
Governing the Bomb
Civilian Control and Democratic
Accountability of Nuclear Weapons

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PEACE RESEARCH INSTITUTE**

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**STOCKHOLM INTERNATIONAL
PEACE RESEARCH INSTITUTE**

Signalistgatan 9
SE-169 70 Solna, Sweden
Telephone: +46 8 655 97 00
Fax: +46 8 655 97 33
Email: sipri@sipri.org
Internet: www.sipri.org

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Civilian Control and Democratic Accountability of Nuclear Weapons

EDITED BY HANS BORN, BATES GILL AND
HEINER HÄNGGI



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Preface

More than 65 years after the dawn of the nuclear age, nuclear non-proliferation and disarmament remain central to the maintenance of peace and security. The common goal must continue to be working towards a world free of nuclear dangers and, ultimately, of nuclear weapons. In choosing the topic of domestic governance of nuclear weapons, the authors of this volume hope to contribute to reinvigorating the international nuclear disarmament agenda and to initiate a debate on a number of key questions related to the governance of nuclear weapons.

Many of the questions on governing the bomb relate to the applicability of general principles of democratic accountability and civilian control of the security sector to the specific area of nuclear weapons. In particular, what role can parliamentary institutions, the media and civil society organizations play in fostering free discussions on nuclear weapons, demanding increased transparency and accountability from decision makers in this field and in pushing for the reduction and eventual elimination of existing arsenals?

As long as nuclear weapons continue to exist, nuclear weapon states have the obligation to take adequate measures to prevent their accidental use or diversion. Therefore, issues raised in this volume also refer to the responsibilities of states and their leaders in ensuring proper command and control over nuclear weapons and guaranteeing the safety of the nuclear arsenal.

While this volume demonstrates that the issue of governing the bomb raises many complex questions and different viewpoints, it is clear that nuclear weapons present a unique threat and that this threat is increasing. The way in which nuclear weapons will be governed nationally and internationally in years to come will be decisive for the future of mankind.

This volume is part of an effort by the Geneva Centre for the Democratic Control of Armed Forces (DCAF) and Stockholm International Peace Research Institute (SIPRI) to bring comprehensive analysis to a wide audience and to encourage continued discussion on nuclear weapons and disarmament from a security sector governance perspective. As the directors of DCAF and SIPRI, we hope that it can raise awareness of the complexities and challenges of governing nuclear weapons among the international community in order to achieve more effective governance of such weapons. We are especially pleased that this volume continues the strong tradition of joint research and cooperation that our two institutes have enjoyed, and we look forward to further strengthening our collaboration in the years ahead.

Governing the Bomb is the result of an extended research and review process that included expert workshops in Montreux in 2004 and Geneva in 2009; an academic seminar at Johns Hopkins School of Advanced International Studies in Washington, DC, in 2005; and a side event for the diplomatic and non-governmental organization communities at the Non-Proliferation Treaty Review Conference in New York in 2005, hosted by DCAF and the Peace Research Institute Frankfurt. This project has also produced a series of other publications on the subject of domestic governance of nuclear weapons.¹ We are grateful to the authors and editors who have contributed to the development of this volume. We are also indebted to Joey Fox and Jetta Gilligan Borg for editing this text and to the SIPRI Library, other SIPRI colleagues and others for research and advisory support, including Christer Ahlström, Alyson J. K. Bailes, Ingrid Beutler, Paul Bracken, Malcom Chalmers, Shahram Chubin, Jonas Hagmann, François Heisbourg, Ian Kenyon, Gary Samore, Walter Slocombe, Klaus Naumann, Yury Nazarkin, Vincenza Scherrer, Aidan Wills and Herbert Wulf as well as the anonymous reviewers.

Dr Bates Gill
SIPRI Director
Stockholm, September 2010

Ambassador Theodor H. Winkler
DCAF Director
Geneva, September 2010

¹ Born, H., 'Civilian control and democratic accountability of nuclear weapons', eds H. Hänggi and T. Winkler, *Challenges of Security Sector Governance* (LIT Verlag: Berlin, 2003); Slocombe, W. B., *Democratic Civilian Control of Nuclear Weapons*, Policy Paper no. 12 (DCAF: Geneva, 2006); Born, H., *National Governance of Nuclear Weapons: Opportunities and Constraints*, Policy Paper no. 15 (DCAF: Geneva, 2007); and Born, H., 'National governance of nuclear weapons: opportunities and constraints', *SIPRI Yearbook 2006: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2006).

Abbreviations

ABM	Anti-ballistic missile
ABM Treaty	Treaty on the Limitation of Anti-Ballistic Missile Systems
BMD	Ballistic missile defence
C ³ I	Command, control, communications and intelligence
C ⁴ I	Command, control, communications, computerization and intelligence
C ⁴ ISR	Command, control, communications, computerization, intelligence, surveillance and reconnaissance
C ⁴ I ² SR	Command, control, communications, and computerization, intelligence and information, surveillance and reconnaissance
CTBT	Comprehensive Nuclear-Test-Ban Treaty
DAC	Development Assistance Committee
EU	European Union
IAEA	International Atomic Energy Agency
ICBM	Intercontinental ballistic missile
ICJ	International Court of Justice
MAD	Mutual assured destruction
MIRV	Multiple independently targetable re-entry vehicle
MOD	Ministry of Defence
NATO	North Atlantic Treaty Organization
New START	New Strategic Offensive Arms Treaty (Prague Treaty)
NGO	Non-governmental organization
NPT	Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty)
OECD	Organisation for Economic Co-operation and Development
PAL	Permissive action link
R&D	Research and development
SACEUR	Supreme Allied Commander Europe
SALT	Strategic Arms Limitation Talks
SLBM	Submarine-launched ballistic missile
SORT	Treaty on Strategic Offensive Reductions (Moscow Treaty)
SSBN	Nuclear-powered ballistic missile submarine
SSN	Nuclear-powered attack submarine
START I	Treaty on the Reduction and Limitation of Strategic Offensive Arms

START II	Treaty on Further Reduction and Limitation of Strategic Offensive Arms
TNW	Tactical nuclear weapon
UN	United Nations

The United States

AEC	Atomic Energy Commission
COG	Continuity of government
DEFCON	Defense Condition
DOD	Department of Defense
DOE	Department of Energy
ENDS	Enhanced Nuclear Detonation Safety
FY	Fiscal year
MDA	Missile Defense Agency
NNSA	National Nuclear Security Administration
NSA	National security advisor
NSC	National Security Council
RRW	Reliable Replacement Warhead
SDI	Strategic Defense Initiative
SIOP	Single Integrated Operational Plan

Russia

CPSU	Communist Party of the Soviet Union
Glavpur	Glavnoie Politicheskoe Upravlenie (the main political directorate of the Soviet Army and Navy)
GPV	Gosudarstvennyi Program Vooruzheniya (State Programme of Armaments)
KGB	Komitet Gosudarstvennoy Bezopasnosti (Soviet national security and intelligence agency)
Minatom	Ministry for Atomic Energy
SRF	Strategic Rocket Forces

The United Kingdom

AWE	Atomic Weapons Establishment
AWEML	AWE Management Ltd
BNFL	British Nuclear Fuels Ltd
CND	Campaign for Nuclear Disarmament
FCO	Foreign and Commonwealth Office

FOIA	Freedom of Information Act
HCDC	House of Commons Defence Select Committee
MDA	Mutual defence agreement
PAC	Public Accounts Committee
RAF	Royal Air Force
SDR	Strategic Defence Review

France

CEA	Commissariat à l'Énergie atomique (Atomic Energy Commission)
CEMA	Chef d'état-major des armées (Chief of the Defence Staff)
CEMP	Chef d'état-major particulier (Chief of the president's military staff)
COFN	Centre opérationnel des forces nucléaires (Joint operational centre)
DAS	Délégation aux affaires stratégiques (Policy Division)
DGA	Délégation générale pour l'armement (Procurement office)
SGDN	Secrétariat général de la défense nationale (General Secretariat for National Defence)

China

CCP	Chinese Communist Party
CMC	Central Military Commission
COSTIND	Commission on Science, Technology, and Industry for National Defence
GAD	General Armaments Department
PLA	People's Liberation Army
Politburo	Political Bureau of the CCP
PRC	People's Republic of China
SASTIND	State Administration for Science, Technology and Industry for National Defence

Israel

IAEC	Israel Atomic Energy Commission
IDF	Israel Defence Forces
MALMAB	Office of Security at the Ministry of Defence

India

AEC	Atomic Energy Commission
CNCI	India–United States Civil Nuclear Cooperation Initiative
DAE	Department of Atomic Energy
DRDO	Defence Research and Development Organisation
IGMDP	Integrated Guided Missile Development Programme
NCA	Nuclear Command Authority
NSAB	National Security Advisor Board
SFC	Strategic Forces Command
SNEP	Subterranean Nuclear Explosion Project

