Pattaya remained in brackets till early February 2014.
he never wanted the NSS to be an endless Summit process, and that 2016 should be a moment of transition, President Obama expressed doubts about the ability of the IAEA to handle the broader nuclear security agenda including aspects dealt with by Interpol and the UN. He suggested a ‘big push’ on the remaining work up till 2016 and subsequently a representative group, a kind of Advisory Board, to provide guidance and keep the process going. Such a Core Group could provide leadership but without the Summits. Dutch PM Rutte concluded the discussion by saying that there was no need for a decision at the time. Picking up a suggestion from Italy, he proposed that the Sherpas could look at different options for the future.\footnote{Interview 11.3.}

\textbf{International assurances}

The idea of international assurances on nuclear security (‘how do we know that you know’ in learning terms) had strong backing in both official and non-governmental circles in the U.S. and emerged over the period from March-October 2013 as a key area of focus for the 2014 Summit. The very first discussion on assurances at Istanbul showed up considerable skepticism, and in response the Chair agreed to provide clarifications about the underlying concepts. The Australian Sherpa, Rob Floyd, prepared a Non-Paper and elaborated the concept in plenary session at The Hague.\footnote{Annex 11.} He gave a definition and argued that its deployment would not be dissimilar to practice in sectors such as aviation and shipping which too involved security-sensitive information. Such mechanisms also existed in the area of nuclear safety and safeguards. Then in 4 breakout sessions the participants explored the use of instruments such as national reports under the 1540 resolution, reports under Article 14.1 of the CPPNM on the laws and regulations that give effect to the Convention, declarations and accounting under the Plutonium Management Guidelines (INFCIRC/549) or as part of accounts of historical production of material, peer reviews such as the IAEA’s IPPAS missions, bilateral cooperation, certification and training, and NSS Progress Reports to convey such assurances. The Non-Paper argued that with more states...
providing assurances there would be greater confidence in the global nuclear security system over a period of time.

There was a strong push back from Russia, China, France, India, South Africa and Pakistan while Japan, the ROK, Sweden and Canada supported the Australian paper. As identified by the Dutch Chair, the fields of tension in this debate were between (1) confidentiality and transparency, (2) voluntary and obligatory measures, and (3) national and international responsibilities. In addition there was a debate over what additional value the concept of assurances provided over the individual components – 1540 reports, CPPNM Article 14, ICSANT Articles 7 & 18 as well as IPPAS missions. The Chair agreed to further refine the concept and consider if a different term (say ‘nuclear security responsibilities’ used in the IAEA General Conference resolutions) could be used and how the concept itself may be included in the draft Summit Communiqué.

The main reason states such as Russia, China, France, India, Argentina, South Africa and Pakistan were opposed to the idea of assurances was dilution of the fundamental principle of national responsibility for nuclear security. There was no nuclear security ‘policeman’ unlike the area of safeguards and a generalised oversight by other states risked introducing subjectivity and political tension. Further, there were widely varying views on transparency of nuclear security measures with some countries seeing enhanced transparency as potentially undermining nuclear security. If the idea was to convey confidence that nuclear security was receiving the attention it deserves, they felt that the first step was adherence to the relevant legal instruments. Second, such a sense of confidence could also be conveyed by participation in the relevant forums in particular the IAEA and by sharing national experiences within those forums. The NSS for its part should

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608 Annex 12.
609 Ibid and Interview 11.3.
610 There is a similar debate within the Biological and Toxin Weapons Convention implementation process since 2011 on the subject of compliance assurances based on a set of voluntary and semi-voluntary measures such as regular CBMs submissions by State parties. See for example Working Paper submitted to the Meeting of States Parties to the BTWC (BWC/MSP/2013/MX.WP.2 dated 29 July 2013) on “BWC compliance – a conceptual discussion: preliminary views by Australia”. The two parallel, ongoing debates reflect U.S. reluctance on legally-binding verification provisions combined with the perceived attractiveness for the U.S. of norms-driven but non-legally binding oversight of implementation of international commitments in key areas such as nuclear security and proliferation of biological and toxin weapons.
611 This was the case of France and India in particular.
continue to do what it had done best – engage political leaders, raise awareness and catalyse concrete actions. It should not blur the distinction between national responsibility and international monitoring.\textsuperscript{612}

Radioactive sources

Apart from the Australian paper on assurances, the meeting at the Hague also considered a paper on “The international framework for security of radioactive sources” by former Director of the IAEA Office of Nuclear Security, Anita Nilsson.\textsuperscript{613} The paper proposed that the Code of Conduct be seen more in terms of legally binding obligations rather than as a voluntary measure. However, during a discussion chaired jointly by the Dutch with Germany the paper was met with general skepticism. Participants expressed a preference for short-term measures based on effective implementation of existing instruments, both binding and non-binding, as compared to long term measures such as the development of a new legally binding instrument. The discussion showed that again as in the run up to Seoul, most participants were content with national approaches based on the non-binding IAEA Code of Conduct on the Safety and Security of Radioactive Sources and international cooperation on protection and registration of such sources. The progressives had to contend themselves with another gift basket, and with the inclusion of NSS 14 in the commitments undertaken by 35 Summit participants in the “excellence paper”.\textsuperscript{614}

Industry role in nuclear security

Just as they did for the subject of international assurances at The Hague in April, the Dutch circulated a discussion paper drafted by Canada and the World Institute for Nuclear Security (WINS) on Government-Industry cooperation at Vienna and based on that organised three break-out sessions of the Sous-Sherpas on 26 June 2013 on the themes of

\\textsuperscript{612} Interview 11.3.
\textsuperscript{613} The international framework for security of radioactive sources, Discussion paper in support of the Sous-Sherpa meeting convened in The Hague, 4-5 April 2013.
\textsuperscript{614} Interview 11.3.
‘Prescriptive versus performance based approach’, ‘Cooperation between government and industry, including evaluation of regulations’, and ‘Certification of regulators and industry security managers’. The Canadian-WINS paper brought out the importance of effective communication between the regulator, the licensees (all nuclear operators with custody of nuclear and other radioactive material, whether or not government or privately owned), and other key stakeholders such as the law enforcement agencies at all stages of the development, implementation and review of nuclear security oversight processes. The paper also highlighted the importance of a strong nuclear security culture throughout the licensee organisation led by the Board and the Chief Executive, who ought not to delegate the nuclear security function to security managers.615

The debated aspects of the paper were first, to what extent nuclear industry should be involved in the development of regulations like its counterparts in civil aviation, maritime transportation and financial services were. Second, should such regulations continue to be largely prescriptive or should they take on aspects of performance and risk management to move in the direction of an Outcome-Focused, Risk-Based approach. Third, how should the industry demonstrate its nuclear security competence and maintain a dynamic Security Management Programme in the light of evolving nuclear terrorism threats.616

At the end of the discussion, it was clear that there was very little appetite for ambitious recommendations in the Communiqué. Different NSS participants had different regulatory regimes; they also had different nuclear economies, some almost exclusively state-dominated and others totally in private hands.617 There was little prospect of agreement within the NSS on a role for industry in nuclear security governance (as opposed to implementation) and discussions therefore moved into the parallel industry forum. An industry Working Group began to draft a set of voluntary principles “Nuclear Industry Participants Principles For Secure Operations”.618 These principles included regulator

616 Interview 11.3 and Piet de Klerk interview to Arms Control Today of 31 October 2013.
617 Ibid.
618 The Working Group was headed by Duncan Hawthorne, CEO of Bruce Power; NIS Newsletter, MAY-NR-1, available on the website of URENCO (which Chaired the overall preparations for the Nuclear Industry Summit): http://media.urenco.com/corp-website/321/nb_nis_nr1_uk_1.pdf
oversight, corporate governance, industrial security programs and operations, industry experience and cooperation and emergence response. The work done prior to Seoul on managing cyber threats was continued and consolidated in a separate Working Group on cyber security. Its draft recommendations included work at the IAEA on common guidelines and criteria, national initiatives to define appropriate regulations, reinforced industry collaboration on cyber security good practices and enhancing of cyber security culture and capabilities.

An interesting aspect of the industry discussion was the role of WINS, a private initiative backed by the NTI, the U.S. and the UK. After trying to coax the World Association of Nuclear Operators (WANO), a respected industry association particularly active on nuclear safety peer reviews, to integrate nuclear security into their mandate, the U.S. helped create this parallel forum. Under the leadership of a former U.K. nuclear security practitioner, Roger Howsley, it began to craft guidelines using the services of experts and consultants. It also started to offer training services, in particular those aimed at inculcating a top-down corporate culture of nuclear security. Both functions overlapped somewhat with what the IAEA was doing and the attempt to project WINS within the NSS process was resented by some of the key NSS players with state-led nuclear industries. While the acceptability of WINS has grown over 2010-2016, a lingering suspicion remains that it is not agenda-free.619

Plutonium minimisation and military materials

A focus on military materials was not explicitly part of the original set of objectives for the Dutch and did not preoccupy the Sherpas for nearly a year after preparations began at Istanbul.620 However, it came up strongly in the first full draft of the Communiqué discussed at Ottawa via three sets of references.621 First, an explicit reference spelling out the scope of the NSS in terms of materials and facilities to include all military material (and

619 Interview 11.3. The strong U.S. link to WINS creates this suspicion.
620 The U.S. Sous-Sherpa did explore the subject at an informal lunch with representatives of some weapon states at the meeting hosted by NTI at Annecy in June 2013. Interview 11.3.
not just material in nuclear weapons) and facilities; second, the introduction of the notion of comprehensiveness to imply the inclusion of military material and facilities for a truly global nuclear security architecture and third, the use of the terms weapons usable material and fissile material instead of the earlier references to nuclear material. The U.S., which now strongly backed an expanded scope, saw the Dutch suggestions as improvements on the Washington understanding on non-civil material. It wanted other nuclear weapons possessors to reciprocate U.S. transparency with regard to its own military material. Believing that such transparency was inevitable, it reasoned with the other skeptical possessors that they should in fact take the lead to control the conversation. However, except occasional and half-hearted support from the UK, it found no support from France, China, Russia, India, Pakistan and Israel.\footnote{The other weapon States did not want the focus on nuclear security to expand to cover more explicitly military material and facilities, which would bring in issues of transparency of military stocks and weapons and fissile material production. The NSS for them was not a forum for arms control and nuclear disarmament.} A Dutch attempt to draft a way forward in paragraph 4 of the Communiqué unraveled at the meeting in Pattaya as Egypt and others insisted on taking the idea of comprehensiveness all the way to nuclear disarmament. In the ensuing melee\footnote{Literally and figuratively as a small group crowded around the Chair to thrash out the language of paragraph 4 on the last day of the meeting at Pattaya. Interview 11.3.} the paragraph reverted to the Washington consensus on military material and facilities to the obvious relief of France, China, India, Russia and Pakistan and the quiet relief of several states in Europe and Asia relying on extended deterrence.\footnote{\textit{Ibid.}}

President Obama returned to this theme at the Summit. At the retreat on 25 March 2014, he said that while the security of nuclear materials in the defence sector had not been the central focus, it was not outside the boundaries of the NSS to develop best practices. While he understood the sensitivities related to transparency of military programmes, to say no would be a mistake. There should be some way of discussing best practices that could be presented to other nuclear weapon states for emulation and conveying a reassurance that military materials and facilities are secured. Russian Foreign Minister Lavrov argued on the other hand that an artificial attempt to expand the scope of discussion would lead away from the central focus of the NSS. Security of military material was a matter of national competence and nuclear weapons were subject to extremely strict measures of a level higher than those for civilian material. If indeed there was a problem with the security of
nuclear weapons it was the lack of norms about such weapons deployed outside of national territories. The Indian External Affairs Minister said that while the matter needed reflection there was no gap in the existing construct and suggested sticking to the Washington understanding on the security of nuclear weapons being a matter of national responsibility. The Dutch PM concluded the discussion by noting that there were different views on the subject.  

Drafting the Communiqué

When the Sous-Sherpas and Sherpas met in Vienna on 26-28 June 2013, President Obama had already announced that the U.S. would host a summit in 2016 to continue efforts to secure nuclear materials around the world. The Dutch hosts were now ready with a two-page draft structure for the Communiqué, very unlike the detailed June 2011 draft that RoK had prepared before the meeting of Sherpas in Seoul. A lesson had been learnt; it was better not to trigger too early the tendency of diplomats to narrow text to what is acceptable.

Drafting began in earnest at the Sherpa meeting in Ottawa on 2-4 October 2013 at the John G. Diefenbaker Building. In a 30-paragraph draft for the Ottawa meeting, the Dutch stretched the Washington and Seoul understandings with new titles for sub-sections - “Nuclear security as part of a broader agenda”, “Building international confidence”, “Strengthened global nuclear security architecture”, and “Fissile material” – as well as with fresh drafting inside the sub-sections, say on nuclear materials for military purposes and a comprehensive global nuclear security architecture covering all weapons usable material (a term introduced for the first time in the NSS Communiqué) as well as facilities where such material might be present. The draft also pushed the boundary on the IAEA advisory and review services and the sharing of lessons learned and the results of such missions with other states. The sub-section on nuclear industry underlined the need for a shift to

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625 Interview 11.3.
626 Remarks by President Obama at the Brandenburg Gate - Berlin, Germany, June 19, 2013, The White House, Office of the Press Secretary.
performance-based regulations, including industry certification schemes, and for a more intense dialogue between different stakeholders on nuclear security regulations.\footnote{Draft of The Hague Nuclear Security Summit Communiqué circulated at the Sherpas’ meeting at Ottawa on 2 October 2013; Interview 11.3.}

The Dutch found support for their drafting ideas from Australia, Italy, Jordan, Turkey, Ukraine, Romania and the ROK. Switzerland, Mexico, Egypt, Argentina and Brazil liked the notion of nuclear security as an integral part of a broader agenda of nuclear non-proliferation and disarmament but wanted to go further than the text in the draft; Egypt and Brazil in particular wanted strong references to peaceful uses of nuclear energy. France, which did not object to these additional references to the third NPT pillar, however, strongly contested the idea of a link with a broader nuclear disarmament agenda. India, Israel, China, Russia and Pakistan contested the explicit references to military materials and facilities and asked the hosts to stick to the Washington consensus on the issue. India argued that the notion of ‘comprehensiveness’ was built into the Washington compromise of ‘all nuclear material’ and there was no need to parse this further. Russia said bluntly that they should be counted out if nuclear security was to be mixed up with nuclear disarmament.\footnote{Ibid.}

The differing views on international assurances also came to a head at Ottawa and a separate small group discussion took place to resolve the issue.\footnote{According to a Sous Sherpa, this small group included Australia, Canada, the Netherlands, the UK, the U.S., Argentina, India, Pakistan, Russia and France. Interview 11.3.} France in particular took a tough line and asked for the entire text to be dropped; Russia said that they could be flexible if the title was changed to reflect the notion of information sharing without compromising confidentiality. This found favour with India and Argentina who argued that the concept should be limited to voluntary sharing of information on legislation, best practices et cetera. The U.S., Australia and the UK argued on the other hand that there was a need to assure ‘friends, allies, enemies and the general public’ about the effectiveness of nuclear security measures and that the IAEA review missions and other peer review mechanisms could be used for this purpose. There was no meeting of minds, however, and the hosts began to prepare for a significant dilution of the first draft. They also had a fallback option in the form of the so-called ‘Excellence Paper’ circulated by the U.S., the ROK
and the Netherlands at Ottawa on which another small but more like-minded group met separately at Ottawa.  

**Finalising the Summit Communiqué**

The Dutch undertook a series of telephonic and e-mail exchanges with the key protagonists post-Ottawa to narrow drafting solutions. This led to a revised draft Communiqué (dated 16 December 2013), which was sent out by the Dutch in advance of the meeting of Sherpas in January 2014 in Thailand. The meeting in Thailand, which had to be shifted to Pattaya because of protests in the Thai capital, was to also discuss the revised programme for the Summit. The explanatory note that went out with the revised programme clarified that the leaders who wished to deliver an oral national statement could do so in one of the plenary sessions. The Dutch also relented a bit on the scenario-based discussion by agreeing that the leaders could consult their staff in a plus three setting before responding to the policy questions based on the scenario presentation.

The 16 December 2013 draft deleted the sub-title on “Nuclear Security as part of a broader agenda” but the reference to a broader nuclear agenda including nuclear non-proliferation and disarmament remained inside the text in paragraph 2. The discussion covered familiar ground – the three NPT pillars, NSS not being the forum for disarmament and non-proliferation, nuclear security should not imply discrimination or restrictions with regard to access to nuclear energy et cetera. The discussion on paragraph 2 also overlapped with the one on paragraph 4, which now talked of effective security of all nuclear and other radioactive materials, “including nuclear material used for nuclear weapons and other military purposes”. After several exchanges involving Algeria, Brazil, Egypt, France, India, Italy, Malaysia, Pakistan, Russia, South Africa, Sweden and Switzerland, the text settled down with a huddle around the Chair on the last morning of the meeting. In the end, the reference to nuclear security being part of a broader agenda was deleted as was the

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630 Interview 13.
631 Interview 11.3. These focused in particular on the issue of balanced treatment of HEU and Plutonium.
632 Ibid.
633 Revised draft Summit Communiqué dated 16 December 2013.
reference to military materials other than those in nuclear weapons. The Washington understanding was thus preserved. In the melee, an important reference to participants “taking responsibility” for preventing non-state actors from obtaining such materials was diluted to “taking appropriate measures” for preventing non-state actors from doing so.634 Thus a theoretical, almost theological, concern with the broader agenda allowed a participant to dilute a significant evolution of national responsibility with regard to nuclear terrorism.

Another set of sentences in paragraph 8 titled “Strengthened international nuclear security architecture” became the battleground for the contestation on comprehensiveness. Switzerland, South Africa and Egypt called for inserting “all” before “nuclear material and other radioactive materials in all States during use, storage and transport at all times”, which were to be secured in line with the guidance contained in IAEA publications on nuclear security. Russia threatened to veto the whole paragraph if this roundabout reference to military material was to be agreed. Australia, Canada, Netherlands and the U.S., which had promoted the notion of an international nuclear security architecture, balked at this and in the end a truncated paragraph was agreed. South Africa’s suggestion to add a reference to UN efforts on nuclear disarmament in paragraph 17 led to a similar deadlock and the offending sentence was then put in brackets.635

The battle now spilled beyond the Communiqué text. At Pattaya, Brazil made a statement titled “In larger security: a comprehensive approach to nuclear security” on behalf of a group of countries (Algeria, Argentina, Brazil, Chile, Egypt, Mexico, South Africa and Switzerland). The statement called for nuclear security to be articulated within the international community’s broader efforts to promote disarmament, non-proliferation and peaceful uses of nuclear energy. It argued that measures aimed at securing nuclear material and facilities will be “tinged with an undeniable degree of precariousness” as long as nuclear disarmament is not realized.636 To focus only on civilian materials and installations would be

634 Interview 11.3.
635 Ibid.
tantamount to neglecting the bulkiest part and nuclear weapon states should regularly give an account of nuclear security measures related to the security of their nuclear arsenals and materials for military purposes. The establishment of a mechanism for information-sharing would be an important confidence-building measure in this regard. The U.S. circulated a Non-Paper before the Summit urging countries not to promote the Joint Statement at the Summit as the issues raised “go beyond the scope of the Summit itself and would detract from its essential focus, undervalue progress made, and needlessly politicize an important and successful Head of State initiative”. In a compromise with the Dutch hosts, Brazil agreed to put this out as a gift basket, which was eventually joined by 13 countries including Indonesia, Kazakhstan, Malaysia, New Zealand, Singapore and Ukraine. Be it on the notion of comprehensiveness or international assurances, the gift basket had now become a pressure valve for containing ambition within the Summit process.

The second most contentious issue at the Pattaya meeting was the push for parity in handling HEU and separated Plutonium. In the 16 December draft, the Netherlands had suggested a formulation in paragraph 21 (titled “Fissile Material”) that encouraged States to “minimize their stocks of HEU and separated plutonium, as appropriate, and consistent with development objectives and national security considerations.” This was a step in the direction of what South Africa had been arguing. However, it satisfied neither side. Pakistan and Algeria called for the title to be amended to read “Nuclear Material” and China asked for the original language from the Seoul Summit to be restored. A compromise was finally found by distinguishing HEU stocks from Plutonium stockpiles, with the former to be minimised and the latter to be kept to the minimum level consistent with national requirements. South Africa was still unhappy and it was only a month later that it agreed with the formulation after suggesting the addition of “both as” to “consistent with national requirements”, which meant that the higher standard on HEU minimisation achieved earlier was diluted somewhat as it was now to be read in the light of national requirements.

At the end of the meeting in Pattaya, in addition to a sentence each from paragraphs 17 (nuclear disarmament) and 21 (HEU minimization), the last paragraph 35 which called for

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637 Annex 14.
638 Interview 11.3.
the next Summit to be held in 2016 in the U.S. was also left pending. This was agreed in inter-sessional consultations in mid-February by when the Communiqué text was ready for submission to the leaders at the Summit.  

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Summit dynamics

The Dutch organisation of the Summit was flawless. However, just as Fukushima had cast something of a shadow over the Seoul Summit, the crisis over Ukraine and the ensuing rupture between Russia and the West did the same for The Hague. Just before the Summit began with a dinner on March 24, the G7 met and decided to suspend their participation in the G8, in effect expelling Russia from the Grouping. To show that Russia was not isolated, Russian Foreign Minister Lavrov took part in a meeting of the BRICS hosted by the South African Minister that morning. At the opening plenary, Germany, Poland, Ukraine and the UN Secretary General raised the Ukraine issue, particularly in the context of the Budapest Memorandum on negative security assurances to Ukraine. Minister Lavrov, who represented President Putin, ignored these remarks but did have a bilateral on the margins with his Ukraine counterpart. It was obvious that a key link in the nuclear security chain since the early 1990s, Russia-U.S. cooperation, was now increasingly under strain.

The scenario-based discussion followed the opening plenary. After an introductory film that laid out the imminent threat of theft of radioactive sources by a terrorist group, the first scenario unfolded with a second film and the exercise ended after a 4th film about a third scenario. Three decision points were reached during the discussion and three pre-identified leaders spoke after each such point. President Obama summed up the lessons of the exercise: counter-terrorism cooperation needs to be improved, it is better to secure material ahead of time, partnerships need to be built for sharing information during a crisis,

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639 Ibid.
public has to be informed appropriately to avoid panic, plans should be in place for tackling crisis and they should be rehearsed and revised. Several other leaders emphasized the importance of inventory checks, clear lines of responsibility within governments, sharing of information, having national threat assessments in place, the importance of communicating confidence to the public and international cooperation. Interestingly, some countries that had earlier expressed reservations about the scenario-based discussion joined in commenting on the unfolding scenarios.643

The heart of the Summit was the informal Leaders only Plenary on the Future of the NSS the morning of 25 March 2014. While the focus was the post-2016 nuclear security agenda, the leaders covered a variety of nuclear security related themes. It was by far the richest nuclear security discussion till date at that level. Leaders plunged into a range of subjects – role of IAEA and Interpol, the future of the NSS process, radiological security, nuclear disarmament, prohibition of fissile material production – and as seen earlier there was back and forth on such a sensitive subject as the security of nuclear weapons.644 The Leaders only Plenary was followed by a luncheon discussion at which the Leaders talked about future commitments while in parallel lunches Ministers and Sherpas discussed nuclear risks and international security in a sense broader than nuclear security. The Summit ended with a Closing session and a Press Conference by PM Rutte. All participating states with the exception of Egypt, Pakistan (which submitted a national statement), and Russia (which submitted a memorandum), Saudi Arabia and South Africa (which submitted a National report) submitted National Progress Reports at the Summit.645

Learning at The Hague

A year before the Summit, the Dutch had identified six themes for it.646 Their number one priority was improving security and reducing use of HEU and plutonium (less fissile material, fewer locations, fewer countries). Second, entry into force of the Amended

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643 Interview 11.3.
644 ibid.
646 Speech by the Dutch Foreign Ministry Secretary-General Jones-Bos, 25 March 2013.
Nuclear Learning in Multilateral Forums

CPPNM. Third, increasing the thoroughness and frequency of monitoring by the IAEA. Fourth, national registration and protection of highly radioactive sources like those used in medical equipment. Fifth, giving the nuclear industry a bigger role in the protection and regulation of nuclear material. Sixth, ensuring that countries play their part in improving the protection of their own nuclear installations and sources. Inside and outside the Sherpas’ process, they pushed the boundaries of the understandings reached earlier at Washington and Seoul in concert with the U.S.

On the civilian material track, as PM Rutte noted at the opening of the Summit, progress had been made in reducing the number of countries with at least one kg of weapons usable material. Twelve countries issued a joint statement at the Summit marking the complete removal of HEU from their territory and the U.S. continued its approach of using the Summits to mop up nuclear material from around the globe. For example, Japan announced the return to the U.S. of the HEU and separated Plutonium at its Fast Critical Assembly (FCA) facility while the U.S. and Belgium completed the removal of all excess fresh HEU and Plutonium from facilities at Mol and Geel. Repatriation also continued from Italy to the U.S. However, despite the removal of 3000 kg of HEU and Plutonium from 27 countries, and since the focus had now widened to take in non-civil material, it could be argued that there were still 2000 tons of weapons usable material in circulation worldwide. Further, as noted by the ROK President and the UNSG at the Summit, production of fissile material for nuclear weapons continued. On the legal instruments, the amended CPPNM was still not in force although awareness of and support for the legal tripod of CPPNM, ICSANT and UNSCR 1540 had gone up substantially. In the third area, while IAEA peer reviews had picked up steam they were still to become the international

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647 Opening Address by Prime Minister Rutte at the Nuclear Security Summit available at https://www.government.nl/documents/speeches/2014/03/24/opening-address-by-rutte-at-the-nuclear-security-summit
648 Ibid.
650 Ratifications to the Amendment went up from 55 at the Seoul Summit to 78 by the time of the Summit at The Hague, the best effort till then in a two-year period but still substantially short of the requirement of 102 ratifications (eventually reached in May 2016) for entry into force.
norm that the U.S., the Netherlands and 33 others who subscribed to the excellence paper wanted them to be.\footnote{Chart on annual frequency of IPPAS missions in presentation by Khammar Mrabit, Director, IAEA Division of Nuclear Security at 2\textsuperscript{nd} International Conference of Nuclear Security Regulators held in Madrid on May 2015 \url{http://csnsecurityconference.org/presentations/keynote-speaker/SS_KMrabit.pdf}}

On the fourth track, the radioactive sources gift basket gathered greater support – 23 countries agreed to secure all IAEA Category 1 radioactive sources on their territory by 2016 - but within the Communiqué there was practically no change in the commitments that participants wanted to take on. The scenario-based discussion did nonetheless highlight the importance of national registries of radioactive sources. Within the official process, differences over the structure of national nuclear industries and the role of private organisations such as WINS ensured that there was no official endorsement of the results of the parallel Nuclear Industry Summit and performance-based assessments were merely noted. The sixth area saw considerable albeit intangible progress; as PM Rutte noted the NSS had managed to strengthen security cultures around the globe with governments, regulators and industry shouldering more responsibility and contributing to a whole of government effort. Twelve nations had set up nuclear security centres of excellence since the 2010 Summit and an international Nuclear Security Training and Support Centres network had come into existence.

