Nuclear Governance and Legislation in Four Nuclear-Armed Democracies: A Comparative Study[1]

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Introduction

This comparative study reflects a decade-long interest of the project's director— both as a scholar and as a citizen— in the problem of the governance of the atom. The problem was recognized at the dawn of the nuclear age, hand in hand with the birth of the bomb itself. If the bomb was so unique, then so must be its governance. Controlling the bomb required extraordinary security measures (especially secrecy) that were unprecedented (e.g., the "born secret" doctrine) in a liberal democracy. Governing the atom is inherently a real challenge—if not an affront—to the norms and values of a democratic society.

The seeds of this particular study were planted more than a decade ago. In 2004, Dr. Avner Cohen was invited to participate in the "Governing the Bomb" research project jointly organized by the Geneva Centre for the Democratic Control of Armed Forces and the Swiss Foundation for World Affairs. For the project's workshop, which took place in Geneva in April 2005, Cohen prepared a paper on nuclear governance in Israel. In 2010, the project published its final results in the volume *Governing the Bomb: Civilian Control and Democratic Accountability of Nuclear Weapons*, edited by Hans Born, Bates Gill, and Heiner Hangi, and published by Oxford University Press. This was the first comparative study on the issue of nuclear governance. In a sense, the material presented here updates the data in that earlier study.

In June 2009, Dr. Cohen published the article "Nuclear Legislation in Israel," the first academic critique of Israel's lack of nuclear legislation. It included some preliminary ideas for future nuclear legislation in Israel. A year later, Dr. Cohen's *The Worst-Kept Secret: Israel's Bargain with the Bomb* was

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[1] Dr. Avner Cohen, a professor of nonproliferation studies at the Middlebury Institute of International Studies at Monterey and a senior fellow with the James Martin Center for Nonproliferation Studies (CNS), serves as the project's director. Brandon Mok, a 2017 Davis United World College research fellow at CNS and an undergraduate student at Cornell University, served as the principal researcher and writer of this study. We are immensely grateful to Dr. Leonard Spector (deputy director of CNS), Laura Rockwood (executive director of the Vienna Center for Disarmament and Non-proliferation), Dr. George Moore (scientist in residence at CNS), Professor Alex Wellerstein (of the Stevens Institute of Technology), Paul Ingram (executive director of the British American Security Information Council), Paul Schulte (senior visiting fellow at both the Centre for Defense Studies at King's College), Dr. Patricia Lewis (research director of the International Security research division at Chatham House), and Professor Benoît Pelopidas (junior chair of excellence in security studies at SciencesPo Paris) for their invaluable assistance in reviewing earlier drafts of this study. Their comments and suggestions were crucial to the study's development. We are especially indebted to Professor Wellerstein for his comprehensive comments on the US nuclear command-and-control system and its policies on nuclear secrecy.

published, which further developed his proposal for nuclear legislation. The book was a broad democratic critique of Israel's unique system of nuclear governance under the policy known as *amimut* (nuclear opacity), with a longer discussion of the legal lacuna in Israel's nuclear realm.

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Half a decade later, in 2015, Israeli activist Sharon Dolev, the founder of the Israeli Disarmament Movement, took action to transform the concern over the lack of nuclear legislation in Israel from an academic matter into a public legal issue. In early July 2015, Israeli Attorney Eitay Mack, acting on behalf of a group of Israelis headed by Dolev, issued a four-page formal letter to Prime Minister Benjamin Netanyahu, Energy Minister Yuval Steinitz, and Attorney General Yehuda Weinstein. The letter called attention to the existence of legal lacuna in the nuclear realm, the severe consequences of this dearth, and its negative impact on the principles of the rule of law and proper oversight of the Israeli Atomic Energy Commission (IAEC). The letter also called upon the Israeli government to take action to remedy this legal paucity by initiating major legislation that would regulate the operation of the IAEC. Notably, the letter made an explicit reference to Cohen's 2009 and 2010 publications on the subject.

The Israeli government responded within weeks to the letter with two laconic (and almost identical) letters, signed by governmental lawyers, from both the Prime Minister's Office and the Justice Ministry. Those responses merely noted that the question of regulating the activities of the IAEC by legislation is a matter of national policy, and that the government had no interest in changing its existing policy on the matter. It was a dismissal in three lines.