Pakistan

CJCSC	Chairman joint chiefs of staff committee
DCC	Development Control Committee
DG SPD	Director-general of the Strategic Plans Division
DNSRP	Directorate of Nuclear Safety and Radiation Protection
ECC	Employment Control Committee
KRL	Khan Research Laboratories (formerly Kahuta Research Laboratories)
NCA	National Command Authority
NESCOM	National Engineering and Scientific Commission
PAEC	Pakistan Atomic Energy Commission
PNRA	Pakistan Nuclear Regulatory Authority
SECDIV	Strategic Export Division
SFC	Strategic Forces Command
SUPARCO	Space and Upper Atmosphere Research Commission

1. Introduction

HANS BORN, BATES GILL AND HEINER HÄNGGI

I. Introduction

Two decades after the golden age of nuclear arms control, nuclear disarmament has again returned to the top of the international community's agenda. A call in 2007 for a 'nuclear-free world' by four senior US statesmen kicked off renewed, high-profile appeals for the abolition of all nuclear arsenals.¹ Many world leaders have responded to these appeals, including US President Barack Obama in a speech in Prague in April 2009, and in April 2010 Russia and the United States signed a new comprehensive nuclear arms reduction agreement.² The fear of nuclear proliferation—coupled with the expectation of a significant global expansion in nuclear energy production—motivates Russia, the USA and other nuclear weapon states to more seriously contemplate 'going to zero' because they believe 'that it will be impossible to curtail nuclear-weapons proliferation without serious progress towards nuclear disarmament'.³ In line with the provisions of the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT), some nuclear weapon states appear to be shifting from an almost exclusive focus on non-proliferation to a more balanced emphasis on both non-proliferation and disarmament.⁴ Even if a world free of nuclear weapons remains a distant prospect, there is increasing momentum to move this idea from rhetoric to reality.

However, there are clearly many hurdles to be jumped before reaching that finishing line. Not least of those is the understanding of how nuclear

¹ The 4 are former secretaries of State George Shultz and Henry Kissinger, former Secretary of Defense William Perry and former Senator Sam Nunn. Shultz, G. P. et al., 'A world free of nuclear weapons', *Wall Street Journal*, 4 Jan. 2007. See also Shultz, G. P. et al., 'Toward a nuclear-free world', *Wall Street Journal*, 15 Jan. 2008.

² Obama, B., US President, Remarks, Hradcany Square, Prague, Czech Republic, 5 Apr. 2009, <http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered/>. On this treaty, the 2010 New START Treaty, see White House, 'The New START Treaty and Protocol', White House Blog, 8 Apr. 2010, <<http://www.whitehouse.gov/blog/2010/04/08/new-start-treaty-and-protocol>>.

³ Perkovic, G. and Acton, J. M., *Abolishing Nuclear Weapons*, Adelphi Paper no. 396 (International Institute for Strategic Studies: London, 2008), <<http://www.iiss.org/publications/adelphi-papers/adelphi-papers-2008/abolishing-nuclear-weapons/>>, p. 7.

⁴ According to the NPT, only states that manufactured and exploded a nuclear device prior to 1 Jan. 1967 are recognized as nuclear weapon states. China, France, Russia, the United Kingdom and the USA are the 5 nuclear-armed states party to the NPT. Israel, India and Pakistan are nuclear-armed states that remain outside the NPT. Treaty on the Non-Proliferation of Nuclear Weapons, opened for signature on 1 July 1968, entered into force on 5 Mar. 1970, <<http://www.iaea.org/Publications/Documents/Treaties/npt.html>>.

weapons are governed. While the world waits for nuclear weapons to be eliminated, it must continue to face the prospect that they might be used. The prospect of nuclear weapon use, and indeed the prospect of how the threat of these weapons could be eliminated, immediately points to issues of who controls nuclear weapons, how and why. This critical issue—governance of ‘the bomb’ in possessor states—is the organizing theme of this volume.

Drawing on concepts of civilian control and democratic accountability, this book explores the roles played by various actors in the domestic governance of nuclear weapons in eight possessor states—the USA, Russia, the United Kingdom, France, China, Israel, India and Pakistan—and assesses how the relative influence of these actors shapes the respective national approaches to questions of nuclear weapon acquisition, doctrine, use and control. It specifically looks at the role in nuclear weapon governance of national executive, legislative and judicial institutions, including the government bureaucracy in general; the military and other core security actors; and civil society, including specialized civilian agencies and civil society organizations.

Section II of this chapter explores the reasons for studying the domestic governance of nuclear weapons. It summarizes some past approaches to such study and outlines the nature of this volume’s inquiry. Section III introduces security sector governance—the key concept used in this volume. Section IV applies this concept to the domestic governance of nuclear weapons and synthesizes the results in a heuristic framework that guides the comparative analysis of the national case studies that follow.

II. Studying domestic governance of nuclear weapons

With nuclear disarmament actively on the agenda, it may seem backward looking to study how nuclear-armed states govern their nuclear weapons. Delving into the governance of nuclear weapons may seem to implicitly legitimize the ongoing possession of these weapons. Indeed, it might lead to the conclusion that the possession of these weapons is acceptable as long as they are subject to good governance, and thus that nuclear weapons are safe in some hands but not in others.⁵ Some may posit that studying domestic nuclear weapon governance risks diverting attention from more pressing challenges, such as the prevention of proliferation and the promotion of nuclear disarmament. On the contrary, non-proliferation,

⁵ Good governance as it relates to the governance of nuclear weapons means policy inputs and outputs that contribute to non-proliferation, disarmament and the diminished likelihood of nuclear weapon use. Policy outputs refer to the efficiency and effectiveness of the ‘delivery’ of these outputs, and policy inputs refer to the procedures by which this policy output is produced (e.g. participatory, transparent, accountable).

nuclear disarmament and the prevention of nuclear weapon use is not just an aspiration, but also a political and moral imperative, and to meet those obligations nuclear weapon governance among possessor states must be examined and understood.

Why study domestic nuclear weapon governance?

There are a number of important reasons for opening the structures and processes of nuclear weapon governance to greater scrutiny and analysis. First, as long as nuclear weapons exist, the states that possess them have an obligation to take adequate measures to prevent their accidental or unauthorized use or diversion. Humankind's ability to hold nuclear-armed states accountable for the security of their weapons and technology is contingent on the proper knowledge of the structures and processes of domestic nuclear weapon governance in these states. Although the record of the past 65 years suggests that the risk of nuclear weapon use is relatively low, there have been too many close calls—both intentional and accidental—that would have been catastrophic. At best, there will be more near catastrophes in the future as long as such weapons exist. Perhaps more worrying is the potential for nuclear weapons or components to fall in to the hands of non-state actors who would use or threaten to use them for their political ends. The exposure of the Pakistan-based Abdul Qadeer Khan network demonstrated that these concerns are not unfounded and served to underscore the idea that the effective domestic governance of nuclear weapons is central to non-proliferation efforts as well.⁶

Second, the study of national systems for nuclear weapon governance across possessor states can lead to a better understanding of these systems and facilitate the learning and exchange of good governance practices. Indeed, there have been a number of instances in which incipient nuclear states have learned from the experiences of established nuclear weapon states.⁷ Taking this further, such knowledge would be crucial if disarmament and non-proliferation efforts fail, triggering the emergence of new nuclear weapon states. According to the International Atomic Energy Agency, up to 30 countries that do not now possess nuclear weapons have the capacity to develop such weapons in a short period of time.⁸

⁶ See Kile, S. N., 'Nuclear arms control and non-proliferation', *SIPRI Yearbook 2006: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2006), pp. 552–55.

⁷ Feaver, P. D., 'Command and control in emerging nuclear nations', *International Security*, vol. 17, no. 3 (winter 1992/93), pp. 160–87. On 'nuclear learning' processes in nuclear weapon states see Nye, J. S., 'Nuclear learning and US–Soviet security regimes', *International Organization*, vol. 41, no. 3 (summer 1987), pp. 378–85; and Gaddis, J. L. et al. (eds), *Cold War Statesmen Confront the Bomb: Nuclear Diplomacy Since 1945* (Oxford University Press: Oxford, 1999).

⁸ '30 new countries could get nuclear weapons: IAEA', Agence France-Presse, 16 Oct. 2006, <<http://www.abc.net.au/news/newsitems/200610/sl1766244.htm>>.

A third important reason for studying domestic nuclear weapon governance is to illuminate the possible linkages between regime type, weapon possession and the nature of weapon governance. In aiming for the security of nuclear weapons, as well as for their non-proliferation and disarmament, this volume addresses the current state of nuclear weapon governance in possessor states and the extent to which the weapons are subjected to democratic accountability and civilian control.

Current approaches to the study of the domestic governance of nuclear weapons

Despite its importance, domestic nuclear weapon governance is sparsely researched. This is largely because research in this highly sensitive policy area is hampered by secrecy in all possessor states and the limits on freedom of speech (including censorship in some states). Most of the existing studies approach the subject from a non-proliferation perspective, highlighting the importance of domestic governance in emerging nuclear weapon states.

