
Governing the Bomb
Civilian Control and Democratic
Accountability of Nuclear Weapons

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PEACE RESEARCH INSTITUTE**

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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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Contents

<i>Preface</i>	viii
<i>Abbreviations</i>	x
1. Introduction	1
HANS BORN, BATES GILL AND HEINER HÄNGGI	
I. Introduction	1
II. Studying domestic governance of nuclear weapons	2
III. The concept of security sector governance	8
IV. Security sector governance and nuclear weapons	11
V. Key actors in domestic nuclear weapon governance	17
VI. Linking governance actors and the nuclear weapon cycle	23
Table 1.1. Security-related state and non-state institutions and bodies	10
Table 1.2. A system of multilayered security sector governance	12
Table 1.3. Possible roles of key actors in domestic nuclear weapon governance	18
Table 1.4. Key governance actors and their possible roles in the nuclear weapon cycle	20
2. The United States	25
PETER D. FEAVER AND KRISTIN THOMPSON SHARP	
I. Introduction	25
II. Constitutional and political background	25
III. Nuclear strategy	30
IV. Nuclear force structure	37
V. Nuclear operations	42
VI. Conclusions	48
3. Russia	51
ALEXEI ARBATOV	
I. Introduction	51
II. Historical background of nuclear weapon control and policymaking	52
III. Nuclear governance since 1991	56
IV. Nuclear force structure and oversight	66
V. Contemporary policy and future policy alternatives	69
VI. Conclusions	74
4. The United Kingdom	77
JOHN SIMPSON AND JENNY NIELSEN	
I. Introduction	77
II. The United Kingdom and nuclear weapons	78

III. The structure and processes of British nuclear weapon governance	85
IV. International factors involved in the governance of British nuclear weapons	98
V. Conclusions	100
5. France	103
BRUNO TERTRAIS	
I. Introduction	103
II. The birth of the ‘nuclear monarchy’	104
III. The French nuclear ‘priesthood’	108
IV. The French national consensus	121
V. Conclusions	126
6. China	128
BATES GILL AND EVAN S. MEDEIROS	
I. Introduction	128
II. Key actors and their relations	129
III. Nuclear force structure and doctrine	134
IV. Assessing civilian control	138
V. Conclusions	150
7. Israel	152
AVNER COHEN	
I. Introduction	152
II. A brief history of Israeli civilian nuclear control	154
III. The political culture of nuclear opacity	158
IV. Auditing, oversight and accountability	165
V. Conclusions	168
8. India	171
WAHEGURU PAL SINGH SIDHU	
I. Introduction	171
II. Historical overview	172
III. Key actors	181
IV. Divided control and its limits	190
V. Conclusions	192
9. Pakistan	195
ZAFAR IQBAL CHEEMA	
I. Introduction	195
II. The South Asian security context	195
III. Nuclear posture, policy and doctrine	199
IV. Nuclear infrastructure	203
V. Civilian actors and nuclear decision making	211
VI. Conclusions	213

10. Conclusions	215
HANS BORN AND BATES GILL	
I. Introduction	215
II. Domestic nuclear weapon governance in possessor states	215
III. Comparing domestic nuclear weapon governance	224
IV. Findings and recommendations	227
Appendix A. World nuclear forces, 2010	234
Table A.1. World nuclear forces, January 2010	234
<i>About the authors</i>	235
<i>Index</i>	239

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.