This dismissal led to the initiation of a full formal petition to the Israeli High Court of Justice (in Hebrew, its acronym is BAGATZ). After nearly a year of work on the document, primarily by Attorney Mack and Dr. Cohen, a formal petition— signed by a group of over one hundred Israeli citizens— was submitted in late May 2016 to the High Court, asking the Court to set a precedent and order the government to "normalize" the status of the IAEC with primary legislation.
The petition rested on the fundamental principle of the rule of law: in liberal democracies, all government activities must be regulated by law; none should take place in the shadows. Hence, it is imperative to establish major legislation over Israel's nuclear affairs. This is even more so given that Israel is viewed worldwide as a *de facto* nuclear-weapon state, and the inherent risks posed by the possession of nuclear weapons are unique and extraordinary.

The petition noted that the current legal status of the IAEC is anchored in a series of secret executive decisions and directives made by the Israeli cabinet (the first one was made in June 1952 when the IAEC was founded) whose legality is based on the "residual powers" principle, i.e., a reference to the default legal statute that authorizes the government to act as it sees fit, and without reservations, in all areas not delineated by law. In 1966, Prime Minister Levi Eshkol re-founded the IAEC—via another series of secret cabinet decision and directives—as a scientific administration in the executive branch, subordinate to the prime minister himself (who was declared the IAEC chairman). Those secret cabinet decisions were revised and updated a few times, the last time in 2011.

The petition also highlighted the situation whereby Israel's nuclear activities occur in a twilight zone beyond the realm of the law. It argues that this is a fundamentally flawed legal arrangement that is incompatible with proper democratic norms and values, while granting unqualified authority to the executive branch. Not only does it violate the fundamental democratic principles of the separation

of powers, checks and balances, and the rule of law, but it allows an inherent conflict of interest to develop between the executive and the regulative functions of the IAEC. It creates a lack of clarity about the source and division of responsibility and authority of the IAEC. Moreover, under the present situation, while there are some internal, classified layers of oversight by IAEC officials, there is practically no *public* oversight of the IAEC.

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The Israeli government's response to the petition urged the High Court to dismiss the petition out of hand—to deny it even an oral hearing—on purely formal legal grounds. The government's objection was that while the High Court can strike laws as unconstitutional, it does not have the authority to order the Knesset (parliament) to pass laws. The government also argued that the IAEC, through its own layers of internal regulation, as well as through the oversight of the State Comptroller's Office, is sufficiently regulated, even if the IAEC activities are not anchored in law. Attorney Mack responded to the government's objection by noting that, while the High Court normally does not order the Knesset to pass laws, there are exceptions to this practice and that the secretiveness of the IAEC is one such exception.

By late December 2016, seven months after the petition was submitted, the High Court decided to deny the state's request and give the case a full hearing. Months later, the High Court announced that on September 6, 2017, a senior panel of three justices headed by Court President Justice Esther Hayut, along with Justices Menachem Mazuz and Noam Sohlberg, would hear this precedent-setting petition.

That High Court decision is a strong statement. It attests that the High Court understands the present situation is flawed and constitutes a real legal challenge. For the first time, the state will report to the Court, and will be obliged to explain the most classified executive orders and internal procedures.

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This comparative study "Nuclear Legislation and Governance in Four Nuclear-Armed Democracies" was researched and written at the James Martin Center for Nonproliferation Studies (CNS) during the summer of 2017. It originated as an independent study of CNS/Davis United World College Fellow Brandon Mok, who did most of the research and writing, under the direction of Dr. Cohen.

The initial purpose of the report was modest: to assist Dr. Cohen in his preparations for the High Court hearing in September. The idea was to prepare a set of comparative raw data on the question of how four Western democratic nuclear-weapon states—namely, the United States, the United Kingdom, France, and Israel—handle the essential tension between nuclear weapons and democracy.

Given the updated nature of the data, the quality and significance of the subject, and given that such material is not publicly available in a condensed form in one site, colleagues at CNS encouraged the two of us to develop the study further in order to make it available to anyone who is interested in the problem of governing the atom.