In a noted debate on the opportunities and threats of nuclear proliferation that was initiated in the early 1980s, Scott Sagan challenged Kenneth Waltz's thesis that the gradual spread of nuclear weapons could have a stabilizing effect on international relations. Sagan argued that deficiencies in the political systems of proliferators are likely to lead to deterrence failure and deliberate or accidental nuclear war. Based on the assumption that future nuclear-armed states are likely to have military-run or weak civilian governments, Sagan contended that these governments would lack the constraining mechanism of civilian control while military biases may serve to encourage nuclear weapon use, especially during times of crisis.⁹

More recent studies have focused on how emerging political powers are likely to use weapons of mass destruction, including nuclear weapons.¹⁰ This literature has also addressed how specific countries that are technically capable of 'going nuclear' might approach the issue of reversing past decisions to renounce nuclear weapons.¹¹ For other analysts, the nature of a country's political system is closely linked to the issue of denuclearization in the sense that democratic governance is viewed as being conducive to nuclear non-proliferation and disarmament.

⁹ Sagan, S. and Waltz, K., *The Spread of Nuclear Weapons: A Debate Renewed* (Norton: New York, 2003), pp. 61–62.

¹⁰ Lavoy, P., Sagan, S. and Wirtz, J. (eds), *Planning the Unthinkable: How New Powers Will Use Nuclear, Biological and Chemical Weapons* (Cornell University Press: Ithaca, NY, 2000).

¹¹ Campell, K. M., Einhorn, R. and Reiss, M. (eds), *The Nuclear Tipping Point* (Brookings Institution: Washington, DC, 2004).

In this context, Harald Müller posits that

the internal structure of states is the decisive variable influencing whatever degree of certainty or uncertainty exists over their intentions and capabilities. Countries with division of power, open discursive decision processes, a distinction between economy and politics, free movement within, and accessibility of all parts of, the country, and the right of parliament, the courts, media, and citizens to investigate executive action independently and critically leave little room for governments to operate large-scale secret programmes.¹²

In Müller's view, democratic political systems best realize these conditions and thus provide the most effective means of nuclear non-proliferation and disarmament.¹³

The political system of potential proliferator states is the key variable in Anne-Marie Slaughter and Lee Feinstein's call for 'a duty to prevent' the proliferation of weapons of mass destruction. They argue that the 'threat is gravest when the state pursuing weapons of mass destruction is a closed society headed by a ruler or rulers who threaten their own citizens as much as they do their neighbours and potential adversaries'.¹⁴ However, recent studies have found that the existence of a democratic regime has a modest to statistically insignificant impact on nuclear non-proliferation.¹⁵ Arguably, this reflects the stronger effect of perceived external threats and technological capacity, as well as the multi-faceted character of democracy. Furthermore, it has also been argued that democracy and particularly the process of democratization can propel proliferation, as evidenced by experience from India and Pakistan, where widespread popular support for nuclear weapons encouraged leaders to acquire nuclear weapons to boost their own popularity.¹⁶

There are few cross-national studies that focus on comparing domestic nuclear weapon governance across possessor states. Most studies have focused on single cases studies, predominantly analysing the USA.¹⁷ Other studies have compared the command-and-control systems in Russia and

¹² Müller, H., 'Nuclear disarmament: the case for incrementalism', eds J. Baylis and R. O'Neill, *Alternative Nuclear Futures: The Role of Nuclear Weapons in the Post-Cold War World* (Oxford University Press: Oxford, 2000), p. 141.

¹³ Müller (note 12), pp 125–44.

¹⁴ Slaughter, A.-M. and Feinstein, L., 'A duty to prevent', *Foreign Affairs*, vol. 83, no. 1 (Jan./Feb. 2004), pp. 136–50.

¹⁵ Singh, S. and Way, C., 'The correlates of nuclear proliferation', *Journal of Conflict Resolution*, vol. 48, no. 6 (Dec. 2004), pp. 859–85; and Kroenig, M., 'Importing the bomb: sensitive nuclear assistance and nuclear proliferation', *Journal of Conflict Resolution*, vol. 53, no. 2 (Apr. 2009), pp. 161–80.

¹⁶ Singh and Way (note 15). See also chapters 8 and 9 in this volume.

¹⁷ Avner Cohen greatly contributed to more knowledge about Israel's policy of nuclear opacity. See chapter 7 in this volume; Cohen, A., *Israel and the Bomb* (Columbia University Press: New York, 1999); Yarynich, V. E., *C3: Nuclear Command, Control, Cooperation* (Center for Defense Information: Washington, DC, 2003); and Feaver, P. D., *Guarding the Guardians: Civilian Control of Nuclear Weapons in the United States* (Cornell University Press: Ithaca, NY, 1992).

the USA.¹⁸ Still other publications present historical accounts of the context, origins, development and actors in nuclear weapon policy in comparative perspective or in a given country.¹⁹ Of particular note is Robert Dahl's research on the compatibility of democracy and 'nuclear guardianship', about which Dahl is rather sceptical. Acknowledging that the control of nuclear weapons is an extreme case, Dahl holds that the pattern of domestic nuclear governance represents 'alienation of authority' rather than 'delegation of authority' because the control of these weapons has been abandoned to a comparatively small group of civilian and military experts. For Dahl, nuclear weapons present a tragic paradox: 'No decisions can be more fateful for Americans, and for the world, than decisions about nuclear weapons. Yet these decisions have largely escaped the control of the democratic process.'²⁰

Other authors are more positive than Dahl about the compatibility of democratic governance and the control of nuclear weapons. Drawing on the case of the USA from a policy perspective, Walter B. Slocombe points to the existence of complex mechanisms of nuclear weapon control in democratically run countries. In particular, he notes that democratic governance embraces not just the choice of 'whose finger is on the button' but also which institutional actors take decisions on acquisition, force posture, strategy, doctrine, planning and deployment.²¹

With few exceptions, however, most of the studies related to issues of domestic nuclear weapon governance focus on who commands and controls nuclear forces, and what this means for possible weapon use; many of these studies have a national focus, mostly on the USA.²²

From command and control to security sector governance

While research on nuclear command-and-control systems has produced important insights, it has been dominated by a narrow focus on one particular subset of the more general problem of civilian control of the military.²³ This volume aims to broaden the debate on nuclear weapon control

¹⁸ Blair, B. G., *The Logic of Accidental Nuclear War* (Brookings Institution: Washington, DC, 1993).

¹⁹ See e.g. Gerard de Groot's account of the 'life story' of the bomb in various countries in de Groot, G., *The Bomb: A Life* (Jonathan Cape: London, 2004); and Perkovich, G., *India's Nuclear Bomb: The Impact on Global Proliferation* (University of California Press: Berkeley, CA, 1999). On how new and emerging nuclear weapon states try to or managed to acquire nuclear weapons and other weapons of mass destruction see Lavoy, Sagan and Writz (note 10).

²⁰ Dahl, R., *Controlling Nuclear Weapons: Democracy versus Guardianship* (Syracuse University Press: Syracuse, NY, 1985), p. 3.

²¹ Slocombe, W., *Democratic Civilian Control of Nuclear Weapons*, Policy Paper no. 12 (Centre for the Democratic Control of Armed Forces Geneva: Geneva, 2006), <http://www.dcaf.ch/publications/kms/series_policy_papers.cfm?nav1=5&nav2=2>.

²² E.g. Blair (note 18); Feaver (note 17); Feaver (note 7); and Bracken, P., *The Command and Control of Nuclear Forces* (Yale University Press: New Haven, CT, 1983).

²³ Feaver (note 7).

beyond the traditional focus on command and control prevalent in the existing literature by applying a security sector governance perspective to the nuclear weapon cycle as a whole. It explores the current domestic governance structures and processes regarding nuclear weapons as a sub-system of the security sector in nuclear weapon states, examining how these structures and processes have evolved over time. In particular, this volume scrutinizes the roles and responsibilities of the institutions and actors that are involved in governing the nuclear sector. These bodies encompass executive, legislative and judicial institutions, including government bureaucracy in general; military and other core security actors; specialized civilian agencies and civil society organizations.

Although this volume adopts a primarily descriptive approach, and to some extent an empirical–analytical one, its underlying research interest is that of generating normative insights into the opportunities and constraints of civilian control and democratic accountability of nuclear weapons. The authors of chapters 2–9 address two key research questions that reflect both the descriptive and the normative aspects of this study:

1. What is the current state of nuclear weapon governance in the possessor state in question, and how did it evolve over time?
2. What is the extent of civilian control and democratic accountability regarding nuclear weapons in these states?

The conclusions review the answers to these questions on the basis of the eight country studies in order to draw broader insights on the domestic governance of nuclear weapons, and particularly the role (if any) of civilian control and democratic accountability in nuclear governance.