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Index

- ABM Treaty (Anti-Ballistic Missile Treaty, 1972) 22, 31, 60
- Abolition 2000 network 122
- accidents 15, 16
- Ailleret, Charles 104, 118
- anti-nuclear protests 23, 94, 169, 227
- Arens, Moshe 158
- Argentina 7
- arms control:
- abandoned programmes 7–8
 - disarmament and non-proliferation 1, 2–3
 - regime type and 4–5
 - transparency and 233
 - treaties 99
 - see also specific countries and treaties*
- Arunachalam, V. S. 183, 190
- Australia Group 210
- Bade, Ramchandra 174
- BAE Systems 96, 98, 101
- Balladur, Edouard 116, 124
- Baluyevsky, Yury 65
- Bangladesh 196
- Beaufre, André 118
- Beg, Mirza Aslam 199
- Ben-Gurion, David 154–56, 158
- Bergmann, Ernst David 154
- Bhabha, Homi Jehangir 173, 174, 175, 176, 187
- Bhutto, Benazir 199
- Bhutto, President Zulfikar Ali 198, 223
- Blair, Tony 81, 82, 87
- border security 9
- British American Security Information Council (BASIC) 94–95
- British Nuclear Fuels Ltd 97
- Brodie, Bernard 118
- Brookings Institution 227
- Brown, Gordon 82, 92, 96
- Bush, President George W.:
- ballistic missile defence 35
 - ballistic missiles in Europe 66–67
 - COG programmes 46
 - nuclear alerting and 44
 - nuclear initiatives 68
 - nuclear strategy 32–33, 38, 39
 - pre-emptive strikes and 13
- Campaign for Nuclear Disarmament (CND) 94, 227
- Cao Gangchuan 132
- Carnegie Endowment for International Peace 227
- Carter, President Jimmy 31, 35
- Castex, Raoul 118
- CFE Treaty (1990) 55
- China:
- Central Military Commission 131, 132, 147, 149–50, 220, 225
 - civil society 130, 221
 - civilian control 130, 138–50
 - command and control 136–37, 146–50, 151, 225
 - Communist Party 220, 221
 - leadership 130–32
 - party–army relationship 129–30, 132, 133–34, 140
 - Standing Committee of Politburo 131, 132
 - conventional forces 69, 138
 - COSTIND 142, 145–46
 - CTBT debate 141–42, 221
 - Cultural Revolution 140, 142
 - democratic accountability 129–30, 150
 - four modernizations 144
 - Great Leap Forward 139
 - Indian relations 176, 178, 179, 184–85, 196
 - key actors 129–34
 - Korean War 132, 149
 - media 221
 - National People’s Congress 130, 221, 226, 231
 - NPT and 125
 - nuclear doctrine 137–38
 - evolution 141–43, 151
 - no-first-use 59, 137–38, 148–49
 - Russian de-targeting agreement 59–60
 - nuclear governance
 - assessment 150–51, 220–21, 229
 - scholarship 128–29
 - nuclear tests 141, 144, 169, 173, 175
 - nuclear weapon state 7, 196
 - nuclear weapons
 - components 135–36

- decision to develop 139–41
 - modernization 135–37
 - numbers 125
 - procurement choices 144–46
 - research and development 144–46
- one-party state 129, 229
- People's Liberation Army
 - leadership 132
 - nuclear role 129–30, 142–43, 151
 - party–army relationship 129–30, 132, 133–34, 140
 - Second Artillery Corps 142–43, 147, 148
- Revolution 133–34
- scientific community 132–33, 134, 141, 142, 143, 144, 145–46, 229, 230
- secrecy 128
- supreme command 138, 149, 150
- Taiwan Strait crisis (1954) 139, 149
- United States and 138
- Viet Nam invasion (1979) 149
- Chirac, President Jacques 110, 115–16, 124, 125
- civil society:
 - alienation of authority 6, 23
 - comparisons 226–27
 - meaning 226
 - nuclear governance and 18, 20, 22–23, 24
 - security sector governance and 9, 12
 - see also specific countries*
- Clinton, President Bill 32, 38
- code management:
 - France 113
 - robustness 17, 18
 - Russia 69
 - United States 46, 216
- command and control:
 - China 136–37, 146–50, 151, 225
 - comparative studies 5–6
 - key actors 224–25
 - delegative v. assertive 19
 - disruption 16
 - France 111–14, 219–20, 225
 - India 180–81, 190, 225
 - Israel 157–58, 169–70
 - mode of governance 9
 - Pakistan 19, 203–208, 211, 214, 225
 - Russia 58, 59, 69, 73–75, 75, 225
 - security sector governance and 6–8
 - United Kingdom 84–86
 - United States 19, 42–48, 225
 - wider issues 228
- continuity of government (COG) 18, 43, 45–46
- CTBT (Comprehensive Nuclear-Test-Ban Treaty, 1996):
 - China and 141–42, 221
 - French policy 125
 - India and 182
 - UK policy and 99
 - US Senate ratification 34
- customs authorities 9
- Czech Republic, US missiles in 66–67
- Dahl, Robert 6, 23, 169, 227
- Dayan, Moshe 155
- De Gaulle, President Charles:
 - five-year defence plans 116
 - institutions 103, 118
 - legacy 123
 - Manhattan Project and 104
 - military and 106–107
 - Mitterand and 122
 - nuclear programme 107–108, 121, 220
- democracy:
 - accountability 7
 - alienation of authority 6, 23
 - democratization process 5
 - denuclearization and 4–5
 - good governance and 9, 11
 - nuclear governance and 228–29, 230–31
 - nuclear guardianship and 6
 - nuclear paradox 169
 - see also specific countries*
- Deng Xiaoping 131, 133–34, 142, 144, 150
- deployment of nuclear weapons 16–17
- Desai, Morarji 176
- Ding Henggao 132
- Dostrovsky, Israel 156
- Drell Report (1990) 47
- Eisenhower, President Dwight D. 35, 40, 45
- emerging powers, use of WMDs 4
- environmental protection 15
- Eshkol, Levi 156, 158–59
- European Union 93, 120, 127
- executive:
 - comparisons 225
 - legislative oversight 21–22
 - nuclear governance 18, 19, 20, 24
 - see also specific countries*
- Falk, Richard 169
- Feaver, Peter 19