This study examines the nuclear-governance structure established by each of these four nuclear-weapon states. In particular, it assesses the comprehensiveness—the breadth and depth—of the legislative, regulatory, scientific, and policy mechanisms that each country created to govern its nuclear affairs in the following categories or parameters: legislation, organizations (directly responsible for either civilian and military applications of nuclear materials or both), regulation, oversight, secrecy, and policy making.

The research was conducted solely by drawing data from open sources such as each country's legislation profiles from the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development, the web pages of the ministries, agencies, and other governmental organizations with jurisdiction over nuclear affairs, national legal databases, and secondary-source analyses. Nearly a dozen of knowledgeable colleagues have reviewed earlier drafts of this study for accuracy.

This study will be kept current and will be updated.

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United States of America

The United States of America has both civilian and military applications of its nuclear program. The framework legislation governing nuclear affairs is the Atomic Energy Act (1954), which "regulates the possession and use of radioactive material and facilities that produce or use such material."[2]

Legislation

Fundamental Laws Governing Civilian Uses of Nuclear Materials and Facilities[3]

- Atomic Energy Act of 1954 (which amended the original 1946 Act). This Act established the Atomic Energy Commission (AEC) to oversee both the US nuclear-weapon program and the civilian uses of nuclear energy.
- Energy Reorganization Act of 1974 separated the military and civilian nuclear activities. It transferred the weapons-related functions of the AEC to a new agency, the Energy Research and Development Administration (ERDA), the organization that would later become the Department of Energy. The act transferred responsibility for overseeing the civil uses of nuclear energy to another new agency, the Nuclear Regulatory Commission (NRC). The National Nuclear Security Administration was created in 2000 to separate some military functions from the rest of the DOE.

Nonproliferation

- Arms Export Control Act of 1976—gives the president the authority to control import and export of defense items.

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[2] "Nuclear Legislation in OECD Member Countries - USA," accessed August 14, 2017, https://www.oecd-nea.org/law/legislation/usa.html, p. 3.

[3] "US Nuclear Regulatory Commission: Governing Legislation," accessed August 15, 2017, https://www.nrc.gov/about-nrc/governing-laws.html.

- Nuclear Non-Proliferation Act of 1978

Fundamental Laws Governing the Processes of Regulatory Agencies

- Administrative Procedure Act (5 U.S.C. Chapters 5 through 8)
- National Environmental Policy Act

Organizations

The organizations that are responsible today for the physical development and maintenance of nuclear weapons are the National Nuclear Security Administration (NNSA) (which operates under the jurisdiction of the Department of Energy (DOE)) along with some offices at the Department of Defense (DOD).

The Department of Energy Organization Act of 1977 established the DOE[4] while the NNSA was established under the National Defense Authorization Act of 2000.[5] The NNSA is headed by the under secretary for nuclear security, who is one of three under secretaries under the deputy secretary of energy, who reports directly to the secretary of energy.[6]

NNSA cooperates with DOD in the management of the nuclear-weapon stockpile. The DOD sets the requirements for the way in which existing weapons are maintained and/or modified, and how new weapons are developed.[7] It is also responsible for coupling the weapons from the NNSA with their delivery systems, maintaining those delivery systems, and developing use doctrine.[8] The process is governed by "laws, presidential directives, and joint agreements."[9] NNSA is responsible for the design, production and dismantlement of nuclear weapons while the DOD is responsible for its operational requirements and logistical maintenance.[10] The Nuclear Weapons Council (NWC) is a joint DOD-DOE organization that facilitates communication and cooperation between the DOD and NNSA to fulfill their nuclear-weapon responsibilities. Congress established the NWC through the National Defense Authorization Act for Fiscal Year 1987 and in 10 USC 179, was given the responsibility to "evaluate, maintain and ensure the safety, security, and control of the nuclear weapons stockpile, as well as develop nuclear weapons stockpile options."[11]