In addition to broadening the debate on nuclear weapon control in substantive terms, this volume also aims to look beyond the paradigmatic case of the USA. Combining a security sector governance perspective with a comparative approach, this volume sheds new light not only on the USA, but also on the other four NPT-recognized nuclear weapon states—Russia, China, France and the UK—as well as the three *de facto* nuclear possessor states with mature nuclear weapon programmes that are not members of the NPT: India, Israel and Pakistan.²⁴ The sample of cases selected for this study excludes former NPT member countries that claim to have acquired nuclear weapons (such as North Korea), those countries that allegedly are trying to acquire nuclear weapon capabilities (such as Iran), those countries that had nuclear weapon programmes but have abandoned them (such as Argentina, Iraq, Libya and South Africa) and those countries with foreign nuclear weapons stationed on their territory (such as Germany).

²⁴ NPT (note 4), Article IX(3).

The case studies in this volume consider states that have widely varying nuclear arsenals (in terms of both quantity and quality) as well as different political and historical circumstances.²⁵ Such a case-oriented rather than variable-oriented approach allows for a more in-depth analysis because it takes into account contextual specifics for each case. Under the best circumstances, it also develops contingent comparative generalizations. In sum, the method of inquiry is a qualitative one—often referred to as ‘thick description’.²⁶

III. The concept of security sector governance

Security sector governance as a concept is a rather recent idea that has its roots in the broadening of the understanding of security.²⁷ For much of the cold war period, ‘security’ was understood almost exclusively in military terms and as referring to the security of the state. A substantive widening and deepening of the concept of security, resulting in a shift from the traditional to the so-called new security agenda, however, has marked the post-cold war period. In this new agenda, non-military dimensions—such as political, economic, societal and environmental concerns—have become broadly accepted as national security issues. However, the primacy of national security has been challenged by the emergence of concepts such as ‘human security’ that shift the focus of security concerns from the state to the individual.²⁸ The concept of security sector governance arises from this broader concept of security, which covers both military and non-military dimensions of security and looks at both state and human security.

Governance can be used as an analytical or as a normative concept. As an analytical concept, it primarily refers to the increasing fragmentation of political authority among state and non-state actors, which requires more complex and inclusive forms of regulation, covering different levels beyond and below the national one. This concept is based on three key assumptions: (a) that ‘multi-level’ governance is the rule in the contemporary system of states, linking the local with the national, regional and global levels; (b) that governance involves a variety of public and private actors, such as states, international organizations, firms, armed non-state actors and civil society; and (c) that governance actors employ a combination of

²⁵ On the nuclear forces of the states in these case studies see appendix A in this volume.

²⁶ The term ‘thick description’ was first used by the anthropologist Clifford Geertz to describe his own ethnographic method. Since then, the term and the methodology it represents have gained currency in the social sciences and beyond. Geertz, C., *The Interpretation of Cultures* (Basic Books: New York, 1973), pp. 5–6, 9–10.

²⁷ For a discussion of the concept of security sector governance see Hänggi, H., ‘Making sense of security sector governance’, eds H. Hänggi and T. Winkler, *Challenges of Security Sector Governance* (LIT Verlag: Münster, 2003), pp. 3–22.

²⁸ For a discussion of the broad notion of security see Sheehan, M., *International Security: An Analytical Survey* (Lynne Rienner: Boulder, CO, 2005).

governance modes (e.g. the coexistence of hierarchical ('hard') modes, such as top-down command-and-control methods, and non-hierarchical ('soft') modes, such as negotiating, bargaining and arguing techniques). In other words, the concept assumes the use of hybrid modes of governance as opposed to the use of hierarchy-based governance only.²⁹

As a normative concept, the term governance is often used to prescribe how an issue or policy area should be governed. Once a qualifier is added (e.g. good or democratic), it becomes a normative concept, which is what most people have in mind when referring to security sector governance. The difference between good governance and democratic governance is ambiguous. In general terms, one may say that good governance tends to focus on the efficient and effective delivery of policy outputs ('output legitimacy') and that democratic governance concentrates on the procedures for how such policy output is produced ('input legitimacy').

The term 'security sector', although widely used, it is often understood in different ways, particularly regarding its scope. The narrowest possible notion of the security sector reflects traditional state-centric understandings of security, focusing on those public sector institutions that are responsible for the provision of internal and external security—often called the security apparatus. This definition does not necessarily cover the military alone, but acknowledges the important, and in some countries, predominant, role of non-military security forces—either in the provision of security or, on the contrary, as a source of insecurity. Consequently, apart from the armed forces, a state's security apparatus includes, but is not limited to, the police, gendarmerie and paramilitary forces, the intelligence and secret services, border guards, and customs authorities.

A broader definition of the security sector would comprise, in addition to the security apparatus, the civilian bodies relevant to the management, oversight and control of security-related policies and action. Under this definition, the security sector could include executive and legislative officials and their advisers, relevant ministries, specialized oversight bodies and agencies, and the judiciary, as well the security apparatus itself. The role of these bodies is to ensure that the security apparatus is managed efficiently and is held accountable to civilian authorities. An even broader definition of the security sector would also encompass non-state actors (such as the media and civil society) and their role in monitoring and seeking to shape security policy outcomes.

²⁹ For a discussion of new modes of governance see Risse, T. and Lehmkuhl, U., *Governance in Areas of Limited Statehood: New Modes of Governance?*, Working Paper Series no. 2 (Research Center (SFB) 700: Berlin, 2006), <http://www.sfb-governance.de/en/publikationen/sfbgov_wp/wp1_en/index.html>.

Table 1.1. Security-related state and non-state institutions and bodies

Major actors	Related institutions
Core security actors	Armed forces; police; gendarmeries; paramilitary forces; presidential guards, intelligence and security services (both military and civilian); coast guards; border guards; customs authorities; reserve or local security units (civil defence forces, national guards, militias); and other specialized civilian agencies dealing with security issues
Security management and oversight bodies	The executive; national security advisory bodies; the legislature and legislative select committees; ministries of defence, internal affairs and foreign affairs; customary and traditional authorities; financial management bodies (finance ministries, budget officers, financial audit and planning units); and civil society organizations (civilian review boards and public complaints commissions)
Justice and rule of law	Judiciary; justice ministries; prisons; criminal investigation and prosecution services; human rights commissions and ombudsmen; and customary and traditional justice systems
Non-statutory security forces	Liberation armies; guerrilla armies; private bodyguard units; private security companies; and political party militias

Source: Organisation for Economic Co-operation and Development (OECD), Development Assistance Committee (DAC), *Security System Reform and Governance: Policy and Good Practice, DAC Guidelines and Reference Series* (OECD: Paris, 2005), pp. 20–21.

A widely employed definition of the security sector is set out in the guidelines of the Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD).³⁰ The DAC's broad interpretation of the security sector encompasses all narrower understandings of the security sector. Accordingly, the security sector—or the 'security system' as it is referred to by the DAC—is defined as including all the state institutions and other entities that play a role in ensuring the security of the state and its people (see table 1.1).

The DAC's broad conceptual definition of security includes military and non-military and state and non-state dimensions. It also reflects an essentially normative governance perspective to the extent that it includes relevant management and oversight institutions as well as non-state actors.³¹

Although no single model of security sector governance exists, it is understood in general terms to refer to the dynamic relationship between

³⁰ Organisation for Economic Co-operation and Development (OECD), Development Assistance Committee (DAC), *Security System Reform and Governance: Policy and Good Practice, DAC Guidelines and Reference Series* (OECD: Paris, 2005), pp. 20–21.

³¹ A similar definition was introduced by the United Nations Secretary-General in early 2008. Accordingly, 'the term security sector is often used to describe the structures, institutions and personnel responsible for the management, provision and oversight of security in a country'. United Nations, General Assembly and Security Council, 'Securing peace and development: the role of the United Nations in supporting security sector reform', Report of the Secretary-General, 23 Jan. 2008, A/62/659-S/2008/39, para. 14.

the security sector actors discussed above and their various operational, management and oversight roles. Rooted in the study of civil–military relations, which was developed in large part by Samuel Huntington in the 1950s and 1960s, the study of security sector governance has generated new thinking about and broadened the subject of civil–military relations.³² In particular, the concept has encouraged the adoption of a more comprehensive understanding of the security sector to include non-military security forces—such as the police, intelligence services and border guards—as well as their management and oversight institutions. Consequently, and consistent with a much broader security agenda in the post-cold war era, the concept of democratic control of armed forces has been expanded to include the concept of democratic control of the entire security sector. One further distinction can be made. Both civil–military relations and security sector governance tend to be analytical concepts rather than prescriptive ones, reflecting the fact that all states do have some sort of civil–military relations and security sector governance—as poor or deficient as these may be in many states. However, the concepts of democratic control of armed forces and democratic governance of the security sector are clearly normative concepts, based on the principle of constitutional democracy.

In this volume, the concept of security sector governance is applied in its normative understanding, implicitly based on the principles of good and democratic governance. Despite its normative character, this understanding of security sector governance can also be used as a heuristic framework for descriptive and analytical purposes. In so doing, security sector governance is understood as a system of a multilayered security sector governance comprising the roles of the core security actors themselves as well as those of the executive, the legislature, independent bodies and civil society (see table 1.2).³³ As discussed further below, table 1.2 can form the basis for framing the subject of nuclear weapon governance in nuclear-armed states.