- Feinstein, Lee 5
- fire resistant pits (FRPs) 47
- first-use policies 14, 59, 83, 136, 137–38, 148, 171, 177, 180, 182, 190, 200, 202, 223, 229
- For Mother Earth 94
- France:
- Algerian War 121
 - arms control 110, 125–26, 229
 - Areva 123
 - Atomic Energy Commission 104–105, 110, 118
 - CEMA (Chef d'état-major des armées, chief of the defence staff) 107, 112, 113, 115
 - CEMP (Chef d'état-major particulier, chief of the president's military staff) 109, 112, 115
 - civil society 122–24, 220
 - code management 113
 - COFN Centre (opérationnel des forces nucléaires, joint operational centre) 112, 113
 - command and control 111–14, 219–20, 225
 - Constitution 103, 108, 114, 220
 - Constitutional Council 119
 - CTBT and 125
 - DAS (Délégation aux affaires stratégiques, Policy Division) 114, 115, 116
 - Defence and National Security Council 109–10, 112, 114, 219–20, 225
 - defence plans 116
 - GSAN (Gendarmerie de sécurité des armements nucléaires) 113–14
 - Institute for Higher Defence Studies 119
 - International Criminal Court and 121
 - international law and 120–21, 127
 - judicial challenges 119–21, 226
 - legislature 114, 116, 116–17, 220, 225
 - media 118–19, 220
 - military role 106–107, 109, 114, 126
 - national nuclear consensus 121–26
 - NATO and 105, 106, 107, 121, 123, 126
 - NPT and 229
 - nuclear bureaucracy 104–106
 - nuclear governance
 - assessment 126–27, 219–20
 - overview 108–21
 - nuclear history 104–108
 - nuclear politics 106–108, 121–22
 - nuclear tests 120, 124, 169
 - nuclear weapon state 7, 196
 - nuclear weapons
 - components 111
 - modernity and 104
 - numbers 125
 - origins 104–108
 - status symbols 106, 108, 123, 126
 - warhead security 113–14
 - Nuclear Weapons Council 110
 - peace movement 122–23
 - policymaking 114–16
 - policy reviews 124–26
 - president
 - direct election 103
 - dominance 108–10, 114–16, 219, 229
 - line of succession 111–12
 - prime ministers 114, 115–16
 - public opinion 122–23
 - RAMSES 113
 - scientific community 110, 114, 117–18
 - secrecy 115, 117, 123
 - SGDN (Secrétariat général de la défense nationale, General Secretariat for National Defence) 109–10
 - State Council 119
 - Suez crisis (1956) 105
 - SYDEREC 113
 - UN speeches 123
 - US relations 106
- freedom of information laws 21, 22, 85–86, 90, 92, 100
- Gaillard, Félix 106
- Gallois, Pierre-Marie 118
- Gandhi, Indira 176–77, 181, 189
- Gandhi, Rajiv 177, 181, 189
- Gates, Robert 39
- Gates, Thomas 45
- gendarmeries 9, 10
- Geneva Conventions, Protocol I (1977) 121
- Germany 7
- Giraud, André 116
- Giscard d'Estaing, President Valéry 110, 121
- Gorbachev, President Mikhail 54, 55, 61, 68, 74
- governance:
 - concept 8–9
 - modes 9
 - multi-level 8
 - political and nuclear 228–29
 - security sector governance 6–17
- Gowda, H. D. Deve 182