A seventh area, the elephant in the room, was military material. While reading the final Communiqué text gives the impression that there was virtually no learning from 2012-2014, considerable time and intellectual capacity was devoted to the issue in the two years from Seoul to The Hague. Three very different approaches to handling it became apparent: the ‘do nothing more’ approach of Russia, China, India, Israel and Pakistan centered on national responsibility, the ‘do something ourselves’ approach of the U.S., supported by some of its Western allies such as the hosts, Canada and Australia, and ‘go all the way’ approach of Brazil and many others who joined the Joint Statement on a comprehensive approach to nuclear security.\footnote{The third approach was articulated somewhat cautiously in view of the understanding reached by the hosts with Brazil. Interview 5.} The discussion among the leaders, while brief, also sharpened this sense of the conceptual fault lines.
Looking at the process, the scenario based discussion was a successful example of multilateral learning driven from the top by a participant determined to exercise the convening power available to it as a host of a multilateral meeting. This process innovation impacted policy and the resulting learning was quickly reflected in national practice as demonstrated by the August 2014 bilateral Argentina and Chile nuclear security exercise.

The second process learning, albeit controversial, was on the issue of demonstrable implementation of nuclear security commitments through the gift baskets. A study of the 16 gift baskets listed at the Summit in The Hague shows the evolution of the idea. In 2010, the U.S. described these as ‘house gifts’ to the Summit and a demonstration of the commitment of the participants to strengthening nuclear security. In 2012, the gift basket became a device to force the pace on the commitments, a platform to go beyond the lowest common denominator of the Summit Communiqué. In 2014, the 35-nation “excellence” statement took the concept of gift basket beyond a like-minded platform for demonstrating a specific aspect of nuclear security implementation to a shared policy platform. It tested the limits of a non-verifiable politically binding process by creating a set of benchmarks which 2/3rd of the participants committed to uphold. If this statement was a challenge to the larger NSS process, so was the other joint statement on policy advocacy, namely the comprehensiveness statement by Brazil, which sought to redefine the meaning of nuclear security and widen the NSS’s mandate beyond what the originators had imagined.

Straddling substance and process, the most powerful learning legacy of the Summit was the Leaders only discussion in the retreat within the Summit on the future of the NSS. The discussion showed that the idea of nuclear security as practiced hitherto within the NSS was reaching a limit in terms of learning. It needed to be reimagined beyond 2016. One school of thought wanted it to be absorbed back into the IAEA from where it had emerged over two bursts of activity in the 1970s and then again in the 1990s. The second school of thought, basing itself more on the multi-agency, multi-regime approach of the post 9/11 years, wanted it taken forward not only in the IAEA but also in the UN, Interpol and industry. A third albeit minority view wanted the Summitry to continue at a more relaxed pace.

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To conclude, the Dutch and the Americans pushed the limits of the NSS process in the run up to 2014. This gave results beyond incrementalism such as the 35-nation joint statement and the greater involvement of leaders through the scenario-based discussion and the retreat on the future of the NSS. In meta terms, the 2014 Summit involved a self-conscious effort to promote learning despite plenty of politics as usual on the substance of the Communiqué. The search for process innovation to facilitate and accelerate learning underlined that the NSS was developing the characteristics of a “learning organisation”. 654

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654 Senge, 1990.
Table 7.2 Nuclear learning in The Hague Summit

<table>
<thead>
<tr>
<th>Type of shift</th>
<th>Evidence of learning in NSS 2014</th>
<th>What was learnt? Or not learnt?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Abandonment of position</td>
<td>Building international confidence</td>
<td>‘You need to show that you know’ through peer reviews and benchmarking against IAEA standards.</td>
</tr>
<tr>
<td>2. Policy compromise or adjustment/sharpening of concepts</td>
<td>Strengthening global nuclear security architecture</td>
<td>Multiagency, multiregime approach including IAEA, UN, Interpol and industry necessary to sustain nuclear security efforts.</td>
</tr>
<tr>
<td>2. Policy compromise or adjustment/sharpening of concepts</td>
<td>Nuclear material</td>
<td>Security of military fissile material requires international scrutiny.</td>
</tr>
<tr>
<td>2. Policy compromise or adjustment/sharpening of concepts</td>
<td>Nuclear security as part of broader agenda</td>
<td>Nuclear security unsustainable without broader progress on disarmament.</td>
</tr>
<tr>
<td>3. Development of new ideas and shared understanding</td>
<td>Scenario-based discussion of nuclear terrorism.</td>
<td>Learning speeds up when leaders emotionally engaged.</td>
</tr>
<tr>
<td>3. Development of new ideas and shared understanding</td>
<td>A soft compliance mechanism in the form of the “excellence” gift basket (INFCIRC/869).</td>
<td>In absence of consensus, a sub-group of participants could pull up learning by subjecting itself voluntarily to higher standards.</td>
</tr>
<tr>
<td>4. Putting into practice of policy compromises or new ideas/understanding</td>
<td>Argentina-Chile cross-border radiological security exercise.</td>
<td></td>
</tr>
</tbody>
</table>

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Chapter 8

Coming Full Circle: 2016 Washington Summit

The last iteration of the NSS process took place over October 2014 to April 2016. Russia, a co-constructor of the idea of nuclear security with the U.S. since 1996, dropped out of the Summit preparations even though it was kept informed by the U.S. till late 2015.\textsuperscript{655} Process issues pre-occupied the Sherpas for several months as the U.S. struggled to inject further innovation into the outcomes. The attempt to force the pace in informal groups dealing with post-2016 follow-up in select international forums succeeded only partially as the group outcomes got renegotiated in the Sherpa meetings back to familiar common denominators. A specific effort to advance learning on comprehensiveness either through the Summit process (led visibly by Switzerland) or on the sidelines through a gift basket of weapon states (led quietly by the U.S.) did not succeed. Another type of comprehensiveness intruded harshly on the NSS from the real world. The rise of ISIS and the terror attacks in Paris and Brussels brought broader counter-terrorism issues to the forefront of the Summit discussions in Washington. The previous two years’ tilt toward nuclear materials minimisation and transparency, pushed by the non-proliferation experts within the nuclear security community, thus underwent a correction, helping preserve the boundaries of nuclear security as a distinct area of nuclear learning. The Action Plans and Gift Baskets adopted at the end of the Summit laid down the pathways for pursuing and preserving nuclear security learning beyond 2016.

An inauspicious start

The first meeting of Sherpas for the 2016 Summit convened in Washington DC on 27-28 October 2014. The Summit was coming home. It was not a Summit that had been

\textsuperscript{655} Russian Sherpa Grigory Berdennikov was copied on all the e-mails sent out by the U.S. Sherpa Laura Holgate till September 2015 when Russia publicly announced that it would not attend the 2016 Summit. Interview 15.1.
foreseen by many veterans of the process; most had thought that The Hague would be the last NSS meeting. Prior to the Sherpas meeting in October 2014, the U.S. gathered a small group of like-minded states in June 2014 to talk about, among other things, the most important issue for the 2016 Summit – what to do with the process once the regular Summits were dispensed with.⁶⁵⁶ Although at The Hague Summit, Kazakhstan had suggested lengthening the interval between the Summits to four years and had offered to host another Summit in Astana, very few believed that there would be regular NSS meetings post-2016.

Table 8.1: Schedule of Meetings for the 2016 NSS⁶⁵⁷

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Venue/Dates</th>
<th>Focus on:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1ˢᵗ Sherpas’ meeting</td>
<td>Washington, 27-28 October 2014</td>
<td>Continuation of nuclear security mission beyond 2016 through the UN, IAEA, Interpol, GICNT and Global Partnership; process issues; issue based versus institution based follow up to NSS.</td>
</tr>
<tr>
<td>2ⁿᵈ Sherpas’ meeting</td>
<td>Hua Hin, 12-13 February 2015</td>
<td>Addressing process concerns through open-ended drafting groups; comprehensiveness; technological options for enhancing nuclear security.</td>
</tr>
<tr>
<td>3ʳᵈ Sherpas’ meeting</td>
<td>Vilnius, 30 June – 2 July 2015</td>
<td>Communiqué-Action Plans interface; IAEA, Interpol roles; comprehensiveness discussion on the margins.</td>
</tr>
<tr>
<td>4ᵗʰ Sherpas’ meeting</td>
<td>Alma Aty, 8-9 December 2015</td>
<td>Follow-up to NSS through Action Plans; Preview of logistics; (on the margins) draft joint statement on security of military material.</td>
</tr>
<tr>
<td>5ᵗʰ Sherpas’ meeting</td>
<td>Stockholm, 17-19 February 2016</td>
<td>Finalisation of the Communiqué; discussion on resources for IAEA; scenario shift towards counter-terrorism.</td>
</tr>
<tr>
<td>Pre-Summit Sherpas’ meeting</td>
<td>Washington, 30 March 2016</td>
<td>Logistics; Gift Basket announcements.</td>
</tr>
<tr>
<td>Summit</td>
<td>Washington, 31 March- 1 April 2016</td>
<td></td>
</tr>
</tbody>
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The issue then became how to preserve the gains of the previous Summits and how to park follow-up in other forums. The IAEA was the obvious choice for a large number of NSS participants and the Agency demonstrated its ability to manage a policy discussion on

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⁶⁵⁶ Personal communication with an attendee of the June 2014 meeting, 14 July 2014.
⁶⁵⁷ Interviews 11.5, 15.1.
nuclear security (as opposed to its well-established technical work) by successfully hosting a Ministerial meeting on nuclear security in July 2013.\textsuperscript{658} The annual IAEA General Conference resolution on nuclear security was another policy platform that covered most of the issues listed in the NSS Communiqués.\textsuperscript{659} One issue that it had not covered traditionally, namely comprehensiveness, was now beginning to be raised in Vienna in the context of the resolution.\textsuperscript{660}

The U.S., however, was not convinced that the IAEA was the only forum for follow up and President Obama reflected the U.S. skepticism about the Agency assuming the lead on nuclear security by arguing at The Hague Summit that the Agency did not have the mandate or the expertise to handle some aspects of nuclear security and that there were other forums such as Interpol and the UN that were more suited for those aspects. He also argued that a smaller group of nations would have to take responsibility for the main function of the NSS, namely, a decision-forcing forum to lead the policy discussion on nuclear security.\textsuperscript{661} The three Summit hosts hitherto and other countries subscribing to INFCIRC/869 were to form this norm-driving kernel.

This U.S. approach was reflected in the convening of the June 2014 meeting in Washington and in the invitation sent out for the first meeting of Sherpas on 16 September 2014. In her invitation message, the U.S. Sherpa outlined two priorities moving towards 2016: first, the continued strengthening of national implementation through tangible house gifts and gift baskets (not the Summit Communiqué) and second, building up an enduring global nuclear security architecture, described as a conglomeration of “binding legal commitments, multilateral institutions, voluntary collectives, and national bodies responsible for executing nuclear security”.\textsuperscript{662} In the second context, the U.S. shared its vision for elaborating the detailed work involved in strengthening five key multilateral

\textsuperscript{658} DG IAEA’s report on the Conference in document GOV/INF/2013/9-GC(57)/INF/6 of 5 August 2013.
\textsuperscript{659} GC(56)/RES/10 adopted on 21 September 2012 by the IAEA General Conference had 25 operative paragraphs and 19 preambular ones compared with 20 operative paras and 17 preambular paragraphs in 2010. The increase reflects the rise in sub-areas of focus in parallel with the NSS.
\textsuperscript{660} IAEA General Conference, Committee of the Whole, Record of the Sixth Meeting, 17 September 2015, GC(59)/COM.5/OR.6, paragraphs 2-62; Swiss amendments to the GC Resolution on Nuclear Security contained in ‘Draft Resolution – Nuclear Security (GC(59)/COM.5/L.4).
\textsuperscript{661} Interview 11.3.
\textsuperscript{662} Nuclear Security Summit 2016: Invitation to Washington D.C. Sherpa Meetings, 16 September 2014.
institutions and voluntary collectives. This work would be facilitated by a “friends of the chair” coordinators’ group (comprising of the ‘more’ like-minded countries that had attended the June meeting), which would lead Informal Working Groups (IWGs) comprised of appropriate representatives from Summit countries, the “Troika” of Summit host countries, and representatives from each of the institutions and initiatives (UN, IAEA, Interpol, GICNT and the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction) to develop action plans for the concrete steps to be pursued within each of the institutions.

Thus, the UK was to chair a working group on what could be done on nuclear security post-2016 under the UN umbrella. Australia in collaboration with Hungary agreed to take on this role with respect to the IAEA, Lithuania was to lead discussions on Interpol, Spain and Morocco stepped forward to coordinate discussions on GICNT and Japan volunteered to steer discussions on the G8 Global Partnership. 663

The U.S. also decided to do away with the idea of a negotiated final document, the well-known Communiqué, which was becoming increasingly difficult to negotiate with every Summit. Instead each IWG would come up with a Work Plan over the course of ten months or so, which would then be shared with all Summit participants in about a year’s time. The Leaders would endorse the Work Plans at the 2016 Summit. The Summit participants would get to choose up to two Groups to participate in order to maintain a manageable size and to obtain balanced participation. Crucially, the IWGs would not be subject to the consensus rule. The regular Sherpa meeting was to be relegated to reviewing the drafts finalised by the Informal Working Groups in about a year. The U.S. argued that while the planning and execution of the 2016 process was to unfold differently from the past, this was necessary to set the stage for enduring success post-2016. 664

While several participants had reservations about the new U.S. approach, it was Russia that came out with the strongest reaction. 665 On the eve of the Washington meeting

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663 Interview 11.4.
664 Interview 11.3 and 11.4.
665 China, India, France, Argentina, Mexico, Pakistan, South Africa and Thailand; one of them made soundings in select capitals to gauge reactions to the working methods proposed by the U.S. Interview 11.4.
on October 24, it sent a non-paper to all NSS participants announcing that it saw “no possibility for us to participate in the 4th Summit on PNS in the USA and, therefore, in the preparatory events”. It denounced the proposed U.S. approach on three counts. First, it saw no added value in another summit in 2016 with the major part of the political obligations assumed by participants at previous summits having been fulfilled. Second, it disagreed with the notion of impromptu, limited working groups providing direction to and interfering with international organisations and initiatives such as the UN and the IAEA. Third, it contested the privileged rights provided to the U.S., the ROK and the Netherlands (“group of three” as the Non-Paper termed them) as previous summit hosts including a guaranteed place in every working group. While conveying the decision to boycott the summit process, Russia stated that it would focus on enhancing physical nuclear security (PNS as it termed it) within the IAEA, particularly through the high-level conference planned in 2016 in succession to the 2013 conference.

While the deteriorating political relationship between Russia and the U.S. was the most proximate cause, it might be asked why Russia could not have continued cooperating with the U.S. on the NSS just as it did on the Iranian nuclear issue. The answer perhaps is that further progress on the nuclear security issue mattered less to Russian national security and interests than did progress on the Iranian issue. Further, while the NSS had a safety net in the IAEA, there was none for the Iranian nuclear issue. Russia could calculate therefore that the political cost of snubbing the U.S. on the NSS was manageable.

Modest results from a modified process

The Sherpas gathered over a reception at Blair House in Washington on 26 October 2014 under the shadow of the Russian boycott. At the meeting the next day, the ROK, the Netherlands, Japan, Poland, Australia, Canada, Germany and the UK defended the U.S. approach as innovative, forward-looking and practical. There was no need to negotiate another Communiqué since the previous three Communiqués and the Washington Work

666 Annex 15. PNS or Physical Nuclear Security was a new coinage that harked back to the physical protection origins of the idea of nuclear security.
667 Ibid.
Plan were still valid. There was no single organisation that could be entrusted with follow-up post-2016 and the IWGs were merely a practical device to be folded up after the Summit. On the other hand, Argentina, France, Egypt, India, Mexico, Pakistan and South Africa expressed concern that the common will channeled through the Sherpas’ meetings thus far would be dissipated in the five IWGs, which also seemed to place very different institutions on the same footing. The NSS could not expect to dictate policy to these institutions, which had their own mandates and memberships. Further, the Sherpas would need to take responsibility for what the Leaders would endorse at the Summit and therefore should be directly in charge of the preparatory process. Many participants also highlighted the need to adopt at least a short political document if not a full Communiqué to allow the Leaders to look back at six years of work and look ahead to the future.

The five IWG Chairs had already prepared presentations on the institutions and mechanisms under their charge. The U.S. Sherpa put the process issue on hold as the meeting went ahead with the presentations on the second day. However, it would not go away. India argued for a return to a “unitary agenda” for the Sherpas and wondered if an issue-based approach to the post-2016 follow-up (as against an institution specific approach) would not be better in order not to let specific nuclear security concerns slip through the cracks between the institutions. As the presentations unfolded, it also became clear that a bulk of the follow-up would be in the IAEA and the UN. Just as the chairs in the room did not match the number of participants when the Sous-Sherpas met on 4 November 2009 in Washington, the numbers at the October 2014 meeting did not add up either. With a total limit of 20 delegations per IWG and almost everyone determined to have their say on follow-up in the IAEA and the UN, the limit of two on IWG participation made no sense.

The discussion at Washington was inconclusive but it became apparent that the original approach would need to be adjusted. U.S. Sherpa Holgate asked for comments on working methods and then reverted to the Sherpas on 11 December 2014 with a revised

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668 The IAEA too was unhappy with this arrangement, which equated the Agency with the UN. This was a throwback to the discussions on the ICSANT at New York in the late 1990s. Interview 11.3.
669 Interview 11.3.
670 Interview 11.3.
671 Ibid.
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approach to developing the institutional action plans. The issues versus institutions debate was addressed in the U.S. communication through an attached matrix mapping themes from the three NSS Communiqués and the 2010 Work Plan onto the mandates and missions of the 5 key nuclear security institutions. The future learning pathways for the issues worked thus far in the NSS became more visible. The U.S. further indicated that the so-called ‘orphan issues’ that did not belong clearly to one institution would be handled by the Sherpas, who would retain overall control over the text of the Working Plans. The U.S. also agreed to a short political document in lieu of a Communiqué, which would connect to the Action Plans through what was termed a ‘segue’ paragraph.

A compromise on the process emerged by the time the Sherpas met in Hua Hin on 12-13 February 2015. The IWGs, rebranded ‘drafting groups’, were made inclusive; everyone could participate although in practice it became difficult as the IWG Chairs came up with their own calendar of meetings (Vienna and Canberra for the IAEA, Lyon for Interpol, New York for the UN). The reframing of Action Plans as strategic guidance rather than detailed plans for monitoring follow-up was also helpful. The drafting groups worked into May 2015 to put together the Action Plans. A theme that cut across the work on the five institutions was capacity enhancement; the discussions on the IAEA draft Action Plan in particular showed the limits of what could be achieved outside of the framework of the concerned institution. Coordination of efforts across the institutions was another gap that showed up during the discussions. Finally, there was little joy for those who felt that the Action Plans could be used as a vehicle to push the envelope on NSS commitments beyond what had been achieved at The Hague. Overall, while the U.S. got its way on channeling follow-up into five pre-selected institutions, the IWG process ended up being a mixed bag. It represented a lot of effort for very frugal results, which were then renegotiated in subsequent Sherpas meetings at Vilnius, Almaty and Stockholm. Again while the Sherpas began a discussion at Hua Hin on how the Action Plans would be ‘infused’ into the relevant institutions by the NSS participants, it was obvious that once the discipline of the NSS process began to fade after 2016, the Action Plans would have to contend with the politics

672 Contention was obviously useful in ensuring this learning outcome.
673 Interview 11.4.
674 The issue of enhancing budgetary support for nuclear security at the IAEA remained unresolved from the beginning of the drafting process in March 2015 at Vienna to the Stockholm meeting of Sherpas in February 2016. Ibid.
and practices of those institutions. President Obama acknowledged the challenge at the concluding session of the Summit on 1 April 2016 when he called for the Plans to be backed by participants’ “voices, votes and voluntary contributions”.

Comprehensiveness

This was the orphan issue par excellence and ended up dominating the substantive side of the proceedings. At the Washington Sherpas’ meeting in October 2014, Switzerland recalled what President Obama had said at The Hague and argued that despite the sensitivities the issue of military stocks was not outside of the NSS ambit. NGOs such as NTI and the Partnership for Global Security led by Kenneth Luongo also highlighted comprehensiveness and demonstrable steps on the security of military materials as a priority for the 2016 Summit. The NGOs organised a parallel meeting on 28 October 2014 at the Washington-based think tank CSIS and unveiled five priorities for 2016, including their first priority ‘Make the Global Nuclear Security Regime Comprehensive’, as well as plans for an elaborate social media campaign to humanise the esoteric nuclear security agenda.

Several participants in the official process engaged with the NGOs on the five priorities at the meeting; Luongo, who highlighted the fact that expert consensus on the five priorities had been reached early in the process, took pains to underline that they were not challenging the Sherpa process but wanted to partner with the Sherpas. The Sherpas and Sous-Sherpas attending the meeting in turn pointed out that most of what the NGOs were advocating was already in the Communiqués, perhaps in less prescriptive form, and the issue of military materials could not be progressed without the support of those who possess such material. The representative of one such state recalled that the NSS was not about nuclear disarmament or nuclear weapons and there was no boundary that had been

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675 The IAEA representative made repeated interventions during the debate in Hua Hin to emphasise that the Agency was already engaged on most of the issues being discussed and it would be a mistake to bring Action Plans decided in the NSS to the IAEA for endorsement.
676 Interview 11.5.
677 Interview 11.5.
678 Interview 11.4.
679 5 Priorities for the 2016 Summit, later termed 5 Priorities for Global Nuclear Security, available at https://partnershipforglobalsecurity.org/5-priorities-for-global-nuclear-security/
drawn to exclude military materials and thus there was no gap. Another said that NSS was not the forum to discuss military materials, which were the subject of discussions in Geneva in the context of the FMCT, and there were limits to transparency in view of the nexus between states and non-state actors.\footnote{\textsuperscript{680}} In parallel to the launch of the Sherpa process, the U.S. dominated NGO community also launched two study groups. In addition to the work begun by the Fissile Material Working Group (FMWG), the NTI set up a Military Materials Security Study Group chaired by former U.S. Senator Sam Nunn and former U.K. Secretary of State for Defence Des Browne whose report was expected to coincide with the middle of the Sherpas-led preparatory process in June 2016.\footnote{\textsuperscript{681}}

The first discussion on comprehensiveness within the NSS process took place in Hua Hin when Switzerland introduced a paper supported by Australia, Chile, Netherlands and Sweden. In order to be truly effective, argued the paper, the global nuclear security system needed to be comprehensive. Even if all civilian materials were fully secured to the highest standards, this would only cover an estimated 15\% of the weapons-usable material around the world, leaving a critical gap in the architecture. Acknowledging the reluctance of states with military materials to enter into a discussion or share information due to concerns about sensitivity of such information, the paper argued that not all forms of military material and facilities were inherently sensitive and it should be possible to explore certain CBMs which would assure the wider international community that these materials are being secured to the best possible standards.\footnote{\textsuperscript{682}}

Switzerland asked that the next meeting of Sherpas be devoted to the issue of comprehensiveness and that in this regard the report of the NTI Military Materials Security Group be discussed in the NSS process. The reactions of France, the UK and India were predictable while China took a tactically quiescent approach. The three nuclear weapons possessors argued that there was no gap in nuclear security efforts and the earlier understanding on military material and facilities to be secured through national measures should not be reopened. France further underlined that their domestic laws might actually

\footnote{\textsuperscript{680} Interview 11.4.}
\footnote{\textsuperscript{681} The outcomes of these two NGO tracks are available \textit{inter alia} at \url{http://www.fmwg.org/FMWG_Results_We_Need_in_2016.pdf} and \url{http://www.nti.org/analysis/reports/bridging-military-nuclear-materials-gap/}}
\footnote{\textsuperscript{682} Annex 16.}
make sharing of information on measures related to military materials illegal. A new element in the discussion was the point made by Belgium, Japan and Germany cautioning against accentuating the divide between the countries possessing military materials and others; another concern albeit unstated was clubbing together different weapon states.\footnote{Interview 11.4.}

In parallel to the public approach of Switzerland, the U.S. began to explore in private with other possessors of military material options for conveying an assurance on the security of material in the non-civil domain. The NTI discussion on military materials was the crucible for forging some of these options, which were then brought into the margins of the Sherpa meetings and tested.\footnote{An important meeting in this regard was the NTI Global Dialogue on Nuclear Security Priorities at the Roosevelt Hotel in New York on 26-28 May 2015. The parallel with the 2013 Annecy NTI meeting and the issue of the Joint Statement on Strengthened Nuclear Security Implementation is obvious. See timeline and details of the NTI Global Dialogue meetings at http://www.nti.org/about/projects/global-dialogue-nuclear-security-priorities/} One of these options was a Joint Statement by NSS participants possessing military material underlining a collective commitment to maintaining the highest level of security for military materials and facilities.\footnote{The report of the May 2015 New York NTI meeting mentioned a potential gift basket in 2016 which would provide a “tailored” approach for countries with military materials to describe specific steps being implemented to secure military materials. Additionally, such a gift basket could consist of consensus sections reaffirming state responsibility to develop and maintain effective accounting and physical protection of all nuclear materials consistent with obligations under UNSCR 1540 as well as committing states to secure military materials to the same or higher standards than those reflected in IAEA recommendations (INFCIRC/225/Rev-5). Global Dialogue on Nuclear Security Priorities, Rapporteur’s Report, 25 June 2015.} Another option was including such references in national statements to be made at the 2016 Summit. The 2014 Progress Report of the U.S. was mentioned as an exemplar for the kind of measures that could be reported by nuclear weapon states.\footnote{Nuclear Security Summit 2014, National Progress Report, United States of America, section on ‘Security of Military Material’, available at http://www.state.gov/documents/organization/235470.pdf} Confidential exchange of best practices between two or more possessor states was also mentioned as a possibility as was consolidation of sites holding military materials.

The idea was pursued quietly on the margins of the Sherpas’ meeting in Vilnius in June-July 2015, at the IAEA General Conference in Vienna in September 2015,\footnote{Proposal from Switzerland ‘Draft Resolution – Nuclear Security (GC(59)/COM.5/L.4). The proposal stated that progress is urgently needed in the area of nuclear disarmament and non-proliferation to promote effective security in a comprehensive manner, referred to the catastrophic consequences of any use of nuclear weapons, including by terrorists, and asserted the responsibility of states to maintain effective nuclear security} and then

\bibliography{references.bib}
again in December 2015 around the Sherpas’ meeting in Almaty. There was an attempt at Almaty by the comprehensiveness advocates – Australia, Chile, Switzerland and the Netherlands – to answer some of the arguments that had been advanced against reporting on military materials. In particular, they pointed out that information could be shared without compromising national security and non-proliferation and that steps to build international confidence in national measures had been successfully taken in other contexts such as civil aviation. The Switzerland-led group also shared a draft Joint Statement on the Security of Military Materials. The draft took as its starting point the obligations set forth in UNSC Resolution 1540 and the standards laid down in IAEA’s “Nuclear Security Recommendations on the Physical Protection of Nuclear Materials and Nuclear Facilities” (INFCIRC 225/Rev. 5). It listed 11 examples of measures that States could choose to highlight to build confidence in the effectiveness of their nuclear security regimes. The measures described could be tailored to each possessor state’s national structures and procedures.