IV. Security sector governance and nuclear weapons

The governance of nuclear weapons applies to every aspect of the nuclear weapon cycle—from the development to the use of nuclear weapons. In this study, this dynamic cycle is abstracted into four components: (a) the initial decision to establish a nuclear weapon programme; (b) the development and evolution of nuclear weapon strategy; (c) the acquisition and pro-

³² On the concept of civil–military relations see Huntington, S. P., *The Soldier and the State: The Theory and Politics of Civil–Military Relations* (Harvard University Press: Cambridge, MA, 1957).

³³ This framework is drawn from the OECD DAC work on security system reform. See Organisation for Economic Co-operation and Development (OECD), Development Assistance Committee (DAC), *The OECD DAC Handbook on Security System Reform: Supporting Security and Justice* (OECD: Paris, 2007), pp. 112–13.

Table 1.2. A system of multilayered security sector governance

Layer	Major actors	Main governance mechanisms
Internal	Security forces; justice providers	Supervision; internal system of review; proactive monitoring; internal complaints mechanisms; code(s) of conduct; disciplinary system; review of performance and control of assignments; human resources (selection, retention and promotion system); freedom of information
Executive	Head of state; ministries; national security advisory and coordinating bodies	Ultimate command authority; setting basic security policies, priorities and procedures; selecting and retaining senior personnel; reporting mechanisms; budget management; power to investigate claims of abuses and failures
Legislative	Parliament; parliamentary oversight bodies	Hearings; budget approval; investigations; enacting laws; visiting and inspecting facilities; subpoena powers
Judiciary	Civil and criminal courts and tribunals; military courts and tribunals	Adjudicating cases brought against security services and individual employees; protecting human rights; upholding the rule of law; monitoring special powers of the security services; assessing constitutionality; providing effective remedy; reviewing policies of security and justice providers in the context of prosecutions
Independent bodies	Ombudsman; national human rights institution; audit office; inspector general; public complaints commissions	Receiving complaints from the public; raising awareness of human rights within the general public and within security and justice institutions; investigating claims of failures and abuses; ensuring proper use of public funds; ensuring compliance with policy and the rule of law
Civil society	Think tanks; non-governmental organizations; media	Providing expertise and analysing security and justice policy; lobbying; providing an alternative view to the public and its representatives; investigative reporting; monitoring

Source: Organisation for Economic Co-operation and Development (OECD), Development Assistance Committee (DAC), 'A system of multi-layered security system governance', *The OECD DAC Handbook on Security System Reform: Supporting Security and Justice* (OECD: Paris, 2007), pp. 112–13.

duction of nuclear weapons; and (d) the deployment and employment of nuclear weapons.³⁴ This model of the nuclear weapon life cycle is constructed for analytical purposes only. In reality, these phases are not necessarily clearly delineated or linear.³⁵

³⁴ Compare with Slocombe (note 21), pp. 4–7.

³⁵ Based on Kincaid, W., 'The United States: nuclear decision-making 1939–89', ed. R. C. Karp, SIPRI, *Security With Nuclear Weapons? Different Perspectives on National Security* (Oxford University Press: Oxford, 1991), pp. 21–56.

The initial decision to establish a nuclear weapon programme

Key to any nuclear weapon programme is a state's initial decision to establish one. Sagan developed three models for explaining why governments want to acquire a nuclear weapon capability: the security model, the domestic politics model and the norms model.³⁶

In the security model, a state can decide to build nuclear weapons to balance and deter attack by other states, especially nuclear-armed states. The security model was the principal justification given for weapon acquisition by all five acknowledged nuclear weapon states. However, since the US Administration of President George W. Bush developed doctrinal thinking for the pre-emptive use of nuclear weapons to attack and destroy emergent nuclear programmes or capabilities in other states or in the hands of non-state actors, it has become increasing less likely that an emerging nuclear weapon state would have the perspective that possessing a nuclear weapon capability can help deter existing nuclear weapon states from interfering in internal or regional affairs. As an alternative to acquiring its own nuclear capabilities, a state may seek to acquire a positive security assurance from a nuclear weapon state, that is, to seek shelter under the 'nuclear umbrella' of another state. Alternatively, a state may decide that its security and that of the international system is best served by forswearing the acquisition of nuclear weapons.

In the domestic model, the decision to acquire nuclear weapons may be a political tool to advance parochial domestic and bureaucratic interests.³⁷ Moreover, it is relevant to analyse the extent to which political leaders receive neutral and balanced advice from civilian and military staff. In states where political leaders are predominantly advised by military and security officials, it is possible that threat assessments supporting the decision to acquire nuclear weapons may be shaped in order to secure a larger budget for the military or to cater to other parochial military interests.³⁸

In a norms model, aspiring nuclear weapon states view nuclear weapons as a powerful symbol of status and modernity.³⁹ Norms and shared beliefs about a state's history and future may motivate governments to pursue a nuclear weapon capacity. Sagan calls this 'nuclear symbolism', that is the idea that having a nuclear weapon capacity symbolizes a strong, independent and modern state.⁴⁰

³⁶ Sagan, S., 'Why do states build nuclear weapons: three models in search of a bomb', *International Security*, vol. 21, no. 3 (winter 1996/1997), pp. 54–86.

³⁷ Sagan (note 36), pp. 54–87.

³⁸ See e.g. chapter 3 in this volume.

³⁹ See e.g. chapters 7, 8 and 9 in this volume.

⁴⁰ Sagan (note 36), p. 73.

In addition to Sagan's three explanations, a fourth explanation for a state's acquisition of nuclear weapons is that it can use a nuclear weapon programme or nuclear weapon possession as a bargaining chip in negotiations with other states and international institutions ('nuclear leverage'). For example, a state may agree to halt its nuclear weapon programme or give up its warheads in exchange for economic assistance or support for a peaceful nuclear energy programme.⁴¹

The development and evolution of nuclear weapon strategy

Nuclear weapon strategy is an issue of military means that is related to political ends.⁴² Nuclear strategy is a broad expression of the state's intentions and may be moderated by the scale of its nuclear capabilities, its sense of security, its commitment to international treaties and the interplay of various domestic actors. A state's nuclear strategy is generally consistent with its threat assessments, is derived from a state's broader national security strategy and is often connected to the capacities of its conventional forces. Although it is beyond the scope of this chapter to discuss the myriad aspects of nuclear strategy, the chapters in this volume focus on four aspects of nuclear strategy and domestic nuclear weapon governance: the adoption (or rejection) of a no-first-use policy; the provision of negative (or positive) security assurances to other states; the declaration (or not) of the 'nuclear threshold'; and the commitment (or not) to international treaties. The various chapters analyse to what extent these crucial decisions are taken by high-level national security and military officials and whether civilian leaders in the executive and legislature are willing and able to weigh in on the decision-making process related to nuclear strategy.⁴³

The acquisition and production of nuclear weapons

Nuclear weapons are highly complex and difficult to acquire and produce.⁴⁴ Governments maintaining their nuclear weapons and those seeking nuclear

⁴¹ North Korea appears to have succeeded in striking such bargains with the international community. Saunders, P., *Assessing North Korea's Nuclear Intentions* (Institute of International Studies: Monterey, CA, 2003); and British House of Commons, Foreign Affairs Committee, *Weapons of Mass Destruction: Report, Proceedings, Evidence and Appendices*, 'Minutes of evidence (4 Apr. 2000): memorandum submitted by Professor Robert O'Neill', 8th Report of Session 1999–2000 (The Stationery Office: London, 2000).

⁴² Freedman, L., 'The first two generations of nuclear strategists', ed. P. Paret, *Makers of Modern Strategy: From Machiavelli to the Nuclear Age* (Princeton University Press: Princeton, NJ, 1986), p. 759.

⁴³ Fred Kaplan saw the nuclear strategist Herman Kahn as the 'high priest of nuclear rationality'. Kaplan, F., *The Wizards of Armageddon* (Stanford University Press: Stanford, CA, 1991), p. 223.

⁴⁴ Although it is not extremely difficult to build a crude nuclear explosive device, it is another matter to render it operational, reliable and safe. Additionally, sub-national groups are allegedly able to build radiological bombs or 'dirty bomb' (i.e. radioactive material detonated by a conventional

weapons must mobilize resources from across society and possibly from abroad, including financial and research capacity, production facilities, managerial and technical expertise, and political will. Thus, a number of important considerations arise for governance during the acquisition and production of nuclear weapons, both for governments with ongoing nuclear weapon programmes and those first acquiring nuclear weapons. In addition to adopting strategy documents, laws and executive orders, political leaders in the executive and legislature may use budgetary control procedures to determine which types of weapon should or should not be researched and produced as well as which types should be taken out of production, stockpiled or decommissioned.