- Greenpeace 122
 Guillaumat, Pierre 104–105, 107–108
 Gulf War (1991) 123, 158
 Guo Boxiong 131, 132
- He Long 132
 health and safety 15
 Hiroshima, atomic bombing of 50
 HMS *Dreadnought* 79
 Hoodbouy, Pervez 213
 Hoon, Geoffrey 80, 83
 Hu Jintao, President 131–32, 134, 143, 147, 150, 220
 human security 8
 Huntington, Samuel 11
- India:
 academic community 188
 Bharatiya Janata Party (BJP) 174, 178, 182–83, 186, 189
 Atomic Energy Act 171, 173
 Atomic Energy Commission 172, 174, 183
 Chinese relations 176, 178, 179, 184–85, 196
 civil society 188–89, 223
 command and control 180–81, 190, 225
 CTBT and 182
 de facto nuclear weapon state 7, 171, 195
 democratic accountability 5, 172, 194
 divided control 171, 190, 192–94, 223
 DRDO 181, 183
 executive control 171
 Nehru era 174–75
 politics 181–83
 Executive Council 180–81
 IAEA and 191–92
 IGMDP 176–77, 183
 India–Pakistan agreements 190–91
 India–Pakistan War (1965) 175
 India–Pakistan War (1971) 196, 198
 India–USA CNCI 191–92
 international agreements 190–92
 Jan Sangh Party 174, 186, 187
 judicial oversight 171, 194
 Kargil crisis (1999) 180
 Kashmir dispute 175, 180, 197, 198
 key actors 181–89
 MTCR and 184
 media 188
 military control 171, 184–86, 193
 minimum credible deterrence phase 178–81
 non-weaponized deterrence 196–97
 NPT and 178n34, 183, 196
 NSAB 179–80, 193
 Nuclear Command Authority, Political Council 171, 180–81, 225
 nuclear governance, assessment 192–94, 222–23
 nuclear history 173–81, 196
 nuclear posture 179–80, 190, 193, 202, 223
 nuclear tests 171, 176, 177, 178, 181, 182, 189, 196, 198, 199
 nuclear weapons as status symbols 183
 Operation Brasstacks 197
 Operation Parakram 180, 192
 Pakistan, relations with 177, 178, 179, 185, 195–98, 200, 202
 parliamentary oversight 171, 174, 175, 178, 186–88, 192, 223
 permissive action links (PALs) 181, 192
 politics of nuclear weapons 181–83
 Project Ploughshare 175n19
 public opinion 176, 178, 182, 189, 223
 recessed deterrence phase 177–78
 scholarship of nuclear weapons 172
 scientific community 171, 183–84, 223, 229
 secrecy 173–74
 security context 230
 SNEP 173, 175
 space programme 183
 Strategic Forces Command 180–81
 terrorism from Pakistan 180, 197
 Trombay plant 173
 un-weaponized phase 176–77
 weapon option phase 173–76
- INF Treaty (Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles, 1987) 55
 insensitive high explosives (IHEs) 47
 intelligence services 9, 10
 International Association of Physicians for the Prevention of Nuclear War 122
 International Atomic Energy Agency (IAEA):
 India and 191–92
 Israel and 159, 222
 Pakistan and 196, 209
 on world-wide nuclear capacities 3
 International Court of Justice:
 French nuclear testing 120
 nuclear weapons opinion 84, 93, 94, 120–21

- International Criminal Court 121
international customary law 93
international relations, effect of nuclear weapons on 4
Iran 7, 67
Iraq 7, 57, 83, 90
Israel:
 acquisition of nuclear weapons 152, 221
 arms control and 153, 221, 229
 auditing and oversight 165–68
 censorship 160–63
 civil society 159, 163–64
 civilian nuclear control, history 154–58
 command and control 157–58, 169–70
 de facto nuclear weapon state 7, 195
 democratic accountability
 concepts 170
 history 155–56
 mechanisms 158
 Directorate for Special Means 158
 IAEA and 159, 222
 Israel Atomic Energy Commission 154,
 156–57, 161, 165
 judiciary 162, 164, 226
 Knesset 155, 158, 165, 166, 167, 222, 226
 MALMAB 157, 161
 media 161, 162–65
 military, by-passing 154–55
 Negev Nuclear Research Center 152,
 157, 158, 159
 NPT and 153, 221
 nuclear complex 156–57
 nuclear governance, assessment 168–70,
 221–22
 nuclear opacity 222, 225
 meaning 152–53
 political culture 158–65
 rationale 169
 secrecy mechanisms 156–57, 222
 social taboo 163–65
 Office of the Military Censor 160–61,
 162
 permissive action links (PALs) 158
 security strategy 159–60, 230
 Soreq Nuclear Research Center 157, 159
 State Comptroller's Office 166–67, 168,
 221
 tacit popular support 153, 159
 United States and 153
Ivanov, Sergei 63, 65, 66
Jiang Zemin 131, 143
Jing Zhiyuan 132, 143
Johnson, President Lyndon B. 38
Jospin, Lionel 116, 120, 124
judiciary:
 comparisons 226
 independence 22
 nuclear governance and 20, 22
 security sector governance and 10, 12
 see also specific countries
Juppé, Alain 124
Kalam, A. P. J. Abdul 183, 184
Khan Research Laboratories (Kahuta
 Research Laboratories, KRL) 205, 208,
 210
Kargil crisis (1999) 180, 197
Kashmir 175, 180, 197, 198
Kennedy, President John 30, 35, 37, 45
Khan, Abdul Qadeer 3, 208, 213, 224
Khan, Ghulam Ishaq 199
Khan, President Ayub 198
Khan network 3, 213n70
Kidder Report (1991) 47
Kidwai, Khalid 201, 202, 208
Korea, North 7
Korean War 35, 132, 149
Kudelina, Liubov 63
Kvashnin, Anatoly 62, 63, 65
legislatures:
 comparisons 225–26
 executive accountability to 21–22
 financial powers 21
 key governance actors 12
 nuclear governance and 19–22, 24
 ratification of treaties 21
 war declarations 21
 see also specific countries
Libya 7
Liu Huaqing 132
Liu Shaoqi 133–34
Lloyd, Tony 83
Lockheed Martin 97
McNamara, Robert 30
Maire, Edmond 103n2
Mao Zedong, President 131, 132, 133–34,
 139, 140, 141–42, 144, 149, 150
Mardor, Munya 156
media:
 China 221
 France 118–19, 220
 India 188
 Israel 161, 162–65