In early January 2016, immediately after the Almaty meeting, the U.S. also shared with other possessor states some language it had developed for public release at the Summit. It was the U.S. assessment that sharing this information would not compromise the security of military materials. On the contrary it would dissuade those who might think of targeting these facilities. The text that could be agreed with other possessors could go into a common gift basket while the rest would go into the national progress reports.

By the time of the last NTI Global Dialogue on Nuclear Security Priorities held in San Francisco on 24-26 January 2016, however, it became clear that there was no support for the idea outside the U.S. delegation. The U.S. consequently dropped the idea of a discussion with other possessors on their proposals at the Stockholm meeting of the Sherpas in February 2016. It, however, continued its national practice of releasing select information of all nuclear and other radioactive material, which includes nuclear material used for military purposes. The last phrase was dropped from the final text.

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689 Interview 11.5.
690 Interview 11.5.
691 Interviews 11.5, 15.2.
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on security of military materials “so that other nations can improve their security and transparency as well”. 692

The Scenario Shifts?

The success of the scenario-based policy discussion at The Hague prompted not just one but two repeats for 2016. The first was a Ministerial level discussion called Apex Gold at the Lawrence Livermore Laboratory in the U.S. chaired by Energy Secretary Moniz and the Dutch Vice Foreign Minister Rene Jones-Bos on 28 January 2016. 693 The fictional scenario built around civilian HEU out of regulatory control unfolded in a series of video clips to provide a basis for a policy discussion. NSS participants coming from diverse fields – foreign affairs, nuclear energy, nuclear regulation, emergency response - chose responses to multiple-choice questions after each clip and defended their choices in the policy discussion. The discussion touched upon real life responsibilities for prevention, protection, prosecution, public communication and international cooperation. The sub-text revolved around exchange of information for prevention and prosecution, including in the context of Article 7, 1 (b) of ICSANT, capabilities for nuclear forensics and the role of Interpol. 694

At the conclusion of Apex Gold, Secretary Moniz underlined the need to go back to the agenda on the non-proliferation of nuclear materials; the use of an HEU prop for the scenario made that obvious. 695 However, when the Sherpas gathered in Stockholm in February 2016 for their last substantive meeting the scenario had shifted. 696 President Obama intervened decisively at one of the last internal preparatory meetings for the Summit to bring the focus on broader aspects of counter-terrorism in light of the spread of

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692 Remarks by President Obama and Prime Minister Rutte at the Opening Session on April 1, 2016 available on www.nss2016.org
693 Fact Sheet: Apex Gold, March 31, 2016 available on www.nss2016.org
694 Interview 11.5.
696 Perhaps more accurately, the two scenarios used in 2016 reflected the respective preferences of President Obama, who was conscious of what leaders were most worried about in early 2016, and Secretary Moniz, who focused on the long-held concern of weapons usable materials. Interview 15.2.
ISIS in West Asia and its use of WMD.\textsuperscript{697} The material prop shifted appropriately to a radiological material – Caesium 137. When U.S. Sherpa Laura Holgate informed the Sherpas of the change, at least one Sherpa expressed discomfort with the shift away from nuclear security to terrorism writ large but as she put it this was now “written in stone”\textsuperscript{698}

The scenario was launched with a single video at the Summit on 1 April 2016.\textsuperscript{699} The ensuing discussion was in two parts, a first round focused on nuclear security. The discussion expanded in the second round to draw in issues of counter-terrorism and counter-radicalisation. Obama’s remarks at the Opening Session of the Summit included an acknowledgment that dirty bombs were the more likely threat compared to improvised nuclear devices; he also dwelt at length on ISIL and the recent developments in Paris and Brussels.\textsuperscript{700} In his remarks at the beginning of the scenario-based discussion, he also pointed out that IAEA and Interpol have proven capabilities to help countries exchange information to counter the nuclear security threat.\textsuperscript{701} In the remarks that followed, quick information sharing, nuclear forensics, effective border controls, regular exercises and emergency preparedness were highlighted as priorities by the leaders. DG IAEA emphasized the need to use the existing template of the ITDB for information sharing and for activating the IAEA’s Emergency Centre. The UNSG highlighted the UN’s role in working with the OPCW to address the issue of chemical weapons use in Syria and the Special Ebola Mission it launched pursuant to a UN General Assembly decision. He called for reduction of stockpiles of fissile material and the pursuit of nuclear disarmament in parallel with action to counter violent extremism.\textsuperscript{702}

The broader discussion on the terrorism threat drew upon recent developments in West Asia, Africa and Europe, in particular the rise of ISIS and the continued resilience of

\textsuperscript{697} Interview 15.2 and Interview 11.6.  
\textsuperscript{698} Interview 11.5.  
\textsuperscript{700} Remarks by President Obama and Prime Minister Rutte at the Opening Session on April 1, 2016 available on www.nss2016.org  
\textsuperscript{701} Interview 11.6.  
\textsuperscript{702} Interview 11.6: Statement attributable to the Spokesperson of the Secretary General on the outcome of the 2016 Nuclear Security Summit, http://www.nss2016.org/unstatement
Boko Haram. The mention of the possibility that the presence of armed guards at Belgian nuclear plants may have deterred a possible ISIS attack was cold comfort. The technology dimension of nuclear security was underlined in the context of the contemporary threat. Steps such as vitrification of Cs-137 before its use in medical applications presented technological opportunities to further strengthen nuclear security while cyber and insider vulnerabilities posed a growing threat. A recurring theme was the inadequacy of internal and international collaboration as demonstrated by the terrorist attacks in Mumbai, Paris and Brussels. A 20th century international framework and mindset confronted a 21st century ‘smart’ terrorist.

In his concluding remarks, President Obama acknowledged that the original focus was narrow but now needed to be broader. The work in the NSS had made the scenario presented to the leaders less likely but there was a continued need to learn from each other and to coordinate better. The network of experts created through the NSS process needed to be preserved and follow-up action pursued on the basis of the institutional and human bonds created through the NSS.

Conserving nuclear learning for the future

There was no NPT-like treaty that came out of the NSS process; nor did the NSS create an international organisation like the IAEA to follow-up on commitments. How would learning, which had taken place inside the NSS survive post-2016? The legal bases – CPPNM as amended, ICSANT and UNSCR 1540 - existed so did the organisational structure – IAEA, UN, Interpol and others. The warp and weave of commitments and organisational follow-up

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705 Varghese K. George, ‘Terrorism has evolved, but responses have become old: Modi’, The Hindu, 2 April 2016.

706 Interview 15.1.
needed, however, to be knotted together. A loosely structured set of 2016 Summit outcomes attempted to provide the frame for this work.

The 2016 Communiqué recognised that the Summits since 2010 have raised awareness of the nuclear security threat and driven many tangible, meaningful and lasting improvements in nuclear security. It underlined the importance of the CPPNM and its 2005 amendment as well as the ICSANT and reaffirmed the fundamental responsibility of states to maintain at all times effective security of all nuclear and other radioactive material, including nuclear materials used in nuclear weapons, and nuclear facilities under their control. It pledged participating States to making nuclear security an enduring priority, maintaining the international network of officials and experts who have supported the Summit process and incorporating the broader community of States into the NSS. The NSS participants also resolved to implement the Action Plans attached to the Communiqué while affirming that the Communiqués from the earlier three Summits and the Work Plan of 2010 would continue to guide their efforts.  

A significant harvest of the last Summit was the entry into force of the 2005 Amendment to the CPPNM. With regard to the other legal pillars of nuclear security, the Action Plan in support of the UN called for full implementation of UNSC Resolution 1540 by 2021 and for States Parties to the ICSANT to implement their obligations in full and a convene a high-level meeting in 2017 to review implementation.

The IAEA Action Plan underlined the Agency’s essential responsibility and central role in strengthening the international nuclear security architecture and in developing international nuclear security guidance. It supported the IAEA’s continued regular convening of ministerial meetings to promote political commitment, enhance awareness and keep up the momentum on nuclear security. A significant outcome was the recognition of the role of the IAEA in coordinating international nuclear security activities and in promoting information exchange inter alia among national Centres of Excellence (COEs) on nuclear

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707 Nuclear Security Summit 2016 Communiqué, 1 April 2016.
708 President Obama’s Opening Remarks, 1 April 2016. The Amendment entered into force on 8 May 2016 after ratification by 2/3rd of the states party to the Convention.
709 Action Plan in support of the United Nations, 1 April 2016.
security. The Action Plan also encouraged states to avail of IAEA’s IPPAS and other training and assistance services. The Action Plan also captured IAEA’s evolving role in sustaining work on nuclear forensics, transport security, computer and information security, sharing information on material out of regulatory control and on fostering a culture of nuclear security. It retained earlier references to minimising the use of HEU where technically and economically feasible and supporting states’ efforts to keep their stockpiles of separated plutonium to the minimum level consistent with their national requirements.710

The Action Plan in support of the Interpol called for strengthening the organisation’s role in facilitating information exchange between law enforcement agencies on criminal and terrorist offences and threats involving nuclear or radioactive material and associated facilities. A significant aspect of the Action Plan was the recognition of the importance of information sharing between the technical communities centered on the IAEA and the law-enforcement communities grouped around the Interpol. Thus, the Action Plan called for States to supply complementary law-enforcement related information about cases in the IAEA’s ITDB through Interpol’s National Central Bureaus and its secured global communications network. It also called for enhancing Interpol’s capacity to support multilateral investigations into nuclear and radiological terrorism and prosecution of offenders.711

The Action Plan in support of the GICNT focused on strengthening global capacity to prevent, detect, deter and respond to nuclear terrorism, including by improving interoperability among its 86 partner countries and 5 observer organisations.712 The fact that Russia co-chairs the GICNT with the U.S. provides a crucial link to the nuclear security community of a key partner no longer participating in the NSS. While the GICNT Action Plan focused on practical cooperation in areas such as tabletop exercises, field exercises, scenario-based discussions and cross-disciplinary workshops, the Action Plan for the Global Partnership Against the spread of Weapons and Materials of Mass Destruction focused on development, coordination, implementation and financing of cooperation projects in nuclear security. Areas of focus – enhancement of national capacity, nuclear forensics,

711 Action Plan in support of Interpol, 1 April 2016.
712 Action Plan in support of the Global Initiative to Combat Nuclear Terrorism, 1 April 2016.
disposition and conversion of nuclear materials - were identified for projects and the Partnership’s unique programmatic deconflicting role strengthened.\footnote{\textit{Action Plan in support of the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction}, 1 April 2016.}

Among the 2016 Gift Baskets, the Joint Statement on Sustaining Action to Strengthen Global Nuclear Security captured the strategic approach of the hosts to conserving nuclear learning. 35 countries and two international organisations (Interpol and UN) committed in the Joint Statement to establish a Nuclear Security Contact Group, to designate senior representatives to participate in the Contact Group and convene annually on the margins of the IAEA General Conference or other such meetings. The mandate of the Group was to discuss a broad range of nuclear security issues, identify emerging trends that may require focused attention, promote and assess implementation of nuclear security commitments, including those made during the NSS process and develop and maintain linkages to nongovernmental experts and industry. Importantly, the Contact Group was to consider and make recommendations to their respective leaders on convening any future Nuclear Security Summits. The Group was to be open to participation by all countries that subscribe to the goals set out in the Joint Statement.\footnote{\textit{Joint Statement on Sustaining Action to Strengthen Global Nuclear Security}, 1 April 2016. The Contact Group first met in Vienna on 23 September 2016.}

An equally popular Gift Basket was the 2016 Statement of Activity and Cooperation to Counter Nuclear Smuggling subscribed to by 35 countries and the Interpol. An interesting new initiative was a Joint Statement on Sustainability in Reporting and Information Sharing by Norway and the Netherlands. The statement proposed a consolidated National Nuclear Security Report, which could be used to fulfill reporting requirements under a variety of instruments such as UNSCR 1540 and the CPPNM.

The 2014 Joint Statement on “In larger security: a comprehensive approach to nuclear security” was taken forward through a 2016 Joint Statement titled “In larger security: looking ahead”. The participating States were Algeria, Argentina, Brazil, Chile, Egypt, Indonesia, Kazakhstan, Malaysia, Mexico, New Zealand, Nigeria, Philippines, Singapore, South Africa, Thailand and Vietnam. While the statement acknowledged the
learning in the NSS on nuclear security, it raised questions about its narrow scope and direction. It said that nuclear security cannot be strengthened if the focus is only on the relatively small quantity of nuclear materials in peaceful use. The international community has the right to demand from States possessing nuclear weapons decisive steps to secure, reduce and irreversibly eliminate their nuclear arsenals and their huge stocks of weapon-grade materials. Nuclear security must be addressed in its broader context of nuclear disarmament, non-proliferation and peaceful uses of nuclear energy to be ultimately effective. Following the conclusion of the NSS process, future endeavours to strengthen nuclear security in all relevant international forums should be guided by mutually reinforcing measures to address the security risks posed by nuclear arsenals and the vast stocks of materials associated with nuclear weapons programs. An alternative vision of future learning on nuclear security was thus laid down. 715

Interestingly, both China and India gave up their initial allergy to Gift Baskets and joined some of them at the 2016 Summit. 716 The Carnegie Corporation of New York and the John D. and Catherine T. MacArthur Foundation came up with an NGO Gift Basket that committed up to $25 million over the course of 2016 and 2017 for work to secure nuclear materials and reduce the nuclear security threat. 717 An idea initially at the margins of the NSS was now mainstream.

Conclusion

Process-wise, the Washington Summit was about exploring the limits of the consensus-based Sherpa meetings and devising a good follow-up scheme to the NSS. Substantively, it was about the two ‘comprehensiveness’ – enlarging coverage of nuclear security efforts to include military materials and a broader approach to countering nuclear

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715 In larger security: looking ahead, Joint Statement by Algeria, Argentina, Brazil, Chile, Egypt, Indonesia, Kazakhstan, Malaysia, Mexico, New Zealand, Nigeria, Philippines, Singapore, South Africa, Thailand and Vietnam.
terrorism. The key process learning in 2016 was on creating follow on mechanisms to keep nuclear security efforts going in conjunction with but separate from existing forums such as the IAEA and Interpol. This met well the changed political and security context that underlay the second comprehensiveness. The revision of the scenario for the Summit, the discussion at the concluding session and the cross-domain Action Plans show the NSS’s agility as a learning forum in this regard. They also highlight the main reasons for this nimbleness: short lines to decision-makers and the diverse character of the knowledge makers inside the process.

On military materials, the discussion showed that learning to recognise the current boundary between what is practical and what is unrealistic is important. This is contrary to what might be expected from many definitions of complex learning. However partial, learning not to broaden the agenda might have been the real learning on military materials. This was because despite its continued conceptual allure the notion of comprehensiveness has two fatal weaknesses. First, it opens the door to other issues from the broader nuclear universe such as lack of trust among the possessors, different notions of transparency and nuclear deterrence, which a distinctly constructed notion of nuclear security sought to avoid. These issues have not yet been thrashed out; in fact many of the forums for addressing them still do not exist. Frontloading them relegates the nuclear security conversation again to the back row of nuclear issues. Second, it raises fundamental questions about the forum and form in which to pursue a comprehensive notion of nuclear security – an exclusive forum of possessors of military material, a mixed ad hoc forum such as the NSS or a truly comprehensive universal forum? The materials or the weapons themselves? Given the politics of nuclear disarmament and the rising levels of frustration in established forums, most possessors fear that even a casual contemplation of these questions could lead to demands to ‘go all the way’ to reframe nuclear security as nuclear disarmament upending the learning paradigm.

Historically speaking, the ‘go all the way’ view of comprehensiveness is akin to the pre-1963 disarmament paradigm where the world is made secure from nuclear material for military purposes by reducing and eliminating such material everywhere. The ‘do

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718 The evolving context is sketched in part in President Obama’s Opening Statement at the Summit.
something’ view of comprehensiveness places nuclear security in the framework of the post-1963 paradigm of non-proliferation, arms control and stability. Thus, President Obama prefaced his Op Ed “The next steps in nuclear security” in The Washington Post of March 31 with a reference to the “most dangerous” threat to global security and peace, “the proliferation and potential use of nuclear weapons”. Placing nuclear security measures in the context of the broader vision of his Prague speech, he sought to defend his record on reducing nuclear weapons (with Russia), de-emphasising the role of nuclear weapons in national security, resolving the Iranian nuclear issue and countering DPRK’s defiance. Along similar lines, the NGOs (NTI and Carnegie) took out a full-page advertisement in the same newspaper the same day. ‘A Call to Action on Nuclear Terrorism’ said that important progress had been made, to wit the elimination of nuclear weapons materials from 11 countries, but the job was not done. “The Summits are ending as the global terrorist threat is growing.” Noting the deteriorating relationship between U.S. and Russia, it called upon the two to work to prevent ISIS and other violent groups from getting these materials and to avoid another costly arms race. The clash between the two views of comprehensiveness thus recalls the clash of the disarmament and arms control paradigms of the first two decades of the nuclear age.

Summing up the learning in the Nuclear Security Summits

The NSS changed the course of nuclear security learning. Nuclear security had been the preserve of experts in Vienna. The General Conference nuclear security resolution, in which the rationale of nuclear security was first articulated in 1977, could have continued as a platform for nuclear security learning even though it was least common denominator based and thus slow and cumbersome. However, the NSS injected urgency and the iterative pressure of Summits forced participants to come up with new ideas and proposals every two years. IAEA Resolutions are read by the experts in Vienna and in Foreign Ministries and Departments of Atomic Energy of the member states. The NSS on the other hand engaged the whole of government and brought leaders into play. The upper levels of policy learning were forced to engage with the technicality and nuance of nuclear security. Experts across

disciplines came together in Sherpa teams and enriched the discussion nationally and internationally. There was a conscious attempt to add an implementation component to the Sherpa teams right from the outset.\textsuperscript{721} Many Sherpas, U.S. and Jordanian Sherpas for example, uniquely straddled the three levels of learning. This expansion of international learning impacted in turn the technical communities in Vienna, New York and Lyon. Given the reinvention of dramatic terrorism by ISIS in the three years leading up to 2016, this was most timely.

\textsuperscript{721} This was emphasised in President Obama’s very first letter to the other leaders inviting them to nominate the Sherpas and Sous-Sherpas.
Table 8.2 Assessing learning in the Nuclear Security Summits

<table>
<thead>
<tr>
<th>Learning in NSS (1st order analysis)</th>
<th>Conceptual underpinning (2nd order analysis)</th>
<th>Comparison: other forums (2nd order analysis)</th>
</tr>
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<tr>
<td>Leaders-led whole of government approach raises priority and resource allocation for goals. Bilateral political engagement in parallel accelerates achievement.</td>
<td>Power/goal-directed intention infused from the top into a technical implementation process (nationally by the leaders) as well as diffused to peers (in an international forum) by agenda-setters.</td>
<td>Leaders not invested in other nuclear forums (with the exception in recent years of the Iran nuclear negotiations); 722 decisive leadership by a country or a group of countries lacking in other multilateral forums.</td>
</tr>
<tr>
<td>A result-oriented preparatory process without formal rules of procedure. A process of regular Summits (like regular bilateral Summits in key relationships) rather than a one-shot event.</td>
<td>Quick iterations of dialogue with pre-set end points create pressure for novelty (hence change). A regular process allows for institutionalisation of learning, absorption through repetition and socialisation of a new generation of practitioners.</td>
<td>Rigidities in process, which become an end in themselves rather than being tagged to outcomes; written rules of procedure raise stakes and comfort but slow down learning; key players interested in preserving rather than extending learning through ritualised discussions.</td>
</tr>
<tr>
<td>Participants with expertise across disciplines; grouped in two levels (Sherpas and Sous-Sherpas) but threaded through with one communication process; a degree of informality.</td>
<td>An active cross-disciplinary epistemic community facilitates learning.</td>
<td>An over-specialised community of practice (disarmament &amp; arms control diplomats) tends to fall into a pattern of ritualistic responses.</td>
</tr>
<tr>
<td>Nuclear security learning facilitated by bringing in non-NPT states. Absence of traditional groupings like NAM or New Agenda Coalition (NAC) allowed more open dialogue.</td>
<td>‘Outliers’ facilitate flow of ideas across notional conceptual boundaries; functional cooperation in absence of pre-existing group identification helps build new community of practice.</td>
<td>Very little cross-regional dialogue even in universal forums; focus on defending group positions and interests rather than on achieving cross-cutting goals.</td>
</tr>
<tr>
<td>Gift baskets and Action Plans for specific institutions allowed learning on margins of Summit Communiqués.</td>
<td>Fluidity in form and availability of alternative learning structures helps advance learning in less than consensus situations.</td>
<td>Difficult to switch or reinvent forums, which are hardwired into national security setups in key stakeholders. Learning on margins has eroded because of underinvestment in supporting institutions and epistemic communities.</td>
</tr>
</tbody>
</table>

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722 Interview 2.1.
Chapter 9

Conclusion: The Past as Future of Nuclear Learning

This thesis has examined change in state behaviour in one conceptual field, policy related to nuclear weapons. Two case studies have been deployed for this purpose: 1) the search for comprehensive disarmament solutions from 1954-1963 from the Sub-Committee of the Disarmament Commission in London to the ENDC in Geneva; 2) the search for security against the threat of non-state actors causing harm by using nuclear or radioactive material and facilities in the NSS process from 2009-2016. It is beyond the scope of this thesis to contrast such multilateral leaders-led learning with the dramatic bilateral nuclear learning of Khrushchev and Kennedy on crisis and control in 1962 or more recently that of George W. Bush and Manmohan Singh on accommodating a non-NPT state into the global nuclear order over 2005-2008. Such bilateral learning washes up on multilateral shores and vice versa, and it may be futile to argue that only one is real and not the other. Nonetheless, given the inherent multi-state entanglement of nuclear issues today, it is logical to assume that clues about the future of nuclear learning can best be gleaned from a study of made to measure multilateral forums such as the NSS, which also provide space on the margins for bilateral learning to reinforce its multilateral twin.

Conceptual model validated

When Joseph Nye looked at nuclear learning in 1987, he laid out the fundamentals in terms of the process and described the interaction between process and structure, or in his view, between learning and regimes. Nye focused more on bilateral learning leading to regimes, contrasting its discontinuous character with the more incremental learning that takes place within the regimes. This thesis has taken a broader approach to nuclear learning,

723 Another example of this bilateral-multilateral dynamic is Climate Change negotiations. See for example, Justin Worland, ‘Why No Country Matters More Than India at the Paris Climate Talks’, Time, December 11, 2015.
where the regimes are just one manifestation of knowledge-construction and its institutionalisation. The focus is on the interaction of multiple nuclear knowledge-makers, whether such interaction happens inside existing regimes, or forums that stand on the margins of existing regimes, come out of new regimes or lead into them. The focus is not only on whether learning is taking place or not in a particular area, it is also to examine whether that particular area is getting differentiated into specific areas of practice. This focus on practice allows both the breadth and depth of learning to be captured.

Further, building on Nye’s inductive approach, a conceptual model has been proposed for learning which can be applied to both bilateral and multilateral channels of knowledge-construction. The two case studies demonstrate the validity of the model across time. Learning in this model is a three table game. The first sphere of learning is a public community such as the Cambridge arms control community that took root in the early 1960s, or the more recent IAEA-centered as well as the Washington-Cambridge based communities on nuclear security. Since the start of the effort to build the bomb, these communities have drawn their influencing power from their links with the deciders in the other two spheres. The second sphere is that of policy forums within Governments, for example the former ACDA or the domestic inter-agency forums from which the NSS national Sherpa teams get their instructions. This is where diverse interests are weighed, different institutional perspectives integrated and national positions forged. Finally, there is the international level, or the diplomatic sphere, where international policy learning takes place and where there is often contention in terms of competing ideas and competing notions of the speed of learning. The London talks, the NSS Sherpas’ meetings or the Summits themselves are examples. There are feedback loops that connect all the three spheres. The system is bathed in a larger universe of politics and technology.

At all levels there is ‘powering’ and ‘puzzling’ going on and at the international level in particular there is a lot of ritual in discourse and practice. The ‘theatres’ of knowledge and action overlap. In this ritualistic iteration, national scripts that have come through the policy process get modified over time. The scripts get modified because they are challenged by others and also because the national actors performing them are not sure whether their script is working and therefore begin to tailor their script under the shadow of the future. In
the first case study, we saw this happening with the iterations on General and Complete Disarmament from the Sub-Committee in London to the TNDC and the ENDC in Geneva. We also saw this happen over the four Summits in the NSS process as nuclear security learning deepens and widens, going from ‘simple’ to ‘complex’ in Nye’s terms. Using a physics analogy, a Sherpa puts it this way “In quantum physics, to jump from one level to another one you need a certain exhortation, a certain energy. You jump and you have to stabilise and then you need another exhortation to jump to the next one.”

Both case studies show that most learning, particularly in consequential nuclear actors such as the U.S., occurs at level 2. The interaction of this level with the level below (public sphere) and the one above (diplomatic sphere) is carefully controlled. The example of the November 1945 Washington Summit in the first case study is pertinent. The underlying idea was thrashed out at level 2 by September 1945, the broad approach was shared with Congress (level 1) in October 1945 and the U.S. position for the Summit (level 3) fleshed out by Vannevar Bush was accepted by and large as the learning outcome when it met the positions forged in the UK and Canadian political spheres.

At the same time, all learning does not take place in the political sphere. It was Szilard and Einstein, two knowledge-makers in the public sphere, who took the ideas of technology control and the bomb itself into the political sphere. Even the unsuccessful attempt of Bohr and Smuts for a political approach to the Soviets on international control illustrates the importance of the public sphere in nuclear learning. Likewise, the diplomatic sphere too can generate its own ideas that have either not been thought of or have been ignored at level 2. The comprehensive test ban idea was pushed in the mid-1950s by a small vocal group of countries that were not even part of the London talks. *Inter alia* they used the interface of the Sub-Committee with the UN in New York to argue their case and later in the early 1960s exploited the deadlock in the discussions of the weapon states on testing to force the reluctant three to address it formally in the ENDC plenary in Geneva. Again, German concerns forced a dramatic shift in learning in the London talks, which the four participants had not foreseen. In the nuclear security context, European concerns on

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724 Interview 13.
radiological terrorism led over a couple of years to an enlargement of the narrow scope that the Americans had set for the NSS at the outset.

Further, the iterative process of engagement at level 3 generates its own pressure for learning. The U.S. came to the table in London aware of the failure of the Baruch plan and bereft of ideas to constrain the growing Soviet nuclear power. Eisenhower himself believed that something had to be done to change the situation. The Soviets too began with the realisation that a complete package of disarmament measures was unworkable. As they went through the talks, the Soviets moved even more and accepted a limited open skies proposal while the U.S. delinked inspections from disarmament. The Sub-committee’s 157 meetings over three years could be seen as a simple exchange of offers and responses that led to no concrete outcome. However, if we take a long-term view and extend the London timeline beyond their suspension on 6 September 1957, we realise that the learning in the talks extended over time into other bilateral and multilateral forums. Likewise, negotiations on verification might appear to have failed completely in the ENDC but the Soviet flexibility on in situ verification of delivery vehicles was cashed in some years later in the START bilateral talks.