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[4] "Nuclear Legislation in OECD Member Countries - USA," p. 39.
[5] Ibid., p. 41
[6] Ibid., p. 41
[7] "Nuclear Matters Handbook 2016 - Chapter 5: Stockpile Management, Processes, and Organizations," accessed August 14, 2017, http://www.acq.osd.mil/ncbdp/nm/NMHB/chapters/chapter_5.htm.
[8] We are grateful to Leonard Spector for insisting on drawing the DOD/DOE divide.
[9] "Nuclear Matters Handbook 2016 - Chapter 5: Stockpile Management, Processes, and Organizations,"
[10] Ibid.
[11] The organizations responsible for nuclear materials that are not for weapons are private companies, the NRC, the DOE, NNSA, and the DOD. Most nuclear power plants in the United States are privately owned and maintained. They are regulated by the NRC, which is responsible for the protection of nuclear materials (OECD 20-21). The DOE also operates a few civilian research and experimental/test reactors, and produces and applies nuclear power systems for other federal agencies e.g. the DOD and the National Aeronautics and Space Administration (NASA) (OECD 40). NNSA is also in charge of the Naval Nuclear Propulsion Program, which designs and develops nuclear propulsion plants for the Navy's ships. NNSA operates two laboratories (with their own power plants). The "program responsibilities are delineated in Presidential Executive Order 12344 of February 1, 1982, and prescribed by Public Laws 98-525 of October 19, 1984 (42 USC 7158), and 106-65 of October 5, 1999 (50 USC 2406)." (https://nnsa.energy.gov/aboutus/ourprograms/powernavy2). The Department of Defense studies the medical applications of nuclear technology with the Armed Forces Radiobiology Research Institute

Regulation

The regulation of civilian nuclear materials and facilities is the responsibility of the Nuclear Regulatory Commission (NRC). The NRC is an independent federal regulatory agency founded by Congress in the Energy Reorganization Act (1974). It licenses all commercial nuclear power reactors and nuclear materials, and conducts research to support its licensing and regulatory activity as the Atomic Energy Act mandates.[12] Its financing comes largely from license fees, which constitute 90 percent of its budget. However, it cannot disburse these funds because under the Omnibus Budget Reconciliation Act of 1990, the NRC must first hand over the collected funds to the federal treasury. Thus, Congress must appropriate the funds before the NRC can disburse them.[13]

Congressional Oversight[14]

The Joint (Congressional) Committee on Atomic Energy (JCAE) was the original congressional body that had overall financial authority and oversight over anything relating to nuclear technology—an authority granted by the Atomic Energy Act of 1946. From 1947 until the 1970s, because the JCAE had much greater access to classified nuclear information than the rest of Congress, its powers were broad. While it did occasionally share information with other committees, it did not pass much information to other bodies in Congress, even though it relied on the JCAE's recommendations when voting on budgets.[15] The JCAE operated as a powerful—but not fully integrated—component of the legislative branch. It created the atomic energy budget which was passed outside the normal budget process, i.e., through negotiation with "authorization legislation."[16] Congress, however, dissolved the JCAE in 1977.

Today, oversight of nuclear matters is exercised by more than thirty committees and subcommittees, each of which has jurisdiction over a certain aspect of the nuclear-weapon program.[17] Notably, the Energy and Commerce Subcommittee on Oversight and Investigations has oversight over the DOE's (and by extension, the NNSA's) management of the nuclear-weapons complex.[18]

Secrecy[19]

Governmental secrecy surrounding nuclear matters was first addressed in the Atomic Energy Act of

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(researches radiobiology and "medical countermeasures to ionizing radiation") and the Uniformed Services University of the Health Sciences (researches radiology and dosimetry) (OECD 45). See also "Nuclear Matters Handbook 2016 - Appendix A: Nuclear Weapons Council and Annual Reports," accessed August 14, 2017, http://www.acq.osd.mil/ncbdp/nm/NMHB/chapters/Appendix_A.htm.

[12] "Nuclear Legislation in OECD Member Countries - USA," p. 32.

[13] Ibid., p. 39.

[14] Special thanks on this section to Professor Alex Wellerstein.

[15] Stephen I. Schwartz, *Atomic Audit: The Costs and Consequences of U.S. Nuclear Weapons Since 1940* (Washington, D.C: Brookings Institution Press, 1998), p. 511.

[16] Ibid.

[17] "Congressional Oversight of U.S. Nuclear Weapons | NTI," accessed August 14, 2017, http://www.nti.org/analysis/articles/congressional-oversight-nuclear-weapons/.

[18] "Subcommittee Examines Nuclear Weapons Complex Security Challenges," Energy and Commerce Committee, September 12, 2012, https://energycommerce.house.gov/news/press-release/subcommittee-examines-nuclear-weapons-complex-security-challenges/.