- Pakistan 213
- Russia 70–71, 72
- security sector governance and 5, 9, 12, 22
- United Kingdom 96
- United States 29
- Medvedev, President Dmitry 39, 67, 75, 76
- Mendès-France, Pierre 105
- Menon, V. K. Krishna 175
- Meridor, Dan 168
- Mian, Zia 213
- military, nuclear governance and 17–18, 20, 24
 - see also specific countries*
- Missile Technology Control Regime (MTCR) 184, 210
- Mitterrand, President François 110, 113, 116, 122, 124
- modernity, nuclear weapons and 13, 104
- Mollet, Guy 105
- Montesquieu, Charles de 230
- Moscow Treaty *see* SORT
- Müller, Harald 5
- Musharaff, President Pervez 200, 201, 203, 204, 208

- Nagasaki, atomic bombing of 50
- Nassau Agreement (1962) 79
- NATO (North Atlantic Treaty Organization):
 - conventional superiority 68
 - deployment of missiles in Europe 23, 227
 - France and 105, 106, 107, 121, 123, 126
 - Nuclear Planning Group 84
 - peace protests and 227
 - SACEUR 77, 79, 83, 84, 101, 218
 - strategy debates 30, 32
 - UK and 77, 82, 83, 84, 94, 218
 - Yugoslavia 57
- Nayyar, A. H. 213
- Nehru, Jawaharlal 173–75, 196
- Netanyahu, Benjamin 168
- Nie Rongzhen 132, 139, 140n36
- Nixon, President Richard 38
- non-state actors *see* civil society
- North Korea 7
- Norway, Russian incident (1995) 59
- Norwegian Radiological Protection Authority 95
- NPT (Non-Proliferation Treaty, 1968):
 - China and 125
 - Clinton and 32
 - control of nuclear weapons 101, 215
 - disarmament v. non-proliferation 1
 - France and 125, 229
 - indefinite extension 215
 - India and 178n34, 183, 196, 222
 - Israel and 153, 169, 222
 - nuclear weapon states 7, 196
 - Pakistan and 196, 223
 - United Kingdom and 99–100
 - United States and 32
- nuclear disarmament *see* arms control
- nuclear governance:
 - acquisition and production of weapons 14–15, 229–31
 - actors 17–23, 224–28
 - alienation of authority 6, 23
 - case studies 7–8
 - comparisons 224–28
 - de jure and de facto control 18
 - democratic deficit 230–31
 - deployment and use 16–17
 - good governance, strengthening 231–33
 - good practice 3
 - greater scrutiny and transparency 227–29
 - initial decisions 13–14, 229–31
 - domestic politics model 13
 - norms model 13
 - nuclear leverage 14
 - security model 13
 - reasons for studying 3–4
 - recommendations 227–33
 - regime type and 4–5, 228–29
 - research approaches 4–8, 168–69
 - scope 6, 11–17
 - strategy development 14
- nuclear leverage 14
- nuclear non-proliferation *see* arms control; NPT
- Nuclear Suppliers Group 191, 210
- nuclear thresholds 14
- nuclear weapon states 7, 196
- nuclear weapons:
 - acquisition and production 14–15
 - cycle 23–24
 - deployment 16–17
 - governance *see* nuclear governance
 - ICJ opinion 84, 93, 94
 - initial decisions 13–14
 - renouncing 4, 7–8
 - security sector governance and 11–17
 - status symbols 13, 106, 108, 123, 126, 183, 196

- storage 17
- strategic changes 14
- threat levels 3, 5
- use 16–17
- world-wide capacities 3
- see also specific countries*

- Obama, President Barack 1, 33–34, 39, 41, 67, 75
- Organisation for Economic Co-operation and Development (OECD) 10, 12