While there is no nuclear learning outside of the three spheres where nuclear weapons and related issues are discussed, the two case studies show that international political developments and technology have a profound impact on learning inside the spheres. The London talks were influenced positively by the post-Stalin thaw in the Cold War, the TNDC floundered on the U2 incident and the ENDC was buffeted by the Berlin and Cuba crises. Likewise, the final two iterations of the Nuclear Security Summit were impacted significantly by the rise of the ISIS and the crisis in relations with Russia over Ukraine. The other significant external field is technology. The development of the thermonuclear bomb and ICBMs reinforced the trend toward parity in nuclear learning forums and the shift of the primary learning track away from disarmament to arms control; the impending deployment of the Polaris system influenced the positions of the Soviets and the Americans in the last phase of the GCD discussion in the ENDC.
The two case studies also underline the conceptual model’s premise about the locus of learning. It is key individuals – negotiators, policy aggregators and public agitators – who learn. If learning seems to fail in a multilateral forum such as the Sub-Committee, it may be resuscitated eventually in another multilateral forum (ENDC) or even a bilateral/plurilateral regime (PTBT). This is because the key actors keep learning irrespective of the formal multilateral outcome; their ‘performance’ evolves - they ‘adjust’ their practice - as they move from forum to forum. The ideas that underpin their ‘failed’ proposals keep coming back and keep evolving, also due to their reinterpretation by a new generation of policy aggregators. “In serious countries, it is still individuals who learn. We learn-adjust-learn-adjust.”

This perspective and the role of individuals along the learning spiral is reaffirmed by another practitioner who also underlines the importance of the politician’s connect with the public sphere. “First, individual envoys learn. The next step is for information to be channeled back to home centre through delegation reports or embassy reports. This is factored into policy recommendations and put up to the Ministers for approval. Occasionally, there is whole government learning. A second major way apart from this learning along the food chain is during interaction at home, say through answers to parliament questions or papers for parliaments....... instructions go to delegations on how to articulate positions. The bureaucracy produces these texts, which come out in different streams (speeches, statements or instructions). Separate from it is the experience of the person who forms policy. For example, the Dutch Foreign Minister is a very dynamic person with his own face book page; he thinks politicians should be more open about their thinking. There are other impacts on his thinking. This is an independent variable.”

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725 Interview 16.
726 Interview 1. The reference is to Frans Timmermans, then Foreign Minister of the Netherlands.
The drivers of learning

The Nuclear Security Summit was almost a forum of choice. Even without it learning on nuclear security would have gone on in other channels, perhaps at a slower pace and possibly with less consequential results. The first case study illustrates better the forced, almost remorseless, nature of nuclear learning. Ruling elites in the ‘big four’ - U.S., the Soviet Union, UK and France - were forced to learn by fear, the fear of catastrophic war, of the failure of nuclear deterrence. They played catch up with complex technology that seemed to outstrip the learning mechanisms that they put together. The shifting sands of Cold War politics often caught them off guard. Safety in nuclear learning terms was truly a ‘sturdy child of terror’. At the same time, they struggled with the temptation of political and military advantage that nuclear weapons offered. The institutional weight of the systems and routines that sprang up around nuclear weapons added inexorably to the reluctance to do away with them. Therefore, as nuclear technology spread, it became politically and institutionally easier to pursue the limited learning agenda of non-dissemination, limits on testing and safeguards on transfers of fissionable material rather than the agenda of comprehensive disarmament. This learning track was supported by a well-organised and influential epistemic community. The national security discipline imposed by the Cold War competition further pushed alternative paradigms to the margins.

Nuclear weapons themselves as drivers of learning

Thus, the first driver of nuclear learning is the beast itself. It sits there asking questions constantly of those who deal with it. As long as nuclear weapons exist, the fear that they might be used with catastrophic consequences will exist. There will be a need to manage the reality of nuclear weapons and since the politics and technology which surrounds them will evolve constantly, learning must stay in step. If testing of thermonuclear weapons riveted the attention of nuclear learners in the 1950s and 1960s, if additional states acquiring nuclear weapons was a key driver in the 1960s and 1970s, today’s learners must contend with non-state actors, cyber threats and Asian politics.
An aspect of this driver is the perception of failure and its consequences.\textsuperscript{727} If something is not working, for example the verification or nothing approach of the U.S. in the late 1940s and early 1950s, and the problem that verification is supposed to address keeps growing, there is pressure to do something about it. To take a contemporary example, “In the NPT context – and the NPT is a better example than the CD - because the 2005 NPT Review Conference had failed, U.S. wanted success in 2010. They realised that the NPT needed to be protected. A third failure would be bad. So they took a number of highly calculated steps – Prague speech, New START, Nuclear Posture Review. This is an example of very concrete learning from previous failure. They even went along with the idea of the Middle East Conference, which in other circumstances they would not have.”\textsuperscript{728}

\textit{Leaders are learners-in-chief}

The second driver is leaders’ engagement. Leaders sit atop policy-making in level 2, worry constantly about perceptions in level 1 and are accountable for outcomes in level 3. Paradigm-shifting “complex’ learning is virtually impossible without buy-in by leaders. In the words of a senior representative of a non-nuclear weapon State: “The rigidity because of the centrality of nuclear weapons in security policies can be overcome from the top. Both Obama and Reagan are radical figures in that sense. Obama, because of what he studied about nuclear weapons in college, has a certain vision. Like Reagan, he could shake things from the top. This is about imposing a belief.”\textsuperscript{729} A senior Sherpa has this to say on the leaders’ role: “They decide. Take the example of the (French signature of the) NPT. In the room and in the bilateral discussion with the U.S., it was becoming rigid. Things were not moving. There was a lot of bad blood. Nationally, the defence ministry was against. However, a few people managed to convince Roland Dumas, the Foreign Minister, who then convinced Mitterand. Even today, it is the President who decides. On nuclear issues in France, it is like that.”\textsuperscript{730}

\textsuperscript{727} For example, Eisenhower feared the end of the Northern Hemisphere if deterrence failed. Interview 6.\textsuperscript{728} Interview 16.\textsuperscript{729} Interview 16.\textsuperscript{730} Interview 4.
The two case studies in this thesis demonstrate that multilateral forums need to find ways to engage the leaders directly. The exchange of letters and occasional summits of the 1950s and 1960s are one example while the NSS model of regular Summits at two-year intervals is another. As Gary Samore puts it “…the Nuclear Security Summits were designed to make Leaders feel personal responsibility……from the beginning we made clear that the purpose of the NSS was to give leaders the opportunity to mobilize their own governments, which means the different agencies and departments that manage nuclear security, to strengthen security of their own sovereign systems.”731 Again in the NSS context, as leaders’ attention flagged, an innovative way was found through the scenario-based discussion to engage the top level emotionally.732

Knowledge communities as drivers of learning

A third driver of nuclear learning is a community of knowledge-makers and practitioners that generates ideas and pushes them along. This driver’s importance is illustrated very well by the second case study. The ideas of key individuals in the U.S. NSS team were forged in the early 1990s post-Soviet Union work on Cooperative Threat Reduction. The Obama Presidency gave high level access to these individuals and their ideas fell on receptive political ground. The Sherpa construct gave plenty of room for the community to expand and take in a more diverse set of practitioners. Pre-existing contacts with NGOs like NTI gave opportunities for ideas to flow back and forth.733 A prime example is the distance traveled by the ‘excellence statement’ (eventually INFCIRC/869) from the NTI meeting in Annecy in June 2013 to the Summit at The Hague in March 2014. Thus, if the knowledge community straddles levels 1 and 2 as it did in the NSS, its influence multiplies.

While there was no epistemic community as distinct as the nuclear security one for the first case study, three sets of knowledge-makers can be discerned over the period covered by it. First, there was a mix of politicians, diplomats, soldiers and scientists with roots in the Manhattan Project. This community’s imprint was reflected in the work of the

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731 Interview 2.1.
732 Interview 5.
Interim Committee of May 1945 as well as the drafting of the Acheson-Liliental report of March 1946. Key individuals in this community such as Vannevar Bush enjoyed access to counter-part knowledge-makers in the British and Canadian set ups. Second, a larger group came into being by the time of the London talks. A professional disarmament negotiator category became visible with representatives from the U.S. State Department and the Atomic Energy Commission such as Weiler, Bechhoefer and Goodby appearing regularly at meetings of the Sub-committee or backstopping them in headquarters on a full time basis. A similar community emerged in other states with professionals such as Tsarapkin and Zorin coming to the fore. In the third phase, as institutions such as the ACDA consolidated the epistemic communities at level 2, a lay non-governmental arms control community (centered around the so-called Cambridge Approach) emerged, driven by pioneers such as Schelling, Halperin and Brennan. Simultaneously, the dissident scientists and philosophers from the time of the Manhattan Project began to come together in forums such as the Pugwash Conferences.

Nye likens the Pugwash Conferences, which helped to get agreement across ideological differences on physical effects of nuclear weapons, to today’s Inter-Governmental Panel on Climate Change (IPCC) which helped develop a science around human effects on global warming. The regimes return the compliment by helping expand and entrench the epistemic community. “So in that sense developing an epistemic community on technical issues will help... my argument would be that the arms control regimes helped to legitimize the exchange of technical information (with the Soviets).”

The influence of the ‘arms control’ and ‘disarmament’ communities has waxed and waned but it still counts. The large number of practitioners of non-proliferation and arms control today that have come through institutions such as the James Martin Center or the international security think tanks in the universities at Harvard, Stanford and Princeton is illustrative.

The importance of this driver is further underlined by its meaningful absence in the case of nuclear disarmament despite a fresh attempt at ‘re-foruming’ described below and

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734 Weiler describes poignantly the travails of this new community and some human interactions across the ideological divide with his Soviet homologues. Interview 17.
735 Interview 7.
despite the occasional interest that leaders of powerful countries have shown in the idea. As Nye puts it “If you think about the 1980s, period of the nuclear freeze, revival of the discussion on nuclear disarmament, you really never developed an epistemic community of people. I mean there is a community of people who believe in nuclear disarmament but it never really developed the same way as the arms control community. I don’t think the Russians or the Americans took it seriously. …..When Reagan and Gorbachev met at Reykjavik, they had a momentary meeting of minds about the desire to get rid of nuclear weapons. But it didn’t last, there wasn’t a community on both sides that…..In that sense I don’t think there was much learning on nuclear disarmament.”

Forum and process as drivers of learning

The fourth driver of nuclear learning is the right contextualisation, notably a forum that fits the purpose. If multilateral learning is theatre, then the stage, the props, the costumes, the music and the hall all matter. A skilled impresario can take a stale script and breathe life into it with a new interpretation and the right cast of skilled performers. A well-crafted set of forum design elements that thread the three spheres of learning together in an iterative learning spiral can maximise learning. The NSS Sherpa community construct with its informality, flat-hierarchy and inter-disciplinary character proved to be a critical enabler of learning within the Summit process. It reached out through key delegations such as the U.S., Australia and the Netherlands into the public sphere, had short lines of communication to the domestic political sphere and was itself a key participant in the diplomatic sphere through its control of the negotiated Summit outcomes. Likewise, the Gift Basket proved to be a valuable tool in pushing the learning envelope; the pressure generated by the expectation of what to bring to the table at the next Summit accelerated learning.

At its simplest, this is putting old wine in new bottles and hoping for more buy in. At the other end, if the proponents of learning want to escape the satisficing equilibirum of simple learning, they need to reframe and ‘re-forum’ the idea under construction. A habitus

736 Interview 7; also Paul Lettow, ‘Ronald Reagan and His Quest to Abolish Nuclear Weapons’, (Random House, New York, 2005).
Nuclear Learning in Multilateral Forums

tends to set in multilateral forums and the arms control bureaucracies manning these forums get comfortable with incrementalism. A new well-constructed forum breaks the mold and brings in new knowledge-makers and a new energy. Seen in contrast with the IAEA and the UN, the NSS is a good example and within the NSS, the Friends of the Chair mechanisms, the Gift Baskets, the scenario-based discussion and the Informal Working Groups are all examples of the potential of re-foruming. In the first case study, the ENDC too was a brave attempt to repackage the GCD idea. The lessons learnt from nuclear forums that preceded it were reflected in its tiered agenda, its variable geometry of discussions and in the co-chairmanship of the Cold War giants. Above all, a set of shared principles underpinned the discussion on substance and the leaders of the three participating nuclear weapon states corresponded with each other and sent their foreign ministers to open the meeting. It did not succeed but the effort defined nuclear learning for decades to come.

The two case studies underline the importance of conserving and channeling learning from one iteration to another within a forum, and from one forum to its successors. The idea is always more important than the forum. We see this with the improvised, forced and clumsy shift from the Sub-Committee to the TNDC and on to the ENDC. We also see this with the more deliberate move from the NSS to the five international institutions through the Action Plans as well as to groups of countries through the Gift Baskets, which proved to be a smart way to dam learning and wait for a better time to channel it into the larger group of learners.

A ‘re-foruming’ is currently being attempted, not by a powerful nuclear weapon State such as the U.S. (in case of the NSS) but by a few non-nuclear weapon States and NGOs. It is a brave ‘back to the future’ attempt if we keep the first case study in mind. Since the 2010 NPT Review Conference, the existing approaches to disarmament have been challenged through the so-called humanitarian initiative, which now seeks to “ban” nuclear weapons because of their unimaginable humanitarian consequences. Frustrated by the inability of the existing triad of disarmament forums to envisage nuclear learning beyond the reigning paradigm, a group of non-nuclear weapon States led by Austria, Mexico and

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Norway took recourse to a voted UNGA resolution in 2012 to set up an Open-Ended Working Group on taking forward nuclear disarmament. The Group met alongside the CD in Geneva in 2013 and again in 2015-2016.\textsuperscript{738} In parallel, a series of conferences were held in Oslo, Nayarit and Vienna to reframe nuclear disarmament as a humanitarian issue. A pledge issued at the end of the Vienna Conference on the Humanitarian Impact of Nuclear Weapons on December 8-9, 2014 has been endorsed by 127 nations.\textsuperscript{739} The work of the OEWG has been carried into a United Nations conference to negotiate a legally binding instrument to prohibit nuclear weapons, leading toward their total elimination through a resolution of the General Assembly.\textsuperscript{740}

One of the key figures in the ban movement, Richard Lennane, Chief Incendiary Officer of the NGO WildFire, says that at a naïve level this approach seeks to transplant the approach that successfully led to the Ottawa Treaty on banning Anti-Personnel Landmines to nuclear weapons. “So, yes, it is a new approach and I think the key element of the approach is ….. that it gives agency to non-nuclear weapon states ….. before all nuclear weapons discussions and diplomacy, and learning if you like, has been about what the states with nuclear weapons are doing or not doing, or how can we get them to do things, or how can they get each other to do things, whereas the humanitarian consequences initiative really transfers the agency to states without nuclear weapons because we are not concerned about who has what and what they could do with it them but rather the effect of those nuclear weapons which is the same for everybody…. this is a collective problem to be addressed in a way that fits the multilateral model much better than what you might call a plurilateral discussion over decades among all nuclear weapon states or aspiring nuclear weapon states.”\textsuperscript{741}

\textsuperscript{739} Text of the pledge and its status at the International Campaign to Abolish Nuclear Weapons (ICAN) website http://www.icanw.org/pledge/ accessed on 16 July 2016.
\textsuperscript{740} UNGA Resolution A/71/258 of 23 December 2016.
\textsuperscript{741} Interview 8.
As the nuclear armed states have shunned these discussions, the spotlight has come on those who rely on extended deterrence.742 Lennane believes that the discourse of these states is shifting under pressure as they face questions about what they (and not just the weapon states) can do to reduce the role of nuclear weapons in security doctrines. A more dramatic example of learning in this context is that of some of the larger non-nuclear weapon states such as Brazil and Indonesia who have traditionally upheld UN disarmament forums and comprehensive approaches.743 Again as Lennane puts it “Suddenly in the last month or two, Brazil has had this road to Damascus kind of conversion ...We are still committed to a comprehensive nuclear weapons convention, with irreversible, verifiable, blah-blah-blah. But legal prohibition is the first step, the first component. And then you would add verification, elimination bits later on; together this would make it a comprehensive convention and they have just latched on to this idea.”744

This is a throwback to the late 1940s and early 1950s when the Soviet Union insisted on a ban before verification and elimination. Again, the focus on use as against possession of nuclear weapons turns the clock back to the time before the NPT, the period covered by the first case study. It remains to be seen whether recent attempts at framing nuclear disarmament as a humanitarian issue warrant such framing being treated as a separate area of nuclear learning. If some of the states are shifting as the subversive norm-entrepreneurs of a ban insist, is there an epistemic community coming together to support this learning? Are leaders interested? The evidence is less than clear.

While Lennane says that a new type of knowledge maker is coming to the fore, it is hard to say if a distinct epistemic community is coming together to drive learning even though in terms of civil society action in the public sphere the discourse of knowledge-construction has changed from moral and theoretical to a short-term practice driven discourse. It also remains to be seen if this approach will succeed and catch the fancy of

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742 With the exception of the Netherlands, NATO members have decided not to participate in the ban conference. Japan too kept away after attending the opening session. See List of Participants on the official website of the Conference: https://www.un.org/disarmament/ptnw/index.html
743 Open Ended Working Group on Nuclear Disarmament, Session II (May 2013, 2016), Working Paper 34 presented inter alia by Argentina, Brazil, Mexico, Costa Rica, Indonesia, Malaysia and Zambia, which recommends convening a Conference in 2017 to negotiate a legally binding instrument to prohibit nuclear weapons.
744 Interview 8.
leaders, particularly in the weapon states. So far the idea has not met the forum the way it did in the case of the Nuclear Security Summit even though its proponents remain hopeful about the prospects of the ban conference coming up with a text that can create an alternative norm.

Contrary to Lennane, a senior representative of a non-nuclear weapon State finds that a nuclear treaty without the possessors makes no sense and would not constitute real learning. “For the nine possessors, nuclear weapons go to the heart of their national security. A lot of thought goes into their positions – how do you handle public opinion et cetera. There is very little freedom of manoeuvre for diplomats. There is continuity of policy; there is continuity in terms of people...... In other countries, policy is not so rigidly controlled. As new people come in, there is change. Civil society has more influence. Therefore they can say ‘make nuclear weapons illegal’. It is not the same context for ....(the) possessors.”

For the possessors, when they want to learn, “the smaller, the more selective the setting, the more concrete the results.” “I think there is a role for those big multilateral settings (CD, First Committee and even the NSS) but I don’t think we should expect very much from them in terms of concrete progress to the extent that we are trying to do real things that actually affect government policies; it is much more likely to take place in bilateral or very small multilateral settings.....at least in the nuclear space that is likely to be the case for the foreseeable future.” Another diplomat from a possessor state is more blunt about large multilateral forums: “They are a talk show. These are not places where we can convince others, these are forums where there is a battle of arguments but there is no Socratic midwifery of new knowledge. There is no maieutic.”

Is the problem rule of consensus or the way it works? Can the problem be resolved by voting? As a senior CD diplomat puts it: “CD is a very bad example for learning. Because of the consensus rule, you can just sit back and say no. There is no pressure to adjust or find a compromise. You just say no.... this does not encourage learning. Even the room is too

\[^{745}\text{Interview 16.}\]  
\[^{746}\text{Interview 2.1.}\]  
\[^{747}\text{Interview 4.}\]
gloomy and there is all the history of past failures including the League of Nations. It does not lend itself to dialogue. Both the rules and the set up inhibit learning. The ATT on the other hand ... the consensus rule was there but we knew always that there was an off ramp to the General Assembly. You worked hard, the sheer pursuit of consensus meant that you learnt and adjusted even on substantive issues. You pushed till the end. The setting was more conducive to learning. A third way is straight voting, for example in the 3rd Committee of the UNGA. In the end you just get your camp together and you just vote. Your press release is ready and the other side is ready with theirs. It doesn’t mean much. There is not much learning either.”

Quality of dialogue and trust

An important intangible in nuclear learning is the quality and nature of dialogue among governments. The deeper and more conceptual the discussion, the higher is the possibility of complex learning. If there is too much formality and the focus is on drafting paper outcomes, the discussion veers away from concepts. “In the final analysis you learn in conceptual discussions. In the CD, there is not much learning because there is no conceptual discussion... Linkages prevent fresh thinking even in areas where progress is possible....In contrast, the NSS is smaller, and probably because it is a US initiative, agreement is simpler, there is easy email contact between sessions, the setting contributes to a rather informal tone, substance can be discussed more easily.”

A certain level of diversity in thought and practice in the delegations is essential for learning. Without the friction of contention the wheels of learning do not move. This is often not apparent to the norm-entrepreneurs eager to forge ahead through like-minded coalitions. An example from the Sub-Committee is the role of Jules Moch while a good example from the NSS is the idea of radiological security pushed by the Europeans from 2009-11. There is of course a balance to be found with diversity in membership. Too few and learning does not spread or evolve, too many and it may not deepen or advance. While

748 Interview 16.
749 Interview 1.
the Sub-Committee and its successor forums struggled, the NSS had this balance mostly right till the last Summit when Russia pulled out.

The quality and nature of the Secretariat also impact the quality of dialogue. A Sherpa has this to say about discussions at the IAEA “Because of the mix of technical and political, there is a different flavor to discussions in Vienna...... technical issues are more easily discussed and they give a partial bottom to the discussion. There is more deference to the Secretariat in Vienna where as in New York it is less so.”750 The NSS is an interesting example where there was no formal secretariat. The IAEA, UN and Interpol had their own Sherpas and participated as knowledge-makers alongside representatives of States who came from diverse backgrounds. There was a balance between technical and political work. This made a difference to the quality of the dialogue.

Among the intangibles is also what Richard Lennane terms as the “excitement factor”. He says: “in any forum, like the NSS, you want to do something new, it is fresh and it is exciting....... people get interested, diplomats are human, it looks good on your resumé, it is much better to be the driver of some new process even if it dies rather than yes, I sat in the CD for three years. So, it is intellectually more stimulating...... I do not think the details (of the forum) and the kind of rules of procedure matter very much. What matters is that it is new, it is being done for a specific purpose, driven by those who have some strong interest in that.” He adds “obstruction and resistance is easier in an existing forum than in a new one, because the purpose of the new one is clear, if you show up here you presumably have some interest in what we are doing and the rules and the setup are new and unfamiliar. It is not like the CD, where everyone is a blackbelt in CD obstruction.”751

Trust is another important intangible in nuclear learning. In the first case study, the extremely difficult discussions on verification were partly attributable to lack of trust between the Soviets and the Americans. Political and scientific engagement in the late 1950s and early 1960s created a small degree of trust to allow discussions to progress on limited inspection zones. Subsequently, trust has been ‘learnt’ by the two sides over

750 Interview 1.
751 Interview 8.
decades of arms control negotiations. Likewise, in the second case study, key individuals such as Gary Samore went out of their way to reassure countries such as Pakistan and South Africa that U.S. did not have a hidden agenda in the NSS. Heather Williams in her study of the negotiation of the New START Treaty has shown that building trust is a corporate process (like learning), which requires consensus-building through ‘trust champions’ (key individuals, including leaders, who may have built a trust-worthy reputation over previous iterations of learning). However, the issue of trust goes beyond bilateral learning; an important raison d’être for multilateral nuclear learning per se is that key stakeholders find it easier to place trust in a multilateral regime, say the CTBT International Monitoring System or the Organization for the Prohibition of Chemical Weapons, rather than leave fundamental issues of compliance and national security to one or two states. In today’s world of diffused power and shifting sand dunes of political trust, multilateral regimes, howsoever hard to construct, are inescapable on really consequential matters.

*Power as a driver of learning*

A fifth driver of nuclear learning is power differentials and contestation. The power element in learning cuts across all the other drivers; it is encapsulated in the extreme violence concentrated in nuclear weapons themselves and it infects leaders, epistemic communities as well as process and forum design. Importantly, it need not necessarily be the privilege of the most powerful nuclear states; a local power differential can be leveraged at critical iterative moments in individual learning loops by lesser states or their coalitions. Contestation itself is a source of learning. If the Soviets had not opposed the Baruch Plan, there would have been no learning for the U.S. Likewise, opposition to a narrow nuclear material focus for nuclear security led over time to the inclusion of radiological material in the scope of the NSS.

It requires power to set an agenda that gets sufficient traction. This is borne out by the NSS case study, where the power element came both from U.S. leadership and the fear

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753 The leadership role that Germany played successfully on security of radiological sources in the NSS despite U.S. lack of enthusiasm is a case in point. Arguably, the coalition of non-nuclear States in the ban negotiations is another example.
of international action or ostracisation on terrorism. “People realise that the US is powerful and so it is better to work with them than to be on the sidelines. Even... *(names a country)* .. which did not have a positive agenda learnt that they could get some brownie points.” As the leading possessor and the only user (so far) of nuclear weapons, what the U.S. says and does sets the tone on nuclear learning. It is the ultimate nuclear norm-entrepreneur. It has a unique ability to get international organisations to contribute to its agenda. However, the U.S. lead cuts both ways. It raises suspicions about the real U.S. agenda both among its nuclear weapon possessing peers as well as among significant non-nuclear weapon states. The former suspect it of trying to place them at a disadvantage either in terms of their deterrent force structures and policies or their commercial and political interests on the use of the atom. The latter suspect it of trying to postpone nuclear disarmament indefinitely and of constantly reinventing non-proliferation in new forms (say nuclear security). When the U.S. is joined in a multilateral chorus, implicitly or explicitly, by its allies (to wit Australia’s role on a threat briefing for the 2010 Summit or on international assurances for the 2014) suspicions about a hidden agenda get strengthened. The result is that while routine or simple nuclear learning might get pushed along, a change in fundamentals through complex learning is difficult to achieve.

Further, U.S. nuclear policies go through cycles of domestic renewal and reinterpretation. Multilateral nuclear learning has to adjust in response. A recent example is the shift from the anti-multilateralism and arms control skepticism of the George W. Bush administration with the Obama administration; the pendulum may have swung back again with Donald Trump. This impacts international nuclear learning – accelerating it in some areas (nuclear security during the Obama administration) or slowing it down in others (a ban on fissile material production during the Bush administration). The prospects of ‘unlearning’ if you will in some areas such as cessation of the nuclear arms race cannot be ruled out with the latest changes in Washington.

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754 Interview 1.
755 The U.S. tried to get around the problem of defensive responses triggered by U.S. leadership, say by having France lead on HEU minimisation issue but the results were mixed.
As the leading norm-entrepreneur shifts, its followers tend to exhibit a lag, a period of bewilderment, before they adjust too. Others who are not followers, and in fact who contest the ideas that the U.S. wishes to mainstream and multilateralise, weigh the incentives that the U.S. is willing to bring to bear during the learning process as well as the opportunities offered by the process itself to mold those ideas into more palatable forms. Often they can simply afford to sit out a particular phase of activism in U.S. nuclear policies. The NSS underlines the increasing constraints on U.S. leadership on nuclear issues; other nuclear weapons possessors and even significant non-nuclear weapon states – the example of Germany on radiological sources is pertinent - are no longer content to follow the U.S. lead.

An aspect of the power dimension is the bilateral-multilateral learning dynamic in multilateral forums. What began largely as a bilateral engagement between the U.S. and the former Soviet Union in the 1990s became a complex bilateral-multilateral interaction in the NSS. The global cleanout of HEU that started in the mid-2000s accelerated with the NSS. The bilateral U.S.-Japan Nuclear Security Working Group became a platform for sharing best practices and for peer to peer exchanges. In some cases, the NSS created new bilateral engagements in addition to accelerating existing ones. One such example is the India-U.S. engagement on a memorandum of cooperation on nuclear security training. These engagements with new stakeholders were perforce broader than the older, which were focused more on HEU removal, physical security of vulnerable sites et cetera. The raised profile of these technical engagements because of their link with the NSS process, and the credit that began to flow to those in charge due to the attention paid to the outcomes by the leaders, helped advance nuclear learning.