Safety measures are another means through which political bodies can govern the acquisition and production of nuclear weapons. For example, governments can opt to store their weapons unassembled or under the custody of a civilian agency, away from the military; although non-assembled nuclear weapons mean diminished readiness, it assists in the prevention of unauthorized or accidental use of nuclear weapons and other accidents.⁴⁵ Another safety-related issue concerns the stockpiling of small nuclear explosives, such as tactical weapons. This category of nuclear weapons is especially problematic from a control perspective because these weapons were produced in large quantities during the cold war, and they are small as well as comparatively portable and easier to smuggle out of a facility and a country.⁴⁶ Another aspect of decision making with regard to acquiring and producing nuclear weapons is the protection of the environment, the health of employees involved in nuclear programmes and of civilians living in the proximity of nuclear testing and production facilities. Public concerns and complaints about ongoing radioactive contamination and illnesses as a result of nuclear testing have been widely documented and may have an effect on how governments choose to acquire and produce nuclear weapons.⁴⁷

explosive). See e.g. 'First, take some uranium . . .', *The Independent*, 30 July 2003; and 'Al-Qaeda and the bomb', *Jane's Intelligence Digest*, 3 July 2003.

⁴⁵ The USA (until the mid-1950s) and the Soviet Union (until well into the 1960s) stored nuclear weapons in this way. Israel is presumed to store nuclear weapons in this manner. Feaver (note 7), p. 167; and British House of Commons (note 41), 'Memorandum submitted by Professor William Walker'.

⁴⁶ E.g. former Russian National Security Adviser Gen. Alexander Lebed claimed that 86 of 132 mini-nuclear bombs ('suitcase' bombs) in the Russian nuclear arsenal were unaccounted for, which was denied by President Vladimir Putin. See Ross, B., 'Portable terror: suitcase nukes raise concern', ABC News, 8 Nov. 2001; and Highfield, R., 'Security plea for Britain's atom sites', *Daily Telegraph*, 22 Sep. 2001.

⁴⁷ Problems with nuclear testing and production include the 1957 fire in the British Windscale (later renamed Sellafield) nuclear plant; the 1986 Soviet Chernobyl disaster in Ukraine; and radioactive contamination of the former Soviet nuclear test range in the Semipalatinsk region of Kazakhstan, where approximately 500 tests were conducted between 1949 and 1990.

The deployment and employment of nuclear weapons

Governance issues regarding the deployment and employment phases of the nuclear weapon cycle include establishing personnel management and security procedures and systems, developing secure and survivable command-and-control systems, providing and maintaining security for the nuclear force, selecting and assigning targets, and ongoing modernization of the nuclear weapon arsenal and associated procedures and doctrines.⁴⁸ The deployment and employment of nuclear weapons is about much more than who pushes ‘the button’. Rather, as the case studies of nuclear-armed states in this volume show, by ordering the use of nuclear weapons, a decision is transmitted through the chain of command, which includes various political and military levels, and is confirmed by multiple security measures. From a governance point of view, political leaders in the executive have to decide (a) whether they will pre-delegate nuclear authorization; (b) whether they will participate in the direct control over the (pre-)targeting of weapons; and (c) who will have control over the means of terminating a nuclear conflict. With regard to each of these decisions, political leaders need to consider whether they want to exert direct control or delegate the authority to others, typically to military echelons.

Concerning deployment and employment, as elaborated in chapter 2, political leaders face the so-called ‘always/never’ dilemma as it relates to command and control and efforts to prevent unauthorized or accidental use.⁴⁹ They would like nuclear weapons to always work when they want them to, but never work when they are not supposed to. On the one hand, political leaders want to be certain that, if necessary, a decision to launch nuclear weapons can be done quickly and reliably. This is especially the case if there are concerns that a nuclear arsenal could be endangered by a surprise attack or a decapitation strike that would disrupt command-and-control systems, the delivery systems or the warheads. This kind of nuclear readiness can be enhanced by various so-called positive control measures, such as (a) maintaining redundant communication networks; (b) protecting command-and-control communication against electromagnetic pulses; (c) protecting launch platforms and maintaining certain launch postures (e.g. bombers in the air, submarines on patrol); and (d) most importantly, pre-delegating authority from the political level to the military level.

On the other hand, political leaders would like to avoid the accidental and unauthorized use of nuclear weapons. Unauthorized use can be mitigated by negative control measures, such as (a) instituting physical and electronic protection of stored warheads and the command-and-control

⁴⁸ Kincade (note 35), p. 22.

⁴⁹ See also Feaver (note 17), pp. 12–28; and Feaver (note 7), pp. 163–68.

system; (b) requiring a ‘two-man’ rule (meaning that the positive action, or launch of a weapon, needs at least two individuals); (c) installing launch codes and locks on nuclear weapons (so-called permissive action links, PALs); (d) practising strict code management; (e) carefully selecting and monitoring associated personnel; (f) separating the warning system organization from command system organization; (g) holding nuclear weapons in stockpile only (the non-deployment of nuclear weapons); and (h) storing nuclear warheads under the responsibility of a special agency separate from the military.⁵⁰

V. Key actors in domestic nuclear weapon governance

Five key actors dominate the domestic governance of nuclear weapons: core security actors, the executive, the legislature, the judiciary and civil society. Those actors shape choices across the various aspects of a national nuclear weapon programme (see tables 1.3 and 1.4). Independent bodies (e.g. ombudsman institutions or human rights commissioners) are not discussed in this chapter as they play a relatively marginal role in nuclear weapon governance.

Core security actors

As mentioned above, the security sector includes a wide range of actors. In the case of nuclear weapons, the military is one of the most important actors responsible for implementing nuclear decisions, especially in the deployment and employment phases, although its influence in this and other phases varies from country to country. Various scholars have expressed concern about the possible negative effects of the complex and bureaucratic military organization as it relates to nuclear governance, in terms of common biases, inflexible routines and parochial interests.⁵¹ Unwritten rules and ‘work-arounds’ in large and complex organizations such as the military could lead to less-than-desirable organizational behaviour vis-à-vis nuclear weapons.⁵² However, commentators do not suggest that the military would wilfully disobey civilian authorities. Rather, they emphasize that large complex professional organizations may have their own dynamics because they pursue their own agenda, seek to protect their autonomy and defend their interests. This is a relevant issue for civilian control when, in the light of the post-cold war security environment,

⁵⁰ Feaver (note 17), p. 166; Sidhu, W. P. S. et al., *Nuclear Risk Reduction Measures in Southern Asia*, Report no. 26 (Stimson Center: Washington, DC, 1998); and Bracken (note 21), pp. 22–23.

⁵¹ E.g. Sagan and Waltz (note 9), p. 47; and Feaver (note 17).

⁵² Feaver (note 17), pp. 22–26.

Table 1.3. Possible roles of key actors in domestic nuclear weapon governance

Key actors	Possible governance roles
Core security actors (the military, specialized security agencies)	Implement security measures; maintain the separate storage of missiles and nuclear warheads; enforce strict recruitment rules on and selection tests of involved security personnel; and develop and control technologies and systems relevant to the safety and use of nuclear weapons
Executive	Embodies formal decision-making power at all stages of the nuclear weapon cycle; maintains the sole ability to change alert status; makes governmental decrees to institutionalize the national nuclear command authority bodies; carries a mobile command centre (e.g. 'nuclear football' or 'nuclear suitcase'); approves appointments of top commanders; has access to permissive action links and the requisite political release codes; and delegates authority to other political authority in case head of state is unable to make decisions and thus ensures the continuity of government
Legislature	Provides budgetary oversight of the nuclear weapon programme and procurement decisions; reviews and confirms the appointment of top officials; has access to classified information; debates various aspects of nuclear weapon programme; and conducts hearings and briefings in order to inform legislators
Judiciary	Rules in legal disputes between citizens and the government; rules in legal disputes between the government as employer and civil and military employees; rules in legal disputes between the executive and the legislature; interprets international treaty obligations
Civil society	Scrutinizes decisions and outcomes; provides the public with alternative information; mobilizes public opinion; and exercises pressure on executive and legislature

civilian authorities in many nuclear weapon states wish to reform and reduce their arsenals.

As mentioned above, a robust system of checks and balances includes, but is not limited to, a 'two-man rule', PALs and code management, aspects of nuclear weapons governance which are thought to be implemented by core security actors in all the current nuclear weapon states. Another element of the check and balances system is a distinction between the *de jure* control and *de facto* control of nuclear weapons.⁵³ The military has *de facto* (or physical control) if it is in charge of a specific operation (the actual use of nuclear weapons) or if the nuclear weapons are physically stored by the military itself. The military loses physical control if nuclear weapons are stockpiled by another specialized civilian security agency.

⁵³ Feaver (note 17), pp. 31, 36.

The executive

Although it is generally the head of state or government (president or prime minister) who ultimately decides on the use of nuclear weapons, executive control also encompasses a wide range of decisions in the entire nuclear weapon cycle. Furthermore, executive leaders decide the extent to which they wish to delegate various aspects of control to other actors at each phase of the cycle.