- Pakistan:
 - anti-nuclear activists 213
 - civil society 213, 224
 - civilian control 204, 211, 214
 - command and control 19, 203–208, 211, 214, 225
 - Constitution (1973) 212
 - conventional forces 202
 - de facto nuclear weapon state 7, 195
 - democratic accountability 5
 - Development Control Committee 204, 206
 - Employment Control Committee 204, 204–205
 - executive role 211–12
 - Export Control Act (2004) 209–11, 212–13
 - IAEA and 196, 209
 - India–Pakistan agreements 190–91
 - India–Pakistan War (1965) 175
 - India–Pakistan War (1971) 196, 198
 - Indian relations 177, 178, 179, 185, 195–98, 200, 202
 - Kargil crisis (1999) 180, 197
 - Kashmir dispute 175, 180, 197, 198
 - martial law (1977) 211
 - media 213
 - military role 198–99, 203, 204, 205, 206, 207–208, 212, 214
 - military rule 211
 - minimum credible deterrence 200–201
 - National Command Authority 203–204, 206, 208, 223
 - National Nuclear Command Committee 203
 - National Security Council 203
 - non-weaponized deterrence 196–97
 - NPT and 223
 - nuclear authorization 207–208
 - nuclear governance, assessment 213–14, 223–24
 - nuclear history 198–99
 - nuclear infrastructure 203–11
 - nuclear posture 199–203
 - nuclear safety framework 208–209
 - nuclear tests 178, 196
 - nuclear use doctrine 202–203
 - nuclear weapons, control 207
 - PAEC (Pakistan Atomic Energy Commission) 205, 208, 210
 - Pakistan Nuclear Regulatory Authority 209
 - parliamentary role 203–204, 212–13, 224, 225, 226, 231
 - peace movement 213
 - public opinion 213
 - regime type 229
 - scientific community 213, 224, 229
 - South Asian security context 195–99, 230
 - Strategic Forces Command 206, 207
 - Strategic Plans Division 201, 204–205, 206, 207
 - terrorism in India 180, 197
- Panikkar, Kavalam Madhava 188
- paramilitary forces 9, 10
- Pax Christi 122
- Peng Dehuai 132
- Peres, Shimon 154, 156
- permissive action links (PALs) 17, 18, 46, 47, 158, 181, 190, 192, 225
- Pléven, René 105
- Poirier, Lucien 118
- Poland, US missiles in 66–67, 68
- Primakov, Yevgeny 57
- protests 23, 94, 169, 227
- Pugwash 95
- Putin, President Vladimir 62–66, 68, 75
- Pym, Francis 89

- Qian Shaojun 132

- RAND Corporation 35, 227
- Rao, P. V. Narasimha 182
- Reagan, President Ronald 31, 34, 35, 36, 45
- regime types:
 - denuclearization and 4–5
 - nuclear governance and 4, 228–29
- research institutes 23, 51, 54, 226, 227
- Rocard, Michel 123
- Russia:
 - 1991 putsch 74
 - 1998 financial crisis 62
 - 2008 economic crisis 66

- academic community 71
- arms control
 - 21st century 64
 - ABM Treaty 60
 - effect on transparency 233
 - executive v legislative positions 57–58, 60
 - New START Treaty 67
 - revival 67, 75, 76
 - SORT 64, 66
 - START I implementation 58
 - START II 60, 64
 - START III 60, 64
- Chechen wars 62
- civil society 51, 56, 72
- civilian expertise 51, 61–62, 65, 75
- code management 69
- command and control 58, 59, 69, 73–74, 75, 225
- Constitution (1993) 56, 57
- conventional forces 69, 138
- corruption 58
- democratic deficiency 62, 64–66, 74–75, 76, 217
- executive role 51, 217
 - Putin era 62–66
 - Yeltsin era 56–62
- judiciary 71, 226
- Kazbeck system 59, 73–74, 75
- KGB 62
- legislature
 - assertion of authority 61–62
 - Defence Law (2004) 65
 - nuclear authorization and 74
 - nuclear planning 60–61, 70–71
 - ratification of START II 60
 - weakness 51, 57, 65–66, 218, 231
- media 70–71, 72
- military
 - budgets 62, 66, 70
 - dominance 69–70, 75, 217
 - expertise 65
 - modernizing 65
 - no-first-use policy and 59
 - nuclear strategy 72–73
 - Putin era 62–63
 - rivalries 62
- National Security Strategy 72
- nuclear alert (1995) 59
- nuclear briefcase 59, 73
- nuclear governance 229
 - assessment 74–76, 217–18
 - contemporary position 69–74
 - divide and rule 56
 - post-1991 56–66
 - Putin era 62–66
 - Soviet era 52–56
 - Yeltsin era 56–62
- nuclear posture
 - 1982 no-first-use 59
 - 1993 Guidelines 58–59
 - Bush policy and 66–67
 - civilian oversight 70–71
 - contemporary process 71–73
 - de-targeting agreements 59–60
 - designed level of damage 72
 - minimal sufficiency 63
 - Obama and 75
 - parity 56, 63
 - Putin 64–65
 - strategic stability 61, 64
 - targeting 61, 72
 - triad 66
 - UN speeches 123
 - Yeltsin declaration (1992) 59
- nuclear weapon state 7, 196
- nuclear weapons
 - 21st century downgrading 63, 64, 218
 - 1990s programmes 58, 61
 - budgets 63
 - contemporary development 69–71
 - ICBMs 55, 61, 63, 64–65, 67, 68
 - negative control 69
 - numbers 125
 - physical control 69, 217–18
 - research and development 66
 - SLBMs 55, 61, 67, 68
 - structure 66–69
 - Rosatom 70
 - secrecy 56–57, 70, 74–75
 - see also* Soviet Union
- 11 September, terrorist attacks on the USA 33, 207
- safety measures 15
- Sagan, Scott 4, 13
- SALT I (Strategic Arms Limitation Talks) 53, 54
- Sarkozy, President Nicolas 110, 123, 125, 126
- Sattar, Abdul 201
- Schlesinger, James 31
- Schnitzer, Meir 162, 164n45
- Scott Report (1996) 90
- secrecy 4, 5, 23
 - see also specific countries*