The two case studies show that there are primarily two axes along which power operates to drive learning. One is the contestation among the possessors themselves – Soviet Union and the U.S./UK in the 1950s and 1960s, and a more complex power dynamic in the 21st century involving U.S./UK, France, Russia, China, India and Pakistan. This dynamic among what may be called “essential stakeholders” drives learning on arms control and

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issues such as transparency and the FMCT. The other is the power play between the possessors, often symbolically captured in power terms as the P5, and the non-nuclear states. The former want nuclear learning to be about learning to live with the bomb whereas the majority in the latter wish it to be about learning to live without it. This dynamic rose in the early 1960s and the Humanitarian Initiative on Nuclear Weapons is its latest manifestation.

Multilaterally, the dice are loaded against the advocates of learning to live without the bomb. The pre-atomic UN Charter does not see disarmament as a pressing priority, certainly not for the major powers. The few references to this issue in the Charter are focused on the elaboration of broad “principles” for disarmament (in the UN General Assembly) and on “plans” for the “regulation of armaments” (in the Security Council and its Military Staff Committee).758 As the first case study underlines, despite this foundational reluctance disarmament became a priority for the UN because of the shock brought about by the destructiveness of nuclear weapons. Again as shown, the disarmament paradigm began ceding ground to the arms control paradigm by the mid-1960s. That has more or less remained the case despite several attempts to bring back the focus on comprehensive nuclear disarmament. The primary reason is the continued power differential between the possessors and the dispossessed. While progress has been made on other weapons of mass destruction, and on completing the unfinished agenda of negotiating a comprehensive test ban, the triad of forums created after the First Special Session on Disarmament of the UNGA in 1978 (the New York-based UNDC and First Committee and the Geneva-based CD, successor to the erstwhile ENDC) have been unable to challenge the reigning paradigm of nuclear learning, which is now hardwired - thus less programmable - in the learning systems of the possessors.

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### Table 9.1: The drivers of nuclear learning

<table>
<thead>
<tr>
<th></th>
<th>Nuclear weapons</th>
<th>The destructive and disruptive power inherent in nuclear weapons and related technology, the fear of failure of nuclear deterrence (or nuclear security) pushes Governments to learn.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Leaders</td>
<td>Leaders are responsible to the public and to international peers for the nuclear policies they inherit or adopt. The national security salience of such policies and the international political and security consequences of changes in such policies further raise leaders’ stakes in nuclear learning. Leaders are uniquely placed to impose their beliefs on the learning process.</td>
</tr>
<tr>
<td>3.</td>
<td>Knowledge-communities</td>
<td>Individuals, sometimes from diverse fields, brought together by shared concepts and a shared vocabulary for talking about those concepts act as pioneers in learning within those conceptual fields. Knowledge-communities go beyond ideation to practice; in fact the more practice impregnated a knowledge-community higher the potential for learning.</td>
</tr>
<tr>
<td>4.</td>
<td>Process and forum</td>
<td>Opportunities for reframing concepts, presence of essential stakeholders, basic agreement about the purpose of the forum, right-size, rules of procedure that force participants to compromise, iterative processes driven by well-informed, committed learners with an agenda that transcends the purely national, efficient and technically competitive secretariats help push learning along.</td>
</tr>
<tr>
<td>5.</td>
<td>Quality of dialogue</td>
<td>A conceptual, idea-rich dialogue, trust among the learners, and an engaging and exciting setting raises the quality of dialogue and learning.</td>
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<tr>
<td>6.</td>
<td>Power</td>
<td>Power in its episodic and systemic forms pushes and controls learning. It permeates other drivers and operates along two main axes in nuclear learning: among the nuclear haves and between the haves and have-nots.</td>
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</tbody>
</table>

### Areas of nuclear learning

Nye took an inductive approach to identifying areas of nuclear learning by dividing nuclear discussions of that time into five areas of nuclear knowledge.\footnote{759} As underlined by the second case study in this thesis, a sixth area - nuclear security - has emerged over time as the notions of physical protection, counter-proliferation and counter-terrorism became fused in three phases: the 1970s, the 1990s following the collapse of the Soviet Union and

\footnote{759} Interview 7.
the period post 9/11. The original five areas of nuclear learning have survived with some modifications. This is briefly elaborated below following Nye’s approach.

With **destructive power**, learning, especially the tradition of non-use has been preserved and extended to other states. Again in this area, nuclear testing has stayed underground; even DPRK follows the lessons of the early 1960s on the environmental aspects of testing.\(^760\) In terms of the multilateral discussion of the destructive power notion, there is a visible uptick in the frequency with which the issue is raised in forums such as the UNGA and the NPT Review Conferences.\(^761\) Equally, there is an attempt to reframe the idea and fuse back together the distinct areas of environmental/human consequences and the political/security dimensions of the destructive power of nuclear weapons. However, no multilateral treaty regime has yet emerged with restrictions on use by nuclear armed States. Looking back, Nye draws a distinction between the doctrinal approach to non-use (given the exigencies of deterrence) and state practice and says that “What we don’t know is how much the taboo...has been multilateralised. If we think of most of the states that possess nuclear weapons today, would they use them? The answer is No but does that include North Korea, I have no idea. Does it include Pakistan? I don’t know that. I suspect they won’t but we don’t know.”\(^762\)

On the **control problem**, again learning has been preserved and expanded to other nuclear states. For e.g. India and Pakistan have negotiated risk reduction measures.\(^763\) As the NSS case study shows, there has been an attempt to get the nuclear weapons possessors to demonstrate voluntary compliance with a set of standards on security and control of nuclear weapons and military materials. The NPT-5 have started a conversation on nuclear weapons with modest results (a glossary of nuclear weapons related terms has been agreed).\(^764\) A P5 Plus consultation process started in October 2011 with the NPT 5 and

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760 As distinct from the political and security aspects of nuclear testing; Interview 7.
761 Starting with a handful of States in 2010, 159 states issued a Joint Statement on the Humanitarian Consequences of Nuclear Weapons at the 2015 NPT Review Conferences. In October 2012, 35 States issued a Joint Statement on the humanitarian dimension of nuclear disarmament at the 67th Session of the First Committee of the UN General Assembly. This went up to 155 States by the time of the 69th Session in October 2014. Source: Reaching Critical Will [www.reachingcriticalwill.org](http://www.reachingcriticalwill.org)
762 Interview 7.
763 ‘India, Pak agree to extend nuclear risk reduction pact for 5 years’, *The Hindu*, 21 February 2012.
India but its current status remains uncertain. Overall, multilateral learning in this area remains in an exploratory phase.

On the proliferation problem, the regimes have expanded but problems remain. NPT is near universal and post-Iraq IAEA safeguards have been strengthened through the IAEA’s 93+2 process. On the other hand there is a new anxiety over fuel-cycle capabilities in countries such as Iran, A Q Khan’s proliferation activities have demonstrated a new dimension of proliferation and DPRK has left the NPT and developed nuclear weapons. Nonetheless in terms of the conceptual model of this thesis, this area appears to be the most fecund for nuclear learning with nuclear forums sprouting up to address challenges such as Iran (E3+3), DPRK (6+2 talks), spread of fuel cycle technologies (Multilateral Fuel Banks and IAEA’s State Level Concept for safeguards) and WMD related transfers (PSI). Leaders remain attentive, there are well-entrenched epistemic communities and regimes, pre-existing or new, provide opportunities for application of episodic or systemic power.

In the context of the NPT, Gary Samore says that “There is more of a recognition that India and Pakistan, Israel and North Korea are nuclear weapon states outside the NPT. That is not going to change. I mean we are not going to amend the NPT and they are not going to give up their nuclear weapons. I think people recognize that is the reality. I think that is new over the last 20 years or so. The threat of nuclear proliferation is much more limited than it was at the dawn of the nuclear age when we worried about nuclear weapons programmes in Latin America, in South Africa, in Europe…. Now I would argue that nonproliferation is much more limited to really just the Middle East and North East Asia. Those are the only two regions where you can imagine additional countries pursuing nuclear weapons.” Another senior representative of a NNWS says that “one of the areas where learning is not proceeding fast is that India, Israel and Pakistan need to be brought into the framework. Nobody is going to reopen it but there are ways of bringing them in. That is why we support

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766 Interview 2.1.
the NSS and the P5 Plus dialogue. Learning is very slow because of the sanctity of the NPT…..the serious players are risk averse because of the possible consequences.”

The knowledge area of arms race stability clearly shows increased complexity and interaction across regions. There has been an erosion of parity and the offense-defense link in the U.S.-Russia context; both concepts are contested in other geographical contexts. Silent arms races going beyond the nuclear field (space, cyber and advanced conventional weapons) are also under way. On the positive side, intrusive international verification has been accepted as a norm in treaties such as the CWC and the CTBT. This acquis could prove useful in future learning on multilateral arms control.

The learning on deterrent force structure just like the learning on destructive effects has spread beyond the Euro-Atlantic area. Apart from the U.S. and Russia, China and India are investing in a triad. The learning on destructive effects and control, however, has ensured that the strategic bomber stays parked and ground-launched ballistic missiles remain the mainstay of deterrence. There is a recrudescence of the conventional imbalance problem: the Conventional Forces in Europe (CFE) regime in Eurasia has eroded and there is a debate in South Asia on a lowered threshold for nuclear use. Against this backdrop of a complex interaction of deterrent force structures, there is still no formal multilateral regime and the existing Intermediate-range Nuclear Forces (INF) treaty regime is under strain with accusations of non-compliance. This issue illustrates like no other the limits of bilateral regimes in a multiplayer world.

Beyond nuclear security, are there new areas of learning under construction? In view of the debate over the humanitarian consequences of nuclear weapons could one of them be the reframing of nuclear disarmament? As seen previously, the evidence is less than convincing. As Gary Samore puts it: “On the NNWS agreeing to some kind of a ban under the

767 Interview 16.
769 See for example, Arka Biswas, ‘India’s Reluctance on Tactical Nuclear Weapons’, South Asian Voices, 4 May 2015.
rubric of humanitarian consequences, ....... it is a complete waste of energy, because it doesn’t put any pressure on the nuclear weapon states. One thing that all the nuclear weapon states agree on is that they are not going to give up their nuclear weapons. Not yet. ... it really is feel good diplomacy without any practical consequences.”

Nye also believes that nuclear disarmament remains to be learnt despite the rhetoric of Obama’s Prague speech, which merely picks up the long tradition that goes back to Eisenhower of American presidents favouring nuclear disarmament. “Yes, there have been such statements but the statements have never been to my mind practical policy statements, and Obama’s Prague speech where he put in a qualifier - in our lifetime or something like that – is no different.”

Likewise, restrictions on use, which too could precipitate out of the learning on destructive effects, would be a tantalising new area of knowledge construction. During the Cold War, China was virtually the only weapon state with a no-first use doctrine; the Brezhnev era pronouncement on no-first use was never taken seriously and even that was abandoned by Russia in 1993. U.S. and its NATO allies consistently rejected an NFU despite subtle nuances in the doctrines of the Western nuclear powers. Even though Russia abandoned no-first-use vis-à-vis the rest of the world in 1993, it agreed to a joint declaration with China in September 1994 on de-targetting and no-first use. This was turned into a bilateral treaty commitment in 2001. In 1998, India committed to no-first use and non-use against non-nuclear weapon States. Discussions on restricting nuclear use received a boost with the reorientation of the U.S. nuclear posture in April 2010 and declaratory steps could still be under consideration. In November 2010, President Obama’s Joint Statement with India’s Prime Minister Manmohan Singh called for reducing the salience of nuclear weapons in international affairs and doctrines and for strengthening the six decade old international norm of non-use of nuclear weapons. These declaratory developments could point to some unilateral or bilateral learning in recent years on reducing the military role of nuclear

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771 Interview 2.1.
772 Interview 7.
weapons. It remains to be seen whether they also point in the direction of multilateral learning in reducing the salience of nuclear weapons. Leaders’ buy-in remains suspect even in the U.S. especially after the election of Donald Trump as President. Further, the idea has not yet found a forum nor is there a substantial epistemic community that is pushing it in the key states.

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<table>
<thead>
<tr>
<th>Area of common knowledge</th>
<th>Resulting beliefs</th>
<th>When learned</th>
<th>How known</th>
<th>Were regimes created?</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Destructive power</td>
<td>Assured destruction, inherent deterrence, and non-use.</td>
<td>1950s H-bombs, 1980s environmental effects</td>
<td>Nuclear tests, theory, and some data.</td>
<td>Yes, in part</td>
<td>Learning, especially tradition of non-use preserved; extended to other nuclear states.</td>
</tr>
<tr>
<td>Control problem</td>
<td>Crisis management practices.</td>
<td>Berlin, Cuba crises; 1957-61 accidents and false alarms, 1970s alarms</td>
<td>Diplomatic experience, false alarms, accidents.</td>
<td>Yes</td>
<td>Learning preserved and expanded to other nuclear states e.g. India &amp; Pakistan have negotiated risk reduction measures; problem, however, remains.</td>
</tr>
<tr>
<td>Proliferation problems</td>
<td>Dangers of nuclear spread, problems of nuclear exports, cooperate to control.</td>
<td>U.S.S.R./P.R.C. 1959; U.S./Europe 1960s; Both/India 1974</td>
<td>Diplomatic experience, and scientific tests.</td>
<td>Yes</td>
<td>Regimes expanded but problems remain; A Q Khan demonstrates new dimensions of proliferation; NPT regime ageing and has reached its limits in terms of membership; DPRK and Iran challenges; new anxiety over fuel cycle capabilities.</td>
</tr>
<tr>
<td>Arms race stability</td>
<td>Interaction of force-structure choices, acceptance of parity and offense-defense link; acceptance of surveillance.</td>
<td>1960s buildup 1970 SALT I and SALT II</td>
<td>Diplomatic experience.</td>
<td>Yes, but eroding</td>
<td>Increased complexity and interaction across regions; Erosion of parity and offense-defense link in U.S.-Russia context, both concepts contested in other contexts; intrusive international verification accepted as norm in CWC/CTBT.</td>
</tr>
<tr>
<td>Nuclear Security</td>
<td>Traditional deterrence may not work with non-state actors; prevention, preemption and mitigation required; control over sensitive facilities and materials requires international cooperation.</td>
<td>After Sept 2001</td>
<td>Learning by extension from physical protection, non-proliferation &amp; other means of non-state violence; reinforced by confluence of instability &amp; non-state actor ascendance.</td>
<td>Yes, in part</td>
<td>NSS process; GICNT; Amended CPPNM, ICSANT, UNSCR 1540; increased focus on nuclear security as civil nuclear energy expands in Asia and slows down in the North Atlantic region.</td>
</tr>
</tbody>
</table>
The past as future of nuclear learning

Multilateral forums are an important arena for interaction among nuclear knowledge-makers. For a large number of international actors, they are the only arena for nuclear learning. Even for the more seasoned learners, who interact across a range of arenas – bilateral, small group and full-blown multilateral – such forums offer opportunities to legitimise knowledge constructed elsewhere, to deepen practice within established paradigms and to keep learning trapped and channelled along set paths. Over time, multilateral interactions may even help advance paradigm-shifting, complex learning. “It is not just learning new things. The information you get, it sometimes changes your paradigm. You have a line and something does not fit and you have to change in order to have a coherent picture.”

The history of nuclear weapons is essentially about the erosion of the U.S. monopoly, the attempt to restrict nuclear weapons and related materials and knowledge to a small number of states (non-proliferation), craft rules of the road for some or all of the possessors in order to restrain and channel competition and facilitate crisis stability (arms control) and a struggle for higher ground between those who want to rely indefinitely on nuclear deterrence and those who wish to eliminate them (disarmament). Nye’s five areas of nuclear learning captured the situation at the peak of the Cold War when learning meant learning to live with the nuclear weapons of the then possessors. Multilateral forums then were a shadow of the arms control game played between the two main protagonists; multilateral learning happened when the two agreed (NPT) and not when they disagreed (GCD, test ban in the ENDC). The CTBT negotiations in 1994-96 were a turning point. The U.S. and Russia no longer needed to test and together commanded enough agenda setting power to get the still reluctant NPT weapon states (China and France) to join the negotiations and work for their conclusion. Possession outside the NPT was still occulted although India’s blocking of the adoption of the treaty text in the CD foreshadowed a different phase in nuclear history when it would become difficult to use multilateral nuclear

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Interview 1.
forums as a stage to reflect the negotiating agenda decided by the U.S. alone or in concert with its nuclear peer.

Most nuclear learning in multilateral forums today is incremental and not paradigmatic; there is no dramatic outcome from a single meeting. In the words of a senior negotiator from a weapon state: “Nationally and in bilateral dialogues there is ‘maturation’, a ripening of ideas. Not only experts and intellectuals but also bureaucrats and leaders are involved.” These are then extended to multilateral forums. “The result is because of a ‘rapport de force’ and not because of the pressure of logic. There is no learning in real time; it is either before or after the meeting, never during the debate.”

Another negotiator from a non-nuclear weapon state agrees: “You cannot change positions at meetings. That happens in capitals, whether through pressure from civil society groups or a change of regime.”

Thus, in multilateral nuclear forums it is harder to discern dialogue as a ceaseless shaper of practice.

Learning is also slow and incremental in such forums because of the dramatically different visions of what is to be learnt between the two most important groups of stakeholders – the haves and the have nots. Differential rates of learning among the possessors act as further brakes on learning. As a senior CD diplomat puts it “The multilateral system is very difficult these days. Twenty-five years ago, the U.S. could push things. It can’t do it anymore. The Obama steps prior to the 2010 NPT Conference were all unilateral or bilateral; he could not take any multilateral steps. It is much harder to impose your vision because of the diffusion of power. Most emerging powers are approaching the multilateral system in a defensive way. They look to defend the status quo and preserve their freedom of manoeuvre rather than take a global perspective. In the next 10-15 years, it is going to be very hard to do things multilaterally. Take the example of Pakistan’s opposition to the FMCT. Could it have been possible 15 years ago? There would have been a lot more pressure.”

Under current conditions there may not be much room for nuclear learning on any

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777 Interview 4. In other words, there is learning at all three levels of the conceptual model.
778 Conversation with a nuclear negotiator from a NNWS, April 2014.
779 Interview 16.
of the big issues whether it is CTBT, or FMCT, or nuclear reductions, what to say of much more dramatic proposals for a Nuclear Weapons Convention or legally binding NSAs. In Gary Samore’s words “We have come to the end of dealing with nuclear arms control and disarmament through the instruments we have all grown accustomed to over the past decades. I don't think any one of them have any near term prospects for progress. I am not saying we should abandon them but we should recognize that for the time being the real focus is on nonproliferation. That’s fortunately dealing with a handful of cases, mainly Iran. And that is where leaders are …. ...outside of President Obama who has a personal interest, I don’t think leaders spend a second in a year thinking about nuclear issues...... Leaders are focused on other issues.”

When asked about possible institutional innovation to advance nuclear learning, Samore continues: “There is a much deeper problem and unfortunately one on which I just don't see any solution because you know the dilemma. Pakistan is building up against India, India is building up against China, China is building up against the U.S. And I don't see any way to organize an arms control process that will address each of those countries national security concerns especially when it is not just nuclear, it is also conventional and that would be such a complicated arms control arrangement that I just don’t know how to achieve it.”

That was precisely the challenge faced by the arms control pioneers in the 1950s and 1960s. The past remains really the future of nuclear learning.

The most important nuclear learning historically has been the learning that has taken place between governments as they try to manage the risk of nuclear war and avoid nuclear conflict. As long as nuclear weapons exist, this will continue to be so. As Governments worry about nuclear dangers and as they talk to each other, there will be opportunities for nuclear learning. The dilemma for this age of nuclear learning is whether to let things drift and hope for learning to take place by osmosis and example or to work purposefully and repeatedly in multilateral forums – traditional or made to measure – to push learning in areas where progress is possible, nuclear security being the latest example, and to broaden and deepen dialogue in others where complex learning is required. The responsibility for this choice lies with the policy-makers inside the Government and even the disruptors, agitators or more

780 Interview 2.1.
sede knowledge-makers outside the Government. At a time when the possibility of nuclear ‘unlearning’, leaders-led or otherwise, cannot be ruled out this broader assumption of responsibility across forums is crucial even at the risk of boring replays of existing performances.

To sum up, this thesis makes an original contribution to knowledge by proposing a conceptual model of international learning which *inter alia* caters for the power element. It provides a concise history of the four Nuclear Security Summits and adds some new insights on early nuclear learning. It not only updates Nye’s Cold War typology of nuclear learning but also extends it to a new field. The main drivers of learning in multilateral forums are highlighted. By taking a long-term longitudinal look at nuclear forums, the thesis brings out the fundamental tracks in nuclear learning and underlines how the underlying ideas resist change even as forums mutate and practitioners move across different forums whether bilateral or multilateral. The thesis also connects contemporary developments such as the nuclear ban negotiations to historical precedents (GCD) and highlights forum design and process elements needed to facilitate future shared learning.

Above all, this thesis showcases learning as an alternative and powerful explanation of policy change at the level of States and fills a gap in applying the learning model to multilateral situations. It shows that learning is neither about structure alone nor is it only about agency. It is about directed and durable change in state behaviour - expressed as formal discourse, policy or concrete action – in the presence of the past, under the shadow of the future and through the play of power and ideas in interactive settings. Seen from a learning perspective, the structure versus agency dichotomy in international relations is shown to be false. The so-called power permeated international actor or agency is itself a creation of a domestic learning process bathed in national and international experience. This agency needs to propel ideas through a process that ends in some sort of legitimisation and institutionalisation if it is to succeed. Existing structures, variants thereof or new forums become the vehicles for the propulsion and population of ideas, which mutate as they are contested, reframed and adopted. In today’s world of diffused power and multiple actors, this is not a limiting case but a common and daily condition.

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VIEWS ON AMENDING THE CONVENTION ON THE PHYSICAL PROTECTION OF NUCLEAR MATERIAL

THE CONVENTION ON THE PHYSICAL PROTECTION OF NUCLEAR MATERIAL IS A KEY LINE OF DEFENSE, PARTICULARLY IN PREVENTING NUCLEAR MATERIAL FROM ILLICITLY ENTERING THE STREAM OF COMMERCE, ESPECIALLY WITH THE INTENT OF DIVERTING ITS USE TO NON-PEACEFUL PURPOSES. HOWEVER, THE CONVENTION CAME INTO ITS PRESENT VERSION TWENTY YEARS AGO AND THE YEARS SINCE ITS ENTRY INTO FORCE IN 1987 HAVE REVEALED BOTH ITS STRENGTHS AND WEAKNESSES. THE UNITED STATES BELIEVES THAT THE TIME HAS COME TO REVISE THE CONVENTION, ESPECIALLY TO ACHIEVE BETTER CONFORMITY BETWEEN ITS PROVISIONS AND CURRENT INTERNATIONALLY ACCEPTED NORMS FOR THE PHYSICAL PROTECTION OF NUCLEAR MATERIAL AND FACILITIES. WE RECOGNIZE THE NEED FOR FLEXIBILITY. IN THE APPLICATION OF THOSE STANDARDS AT THE NATIONAL AND OPERATOR LEVELS, AS WELL AS THE NEED TO PROTECT THE CONFIDENTIALITY OF SENSITIVE INFORMATION CRITICAL TO EFFECTIVE PHYSICAL PROTECTION. HOWEVER, WE ALSO BELIEVE IT IS IMPORTANT TO ADAPT THE CONVENTION TO THE NEEDS THAT HAVE EMERGED IN THE 1990S.

IN 1998, WE BEGAN AN INITIATIVE TO STRENGTHEN THE INTERNATIONAL PHYSICAL PROTECTION REGIME. OUR INITIATIVE INCLUDED A PROPOSAL FOR SPECIFIC REVISIONS TO THE CONVENTION, WHICH RECEIVED STRONG SUPPORT FROM MANY STATES PROVIDING THEIR VIEWS. A SUBSTANTIAL MAJORITY OF THE RESPONDING STATES GENERALLY SUPPORTED THE PROPOSED CHANGES, BUT SEVERAL STATES EXPRESSED RESERVATIONS ABOUT KEY ELEMENTS OF THAT PROPOSAL. BECAUSE THERE WAS NOT CONSENSUS, WE DECIDED THAT IT WAS PREMATURE TO REQUEST THE CONVENING OF A REVIEW CONFERENCE PURSUANT TO ARTICLE 20 OF THE CONVENTION TO CONSIDER THE US OR OTHER PROPOSALS TO REVISE THE CONVENTION. IT DID APPEAR TIMELY, HOWEVER, TO SEEK THE CONVENING OF AN OPEN-ENDED EXPERT GROUP UNDER IAEA AUSPICES AS A MECHANISM FOR FINDING AND BUILDING CONSENSUS FOR UPDATING THE CONVENTION.

IN MAY 1999, IAEA DIRECTOR GENERAL ELBARADEI ANNOUNCED HIS DECISION TO CONVENE AN INFORMAL, OPEN-ENDED MEETING OF EXPERTS, NOVEMBER 15-19, 1999, AT THE IAEA TO CONSIDER THE QUESTION OF WHETHER THERE IS A NEED TO REVISE THE CONVENTION. THAT MEETING, WHICH HAS JUST CONCLUDED, WAS MOST HELPFUL IN BETTER UNDERSTANDING PRESENT DIFFERENCES ABOUT REVISING THE CONVENTION, ESPECIALLY REGARDING OUR 1998 PROPOSAL, IN POINTING
TOWARD AREAS WHERE FUTURE CONSENSUS MAY BE FOUND, AND IN CHARTING A PATH TOWARD SUCH CONSENSUS. WE ARE DEEPLY APPRECIATIVE OF DIRECTOR GENERAL ELBARADEI'S DECISION AND OPTIMISTIC THAT THE EXPERTS GROUP HE CONVENED WILL REACH A SUCCESSFUL OUTCOME TO STRENGTHEN THE INTERNATIONAL PHYSICAL PROTECTION REGIME AND UPDATE THE CONVENTION.

THE UNITED STATES CONTINUES TO BELIEVE THAT UPDATE OF THE CONVENTION IS NECESSARY, BUT RECOGNIZES THAT MORE TIME IS NEEDED TO REACH CONSENSUS ABOUT HOW THE CONVENTION SHOULD SERVE AS AN INSTRUMENT FOR STRENGTHENING THE INTERNATIONAL PHYSICAL PROTECTION REGIME. WE ARE ALSO SYMPATHETIC TO THE VIEW THAT A SYSTEMATIC ASSESSMENT OF THE EFFECTIVENESS OF THE PRESENT INTERNATIONAL PROTECTION REGIME SHOULD OCCUR AS PART OF IDENTIFYING HOW BEST TO STRENGTHEN THE REGIME AND UPDATE THE CONVENTION. WE RECOGNIZE, TOO, FROM THE THOUGHTFUL COMMENTS RECEIVED ON OUR 1998 PROPOSAL THAT CERTAIN OF ITS PROVISIONS WOULD NOT BE PRACTICABLE. AS THE EXPERT GROUP CONVENED BY THE DIRECTOR GENERAL CONTINUES ITS WORK, WE THOUGHT THAT IT WOULD BE HELPFUL TO CONVEY HOW OUR THINKING ABOUT REVISION OF THE CONVENTION HAS EVOLVED.