Feaver has categorized two types of command-and-control systems in the broader framework of civil–military relations: ‘delegative’ and ‘assertive’ control.⁵⁴ Delegative control favours military control and emphasizes protection against threats of decapitation and pre-emptive strikes, whereas assertive control favours executive control and emphasizes protection against accidental and unauthorized use. Nuclear command-and-control systems shift back and forth between delegative and assertive postures depending on the ‘time urgency quality’ of the nuclear arsenal and, more important for the subject at hand, the state of civil–military relations and domestic politics more generally. Countries with predictably stable civil–military relations and domestic situations, such as the USA, tend to favour delegative control. In contrast, other countries which may have a more volatile domestic politics or civil–military relations, such as Pakistan, tend to favour assertive control. However, volatile civil–military relations may make the establishment of assertive control impossible so, as a consequence, delegative control prevails, with potentially destabilizing effects.⁵⁵ Both strategies have problematic features. Delegative control presumes a clear delineation of political and military responsibilities, which is rather difficult because the use of nuclear weapons has consequences that go far beyond the battlefield. In contrast, assertive control is problematic in the case of a surprise or decapitation attack, in which the command-and-control possibilities of the executive are destroyed.

The legislature

The legislature can fulfil various functions in relation to security policy in general and nuclear weapons in particular. Depending on the range of powers that a legislature is accorded, it can adopt laws, exercise oversight, control budgets, represent the will of its constituents, ratify treaties and, in some systems, elect or depose governments.⁵⁶ A legislature’s capacity to

⁵⁴ Feaver (note 17), pp. 7–12, based on the US experience.

⁵⁵ Feaver (note 17); and Feaver (note 7).

⁵⁶ Born, H. (ed.), *Parliamentary Oversight of the Security Sector: Principles, Mechanisms and Practices*, Handbook for Parliamentarians no. 5 (Inter-Parliamentary Union/Centre for the Democratic Control of Armed Forces Geneva: Geneva, 2003).

Table 1.4. Key governance actors and their possible roles in the nuclear weapon cycle

Objects of governance		Strategy	Acquisition	Deployment and employment
Subjects of governance	Decision to acquire nuclear weapons			
Core security actors	Gives advice to executive	Develops and co-drafts new strategies	Specifies procurement needs; possibly provides stewardship over nuclear arsenal	Operationalizes command and control; possibly provides stewardship over nuclear arsenal
Executive	Takes decisions; takes initiative	Co-drafts and approves new strategies	Determines research, acquisition, production and stockpile	Authorizes use; determines command-and-control protocol
Legislature	Influences programme establishment through budget control; holds hearings; solicits independent opinion	Approves new strategies; ratifies international treaties	Influences procurement through budget control; solicits independent advice; conducts hearings; provides a forum for public debate	Approves laws as legal framework for command and control; approves declaration of war; controls the budget
Judiciary	Rules on the legality of nuclear weapon-related matters		Rules in (health) cases between government versus citizens and military–civil personnel	Settles legal disputes between government and citizens
Civil society	Applies pressure on government and political parties	Conducts independent research on strategy	Conducts independent research on new nuclear weapons	Applies pressure and conducts independent research on nuclear-related matters

fulfil these functions varies between political systems. Very little reference is made in the nuclear weapon literature to the role of the legislature in nuclear weapon states—and typically only in reference to the US Congress.

The right of the legislature to declare war and to terminate war activities is enshrined in the constitutions of most democratic states. However, in most countries, it is implicit that the executive has the power to respond to sudden attacks and to decide which weapon is appropriate in that response, including the use of nuclear weapons. A second important legislative power can be the ability to authorize the use of public funds for the procurement and deployment of nuclear weapons. Most decisions related to nuclear weapons have major financial implications. Especially important is the power to authorize the development or procurement of a new nuclear weapon capacity.⁵⁷ By using this power, parliaments may be able to block or approve research, production and stockpiling of specific types of nuclear weapons. Third, legislatures have, via their law-making powers, the ability to set up the legal and institutional framework for domestic governance of nuclear weapons. For example, a legislature may delineate the responsibilities of itself, the executive (president, prime minister and other ministers), senior military leaders and other relevant institutions in the governance of nuclear weapons. Additionally, some legislatures have the ability to improve the transparency of a nuclear weapon programme via freedom of information laws. Such laws are an important tool for accountability as exercised by journalists, academics and non-governmental organizations (NGOs) concerning nuclear weapons. A fourth way that legislatures can influence nuclear weapon governance is through their role in the ratification or non-ratification of international treaties on nuclear weapons that are signed by the executive leadership.

The capacity of a legislature to wield these powers is dependent in part on its members having access to sufficient information and possessing relevant expertise on nuclear weapon issues. The fact that secrecy laws—laws approved by legislatures in the first place—shield nuclear weapon programmes presents a formidable obstacle to legislatures. A second obstacle to effective legislative oversight is that nuclear weapons constitute a complex field of security policy, comprising complicated research, technology and strategy. In order to have access to independent expert opinions, some legislatures, such as the British Parliament and the US Congress, organize hearings and invite experts to give their opinion on pending issues.⁵⁸

Having powers, information and expertise are necessary but not sufficient elements for effective legislative oversight. A crucial element is the willingness and ability of the legislature to hold the executive to account.

⁵⁷ Chapters 2 and 3 in this volume examine this in detail.

⁵⁸ On the British Parliament's hearings on weapons of mass destruction see British House of Commons (note 41).

Due to party discipline, political constraints, traditional deference or general disinterest in security policy, legislatures may refrain from exercising oversight of the government's security policy.⁵⁹ For example, it was not until 1969, a quarter of a century after the USA had started its nuclear weapon programme, that the US Senate voted on a major aspect of nuclear weapon policy (a new anti-ballistic missile system which the executive branch sought).⁶⁰ In other instances, legislative bodies are extremely weak or merely symbolic bodies, and, even if populated with well-informed and expert individuals, they are unable to exercise substantive governance oversight on nuclear weapon issues.

The judiciary

As with legislative bodies, the role of judicial bodies regarding the governance of nuclear weapons varies widely depending on the country in question. Also, similar to the role of the legislature, very little has been written on the role of judicial bodies in the governance of nuclear weapons. In countries with stronger, more independent judiciaries, courts could play a governance role in at least five important areas: (a) mediating legal disputes between citizens and the government concerning, for example, freedom of information laws (citizens requesting the declassification of documents) or environmental or health problems arising from nuclear production or testing facilities; (b) mediating legal disputes between the government as an employer and its military or civilian employees involved in nuclear weapon programmes who, for example, have suffered radiation effects after testing of nuclear weapons; (c) ruling in cases related to illegal acts regarding nuclear weapons (e.g. the handing over of secret documents or nuclear weapon material illegally to third parties); (d) adjudicating disputes between the legislative and executive or other governmental bodies or levels (e.g. between the local and state level or between various government ministries); and (e) interpreting the country's commitments to international treaties and agreements regarding nuclear weapons.

Civil society

A strong civil society can have an important role in security sector governance. However, it is difficult for civil society—be it activist citizens, academics, NGOs or the media—to exert a strong influence on the governance of nuclear weapons. As is the case with legislators, members of civil society bodies have restricted access to information on nuclear weapons due to

⁵⁹ See Born (note 56).

⁶⁰ Freedman, L., *The Evolution of Nuclear Strategy* (Palgrave Macmillan: Houndmills, 2003), pp. 320–21.

secrecy laws, despite freedom of information laws in some countries. This is especially difficult if governments of nuclear weapon states pursue a strategy of nuclear ambiguity or opacity, that is, to deny that a nuclear weapon capability exists or to give little or no information about its intentions and capabilities.⁶¹ The combination of the veil of secrecy surrounding nuclear weapon programmes and the complexity of these weapons have led to serious doubts among scholars as to whether civil society can play a meaningful role in shaping nuclear weapon governance issues at all. According to Dahl, citizens have ‘abandoned’ decision making over nuclear weapons to a few specialists, a process that he calls ‘alienation of authority’ because so little public discussion takes place about the policy and future of nuclear weapons.⁶²

Nevertheless, the voice of civil society, especially in democratic nuclear weapon states, has been heard at important points. Anti-nuclear protest organizations raised their voices at the end of the 1970s against the deployment of the neutron bomb (an enhanced radiation weapon) and during the early 1980s against the decision by the North Atlantic Treaty Organization (NATO) to deploy nuclear cruise missiles and ballistic missiles in five European NATO states. The massive protests fostered an intellectual climate in which new think tanks and research institutes emerged, focusing on the risks and consequences of nuclear weapons. Eventually, these protests spilled over to the political mainstream since centre and left-wing political parties in particular could not ignore their appeals. While the direct influence of these protests was rather limited, the anti-nuclear movement indirectly illuminated various problems of nuclear weapons and helped to foster a political atmosphere more conducive to arms control.⁶³

Additionally, research institutes played a role in shaping government thinking on nuclear strategy, especially in the UK and the USA, where think tanks influence the public debate on nuclear weapon policy. It has been pointed out that the role of independent research institutes is facilitated when the ‘demarcation line’ between government and academics is not strict.⁶⁴ Occasionally, concerned nuclear scientists have called for the inclusion of the public in debates about the future of nuclear weapons.