- security:
 apparatus 9
 assurances 14
 concepts 8
- security sector governance:
 command and control and 6–8
 concept 8–11
 major actors 9–10
 multi-level 12
 nuclear weapons and 11–17
- SERCO 97
- Serdyukov, Anatoly 66
- Sergeyev, Igor 60, 61, 62, 63
- Sharon, Ariel 167
- Sharif, Mohammad Nawaz 199, 200–201
- Shastri, Lal Bahadur 175–76, 187
- Shevardnadze, Eduard 54–55
- Singh, Jaswant 182
- Slaughter, Anne-Marie 5
- Slocombe, Walter 6
- soft governance 9
- SORT (Strategic Offensive Reductions Treaty, 2002) 39, 44, 64, 66
- South Africa 7
- South Asian Strategic Stability Institute 210
- Soviet Union:
 arms control 53, 54, 55
 arms race 39, 228
 Defence Council 52–53
 Glavpur 53
 Gorbachev era 54–56
 KGB 53
 military–political leadership 52
 Minatom 53
 nuclear posture
 1982 no-first-use 59
 cold war 138
 parity with USA 56, 63
 pre-1990 shift 54–56
 process 53–54
 nuclear war scenarios 54
 nuclear weapons
 atomic bomb 52
 categories 55
 economic effect 55–56
 Piaterka (the Five) 53
 Politburo 52
 preparation for nuclear war 43–44
 shifting paradigm 54–56
 Soviet paradigm 52–56
 Sputnik 105
see also Russia
- Sputnik 105
- START I (Strategic Arms Reduction Treaty, 1991) 32, 54, 55, 58, 66
- START II (1993) 57, 60, 64
- START III 60, 64
- START, New (New START Treaty, 2010) 1, 39, 67
- status symbols 13, 106, 108, 123, 126, 183, 196
- Suez crisis (1956) 105
- Sundarji, Krishnaswami 185
- Taiwan Strait crisis (1954) 139, 149
- think tanks 23, 35, 96, 227
- Truman, President Harry S. 45
- two-man rule 17, 18
- Ukraine 58
- Ullah, Anayat 213
- United Kingdom:
 30-year rule 85, 92
 air-missile attacks on Iraq 57
 Aldermaston AWE 95, 96–98, 101
 arms control 82, 99–100
 civil service 87–88
 civil society 93–96, 100–101, 219
 Campaign for Nuclear Disarmament (CND) 94, 227
 command and control 84–85, 101
 constitutional framework 77, 86–87, 93, 226
 decision-making process 86
 defence industry 96–98, 101
 democratic accountability 77, 86, 100–102
 executive powers 87–88, 219
 For Mother Earth 94
 freedom of information 85–86, 90, 92, 100
 House of Commons Defence Select Committee 79, 83, 86, 89, 90, 101
 international agreements 98–100
 Iraq and 83
 judiciary 92–93, 226
 media 96
 ministerial responsibility 90
 Nassau Agreement (1962) 79
 NATO and 77, 82, 83, 84, 94, 218
 nuclear governance
 assessment 100–102, 218–19
 overview 85–98
 nuclear posture 83–84
 nuclear weapon state 7, 196