FIRST AND FOREMOST, WE CONTINUE TO BELIEVE THAT THE CONVENTION SHOULD APPLY TO NUCLEAR MATERIAL IN DOMESTIC USE, STORAGE AND TRANSPORT, AS WELL AS TO NUCLEAR MATERIAL IN INTERNATIONAL TRANSPORT. WE ALSO BELIEVE THAT THE CONVENTION SHOULD APPLY TO NUCLEAR FACILITIES.

SECOND, WE BELIEVE THAT IT SHOULD NOT COVER MILITARY FACILITIES OR MILITARY USE OF NUCLEAR MATERIAL.

THIRD, WE THINK THAT STATES PARTIES TO THE CONVENTION SHOULD BE ABLE TO HAVE CONFIDENCE THAT THE INTERNATIONAL PHYSICAL PROTECTION REGIME IS WORKING WELL, INCLUDING THAT THE CONVENTION'S PROVISIONS ARE BEING IMPLEMENTED APPROPRIATELY AT THE NATIONAL AND OPERATOR LEVELS IN EACH STATE PARTY. HOWEVER, WE RECOGNIZE THAT ANY MECHANISM FOR DOING SO MUST RESPECT STATE SOVEREIGNTY FOR PHYSICAL PROTECTION WITHIN ITS BORDER. WE ALSO RECOGNIZE THE NEED FOR PROTECTION OF THE CONFIDENTIALITY OF CERTAIN SENSITIVE INFORMATION ESSENTIAL TO THE EFFECTIVENESS OF PHYSICAL PROTECTION. ACCORDINGLY, WE NO LONGER BELIEVE THAT THE MECHANISM OF NATIONAL REPORTS AND PEER REVIEW UNDER IAEA AUSPICES IN OUR 1998 PROPOSAL IS PRACTICABLE. WE CONTINUE TO SEEK AN APPROPRIATE MECHANISM BY
WHICH STATES PARTIES CAN DEMONSTRATE THAT THEY ARE CARRYING OUT EFFECTIVELY THE OBLIGATIONS OF THE CONVENTION. ONE QUESTION TO WHICH WE WILL GIVE EARLY ATTENTION IS WHETHER IAEA PHYSICAL PROTECTION ADVISORY SERVICE (IPPAS) MISSIONS MIGHT CONCEIVABLY HAVE AN EXPANDED ROLE IN PROVIDING SUCH CONFIDENCE.

FOURTH, WE RECOGNIZE THAT OUR 1998 PROPOSAL TO MAKE THE INTERNATIONALLY ACCEPTED STANDARDS OF IAEA INFCIRC/225 OBLIGATORY FOR STATES PARTIES TO THE CONVENTION DID NOT TAKE SUFFICIENT ACCOUNT OF THE NEED FOR FLEXIBILITY IN IMPLEMENTING THOSE STANDARDS AT THE STATE AND OPERATOR LEVELS. THEREFORE, WE ARE GIVING CONSIDERATION TO CHANGING THE LANGUAGE OF OUR 1998 PROPOSAL TO SOMETHING LIKE "GIVING DUE CONSIDERATION" TO THOSE STANDARDS OR PERHAPS TO INCLUDING APPROPRIATE HORTATORY LANGUAGE IN THE PREFATORY LANGUAGE OF THE CONVENTION. ANOTHER POSSIBILITY MIGHT BE EXTRACTING FROM INFCIRC/225/REV. 4 SUCH UNIVERSALLY ACCEPTED PRINCIPLES OR PERFORMANCE MEASURES AS MIGHT BE APPROPRIATE FOR INCLUSION IN AN UPDATED CONVENTION.


GIVEN THE SPECTRUM OF VIEWS GOING INTO THE NOVEMBER MEETING ON THE QUESTION OF WHETHER THERE IS A NEED TO REVISE THE CONVENTION, WE ARE PLEASED WITH THE PATH FORWARD THAT THE EXPERT GROUP CHARTED TO CONTINUE ITS WORK TOWARD ADDRESSING THAT QUESTION. WITHIN THE FRAMEWORK OF EXPERT GROUP DELIBERATIONS, COUPLED WITH RELATED CONSULTATIONS, WE WILL SEARCH FOR PRACTICABLE MEANS TO UPDATE THE CONVENTION AND STRENGTHEN THE INTERNATIONAL PHYSICAL PROTECTION REGIME. OUR GOAL CONTINUES TO BE TO FIND A CONSENSUS APPROACH TO UPDATING THE CONVENTION AND OTHERWISE STRENGTHENING THE INTERNATIONAL PHYSICAL PROTECTION REGIME. OUR HOPE, TOO, IS THAT ONE DAY WE MAY SEE UNIVERSAL ADHERENCE TO THE CONVENTION BY ALL STATES WITH NUCLEAR MATERIAL WITHIN THEIR BORDERS OR JURISDICTION.
OPEN ENDED EXPERT MEETING TO DISCUSS THE NEED FOR
REVISION OF THE CONVENTION ON PHYSICAL PROTECTION OF
NUCLEAR MATERIAL, VIENNA, 15-19 NOVEMBER 1999

Note from the United Kingdom, France, Germany, Belgium and Sweden

1. The five States above welcome the opportunities presented by the Expert Meeting to be held on 15-19 November 1999.

2. These states recognise the Convention on the Physical Protection of Nuclear Material’s fundamental role in the international regime for the physical protection of nuclear material and accord it strong support. They believe it inopportune however, to consider the case for revision of the Convention at this point.

3. The process of any revision of the Convention would be resource intensive and lengthy. Substantial expert resources, legal and technical, would need to be devoted to it, preventing their deployment elsewhere whether in national programmes of physical protection or in the provision of assistance to those States who so request. The process overall, taking account both of any negotiations and of the time needed subsequently for signature and ratification in each Contracting Party, would inevitably mean a significant number of years of diverting resources from other efforts to ensure high standards of physical protection.

4. The five States consider therefore that before the necessity of revising the Convention can be properly discussed, there needs to be:

• a review of the Agency’s various support and assistance activities in the field of physical protection. These activities complement the legal provisions of the Convention and play a key role in supporting its aims. They are very important in stimulating practical improvements in physical protection. Their impact needs to be better appreciated, and the scope for strengthening or refocusing them considered, before any consideration of the case for changing the Convention itself takes place;

• a comprehensive survey of State Parties' programmes of assistance in the physical protection field, including assistance in training. These activities are extensive, but information on them is lacking. Such information needs to be brought together in manageable form and made more widely known. It is only on the basis of fuller knowledge of existing programmes and their impacts that sound decisions can be made about future priorities, in relation both to practical assistance and any changes to the international legal regime;

• a careful analysis of incidents or illicit trafficking, should be made. The IAEA’s illicit trafficking database will be of value in this regard. Such a study
should be designed to ensure understanding of the scale and nature or any problems with the security of nuclear material.

5. To underline the importance attached by IAEA's membership as a whole to the maintenance of effective systems of physical protection, the five States further propose that:

• a resolution should be presented to the General Conference at its forty fourth session endorsing the Agency's recommendations INFCIRC/225

Such a resolution (which should be written in terms similar to the references to INFCRC/225 in Annex C of the Nuclear Suppliers Guidelines) would underline the important role of these recommendations in providing a useful basis for guiding States in designing, implementing and regulating their national physical protection systems and measures, while respecting the national sovereignty of states. It would send a important political signal.

6. The five States believe that the Expert Meeting on 15-19 November should consider these questions, and other comparable issues, and establish a programme of work to address them. The aim would be to strengthen the basis of knowledge and understanding on which any decision as to the need for eventual review of the Convention should be based.

7. In the absence of such prior analysis, there is a danger both that decisions to engage on revision of the Convention could be made unnecessarily and that such effort might be focussed inappropriately. We believe that any decision to revise the Convention ought to result from a careful analysis both of the scale and nature of illicit trafficking in recent years and of the effectiveness of a wide range of current efforts to enhance the physical protection of nuclear material.

Conclusion

8. The five States invite States Parties to discuss the issues identified in paragraph 4 and 5 at the Expert Meeting, together with others they wish to propose, with a view to establishing a programme of work to take them forward. They believe that this rigorous approach will serve the dual purpose both of facilitating improvement in each individual State's physical protection systems in the short to medium term, and of preparing the ground thoroughly for any future consideration of the need to revise the Convention. They consider it constitutes a fruitful use of the opportunities offered by the meeting, in preference to any discussion focused narrowly on the Convention's legal text, which we believe would be of limited value at this stage.

22/10/99
- President Obama announced in July during the G8 Summit in L’Aquila that he would host a Nuclear Security Summit in 2010. The summit will be held in April 2010 with the goal of finding a common understanding on the threat posed by nuclear terrorism and to gain agreement that nuclear material, whether in civilian or military use, should not be vulnerable to threat.

- (Country) has been invited to the Summit.

- Each participating nation is asked to appoint a Sherpa to prepare for the Summit.

- The Sherpa for the United States will be Gary Samore, Special Assistant and Weapons of Mass Destruction Coordinator for the National Security Staff.

- Dr. Samore will hold an initial meeting on September 15, 2009 on the margins of the International Atomic Energy Agency’s (IAEA) General Conference in Vienna, Austria. Two more meetings will be held in November 2009 and February 2010 in venues to be determined.

- Because of an unforeseen delay in issuing invitations and requests to appoint Sherpas, we understand that due to the late notice a Sherpa may not be designated in advance of the September 15 meeting and ask that, if possible, Governments designate an appropriate official, most likely someone on their delegation for the IAEA General Conference.

- We also request that you designate a working level point of contact for the Summit.

Questions & Answers
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Q. What is the appropriate level of Sherpa designee?

A. The United States has appointed Gary Samore, who is the member of the President’s National Security Staff responsible for coordinating the U.S. strategy for combating weapons of mass destruction, non-proliferation, and disarmament. We anticipate that invited nations will designate a Sherpa at a similar level.

Q. Will this Summit launch a new program on nuclear security?

A. We do not intend for the Summit to launch a new program ----there are a lot of good programs in existence. We would like to use the Summit to raise awareness of this important issue at the highest levels of government, encourage governments to recommit themselves to commitments that they have already undertaken and perhaps foster additional participation in mechanisms that already exist.

Q. How does this effort relate to the effort to secure all vulnerable material within 4 years?

A. The overall goal of the Summit is to come to a common understanding of the threat posed by nuclear terrorism and to recognize that nuclear material, whether in civilian or military use, should not be vulnerable to that threat. Participants should therefore commit, as responsible steward of nuclear material, to reduce the stocks of nuclear material where possible and to protect the remainder of that material to the highest standards. This is directly relevant to the President’s call for an international effort to improve security far vulnerable nuclear materials in 4 years.

Q. How did you choose invitees?
A. We chose a representative rather than an exhaustive list of invitees to include those with significant material holdings, nuclear fuel cycle facilities, advance as well as nascent, nuclear energy programs, and involvement in various international regimes.

Q. Why were some countries excluded?

A. There was not an attempt to exclude any one country, there was simply a need to limit participants in order to have a robust dialogue. This summit is a beginning and is intended to lay the groundwork for activities that can support the President's call for an international effort to improve security for vulnerable nuclear materials in 4 years. We anticipate and welcome working with as many nations as possible on this official effort, which impacts us all.

Q. Why is this being held in the United States?

A. President Obama places great importance on nonproliferation and, in particular, nuclear security and therefore wanted to host the first summit on this topic.

Q. Where will this meeting take place?

A. We haven't yet chosen a venue, but it will be in the Washington, D.C. area.

Q. Is this going to be a yearly event?

A. President Obama has discussed the possibility of additional summits in the future. We hope that the discussions and outcomes of the Summit will raise the importance of this issue and perhaps lead to follow-on meetings at this level on this important issue.

Q. What will the delegation size be?

A. This decision has not yet been made; however, the current thinking in Washington is that the Summit will be head of state plus three, one being the Sherpa, the other two at the discretion of the delegation. It would be helpful if one member of the DEL is responsible for nuclear security in-country.

Q. Is this a pledging conference?

A. This summit is not designed to be a pledging conference. Participants may discuss the need to expand existing programs or increase spending in some areas related to nuclear security, but that is not a specific goal of the meeting.

Q. How is this related to the NPT Review Conference?

A. The Summit is not directly related to the Review Conference. However, we would note that nuclear materials, whether in civil use or in military use, need to be protected to the highest standards and that pursuit of nuclear energy requires diligence and good stewardship of that material.

Q. How does this summit relate to the Global Initiative to Combat Nuclear Terrorism?

A. The Summit will focus on nuclear material security and efforts to prevent nuclear Smuggling and therefore overlaps with the goals and the principles set out by the Global Initiative. The Global Initiative is a useful tool to help countries building capacity and identify gaps in their own systems as well as to share best practices. We see the Summit as complementary to the Global Initiative and we hope that some of the outcomes of the Summit will be highlighted in the coming Global Initiative work plan.
Q. How does the Summit relate to the Proliferation Security Initiative (PSI)?

A. The Summit complements the PSI, which is a global effort to stop the spread of all weapons of mass destruction, to include nuclear weapons, their delivery systems, and related material. The PSI emphasizes the need for states to take cooperative action, consistent with national and international authorities, to put an end to WMD trafficking and to take steps to strengthen those authorities as necessary. The Summit will reinforce these PSI objectives.

Q. Will countries be asked to join either of these initiatives?

A. In the case of the Global Initiative, many of the countries that will attend the Summit have already joined. And in the case of the PSI, we have consistently encouraged all responsible states to join the initiative. But at this summit, we will not ask countries to join specific initiatives.

Q. Does this summit relate to the G8 Global Partnership?

A. Also in the case of the G8 Global Partnership, many of the countries that will attend the summit have already joined, and pledges made toward improving nuclear security and combating nuclear terrorism can contribute to the goal of the President's call for a 4-year international effort to secure vulnerable nuclear material.

Q. Does the Summit share objectives with UNSCR 1540?

A. UNSCR 1540 asks states to take responsibility for developing and implementing regulations and procedures that strengthen their indigenous capacity to respond to proliferation and terrorist threats. This summit shares those objectives with respect to nuclear security and a potential role for nuclear safeguards, and is therefore consistent with 1540.
Possible Summit Outcomes

General:
- Increase understanding of nuclear terrorism threats and responses
- Recognize that all states are responsible for insuring world-class security of their own nuclear materials, for seeking assistance to do so if necessary, and providing assistance if asked
- Agree to avoid building up stocks of fissile materials directly usable in nuclear weapons; agree to pursue cooperation on measures to secure, monitor, convert and dispose of vulnerable fissile materials.

1540:
- Fulfillment of reporting requirements
- Increase support for 1540 experts group
- Improve cooperation match-making mechanisms
- Further definition of "appropriate effective"
- Develop model legislation to help states fulfill 1540 obligations

International Convention on Physical Protection of Nuclear Materials (CPPNM):
- Seek universality and entry into force
- Commit to assist adherents to meet requirements of amended CPPNM and 225 as revised

Global Initiative to Combat Nuclear Terrorism:
- Expand participation
- Endorse use of forum to enhance cooperation
- Exercise acts of and responses to the theft, diversion, detection and interdiction

G8 Global Partnership:
- Expansion (geographic) of activities
- Extension of funding to assist in nuclear security activities

Nuclear Security Guidelines:
- Seek completion of INFCIRC 225 rev 5 in 2010 and recommend provisional adherence
- Adoption of a “de minimus” Design Basis Threat concept
- Equivalent Material control & Accounting document
- Develop new civil HEU management guidelines

Increasing Regulatory Capacity:
- Enforcing regulations
- Incentivizing security practices
- Enhancing regulatory independence
Increased Security Culture Among Industry Actors:
  • Philosophy of sustained improvement
  • Exchange of best practices
  • Commitment to highest standards
  • Establish safeguards/security-by-design as new facility standard

Dedicated Resources to Nuclear Security:
  • Help "nuclear energy newcomers" to establish necessary infrastructure on physical protection, IAEA safeguards, material control and accounting and security culture
  • Develop regional "Centers of Excellence" for the purpose of training nuclear Practitioners on nuclear security topics
  • Endorse World Institute for Nuclear Security (WINS) as a mechanism for exchanging best practices on nuclear security
  • Support for robust IAEA Nuclear Security Program budget

HEU Minimization:
  • Conversion of research reactors
  • Conversion of production processes for medical isotopes
  • Down-blend of excess stocks
  • Consolidation of materials
  • Shut-down of under-utilized reactors
  • Accelerate work on non-HEU fuels/targets
  • Agree not to construct new HEU fueled research reactors
  • Accelerate/facilitate removal of HEU spent fuel

Intelligence Sharing:
  • Regularized sharing of threat information
  • Improved bilateral/multilateral collaboration

Forensics/Enforcement:
  • Development of forensics framework/libraries
  • Collaborate on law enforcement activities regarding smuggling
DIFFERENCES BETWEEN THE NUCLEAR SECURITY SUMMIT AND THE NONPROLIFERATION TREATY REVIEW CONFERENCE

The overall goal of the Nuclear Security Summit is to come to a common understanding of the threat posed by nuclear terrorism and agree to effective measures to secure nuclear material, and prevent nuclear smuggling and terrorism.

The United States distinguishes between the Nuclear Security Summit and the Nonproliferation Treaty Review Conference in the following ways:

- The Nuclear Security Summit is intended to focus narrowly on the issue of nuclear materials security, leaving broader issues of nuclear disarmament, nonproliferation, and peaceful uses of nuclear energy for other venues such as the NPT Review Conference in May. The Summit is not intended, nor do we expect it, to yield an international agreement.

- We hope to use the NPT Revcon (Review Conference of the Treaty on the Non-Proliferation of Nuclear Weapons) to reaffirm the NPT Parties commitment to this vital instrument and agree on measures to strengthen it.

- The NPT's is the cornerstone of international nuclear nonproliferation efforts, particularly the development of nuclear weapons by Non-Nuclear Weapon States, and provides a foundation for the pursuit of nuclear disarmament and cooperation in the peaceful uses of nuclear energy. By contrast, the Summit is intended to address the dangers of nuclear terrorism. It will provide a forum and opportunity for leaders to engage with each other and engender nuclear security awareness and commitment at the highest levels.

- We hope leaders will pledge to take full responsibility for the security of nuclear materials under their control, to continue to evaluate the threat and improve nuclear security as changing conditions may require, and to exchange best practices and practical solutions for doing so.

- We believe the Summit should reinforce the principle that all states are responsible for ensuring the best security for their own nuclear materials, for seeking assistance to do so if necessary, and for providing assistance if asked.

- The Summit is not intended to create any new mechanism or initiatives, but should build on already existing mechanisms, to include the International Atomic Energy Agency's Nuclear Security Program, the G8 Global Partnership Against the Spread of Materials and Weapons of Mass Destruction, and the Global Initiative to Combat Nuclear Terrorism, to name a few.

- While we hope that momentum from a successful Summit will carry over to help foster a successful NPT Review Conference, we envision no direct linkages between the Nuclear Security Summit and the NPT Review Conference.

- Another difference is that the Summit will involve only a representative sampling of countries (43 invited heads of State plus the IAEA DG, UN DG, and head of the EU), including three non-NPT states, whereas the Revcon involves all the parties to the NPT - nearly 190 states parties.
Introduction: Transforming Pledges into Action

The 2010 Nuclear Security Summit in Washington resulted in a wealth of commitments that all countries must now turn into actions. Leaders set the course through the Communiqué and Work Plan towards a more secure nuclear world and the mission now is to smartly set goals and tangibly measure progress against these objectives. The challenge is to dissect the Work Plan and translate each pledge into a concrete action. When leaders step back on the high-profile stage in Seoul, they should demonstrate both tangible progress on the pledges of April 2010 and new concepts to present to the world that can be summarized in headlines to show that all States have taken nuclear security seriously. Establishing the foundation for the norms of behavior will, if universally adopted, reduce the risk of nuclear terrorism that would affect all nations. There may be additional benefits from delivering on nuclear security pledges such as greater public confidence and acceptance for nuclear power expansion and new nuclear power plants as low-carbon energy alternatives. To that end, this paper includes a series of discussion points that can lead to measurable progress for our leaders to unveil at the 2012 Nuclear Security Summit in Seoul. This paper represents the collected views from countries that provided ideas for further discussion. Rather than advocating any particular idea, this paper provides the collective input for consideration during the next Sherpa meeting in Argentina.

1) A Tracking Mechanism

As all countries move from pledge to implementation, there is a need to consider the best way to track actions. Any mechanism should be based on each country reporting its own actions without the intention of creating a new oversight regime. The output would be a progress report that describes each country’s advancement on work plan pledges with the goal of showing concrete steps forward in Seoul. Modalities to be considered include several issues such as frequency of updates, accessibility, straightforward interface for updates, and management responsibilities. Several ideas have been put forward for how to demonstrate progress over the coming months.

- Reporting frequency could be as often as appropriate, but with a minimal expectation of input before each Sherpa meeting. Reporting would initially be limited to dissemination exclusively within Sherpa channels, but might be summarized in a public report for release at the 2012 summit.
- To promote efficiency and continuity and regardless of reporting form, the chair of each Sherpa meeting – or a “friend of the chair” on their behalf – could collect the progress reports for each Sherpa meeting.
- In addition, the chair of each Sherpa meeting could produce a chair’s summary.
- Countries could input their accomplishments to a secure website with real-time accessibility in a standardized database format. The database could break down each commitment from the Work Plan and identify participants’ activities within each category. The output could display in a chart or matrix the sum of collective inputs.
- A document could be created to break down each commitment into different concrete actions at the participant’s disposal as a “vade mecum” or guide to implement the Communiqué and the Work Plan.
- A possible reporting model could be some adaption of 1540 Committee reports.
- IAEA could act as a central depository with responsibility for compiling and tracking the progress of implementation of the pledges made by each country, consistent with the Communiqué that acknowledges the IAEA’s central role on nuclear security issues.
- Each country could submit a paper outlining accomplishments to the host of each Sherpa meeting.
- Each Sherpa meeting could include a “tour de table” in which to report on progress and explicit measures to improve security.

As a concrete example, goals such as ratification of CPPNM and ICSANT are easily measurable and may lend themselves to numerical presentation.

2) Outreach Efforts

Effectively preventing terrorists from obtaining nuclear material requires a worldwide approach. Nuclear Security Summit participants are in a position of regional leadership and should instill the importance of the issue to their neighbors. Participants in regional outreach events could share worldwide best practices while highlighting specific issues that States within each region can best address together.

States that did not attend the 2010 Nuclear Security Summit may want to show support for the worldwide objectives of the Communiqué and Work Plan. Without opening these documents to revisions, other countries should have the opportunity to make pledges consistent with the Summit documents. An action plan for outreach efforts might help coordinate and streamline the messages of the Nuclear Security Summit to States that did not participate. There exist a variety of established multilateral, regional and bilateral venues that may facilitate this conversation; in some cases States may need to establish new venues. Ideas and opportunities for further outreach may be presented and discussed during the November meeting.

- Briefings and discussions on Summit outcomes have already occurred at the IAEA, the GICNT Plenary, the G8 Summit, and the European Union. Poland held a Central and Eastern Europe regional workshop on August 30th. Other potential venues include various UN meetings, GICNT workshops, Centers of Excellence, WINS conferences, European Nuclear Security Regulators Association (ENSRA), and INTERPOL.
• In addition to official channels, briefings have been provided in NGO and nuclear industry forums.

3) Specific Proposals for 2012

In searching for the most effective ways to markedly lessen the chances of nuclear terrorism by 2012, several focus areas may offer the greatest return for dedicated resources. Many Work Plan pledges have straightforward application and require little further discussion. For example, advocating universal adherence to relevant conventions, treaties, and amendments remains a critical step as they provide the appropriate legal foundation. However, other areas such as combating illicit trafficking, addressing the insider threat, and increasing security culture are broad and therefore further definable with additional dialogue aimed at concrete action. In addition, national political sensitivities and legal cultures must be considered. A dedicated discussion at upcoming Sherpa or sous-Sherpa meetings might provide a platform for further discussion and sharing of best practices for these topic areas.

Countries should have an opportunity to take credit for specific national actions (“house gifts”) in an international forum. Acknowledging the public perception of a robust set of house gifts was a key component of the first summit’s success, a joint list of house gifts could be prepared in preparation for the Seoul Nuclear Security Summit.

Establishment of National Counter Nuclear Smuggling (CNS) Teams

Along with the Work Plan, several international conventions, agreements, and initiatives (e.g. UNSCR 1540, ICSANT, CPPNM, and GICNT) call for an increased capability and information sharing on illicit trafficking cases. Addressing illicit trafficking is a critical part of worldwide efforts to prevent nuclear terrorism because material may have been stolen long ago and remain within nuclear smuggling groups. In an environment where securing all radioactive material is challenging due to the vast dispersion of these sources, counter nuclear smuggling (CNS) teams can play an important role in mitigating the threat of radiological terrorism. Indeed, recent smuggling cases suggest that more material could still be on the market. No security upgrades can address material already out of State control so failing to seize this potentially loose material could expose a weak link in our efforts.

To formalize an increase in national CNS capabilities that addresses both nuclear and radiological terrorism, States could develop national action plans, consistent with national laws and respecting human rights, as a deliverable for the 2012 Summit. These plans might include the establishment of a dedicated counter nuclear smuggling team (or expansion of existing capabilities) and appropriate laws to enhance its effectiveness and capabilities. A division or group of officials – a team wholly dedicated to countering nuclear smuggling – within each government’s law enforcement, intelligence, or other communities could exponentially increase worldwide capabilities to prevent terrorists from acquiring black market materials. IAEA-facilitated cooperative efforts may offer a useful platform for this concept.
• Most weapons-usable nuclear material seizures have been the result of intelligence and law enforcement operations that utilized investigative skill more than expensive equipment and technology. This suggests that the dedication of resources to nuclear smuggling could be a relatively low-cost endeavor for a potentially high reward of taking nuclear material off the black market.

• The 2010 Work Plan call for States to take steps to enhance their technical capabilities to prevent and combat illicit trafficking is also applicable to CNS teams, whose effectiveness could be improved with the integration of detection technology and training into existing law enforcement practices and procedures.

• Through an iterative information sharing process among nations through bilateral or multilateral channels these efforts could lead to more seizures and if publicized could have a deterrent effect on would-be nuclear smugglers if they perceived increased risk from the pervasiveness of these teams in their operating areas.

Investigative Cooperation: Illicit Trafficking Information Sharing

Information sharing on illicit trafficking proceeds in an ad hoc and inefficient manner. As a result, it is likely that many countries are unaware of activity within their borders. The international community needs a more comprehensive international approach that expands and maximizes use of existing international mechanisms and empowers cooperation among appropriate national counter smuggling assets. Recognizing inherent information barriers with regards to intelligence that is most often conducted bilaterally, nuclear smuggling groups often consist of low-level criminals and this information should be sharable in a cooperative law enforcement sense given that these criminals are a threat to all nations.

• One possible solution to strengthen information sharing through an objective international entity that can facilitate the synthesis, analysis, and timely dissemination of actionable information on nuclear smuggling cases. Biographical data on smugglers who are otherwise able to travel freely to market their nuclear material could be shared with each State and placed on appropriate no-fly or watch lists. Dissemination of this information could prevent or impede travel as more countries would have the information necessary to justify action that could take material off the black market or disrupt networks that could facilitate future smuggling.