VI. Linking governance actors and the nuclear weapon cycle

For a number of reasons, the role of the various domestic groups in the phases of the nuclear weapon cycle varies. First, the relative influence of

⁶¹ Freedman (note 60), p. 492. E.g. the British Government is generally unwilling to release information on strategic matters, while Israel denies that it has a nuclear weapon capacity. See chapters 4 and 7 in this volume.

⁶² Dahl (note 20), p. 3.

⁶³ Freedman (note 60), p. 381–83.

⁶⁴ Freedman (note 60), p. 492.

the executive, legislature and judiciary is dependent on the respective political system. Second, in times of crisis, the executive and the military would play critical roles in the deployment and possible use of nuclear weapons; immediate and effective legislative and public oversight would probably be marginal if not non-existent. Finally, and most importantly for this study, the influence of each actor may vary in each phase of the nuclear weapon cycle.

Key actors might play a range of roles across the different phases of the nuclear weapon cycle (see table 1.4 above). In most phases, the role of the executive or the core security actors is predominant, depending on the nature of civil–military relations and the related command-and-control arrangements. However, the legislature may be influential in those phases in which decisions are taken with major financial consequences, for example in the acquisition phase. Civil society may play a role in those phases in which government makes declaratory statements or is preparing to make changes in nuclear policy. The functions described in table 1.4 are merely indicative of the possible roles played by actors at each level of governance and in each phase of the nuclear weapon cycle.

The heuristic framework of analysis established in table 1.4 linking the key actors in domestic nuclear governance to the nuclear weapon cycle guides the eight country studies in this volume. Each of the chapters assesses the roles played by the various domestic actors in the governance of nuclear weapons in the country of study. In applying this framework, the chapters taken together produce a rich comparative and analytic tapestry about domestic nuclear governance and the current extent and future prospects for civilian control and democratic accountability of nuclear weapons in the eight states. In particular, the chapters provide deeper insights into who controls nuclear weapons, how and why. Furthermore, they assess the status and prospects for a meaningful role to be played by the military, specialized civilian agencies, the executive, legislature, judiciary and civil society. In this sense, the main argument of the book is that the software (i.e. governance) is as important as the hardware (the bomb) itself. The volume's concluding chapter outlines these comparative findings and analytic implications in detail. With increased knowledge of governance of the nuclear bomb, the international community can have greater expectations that nuclear weapons will never be used again and can continue to make progress towards the goal of nuclear disarmament.

About the authors

Dr Alexei Arbatov (Russia) is head of the Center for International Security of the Institute of World Economy and International Relations (IMEMO) of the Russian Academy of Sciences. He is also a scholar-in-residence at and co-chair of the Nonproliferation Program of the Carnegie Moscow Center. Dr Arbatov is vice-president of the Luxembourg Forum and is a member of the governing board of Stockholm International Peace Research Institute (SIPRI), the international advisory board of the Geneva Centre for the Democratic Control of Armed Forces (DCAF) and the board of the James Martin Center for Nonproliferation Studies of the Monterey Institute of International Studies.

Dr Hans Born (The Netherlands) is a senior fellow at the Geneva Centre for the Democratic Control of Armed Forces (DCAF). He has conducted policy studies in the area of human rights, accountability and security sector governance for the United Nations, the Organisation for Security and Co-operation in Europe, the Council of Europe and the European Parliament. In addition, he is a guest lecturer for the ETH Zurich Master of Advanced Studies on Security Policy and Crisis Management. Born received an MA degree in public administration from Twente University and a PhD in social sciences from the University of Tilburg.

Dr Zafar Iqbal Cheema (Pakistan) is a specialist in strategic studies, South Asian security, arms control and non-proliferation. He received his PhD in Indian nuclear strategy from the Department of War Studies of King's College, London, and holds a diploma in peace and conflict resolution from Uppsala University, an MSc in international relations from Quaid-i-Azam University, Islamabad, and an MA in political science from Punjab University, Lahore. Dr Cheema is former dean of the Faculty of Social Sciences, meritorious professor and chairperson of the Department of Defence and Strategic Studies at Quaid-i-Azam University.

Dr Avner Cohen (Israel) is a senior fellow at the James Martin Center for Nonproliferation Studies of the Monterey Institute of International Studies. Dr Cohen served as a public policy scholar at the Woodrow Wilson International Center for Scholars (2009–10) following a 10-year affiliation with the Center for International and Security Studies at the University of Maryland (CISSM). Dr Cohen was a senior fellow at the United States Institute of Peace (USIP) and co-director of the Project on Nuclear Arms

Control in the Middle East at the Security Studies Program at the Massachusetts Institute of Technology (MIT) from 1990 to 1995.

Dr Peter D. Feaver (United States) is a professor of political science and public policy at Duke University. He is director of the Triangle Institute for Security Studies (TISS) and of the Duke Program in American Grand Strategy. From June 2005 to July 2007 Feaver was on leave to be special advisor for Strategic Planning and Institutional Reform on the National Security Council Staff at the White House, where his responsibilities included the US security strategy, regional strategy reviews and other political–military issues. In 1993–94 Feaver served as director for Defense Policy and Arms Control on the National Security Council at the White House. Feaver received his PhD from Harvard University. He is author and co-author of several books on civil–military relations, nuclear weapons and the domestic politics of national security

Dr Bates Gill (United States) is director of Stockholm International Peace Research Institute (SIPRI). Prior to being named the SIPRI director in 2007, Gill held the Freeman Chair in China Studies at the Center for Strategic and International Studies in Washington, DC, from 2002. He has previously held positions at the Brookings Institution, where he was the inaugural director of the Center for Northeast Asian Policy Studies, and at the James Martin Center for Nonproliferation Studies of the Monterey Institute of International Studies. He is a member of the Council on Foreign Relations and the International Institute for Strategic Studies and has consulted for a number of multinational corporations and government agencies. Gill received his PhD in foreign affairs from the University of Virginia.

Dr Heiner Hänggi (Switzerland) is assistant director and head of research at the Geneva Centre for the Democratic Control of Armed Forces (DCAF). He is also an associate fellow at the Geneva Centre for Security Policy (GCSP) and an associate professor of political science at the University of St Gallen, where he teaches courses on security governance, Asia–Pacific security, and democracy and foreign policy. His recent research and publications focus on the concepts of security sector governance and security sector reform, and on the role of inter-regionalism in international relations. Most recently, he has been working with the United Nations and its member states on the development of a UN policy for security sector reform. Hänggi received his PhD in international affairs from the University of St Gallen.

Dr Evan S. Medeiros (United States) is director for China, Taiwan, and Mongolian Affairs at the US National Security Council. He was a senior political scientist at the RAND Corporation until August 2009. Dr Medeiros holds a PhD in international relations from the London School of Economics and Political Science, an MPhil in international relations from the University of Cambridge (where he was a Fulbright Scholar), an MA in China studies from the University of London's School of Oriental and African Studies (SOAS) and a BA in analytic philosophy from Bates College, Lewiston.

Jenny Nielsen (Denmark) is a political science and international relations PhD candidate at the University of Southampton. She holds a BA in international relations from the University of San Diego and an MSc in Global Politics from the University of Southampton.

Kristin Thompson Sharp (United States) was a graduate student in the Department of Political Science at Duke University at the time of this writing. Since 2006 she has served in a variety of national security positions in the US Senate. She is currently the legislative director in the Office of Senator Mark Pryor, a Democrat from Arkansas. She received her master's degree from Duke University in 2006.

Dr Waheguru Pal Singh Sidhu (India) is vice president of programmes at the East West Institute in New York and directs its Weapons of Mass Destruction programme. Prior to this he was director of the New Issues in Security course at the Geneva Centre for Security Policy (GCSP). Dr Sidhu has researched, written and taught extensively on the United Nations, disarmament, arms control and non-proliferation issues. His recent publications include *Arms Control after Iraq: Normative and Operational Challenges* (United Nations University, 2006) and *Kashmir: New Voices, New Approaches* (Lynne Rienner, 2006).

Dr John Simpson (United Kingdom) is professor of international relations at the University of Southampton. Simpson is a member of the Strategy Group of the James Martin Center for Nonproliferation Studies of the Monterey Institute of International Studies and the Royal Society's Committee on Scientific Aspects of International Security. Simpson was created an Officer of the Order of the British Empire (OBE) in 1999 for services to nuclear non-proliferation.

Dr Bruno Tertrais (France) is a senior research fellow at the Fondation pour la Recherche Stratégique (FRS). He graduated from the Institut d'études politiques de Paris (Sciences Po) in 1984. He holds an MA in

public law and a PhD in political science. His past positions include director of the Civilian Affairs Committee of the French NATO Assembly (1990–93), European affairs desk officer of the French Ministry of Defence (1993–95), visiting fellow at the RAND Corporation (1995–96) and special assistant to the director of Strategic Affairs of the French Ministry of Defence (1996–2001). He is a member of the International Institute for Strategic Studies and a member of the editorial board of the *Washington Quarterly*.

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