- nuclear weapons
 - Chevaline 79, 86, 96
 - current capabilities 80–82
 - end of cold war 80
 - history 78–80
 - numbers 125
 - origins 104
 - Polaris 79, 80, 85, 86
 - Trident 79, 80, 81, 85, 86, 93, 96, 97, 98, 100–101
 - US dependence 77, 79, 86
 - US weaponry 78, 79, 82
- Official Secrets Act 92
- Parliament 225
 - Chevaline and 79, 86, 89
 - expert advice 21
 - influence on policy 232
 - powers 88–90, 219
 - Trident 89–90
 - Trident replacement 81–82, 86, 90, 101
- Public Accounts Committee 89, 90, 101, 219
- Royal Aircraft Establishment 96
- Russian de-targeting agreement 59–60
- secrecy 86, 89, 90–93, 100–102, 174, 219
- Strategic Defence Review (1998) 80, 95
- think tanks 23, 96
- US mutual defence agreements 78–79, 95, 98, 218
- US relationship 77, 98–99
- United Nations:
 - Security Council Resolution 984 83
 - Security Council Resolution 1540 210
 - Security Council Resolution 1887 82
 - self-defence 120
- United States:
 - air-missile attacks on Iraq 57
 - alienation of authority 6
 - arms control
 - CTBT and 99
 - loss of interest 64
 - negotiations 31, 32, 36, 41
 - revival 67, 75
 - SORT 64, 66
 - see also* START I, II, III and New START
 - arms race 39, 228
 - assessment of nuclear governance 48–50, 215–17
 - Atomic Energy Commission 27
 - ballistic missile defense 38
 - China and 138
 - estimate of nuclear forces 136
 - no-first-use policy 137–38
 - Taiwan Strait crisis (1954) 139
- civil society 29, 35–36, 217
- civilian control 216
- command and control 19, 42–48, 225
- Congress
 - ABM system and 22
 - budget control powers 27–28, 230
 - defence responsibilities 26
 - expert advice 21
 - funding powers 28
 - House International Relations Committee 27
 - influence on policy 232
 - nuclear doctrine and 231
 - nuclear force structure and 40–42
 - oversight 24, 27–29, 216, 226, 230
 - reassertion of authority 48–49
 - Senate Foreign Relations Committee 27
 - succession line 47, 48
- Congressional Budget Office 29
- Congressional Research Service 29
- Constitution
 - framework 25–29
 - line of succession 47, 48
- decision makers 39–42
- decline in nuclear expertise 37
- DEFCON system 44
- democratic accountability 34–37, 217, 228, 231
- Department of Energy 27
- executive control 24, 26–27, 34–35, 216, 231
- French relations 106
- Government Accountability Office 29
- government agencies 29
- India–USA CNCI 191–92
- inter-service rivalry 40
- Israel and 153
- judiciary 26n2
- Manhattan Project 42, 49, 104
- media 29
- military-industrial complex 40
- military role 24, 216
- Missile Defense Agency 39
- missile gap 35, 40
- Nassau Agreement (1962) 79
- National Nuclear Security Administration 27
- National Policy Office 45
- national security advisor 26

- National Security Council 26, 216
- nuclear authorization 45–48
 - code management 46, 216
 - continuity of government 45–46
 - delegation of authority 47
 - devolution of command 47–48
 - ENDS devices 46–47
 - line of succession 47
 - PALs 46, 47
 - pre-delegation 47–48
- nuclear debates 50
- nuclear operations
 - accidents 49–50
 - alerting 43–44
 - authorization 45–48
 - overview 42–48
 - preparation for nuclear war 43–44
 - public awareness 43
 - secrecy 43
 - targeting 44–45
- Nuclear Posture Review 28, 33, 34, 138
- nuclear strategy 229
 - assured destruction 30–31, 36
 - democracy and 34–37
 - disarmament 33–34
 - diversity 36
 - Europe 31–32, 66–67
 - flexible response 30–31
 - massive retaliation 30
 - NSDD-13 31
 - PD-59 31
 - post-September 11 33
 - post-war history 30–34, 30–37
 - triad doctrine 32, 37
 - WMD policy 32
- nuclear taboo 48
- nuclear tests 144
- nuclear weapon state 7, 196
- nuclear weapons
 - budget 42
 - bunker busters 41
 - components in UK 78, 79, 82
 - costs 50
 - custody and control 46–48, 216
 - numbers 125
 - overview 37–42
 - types 37–39
- public opinion 41
- research and development 38, 41
- RRW programme 41
- Russian de-targeting agreement 59–60
- Safeguard Programme 38, 40
- SDI 38
- secrecy 36–37, 174
 - black budgets 41–42
 - Manhattan Project 49
 - nuclear operations 43
 - trend 24, 49
- Sentinel programme 40
- SIOP 45
- Strategic Air Command 44
- terrorism 33, 207
- think tanks 23, 35, 41
- UK mutual defence agreements 78–79, 95, 98, 218
- UK relations 77, 98–100
- war games 45
- use of nuclear weapons 16–17

- Vajpayee, Atal Bihari 178, 179, 181–82, 186
- Vanunu, Mordechai 152
- VERTIC 95
- Viet Nam 149

- Waltz, Kenneth 4
- Wilson, Harold 94

- Xu Caihou 131, 132, 143

- Yazov, Dmitry 74
- Yeltsin, President Boris 56–62, 68

- Zardari, President Asif Ali 204
- Zhang Aiping 132
- Zhou Enlai 133–34
- Zia ul-Haq, President Mohammad 199