[19] Special thanks on this section to Professor Alex Wellerstein. With his permission, we used verbatim some of his textual suggestions.

1946 and later amended in the 1954 Act. The 1946 Act created a new, parallel category of classification, "Restricted Data," for information considered secret because of its content, rather than as a result of an authorized classifier designating it as such (in this respect, it differs from all other US classification categories). All information about nuclear weapons and associated technologies is considered Restricted Data, unless the Atomic Energy Commission (or its successor agencies) has explicitly removed it from that categorization.[20] Because the category of Restricted Data deems certain kinds of information classified simply because of its subject matter, its use has been sometimes referred to as the "born secret" doctrine. The Act also granted the Atomic Energy Commission the right to seize private patents and prevent inventors from patenting technology that is used exclusively in nuclear weapons. It claimed intellectual eminent domain over the field of nuclear science and obliged inventors to disclose any nuclear discoveries to the government.[21] In essence, any nuclear property, intellectual or physical, was the property of the government from the moment of its creation.[22] However, there were varying levels of nuclear secrecy even within the government. Even though the Freedom of Information Act allows members of the public to request information about government agencies, it exempts nine categories of information from disclosure—one of which is information regarding "national defense and foreign policy."[23]

However, there is confusion regarding what has been declassified because of the 1998 Kyl-Lott Amendment to the National Defense Authorization Act, which mandated that the DOE re-examine all declassified documents that once contained Restricted Data to check if any information had inadvertently been improperly declassified. The effect of this has been a "re-classification" of many documents that were once declassified, despite the fact that "re-classification" is not considered a legal practice.[24]

Policy Making

The governance and policy making with respect to US nuclear weapons is the responsibility of the Departments of Defense, Energy, and State, respectively, with the final authority vested in the president of the United States. The DOD sets out its strategy in the legislatively mandated Quadrennial Defense Review (QDR). The 2014 QDR asserted the need for DOD to maintain a "nuclear deterrent," which it has done with the DOE by "sustaining" and "modernizing" the existing nuclear-weapon stockpile (responsibility for the weapons shifts to the DOD once they are handed over for mating with their delivery systems).[25]

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[20] Confusingly, there is another category, "Formerly Restricted Data," which is not strictly Restricted Data but is usually still classified (it is information that was originally Restricted Data, but was downgraded for the purpose of sharing widely with military personnel, like the shapes of bombs and their expected performance). When a document that once had Restricted Data is declassified, it needs to be asserted by the declassified that it does not contain Restricted Data (any longer). Thanks to Alex Wellerstein for this footnote.

[21] Peter Galison, "Secrecy in Three Acts," Social Research, 2010, https://galison.scholar.harvard.edu/files/andrewhsmith/files/galison_secrecyinthreeacts.pdf, 956. On the origin of the patenting policy, see Alex Wellerstein, "Patenting the Bomb: Nuclear Weapons, Intellectual Property, and Technological Control," *Isis* 99, no. 1 (March 2008), pp. 57–87.

[22] Ibid., 960.

[23] "The Freedom of Information Act: U.S. Department of State - Freedom of Information Act," accessed August 27, 2017, https://foia.state.gov/Learn/FOIA.aspx.

[24] "Declassification in Reverse: The Pentagon and the U.S. Intelligence Community's Secret Historical Document Reclassification Program," accessed August 27, 2017, http://nsarchive2.gwu.edu/NSAEBB/NSAEBB179/.

[25] "Nuclear Matters Handbook 2016 - Chapter 1: Nuclear Deterrence — U.S. Policy and Strategy," accessed August 14, 2017, http://www.acq.osd.mil/ncbdp/nm/NMHB/chapters/chapter_1.htm. The terms used here, "maintaining," "sustaining" and "modernizing," are terms used by the Obama administration in reference to its nuclear modernization

The DOD, the DOE, and the Department of State also participated in the 2010 Nuclear Posture Review (NPR) 2010 in conjunction with the president. "The NPR focused on five key objectives on the United States' nuclear agenda: 1) preventing nuclear proliferation and nuclear terrorism; 2) reducing the role of nuclear weapons; 3) maintaining strategic deterrence and stability at reduced nuclear force levels; 4) strengthening regional deterrence and reassuring U.S. allies and partners; and 5) sustaining a safe, secure, and effective nuclear arsenal."[26] The Bureau of International Security and Nonproliferation within the Department of State is responsible for the "formulation and implementation of policies and proposals concerning nuclear non-proliferation, nuclear exports and other aspects of nuclear policy in relation to other nations and international organizations."[27]