• This entity might also facilitate the sharing, as appropriate, of nuclear forensic information on material seized in the black market. If investigations reveal that material was recently stolen, this information would be useful in turning off a potential leak.

• INTERPOL may be appropriately positioned to facilitate biographical and investigative information sharing, especially in law enforcement and security service channels. INTERPOL’s Green Notice system is an existing mechanism that could provide timely alerts of suspected nuclear smugglers’ travel or location. The IAEA’s Illicit Trafficking Database (ITDB) already collects, organizes, and
analyzes physical circumstances surrounding seizures, and this data might complement other types of information sharing for investigative purposes.

- Each CNS team could identify a POC able to take in new information from international inputs and with authority to disseminate relevant information to international POCs.

**Forensics Cooperation: Illicit Nuclear Material**

States could reaffirm the importance of developing cooperative nuclear forensic mechanisms to deter the theft of nuclear and radiological material by increasing the chances that stolen material will be traced and thieves identified. Reinforcing that nuclear forensics can match seized material with pathway contamination could deter some middlemen, particularly through the development of national nuclear forensics libraries. Recognizing the need for global capacity building to enhance global nuclear forensic analytical capabilities, States could develop international and collaborative programs to address the need for global research and development through investment in education, equipment, and technologies, especially in deficient areas such as reference materials, signature evolution, and uncertainty analysis. In addition, States could participate in activities being undertaken in the International Technical Working Group on Nuclear Smuggling (ITWG) and the GICNT.

**Establishing a Global Norm on the Minimization of HEU**

UNSCR 1887 called on all States "to manage responsibly and minimize to the greatest extent that is technically and economically feasible the use of highly enriched uranium for civilian purposes, including by working to convert research reactors and radioisotope production processes to the use of low enriched uranium fuels and targets." Similarly, the Nuclear Summit Communiqué "encourages the conversion of reactors from highly enriched to low enriched uranium fuel and minimization of use of highly enriched uranium, where technically and economically feasible."

- A tangible goal for the 2012 Summit, combining minimization in all civil applications, robust physical protection and other best practices in the interim, and transparency to transform these pledges into a global norm, would be to seek consensus by a group of IAEA Member States to formally propose to the IAEA, and pledge adherence to, a set of "Guidelines on the Management and Minimization of HEU."

Almost all of the nine signatories of the Plutonium Management Guidelines (INFCIRC/549) explicitly called for such HEU guidelines in their Notes Verbale to the IAEA in 1998, and many in the international community have expressed interest in the interim. Since then, dozens of research reactors have been converted and tons of HEU repatriated or blended down. Commercially, several of the major medical-isotope-producing countries have been moving aggressively toward LEU-based production.
• Entire regions are becoming de facto HEU-free zones, which could engender additional political support and recognition through the IAEA reporting mechanism associated with such Guidelines. Success by 2012 is feasible and the timing is ripe for a move in this direction. And unlike the Plutonium Management Guidelines, HEU guidelines would be focused on the growing consensus around minimization, taking into account the wide variety of IAEA and Member State programs in place to assist others in achieving that goal. The de facto consortium formed by the Guidelines’ adherents themselves might be used, and facilitated by the IAEA, to promote the spreading of “HEU free zones” that may expand geographically as countries eliminate more and more HEU.

The worldwide conversion of HEU research reactors to run on LEU requires both a political and scientific commitment. Considerable technological progress has allowed for the development of new high density LEU fuels but more scientific advancement could open the door for more LEU conversions. Cooperation on the development of proliferation resistant technology provides an opportunity for multilateral science that could benefit all States.

Reducing the Insider Threat: A “Hands-Off” Approach

Most nuclear material that has been stolen was a result of an insider quietly removing material instead of physically attacking security vulnerabilities. Small amounts of material can be siphoned off of processing lines within the measurement uncertainties of even the best accounting systems. This ambiguity provides thieves the opportunity to steal material without facility operators’ knowledge. The opportunity exists in any system of accounting and the chances of theft might be significantly reduced by adopting a “hands-off” approach for large-scale facilities operating with plutonium and HEU.

• This can be done, for example, by moving more processing operations into sealed rooms with remote manipulators (even when radioactivity levels do not require it); mechanizing secure movement within facilities (e.g. connecting glove boxes with automated transfer systems); installing automatic waste removal systems (e.g. solid, powdered, or liquid scrap materials); and minimizing scientists’ control of material to only measurements necessary for the experiment. These improvements do not obviate the need for material control measures that rely on administrative procedures such as the two-person rule.
• If new facilities can be designed with this principle in mind, it would increase both efficiency and security.

The need for special attention to the insider threat was included in several provisions of the draft INFCIRC/225 Rev. 5 recommendations document. Another way to address the insider threat is though the effective integration of material accounting and control into the facility’s overarching security configuration. The current nuclear security regime is disproportionally focused on physical protection with little attention being given to the indispensable role that facility level MC&A – not to be confused with international safeguards - plays in the timely detection of insider diversion. There is an understandable
sensitivity to share nuclear security information in an international forum and one way to
address this concern is to work with the IAEA on confidential ISSAS missions.

• The IAEA State System for Accounting and Control Advisory Service (ISSAS)
  missions provide recommendations and suggestions for improvements to the State
  system of accounting for and control of nuclear material. The establishment of a
design basis threat (DBT) that considers the insider threat and insider-assisted
outsider threat when designing security systems can lead to a more comprehensive
security posture.
• States can request these ISSAS missions and many already have had successful
nuclear security improvements as a result. This is not to diminish the importance of
IPPAS missions, as identified in the Work Plan.
• In 2008 the IAEA’s Office of Nuclear Security formed a working group to identify
technical best practice supporting material control and accounting (MC&A) and to
provide an additional tool to assist States with mitigating insider related
vulnerabilities at a facility level. Consistent implementation of MC&A best practices
can help improve security culture.

**Personnel Reliability and Security Culture**

Psychologists and criminologists note that approximately 1 in 200 people have some form of
kleptomania. Although it is not clear that this phenomenon translates to the nuclear industry,
the point remains that there will always be, in any society or setting, a subset of people
motivated to steal. An understanding of how to identify potential motivations such as greed,
idealism, thrill, etc. could identify individuals whose access to nuclear material should be
minimized. Comprehensive personnel reliability programs can recognize potential thieves
before they are given access to nuclear material and changes in behavior once they have
access. In addition, life stress might drive previously reliable personnel toward decreased
attention to security procedures or toward more erratic behaviors and decisions. The ultimate
goal would be to embed an increased sense of positive nuclear security culture into a new
baseline of normal behavior that flows from principles to all levels of government, especially
operators.

Organizations, managers and individuals can work together to develop and maintain an
effective nuclear security culture. Organizations can make their responsibilities known via
management to illustrate management’s commitment by setting guidelines and security
objectives. International security culture workshops, training courses, and other bilateral or
multilateral programs that result in certificates might increase security culture, especially if
these certificates are considered as important for promotion or awards within worldwide
nuclear establishments. Along with the expansion of nuclear power will come a new cadre of
nuclear engineers, regulators and operators, who could receive as a part of their standard
training, courses on nuclear security. Similar to “security by design” facilities, nuclear
employees can be “security-minded by design” through training.

Acknowledging that security culture is already part of the Work Plan, a Fundamental
Principle of CPPNM, INFCIRC/225 Rev. 5, and recognizing the IAEA’s Nuclear
Security Series No. 7 Implementing Guide, there seems to be room for further discussion given that there is no universally applicable solution. Although a general set of best practices may chart a good trajectory, societal diversity suggests different approaches would need to be tailored for each country. Improvements in security culture remain central to the risk/gain calculus of would-be thieves and the institution of security culture programs could be a relatively low resource investment with potentially significant gains. A “code of conduct” for private sectors also might be developed to further instill good practices. There appears to be two general approaches to affecting this calculus – positive reinforcement of gains and negative reinforcement of risks. A combination of both approaches may work in some societies.

- A positive security culture reinforcement mechanism might be a school of nuclear security, whereby participants can earn certificates or even degrees in nuclear security. Other types of reinforcements might include a rewards system for good security practices within each facility, friendly competition among facilities, as well as appeals to patriotism, nationalism, or the general greater good.
- Some countries might focus on negative reinforcement mechanisms that include reminders of potential jail times for convictions, garnishment of wages, seizure of assets, and the pervasiveness of security personnel (even potentially undercover) at each facility. Others might enhance deterrence through messages in posters and flyers; through visible security presence in the form of roving guards and cameras; or through audible security reminders.

**INFCIRC/225 Rev.5**

INFCIRC/225 Rev. 5 may be published around the time of the Sherpa meeting. All States should work to implement (or enact legislation to implement if required) Revision 5 of INFCIRC/225 as a matter of policy. Broad adherence to the expanded standards of Rev. 5 could provide a good talking point for our leaders to present in Seoul. As part of regional outreach or among summit attendees, States could offer to hold workshops on Revision 5 to provide assistance in interpreting and implementing its recommendations.

INFCIRC/225 Rev. 5 also could be used as a standard certification of good security in a visible way for nuclear facility employees. If a nuclear facility meets Rev. 5 standards, a highly visible sign could be posted to the effect of: “This facility is certified to meet INFCIRC/225 Rev. 5 standards”. A standard and easily recognizable seal or emblem could be developed to go along with the sign. Highly visible reminders such as this can have significant deterrent value and may reinforce positive security culture.

**Information Security**

Addressing the threat of nuclear terrorism has an information security aspect. Security-related technology and tacit knowledge that could aid terrorists in their ability to steal material or construct nuclear weapons should be kept within government classified channels. Even if released in small parts that seem unconnected, terrorists might piece together a picture that could aid efforts to steal nuclear material or attack facilities. If
pieces start to show a clearer picture, groups that otherwise would not have embarked on nuclear programs might reach a level of confidence that compels them to proceed. Other groups that already have nuclear terrorism goals might accelerate efforts. At the same time, information security needs must be considered with a clear eye towards advancing legitimate civil nuclear energy goals.

**Excess Weapons Usable Nuclear Material**

Enhancing focus on the Work Plan pledge for “the timely removal and disposition of nuclear materials from facilities no longer using them” could be an area to mark measurable gains. Weapons usable nuclear materials in storage are costly to secure and in some cases the economic or scientific benefits of retaining the material outweigh the costs of security. There may be facilities that no longer use their nuclear material and cannot see a need for it in the near future. All States should review holdings and identify material that falls into the unneeded category. International assistance may be available in the secure transport and destruction of excess weapons-usable nuclear materials to provide an economic incentive.

**Coordinating Relevant International Organizations and Initiatives**

Various international organizations and cooperation mechanisms share common mission space and here exist potential overlaps relating to nuclear security. Attention to Work Plan pledges on coordination, “Participating States will work together, as appropriate, to ensure that nuclear security cooperation mechanisms are complementary, reinforcing, efficient, consistent with related IAEA activities and appropriately matched to identified needs in those States requesting assistance”, could help maximize effectiveness and minimize overlaps of existing initiatives and organizations.

**Nuclear Materials Transport**

There exist potential vulnerabilities while nuclear materials are in transport as well as during loading or unloading operations. Careful attention to route secrecy, minimization of land transports through densely populated areas, avoidance of regions with topologies suited for ambush, and sufficiently armed and protected convoys can decrease the chances of attack. Pursuant to the “Hands-Off” approach, minimizing direct personnel loading and unloading of nuclear materials into shipping containers and mechanizing such operations where feasible can reduce the chances that thieves would siphon material and minimize the possibility of thefts mistakenly characterized as “material unaccounted for”.

**Security Measures and Accounting for Separated Plutonium**

As the Communiqué notes, plutonium (along with HEU) requires particular care in its use and management. Given the industrial-scale operations that generate large quantities of separated plutonium, particular attention may be given to the challenges associated with these facilities and uses.
Nuclear Security Summit Follow-up HEU Guidelines Non-paper

1. Current status of activities related to HEU

Highly Enriched Uranium (HEU), defined as uranium in any chemical or physical form, by itself or in combination with other materials, containing a concentration of 20 percent or higher in the isotope 235, is currently used in several civil applications, such as nuclear fuel for research reactors and critical facilities, and targets for radioisotope production.

While recognizing the central role of research reactors in the development of peaceful uses of nuclear technology, there also exists an international understanding that HEU, both un-irradiated and irradiated, is proliferation sensitive, as it may be used for the manufacture of nuclear explosive components without transmutation or further enrichment. With the emerging threat of nuclear terrorism, it thus requires special precautions.

2. Gaps to be filled to meet Summit Work Plan elements

The Washington Nuclear Security Summit’s final Communiqué recognizes “that highly enriched uranium [...] require[s] special precautions and agree to promote measures to secure, account for, and consolidate these materials, as appropriate; and encourage the conversion of reactors from highly enriched to low enriched uranium fuel and minimization of use of highly enriched uranium, where technically and economically feasible”.

The UNSCR 1887, adopted in September 2009, also “calls upon all States to manage responsibly and minimize to the greatest extent that is technically and economically feasible the use of highly enriched uranium for civilian purposes, including by working to convert research reactors and radioisotope production processes to the use of low enriched uranium fuels and targets”. Similar statements have been made within the framework of the NPT (see action 61 of the 2010 NPT RevCon Action Plan).

With the support of relevant entities, extensive bilateral and international programs have already been undertaken or are under way to meet Summit Work Plan elements.

Conversion: The IAEA plays a fundamental role in these efforts by organizing workshops to deal with the technical issues raised by HEU conversion and by providing assistance to Member States in several conversion projects. More specifically, the Reduced Enrichment for Research and Test Reactors Programme (RERTR), launched in 1978 by the United States, brings today together more than 25 countries involved in reducing the use of HEU in the world. Thanks to international efforts, over one-third of an estimated 200 civilian HEU-fueled research reactors eligible have been converted to LEU cores or decommissioned. Priority should be given to the conversion of cores placed in situations where there is a security risk, and based on an assessment of the technical and economic
feasibility of conversion projects.

**HEU securisation or repatriation to the country of origin:** Many States have expressed their wish to receive assistance to secure or remove HEU from their territories, in order to reduce inventories of vulnerable nuclear material. Several international initiatives have allowed them to return HEU fuel stored without any foreseeable use to the country where it was originally enriched.

**R&D new technologies:** The Nuclear Security Summit participating States agreed to collaborate to research and develop new proliferation-resistant technologies that require neither highly enriched uranium fuels for reactor operation nor highly enriched uranium targets for producing medical or other isotopes. International efforts have been undertaken to design new research reactors and develop isotope production capabilities to use non-HEU technologies (e.g. advanced high-density LEU fuels) wherever technically and economically feasible. Those developments are difficult and long-term undertakings, with many technical and industrial challenges to preserve research capabilities and allow research reactors and critical assemblies to operate at performance levels as high as those attained through the use of HEU cores. For this reason, it is essential to work out additional solutions at the same time, such as minimizing enrichment rate, in order to reconcile, to the extent possible, applications of HEU in fundamental science and basic research with national and international security concerns.

3. **Actions to fill the gaps**

In this context, the adoption of Guidelines for the management of HEU and minimization of its use by States holding HEU would constitute a fundamental and practical step to complement the actions already undertaken in other forums, with a view to reinforcing confidence within the international community. Such a transparency policy was first encouraged in the 2000 NPT Review Conference Final Document. Many Sherpas have already expressed their support to this idea during our last meeting in Buenos Aires.

We suggest the following steps:

- To constitute a group of supportive States willing to work on HEU Guidelines (Vienna meeting)
- To discuss and reach an agreement on basic principles and elements that should be included in such Guidelines (Vienna meeting)
- Based on these comments, to draft Guidelines that would circulate and be discussed among the group of supportive States (email exchanges and expert meetings, as appropriate)
- To formally propose the Guidelines to the IAEA, to be published as an INFCIRC document (end of 2011). States would pledge adherence to it on a voluntary basis and commit to providing information on the policies which their governments have decided to adopt in the management of HEU and minimization of its use. As appropriate, these Guidelines could also be formally presented at the 2011 IAEA 55th General Conference or be taken note of by the Board of Governors in March 2012.
4. Deliverables by 2012

We hope to be able to collectively finalize HEU Guidelines as a deliverable for the next Nuclear Security Summit in Seoul. As a first outline, this document may include the following considerations:

**General Purpose of the Guidelines:**
- To provide a general framework for implementing measures to responsibly manage national holdings of HEU and minimize the risks associated with the use of HEU, including in particular, and wherever technically and economically feasible, by the minimization or elimination of its use.
- The governments pledging adherence to the Guidelines would accept to publish occasional brief statements explaining their national strategy for managing and minimizing the use of HEU and to provide annual figures on their stocks of civil HEU.

**Key elements**
- The Guidelines would recall the inalienable right of each State to develop research, production and use of nuclear energy for peaceful purposes in accordance with its respective international obligations, and the sovereign responsibility that accompanies this right for the use and management of all nuclear materials under its jurisdiction.
- The Guidelines would apply to the management and minimization of all HEU in all peaceful nuclear activities, and of other HEU after it has been designated by the government concerned as no longer required for defense purposes.
- The governments pledging adherence to the Guidelines would commit to handling HEU in accordance with their obligations under the NPT, their Safeguards agreement(s) with the IAEA and their other nuclear non-proliferation commitments, as well as current internationally recognized standards of radiological protection and nuclear safety. They would also commit to maintaining the highest standards of physical protection in use, storage or transport of HEU, applying as appropriate the provisions of the Convention on the Physical Protection of Nuclear Material and taking into due consideration the recommendations published by the IAEA as document INFCIRC/225 as revised. The governments would also accept to submit HEU to an effective system of nuclear material accountancy and control.
- The Guidelines would also define formal assurances that would be required from the recipient State before authorizing transfers of HEU for peaceful purposes.
Sherpa (and Sous-sherpa) meeting
27 and 28 November 2012
Istanbul (Turkey), Conrad Hotel
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Annotated Agenda

1. Opening and Information

2. Views on Seoul
   Eight months after the successful Seoul Summit, Sherpas are invited to succinctly express their views on the results, on the lessons to be learned from that event and on the way ahead.

3. Deliverables for the 2014 Summit in The Hague
   In 2014, four years after the Washington Summit, leaders will be asked what concrete results have been achieved, and what impact this will have on the prevention of nuclear terrorism. Results in Seoul were certainly impressive, but work remains to be done to fulfil the Washington Work Plan and the additional goals from the Seoul Communiqué.

   The Chair proposes to focus on a number of visible and attainable goals. Furthermore, these goals should be made as concrete as possible and a step-by-step plan for their implementation should be set up.

   The Chair offers the following list of goals for consideration:

   a. HEU and Plutonium: agree on steps to implement commitments related to less stocks, less production, less dependency, concentrated in less countries, less sites and better security;
   b. Amended Physical Protection Convention (CPPNM): agree on outreach activities and steps at a national level, to bring about the entry into force of the Convention before 2014 Summit;
   c. IPPAS: agree how to encourage NSS nations to announce (more frequent) use of this IAEA service and other (IAEA) services and peer reviews and to exercise maximum possible transparency about these missions without jeopardizing security [has a relationship with the assurances mentioned under d].
   d. Providing internal and external assurances: agree on possibilities and limitations of transparency related to nations’ legal and institutional framework and its implementation1

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1 Transparency would not be a new commitment of states nor would it infringe on national responsibilities and sovereignty: art 14 of the (original) CPPNM stipulates: “Each State Party shall inform the depositary of its laws and regulations which give effect to this Convention. The depositary shall communicate such information periodically to all States Parties.” According to information provided by the depositary (IAEA) actual implementation of this obligation should be improved. NSS participating states may take it upon themselves to actually implement this obligation, thereby contributing to the assurance of the nuclear security framework as a whole.
e. High-Active Radiological Sources: agree on improving protection and registration, discuss the possibility of a legal instrument
f. Nuclear Industry: agree on steps to involve industry in security regulation evaluation and to consult industry on drafting national and, possibly, international norms and regulations

Chair will further explain these items and delegates are invited to comment.

Further deliverables may be derived from discussion in agenda items 4 and 5.

4. NSS in relation to IAEA

One of the key issues to discuss is the future of the NSS process. In order to safeguard a long term commitment to the "nuclear security mission" there are basically two avenues to take: to continue convening summits (bi-annually or less frequently) or to conclude the summit cycle in 2014 and transfer its mission to other instruments or organization(s).

The Chair proposes the latter option, provided the necessary conditions to do so are in place. First and foremost, this means that high-level political commitment has to be assured as well as permanent awareness of nuclear terrorism. Secondly, the process of continuous security improvements needs to be in safe hands. Rationale is that the Summits - an initiative taken by US President Obama - were to accomplish their main task in 4 years' time and that nuclear terrorism is a global threat that eventually ought to be addressed in a permanent global forum.

The Chair believes the IAEA is the most suitable organization to assume a considerable part of this role. It has the mandate, global legitimacy, structure (Office of Nuclear Security) and tools (Nuclear Security Plan) to carry out the tasks. Moreover, the tri-annual Nuclear Security Conference provides an excellent way to ensure both political attention and technical expertise. Finally, in the Seoul Communique leaders have already reaffirmed the IAEA's "essential responsibility and central role" in strengthening the international nuclear security framework.

In assuming this role the IAEA should be ensured of the resources to carry out activities inspired by the NSS-process.

The Chair intends to have a discussion on this issue and take a principal decision on the way forward. A timely decision is vital in order to prepare the next steps.

5. Gift Baskets

The gift baskets were one of the innovative ideas of the Seoul Summit. Some had very specific audiences (such as the quadripartite statement on "Minimization of HEU and the Reliable Supply of Medical Radioisotopes"), others were open-ended. What they all have in common is that a number of NSS countries have committed themselves to make progress on items derived from the Washington Work Programme.
In the lead up to the NSS 2014 it is essential to explore opportunities for further progress: extending the scope of our commitments, make them more concrete and widen the group of supporting NSS states. Discuss how to sustain after 2014.

The Chair will present the state of affairs, followed by a discussion.

6. Conclusion and next steps
Although the question of the appropriate endpoint of the Nuclear Security Summits remains open, it is not too early for a discussion of how to continue the progress on nuclear security created by the Summits. A key component of determining the appropriate conclusion of the Summit process is the development and maturity of institutions and processes that can carry forward this momentum. It is likely that this will be no single solution to this challenge, but rather that a range of approaches will be required. Some existing activities may be able to absorb this mission; some new elements may need to be designed and launched. Key aspects of the Summits’ success have included the personal attention of national leaders; a focus on tangible, meaningful outcomes; a regular event that elicits deliverables and announcements; and a forum that builds relationships that can help advance joint efforts. This paper proposes some ideas on how to capture some of these attributes in more lasting vehicles to promote nuclear security progress.

International Atomic Energy Agency’s International Conference on Nuclear Security
In July 2013, the IAEA will host an International Conference on Nuclear Security: Enhancing Global Efforts. The Director General has written to all IAEA Member States to encourage participation in a ministerial session of the week-long event. Consideration is also being given to regularizing these events at the IAEA every three years. This meeting series could become one vehicle for achieving continued high-level focus on nuclear security and to eliciting deliverables and announcements of specific, meaningful outcomes relating to the full range of nuclear security issues. The U.S. intends to participate at the ministerial level, and to support the three-year recurrence of this meeting.

Even beyond this elevation and repetition of this important international meeting, this nuclear security conference could be put in service of reviewing progress on the Convention on Physical Protection of Nuclear Materials (CPPNM), as amended. Article 5 of the CPPNM suggests that States Parties shall cooperate and consult, with each other directly or through international organizations, on improving physical protection systems. Article 16 established provisions for reviewing implementation of the Convention, but they have not been exercised since the CPPNM Amendment was completed in 2005. Should a majority of CPPNM States Parties so request, this regular IAEA nuclear security conference could provide a platform for implementation review under Article 5 and/or 16. Such meetings could eventually draw from the experience of the Convention of Nuclear Safety, in which countries submit regular reports for peer review by other states parties. Such steps could
strengthen considerably not only the legal basis but also the norms and practices supporting nuclear security commitments.

**International Convention on Suppression of Acts of Nuclear Terror (ICSANT)**
The 2010 Summit Work Plan encouraged the discussion among States Parties on effective implementation of the ICSANT, as provided for in its Article 20. This Article offers the Secretary-General of the United Nations as an avenue of such consultations. Although ICSANT states parties have not yet formally requested that the UN Secretary-General convene such a meeting, several countries called during September’s High Level Meeting at the UN on nuclear terrorism for the Secretary-General to facilitate such a review. When the U.S. completes its ratification of this treaty, we will add our voice to this proposal. Such a meeting could become a regular event to highlight progress made and share best practices in implementation of the treaty.

**Institutional Effectiveness**
One of the goals of the Nuclear Security Summits is to expand, enhance, empower and energize the existing institutions and structures aimed at advancing nuclear security. The Seoul Communiqué identified the central role of the IAEA in this field; the United Nations and INTERPOL have their own areas of responsibility and competence as regards nuclear security. The U.S. invites all Summit countries (and others) to join us in our efforts to make sure these institutions have the human and financial resources, technology, and authorities they need to fulfill their respective mandates and execute their different but related missions. When these organizations reach new levels of effectiveness, many of the Summits’ goals will have been accomplished.
Chairman’s Observations on Istanbul Sherpa meeting

1: General

Chair to base future drafting (communiqué) on the outcomes of the Washington and Seoul Summits.

2: Views on Seoul

Participants States exchanged views on Seoul Summit and the way ahead, stressing the importance of high level attention.
Focus on strengthening nuclear security and the importance of implementation of agreed measures; some participants put their views in the wider context of nuclear disarmament and non-proliferation.
Progress on NSS goals is the sum of individual and collective actions.

3: Deliverables for the 2014 Summit in The Hague

A: HEU
- Participating States are encouraged to keep the Chair informed about national developments and intentions on conversion of HEU to LEU of research reactors and other nuclear facilities, where it is technically and economically feasible, and similar actions (Washington Work Plan).
- Participating States are encouraged to keep the Chair informed about developments on the safe, secure and timely removal and disposition of nuclear materials, notably HEU and Pu, from facilities no longer using them (Washington Work Plan).

B: Amended CPPNM
- Participating States concerned will aim to ratify the Amended CPPNM before the third NSS in The Hague; IAEA will be kept informed on progress.
- Participating States in a position to do so will support IAEA Outreach activities on ratifying the amended CPPNM.

C: IPPAS Missions
- IPPAS missions are a valuable contribution to the nuclear security regime.
• Participating States are encouraged to ask IAEA to conduct IPPAS missions.
• Participating States share in lessons learnt.
• Participating States encouraged to provide information about these missions without jeopardizing security.

D: Internal and External Assurances
• Participating States are encouraged to fulfil art 14 CPPNM by informing the depositary, before the next Summit, of its laws and regulations which give effect to the Convention.
• Chair to provide clarifications about underlying internal and external assurances concept.

E: High-Activity Radioactive Sources
• Participating States concerned will aim to ratify ICSANT before the third NSS in The Hague and are encouraged to keep the Chair informed on progress.
• Participating States encouraged to provide Chair with proposals for improving international cooperation and assistance with regard to high-activity radioactive sources, in particular with regard to protection and registration.
• Participating States to consider usefulness of a legal instrument and possibly put forward ideas in other fora.

F: Nuclear Industry
• States and industry have a common interest in fostering nuclear security.
• Participating States will engage nuclear industry in evaluating nuclear security regulations as much as possible.
• Participating States will come forward with specific ways to involve industry in strengthening nuclear security, taking into account possible conflicts of interest and the ultimate responsibility of national authorities.

Reporting:
• Chair would appreciate receiving initial information on progress before first sous-Sherpa meeting (not for publication).

4. Future of NSS:

• Range of views. Large measure of support for Chair’s direction, number of Sherpas argued for prudence.
• Noted intention of the Chair to take a decision on the future of NSS at the next Sherpa meeting and committed to seek clear guidance at home.

• If the cycle of summits were to end in 2014, it is essential that the following conditions for carrying forward the momentum and the mission of the NSS are being met:

1. High-level political attention for nuclear security and awareness of the threat
2. Continuous process of nuclear security improvements
3. Result driven process with global legitimacy
4. Prospect for sufficient resources.

• NSS participating states encouraged to closely cooperate with each other and the IAEA to make the 2013 Nuclear Security Conference and follow-on conferences a success; and to consider ministerial level participation at the Conference’s ministerial segment.

5. **Gift Baskets and additional deliverables**

• Number of Gift Baskets is ongoing work. Commit to continue work with a view to arrive at deliverables to be concluded by the Hague Summit.

• A number of other Gift Basket topics have been mentioned in the discussion.
NON-PAPER
INTERNATIONAL ASSURANCES IN NUCLEAR SECURITY

Purpose
This paper has been prepared by Australia at the request of the Netherlands for discussion at the Nuclear Security Summit Sous-Sherpa meeting, The Hague, April 2013. At this meeting we seek feedback on the concepts in this paper as well as suggestions for further development. The paper will then be further developed for consideration by Sherpas at their next meeting.

If agreed by Sherpas, international assurances in nuclear security could be included in the Communiqué of the 2014 Netherlands Nuclear Security Summit, as a new element of collective agreement to enhance nuclear security practices. It may also be supplemented by a "gift basket" mechanism that would allow participants to voluntarily commit to implement various international assurance measures.

Taking the Next Step in Building Effective Global Nuclear Security
Measurable progress has been made in reducing the risk posed by vulnerable weapons-useable nuclear materials (highly enriched uranium and separated plutonium) over the past four years. The Nuclear Security Summits have facilitated significant progress in further minimisation and securing of vulnerable nuclear materials, strengthening the international legal architecture, and improving the internal and cooperative capability of states in addressing the threat. A fundamental starting point was that leaders recognised the global nature of and global consequences associated with the risk of unauthorised access or theft of nuclear materials in the original summit Communiqué. States in possession of these materials have taken a variety of steps to provide greater accountability to internal constituencies for the security of these materials and to assure themselves that these materials within a state's jurisdiction will remain within the state's control. States without these materials have different responsibilities in the field of nuclear security. Their vital contributions come in the form of strengthening the international legal architecture, cooperating in efforts to combat illicit trafficking and in ensuring that their own territories do not become transit points, staging grounds or safe havens for terrorists or criminal networks.

Building on this encouraging progress, the next step to consider is how we could provide greater assurance to states, and even the public, regarding the effective operation of the nuclear security system as a whole. Of critical importance is to develop mechanisms that will allow states to gain confidence about each other’s security arrangements without compromising the security we seek to establish.
What are International Assurances and Why Should They Matter?

International assurances in nuclear security can be defined as:

- Activities undertaken, information shared, or measures implemented by a state or other stakeholders that provide confidence to others (other states, a designated international organisation, the public, etc.) of the effectiveness of nuclear security within a given state. International assurances could be provided through voluntary and non-voluntary actions while protecting sensitive information about materials and facilities.

International assurance is not a new concept. Assurance mechanisms are widely used in aviation, shipping and other industries, including those involving security-sensitive information. Furthermore assurance mechanisms already form an important role in the nuclear safety and safeguards regimes, and many of the potential international assurances for nuclear security listed below are already implemented by some States, even if only to a limited extent. The challenge is to widen and normalise such practices into an inseparable and integral part of the overall nuclear security regime.

Sufficient internal assurance and accountability mechanisms should facilitate the ability of a state to provide international assurance that its nuclear materials and facilities are secure. International assurances are about building confidence in the effectiveness of a state’s nuclear security system rather than making a guarantee about specific measures. With more and more states taking steps to make meaningful assurances over time, there would also be greater confidence in the effectiveness of the global nuclear security system.

Because all states, the entire nuclear industry and the public would share in the consequences of a nuclear catastrophe, all have a stake in how effective other states are in meeting their security responsibilities. International assurances can play a vital role in building confidence among states and the public, raise the level of nuclear security practice among states and in the nuclear industry, and ultimately, yield important global security benefits.

A Menu of Potential International Assurances

Assurances should never jeopardise the security of materials and facilities, however there are a variety of ways in which a state can voluntarily provide confidence to others about the effectiveness of its nuclear security system while protecting sensitive information about materials and sites. A state could choose a set of appropriate international assurance mechanisms, taking account of its circumstances and the ways in which it uses nuclear materials. Furthermore, any particular international assurance mechanism could vary in the number of parties that participate in providing assurance, the parties that would receive the assurance, as well as how much assurance is ultimately provided. While particular
sensitivities apply to non-civilian material, most assurance mechanisms can be shaped to treat such situations appropriately. Below are examples of ways in which a state could provide international assurance. Many of these measures already exist and in some cases all that is required is a mechanism to facilitate the sharing of information. Greater participation in a variety of these measures and greater sharing of information will result in greater international assurance.

Information Sharing and Reporting
Many states already engage in some form of international assurance by publishing either annual reports of nuclear security issues or details of their nuclear security regulations. Public release of these official documents increases confidence that the basic legal and regulatory framework required for nuclear security is in place within a state. There are two mechanisms that already exist where states could use existing obligations to build greater confidence. Firstly, through UN Security Council Resolution (UNSCR) 1540, each state is to provide reporting on nuclear security related issues, in particular, the steps a state has taken or plan to take to implement their obligations for appropriate and effective nuclear security measures. A state could choose to make its UNSCR 1540 report available to the public. Secondly, all States Parties to the Convention on the Physical Protection of Nuclear Materials (CPPNM) (and its 2005 Amendment when in force) have through Article 14.1 committed to inform the depositary, in this case the International Atomic Energy Agency (IAEA), of the laws and regulations that give effect to the Convention. The assurance comes from the IAEA communicating "such information periodically to all States Party” as specified in Article 14.1.

Examples:  
• Publish details of nuclear security regulations  
• Publish annual reports of nuclear security issues  
• Provide nuclear security relevant information in UNSCR 1540 reporting  
• Submit CPPNM (2005 Amendment) Art 14.1 report to the IAEA for circulation to other States Parties

Declarations and Accounting
Knowing how much nuclear material exists and that it is being appropriately accounted for is another way in which to develop confidence about nuclear security systems. Declarations about quantities of material (e.g., INFCIRC/549, historical production, etc.) or, at a minimum, demonstrating that a regular accounting/auditing process with respect to these materials takes place, without divulging sensitive details, are steps to consider for all materials. Such declarations or demonstrations could provide a level of confidence that material is accounted for and could also encourage the sharing of best practices for accounting.

Examples:  
• Provide regular declarations about quantities of nuclear materials
• Demonstrations of a regular accounting/auditing process

**Peer Review**

Peer review is an evaluation of processes or practices that uses the independence of the reviewers to make an impartial assessment of current arrangements and recommendations for improvement. States can request a peer review of their nuclear security arrangements from the IAEA through its International Physical Protection Advisory Service (IPPAS) missions. The purpose of an IPPAS mission is to provide recommendations to requesting states on ways to strengthen their nuclear security systems (including legal and regulatory systems) and assess whether these systems comply with existing treaties and IAEA guidelines (IPPAS missions also visit at least one facility). By hosting an IPPAS mission, a state demonstrates a commitment to strengthening its nuclear security systems through external review, which in turn builds international confidence in its nuclear security system.

A state can build further confidence by publishing the results of the IPPAS mission report (with sensitive information redacted), reporting on steps taken to respond to IPPAS recommendations for improvements, and by requesting a follow-up mission within a reasonable period of time. Further expanding the capacity for peer review in the nuclear security field, the World Institute for Nuclear Security (WINS) is developing peer review services, which can be directly requested by nuclear operators, of corporate governance and management practices as they relate to nuclear security.

**Examples:**

• Host an IPPAS mission
• Share the results of the mission with parliament on a confidential basis
• Publish redacted results of IPPAS mission
• Publish response to IPPAS mission recommendations
• Conduct follow-up IPPAS mission
• Participate in other peer review mechanisms

**Expanded Best Practice Sharing**

Best practice sharing can usefully occur between states as well as between those in the nuclear industry community with responsibility for implementing nuclear security. With regard to the nuclear industry, WINS offers a series of best practice guides on a wide range of topics and conducts workshops to gather and disseminate best practices. Through these activities, WINS creates a community of practice, which currently includes over 1200 members from 63 countries, for ongoing engagement of nuclear security professionals. Other mechanisms also exist for best practice sharing such as peer reviews offered by the IAEA as discussed above, or collecting best practices in IAEA guidelines on different nuclear security related topics. All relevant nuclear security professionals should be encouraged to participate in workshops and training that facilitate the identification and sharing of best practices.
Best practice sharing, through peer reviews, workshops and training, is not only applicable to materials in civilian programs but also to non-civilian material, particularly as nuclear-armed states have common objectives in appropriately securing such materials and can learn from one another. Because of the challenges around sharing of sensitive information, best practice sharing in the non-civilian sphere could be done in the context of small groups of nuclear-armed states or between states with relationships of trust.

Examples:
- Participate in WINS best practice exchanges
- Develop best practice exchanges bilaterally, regionally or multilaterally among states with similar facilities or materials

**Bilateral Cooperative Measures**
States can cooperate bilaterally in providing nuclear security assurances to one another. Most nuclear cooperation agreements (for supply of uranium and technology) contain provisions for minimum standards of physical protection. Some bilateral partners use, to varying degrees, these agreements to facilitate exchanges on the physical protection applied to obligated nuclear material. Australia has several times hosted the USA to observe the physical protection systems in place for the protection of U.S. origin nuclear material in Australia. Such mechanisms have scope for greater use by bilateral partners.

Cooperative Threat Reduction and other U.S.-Russian cooperation programs, like the Materials Protection Control and Accounting (MPC&A) program, demonstrate both that bilateral mechanisms to improve security and build confidence are valuable and that nuclear security cooperation at sensitive sites and with sensitive materials is possible without compromising sensitive information. Russia and the United States are in a unique position to encourage other states to take part in similar arrangements and share their experience in cooperating together.

Examples:
- Bilateral physical protection visits
- Other bilateral cooperative measures

**Certification and Training**
Institutions within states can be certified for providing nuclear-security relevant training. The WINS Academy is piloting corporate governance certification for institutions to provide training for professionals with nuclear security responsibilities. Such activities can help build confidence that security professionals have participated in standardised training programs and could be equally relevant to those responsible for civilian or non-civilian materials. Ultimately, states could require such certification of the contractors employed to protect such materials and facilities. Other kinds of certification efforts could be supported by the
IAEA, WINS, Centres of Excellence, trade groups, or other professional security organisations.

Examples:
• Corporate governance certification
• Other training and certification

NSS Progress Reporting
At the Seoul Summit “Progress Reports” were published, reporting on an impressive array of developments and actions in the context of nuclear security. These reports not only inform other (participating) states and the public about the implementation of the Washington summit Work Plan but also can serve to provide confidence in participating states’ nuclear security and, collectively, assurance in the global nuclear security system.

Example:
• NSS Progress Reports

How Does it All Add Up?
The foundations for providing international assurances already exist in the nuclear security field. Indeed, some states are already providing them, but there is no single universal solution. Given differences (technical, political, legal, financial, etc.) among relevant states that possess weapons-usable nuclear materials, it is likely that any steps a state would take to provide confidence to others would comprise a variety of unilateral, bilateral, and multilateral commitments and activities appropriate to its own circumstances. Over time, as more steps are taken to contribute to an increasingly more effective global nuclear security system, states need to consider how much assurance is necessary and how much is sufficient. Eventually it may be useful to determine objective thresholds for assurances even if those thresholds may change over time or differ from state to state.

Conclusion
Each state has the sovereign responsibility to ensure the security of its nuclear materials and facilities, and states desire confidence in the effectiveness of other states' nuclear security. Many states already engage in some activities that provide assurance to others which provides a great starting point.

We can resolve to learn from each other’s’ experiences in providing international assurances but also seek to implement more assurance measures within our states and encourage others to voluntarily adopt a wider range of measures. Looking forward, we could develop additional measures to further enhance assurance of, and confidence in, effective nuclear security implementation, not just within our own borders but globally.
Chairman’s Summary on The Hague Sous-Sherpa meeting
4 & 5 April 2013

1 General
• Chair will draw up a first “structure” of a communiqué/final document, to be sent before and to be discussed at the Sous-Sherpa/Sherpa Meeting in Vienna 26-28 June.
• Chair will keep participating States informed about the setup of side-events, i.e. Nuclear Industry Summit, table-top exercise @topic2014, and the Nuclear Knowledge Summit.
• Chair informed States on key organizational features of the summit, and will keep the NSS community informed on further development of the concept of “interactive discussions”.
• Chair informed States on the use of social media and invited the NSS community to participate, especially through LinkedIn / group NSS2014.
• Next meeting will be a “back to back” Sous-Sherpa and Sherpa meeting in Vienna:
  o Wednesday, 26 June (afternoon only) and Thursday 27 June: Sous-Sherpa meeting
  o Friday, 28 June: Sherpa meeting
(These meetings will precede the IAEA Nuclear Security Conference in Vienna).

2 International Assurances
• Goal of discussions in The Hague was to provide further clarifications on the concept of “assurances” as requested in Istanbul, seeking input from participating States.
• AUS Sherpa introduced the concept in a plenary session. In 4 breakout sessions participants explored the use of instruments for the purpose of assurance, such as the national implementation plans related to SC-Resolution 1540, the CPPNM art 14,1 report, bilateral cooperation and IPPAS missions.
• International assurances aim to provide mutual confidence in the effectiveness of nuclear security among participating states. This can be done by effective implementation of existing legally binding and voluntary measures, as well as possible new elements (such as peer reviews, increased transparency to the public).
• Many states recognized the value of providing greater assurances to one another regarding nuclear security practice and could see how many existing activities could be organized or enhanced in ways to provide such assurances.
• A number of States identified fields of tension between (1) confidentiality and transparency, (2) voluntary and obligatory measures, and (3) national and international responsibilities.
• Some States asked for further information on what additional value the concept of assurances has over the individual components.
• The Chair will further refine the concept taking into account the input provided. Chair will look if and how the terminology (currently “assurance”), which led to some confusion, might be rephrased, and explore the possibility to include the concept in the NSS outcome document.

3 High-active Radioactive Sources
• Former Director of the IAEA Office of Nuclear Security, Anita Nilsson, presented a paper titled “The international framework for security of radioactive sources”.
• Participants expressed a preference to focus on short term measures (effective implementation of existing instruments, binding and non-binding), as compared to long term measures (development of new or more legally binding instruments).
• Chair, with involved countries, will explore possibilities for taking practical steps towards NSS2014.

4 Gift Baskets
• Gift Basket Holders informed participants on current progress and deliverables for the Summit in 2014.
• Presentations were given on the following 7 Gift Baskets: Treaty Ratification and Model Legislation; Transport Security; Forensics in Nuclear Security; Coordination and Synergy; Nuclear Security Culture; Information Security; Nuclear Training Centers & Support Centers. (Security of High Active Radiological Sources was a separate item on the agenda).
• Chair will prepare an overview (matrix) of Gift Basket deliverables for the Summit, in preparation for the (Sous-)Sherpa Meeting in Vienna.
Nuclear Security Summit 2014
Vienna 2013

Cover note on Interactivity

The Netherlands intends to organise the NSS through several interactive sessions, dedicated to specific NSS-related topics.

Three interactive sessions are foreseen:

- A discussion on possible policy decisions based on an unfolding scenario of a Nuclear Security Threat (see attached Information Paper).

- A lunch discussion in three groups (information will be given at the Sherpa meeting in Ottawa).

- A Leaders only Retreat (information will be given at the Sherpa meeting in Ottawa).

Additionally, the Chair intends to invite all NSS leaders to prepare their national statements in a televised form (see attached Information Paper).

The two attached information papers, which will be presented in Vienna, explain more in detail the approach, taking into account comments received during earlier (Sous-) Sherpa sessions preparing the NSS2014.
NSS 2014 Information Paper on Interactivity
Vienna, 2013

Country statements

During the Nuclear Security Summit 2014 all leaders will have the opportunity to show through a National Statement what his or her country has initiated and achieved in the field of Nuclear Security over the past years, and what plans it has in the future.

It is common practice at international summits that National Statements are shared with other participants during a plenary session. Given the exceptionally large number of leaders that are expected to attend the Nuclear Security Summit, this would be a time consuming exercise, leaving little time for actual discussion among leaders about the Summit’s desired outcome. In order to avoid this scenario from unfolding, the Chair intends to invite all leaders to prepare their National Statement in a televised form, which would be shared with all other leaders at the Summit.

Additionally, video statements can be distributed to the international media, as they offer an excellent opportunity to present participating States’ efforts and achievements in the field of nuclear security and the prevention of nuclear terrorism to a larger audience.

These videos will provide a documented overview of the Summit and can be used for future reference.

The objectives of the initiative outlined below are:

• To avoid lengthy plenary sessions solely devoted to National Statements rather than discussion on the Summit’s outcome.
• To ensure a large and international (media) audience for the National Statements.
• To give leaders the possibility to be comprehensive in their statements and support these with imagery.

Proposed proceedings:

• Delegations are free to use their own video material (pictures or moving) in the video statement.
• Delegations are asked to send in video statements (if desired complemented by imagery) on March 10, 2014 at the latest. The statements are to be limited in length (no more than 10 minutes).
• The NSS organisation will provide the NSS logo to delegations to incorporate in their statement, in order to show a clear NSS link.

• Together with the video statements, delegations can provide the NSS organisation with the text in PDF. This will be put on the NSS 2014 website together with the video statement after its release during the summit.

• Statements will be released to the press and put on the NSS website throughout the summit at specific time slots allocated by the NSS-organisation after consultation with delegations.

• The Summit’s official host broadcaster will facilitate release and distribution to the international press during the summit.

• The NSS organisation will ensure that released statements remain accessible to the press (and delegations) for later reference.
NSS 2014 Information Paper on Interactivity
Vienna 2013

Session on Nuclear Security Threat

Format proposed

A discussion of possible policy decisions on the basis of an unfolding scenario. This scenario will revolve around a Nuclear Security Threat, e.g. focusing on the loss of significant amount of nuclear material. In a real life situation, this would, in many countries, be brought to the attention of the Head of Government early in the process. A number of high level policy decisions and actions will have to be envisaged and decided upon.

Setting

Leader + max 3 delegates, full conference table, no press or other observers present, full interpretation in 6 UN languages (possibility of own interpreters for other languages).

Objectives of the discussion

• Leaders gaining a greater appreciation of the value of various nuclear security measures and options.

• Build confidence in the value of international cooperation (how countries can be called on to assist another country seeking to manage an identified threat without judgment or compromise of security).

• Build greater commitment amongst Leaders to the value of collective action.

Proposed proceedings

• The session is restricted to leaders and max. 3 delegates (“advisors”) per delegation. No press allowed.

• Headlines of the scenario and pre-identified policy dilemmas and options sent to capitals one month before the NSS.

• During the session the scenario unfolds with the use of audio-visual means.

• The session will have 3 issues in the scenario that require a decision.

• When a decision point is reached, Leaders will be offered time to confer with their advisors. Subsequently, Leaders are able to indicate, in an anonymous way, which of the (previously communicated) policy options would be taken in the suggested context.
• Three (pre-determined) Leaders will be asked by the Chair to share their policy choice and the underlying argumentation with their colleagues during a very short contribution.

• Other Leaders will be invited to comment on those arguments or to contribute their own decision and argumentation.

• At the end of the session the Chair would summarize the proceedings and possible lessons learnt.

Possible questions and responses, based upon comments made in preliminary discussions on this session:

• “Leaders don’t play games”. Leaders will not be asked to play a game. They are asked to comment on a situation and on decisions (options) which can be taken.

• “The fact that leaders discuss decisions to be taken in the event of a Nuclear Security Threat may cause public alarm”. As in any discussion amongst Leaders, communication to the public (and the media) needs to be carefully considered. No press or public will attend this session. Pictures of Leaders sitting at the conference table will be made by the official photographer. A press briefing of the proceedings will be prepared in advance. The public might be pleased to learn that their Leaders have been discussing how to handle possible nuclear threats in such a substantive and concrete manner.

• “Leaders should not be asked to improvise”. It is proposed to distribute the headlines of the scenario and the policy dilemmas beforehand in order to give Leaders and their close advisors the opportunity to prepare their participation.
This proposed Joint Statement would complicate the Nuclear Security Summit agenda by raising the issues of disarmament, nonproliferation and peaceful uses of nuclear energy, which, though important, are not directly tied to the fundamental Summit goal of securing all vulnerable nuclear material.

We recognize these issues are part of a broader international agenda to reduce global nuclear dangers, an agenda to which we are fully committed. We are prepared to recognize that context in the Summit communiqué. However, these issues go beyond the scope of the Summit itself and would detract from its essential focus, undervalue progress made, and needlessly politicize an important and successful Head of State initiative.

From the first Summit, the United States has sought to keep a sharp focus in the Summit process on nuclear security, and to pursue the very important discussions on disarmament in other venues. This allows for an open discussion that includes participation by states possessing nuclear weapons (and who hold the majority of nuclear material), without importing into that process the politicized discussions prominent in disarmament-related fora.

We believe that there are already several respected multilateral fora for discussion of nuclear disarmament and nonproliferation issues, including: the UNGA First Committee, the UN Disarmament Commission, the Geneva Conference on Disarmament, and the NPT review process. We are committed to addressing the broader issues - including issues of disarmament - in full and in depth during NPT Preparatory Committee meetings as well as at NPT Review Conferences, which is a long-standing forum for such discussions.

The United States actively supports the three pillars of the NPT, and remains committed to practical, step-by-step disarmament and will continue to take steps toward securing a world without nuclear weapons.

We request that you not join any effort to promote this Joint Statement at the 2014 Nuclear Security Summit so we can focus our time and attention on themes addressed in a strong communiqué focused on nuclear security-related issues, as in past Summits, and not on political issues that are better dealt with elsewhere.
Since 2010 Russia has been actively participating in preparing and holding summits on Physical Nuclear Security (PNS) and promoting the final decisions of these fora at various multilateral platforms.

The common approaches to the main aspects of international cooperation on PNS along with the joint working plan were formulated and adopted in the final communiqués of the summits in Washington (2010), Seoul (2012) and the Hague (2014). The sides reached a principal agreement that the key role in coordinating the respective efforts of the international community must be played by the International Atomic Energy Agency (IAEA), which has the necessary expert potential.

Today the major part of political obligations taken by the participants of the previous summits has been fulfilled and significant progress in enhancing PNS has been achieved, therefore, the political agenda of the summits is almost closed. In this regard, we see no "added value" in the forum planned to be held in the USA in 2016, particularly given the concept of preparation for the event proposed by Washington, which provides for privileged rights for the USA, South Korea and the Netherlands as the organizers of the previous summits. Russia cannot but disagree that the impromptu formed limited working groups will prepare the directive documents for such international organizations and initiatives as the UN, the IAEA, the "Global Partnership", the Global Initiative to Combat Nuclear Terrorism (GICNT) and Interpol. At the same time, the participants of the summit, except for the abovementioned "group of three", will be able to work only in one working group. Moreover, these groups mismatch the respective international organizations not only in the number of member states but also in terms of combined expert potential. We consider it unacceptable to set a precedent of such an external interference into work planning of international organizations.

A situation where the leaders of states are offered to approve the documents prepared with their representatives in absentia and without proper discussion by them is unacceptable.
In our view, the proposed system of preparation for the summit rules out the possibility that the opinion of those states, which are not prepared to fully comply with the line imposed by Washington, will be considered or even heard during elaboration of working plans for the international organizations seen as the main outcome of the Summit-2016 in the US.

We also cannot but disagree with the fact that the nomination of the chairs of five working groups in charge of finalizing these plans was held behind the closed doors without taking into account the principle of political balance. We stress that the USA still have not joined the existing international legal tools in this field (Convention on the Physical Protection of Nuclear Materials, the Amendment to it of 2005 and the International Convention for the Suppression of Acts of Nuclear Terrorism - ICSANT) though are trying to assume the role of a key and privileged player in this field.

With this in mind, we see no possibility for us to participate in the 4th Summit on PNS in the USA and, therefore, in the preparatory events. Instead, we intend to focus on enhancing physical nuclear security within the IAEA, particularly on preparing for the regular high-level conference on this issue under the aegis of the Agency, scheduled for 2016.
NSS 2016 : Non-Paper on Comprehensiveness

1. Context

Following the Sherpa meeting in Washington, Participating States were invited to highlight so-called „orphan” issues that require attention, but fall outside the scope of the proposed working groups. Comprehensiveness -arrangements that cover all weapons-useable nuclear material - is one of these issues and has so far been only partially addressed during the NSS process.

In order to be truly effective, the global nuclear security system needs to be comprehensive. Even if all civilian materials were fully secured to the highest standards, this would only cover an estimated 15% of the weapons-useable material around the world, leaving a critical gap in the architecture. It is thus both legitimate and important to also address the issue of the remaining 85% which is categorized as military materials and is not subject to any international security standards or oversight mechanisms.

While the past NSS Communiqués have mentioned the issue of comprehensiveness, a more focused discussion of the issue that could provide a better understanding of its scope and significance and lead to recommendations to improve the security of these materials has so far been lacking. In our view, there would be merit in giving some consideration to this important issue in the run-up to the 2016 Summit.

States with military materials have been reluctant to enter into a discussion or share information in this area due to concerns about the sensitivity of such information. As a category, these materials are, however, quite diverse and include materials in different forms, in different facilities and different uses. Not all of these forms and facilities are inherently sensitive in nature. Furthermore it may be worthwhile to consider exploring certain confidence-building measures that could give assurances to the wider international community that these materials are being secured according to the best possible standards. Such confidence-building measures might include voluntary declarations, reporting (in National Progress Reports or in the framework of 1540 reporting), applying where feasible and appropriate - best practices for civilian materials to military materials or considering bilateral or internal peer reviews without jeopardizing sensitive information.

Greater transparency would demonstrate the commitment of States with military materials to strengthen their nuclear security and contribute to greater domestic and international confidence. Sharing information and lessons learned can actually lead to improved security. It also has a deterrent effect, sending a strong message to terrorists that military materials are secured to the highest possible standards.

The Nuclear Threat Initiative (NTI) has recently established a high-level international study group that will develop (most likely by June 2015) specific recommendations for strengthening the security of military materials and building international confidence in the effectiveness of their security. This underlines the pertinence of the issue. The work of this group could provide valuable discussion points at a Sherpa meeting.

2. What can / should be done in concrete terms?

We would like to propose that consideration be given to organizing a dedicated session or a discussion in some other format on the issue of comprehensiveness during one of the up-coming Sherpa meetings, ideally after the completion of the report by the NTI Military Materials Study Group.