The authority to use nuclear weapons lies solely with the president. He or she is granted that power by his or her constitutional role as Commander in Chief. He or she may seek advice from his or her military advisors, although neither these advisors nor Congress may overrule a decision to use the nuclear weapons (Defense Primer P1). If anyone in the chain of command seeks to obstruct a nuclear launch order, the president can fire them—even the defense secretary.[28] The president does not even need the approval of Congress for any order for military deployment until sixty days after the start of a war, under the War Powers Act of 1973.[29] It must be stated that the constitutionality of the president's monopoly over authorizing a nuclear launch has never been formally challenged in court, although in January 2017, Congressman Ted W. Lieu and Senator Edward J. Markey introduced to Congress the *Restricting First Use of Nuclear Weapons Act of 2017*, which awaits discussion at the time of writing[30].

Professional or advisory agencies that support policy consist of the DOE/NNSA Nuclear Security Enterprise (NSE) for military applications of nuclear technology and the Nuclear Energy Advisory

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program that allowed significant amounts of upgrading and modification to current weapons capabilities, even though it did not explicitly refer to the development of new weapons designs. While President Trump has said and tweeted all sorts of comments about the need of the United States to keep nuclear superiority (tacitly implying the development of new nuclear weapons), his administration is formally "reviewing" afresh US nuclear policies. See Arms Control Association, "U.S. Nuclear Modernization Programs: Fact Sheets and Brief," August 2017. Accessed August 31, 2017. https://www.armscontrol.org/factsheets/USNuclearModernization.

[26] Ibid.

[27] "Nuclear Legislation in OECD Member Countries - USA," p. 46.

[28] Chris Cillizza, "The Nuclear Football Is a Lot like a Denny's Menu," *CNN*, accessed August 30, 2017, http://www.cnn.com/2017/08/23/politics/nuclear-football-garrett-graff/index.html.

[29] Dan Lamothe, "If Trump Wants a Nuclear Attack against North Korea, His Military Advisers Have Few Other Options," *Washington Post*, August 10, 2017, https://www.washingtonpost.com/news/checkpoint/wp/2017/08/10/if-trump-wants-a-nuclear-attack-against-north-korea-his-military-advisers-have-few-other-options/. The centralization of the right to use nuclear weapons in the person of the president is a result of a series of decisions by successive administrations. Initially, under the administration of President Harry S. Truman, the Atomic Energy Act of 1946 ensured civilian control and use of nuclear weapons; the military did not even physically possess any weapons (although President Truman did allow the transfer of only nine weapons to the military to be held in reserve). Under the administration of President Dwight D. Eisenhower, the separation of powers on nuclear weapons between civilian and military became more of a legal and procedural technicality than an actual physical reality. President Eisenhower also introduced "under which the military could be 'pre-delegated' to use nuclear weapons without Presidential approval in certain situations (e.g., using nuclear-tipped anti-airplane missiles on Soviet bombers in the event of a surprise attack)." Under the administration of President John F. Kennedy, there was a recentralization of control over the use of nuclear weapons in the president's hands because of fears of accidental escalation and nuclear war. This was achieved with new physical controls (e.g. Permissive Action Links), and new operational procedures (e.g.., the Single Integrated Operational Plan, which had the effect of centralizing launch control). "Military regulations make clear that the president is considered the sole authority for nuclear weapons use." Private email from Alex Wellerstein to author, August 26, 2017.

[30] Cillizza, "The Nuclear Football Is a Lot like a Denny's Menu."

Committee for civil applications. The DOE/NNSA and the DOD research, develop, and produce US nuclear weapons. NSE sites are government-owned, contractor-operated (determined through a competitive bid process), and managed jointly by the DOE and the NNSA.[31] The Nuclear Energy Advisory Committee provides independent advice to the Office of Nuclear Energy on science and technology regarding the DOE's nuclear-energy program. The Committee includes "representatives from universities, industry, foreign nationals, and national laboratories."[32]

Evidence of legislative deliberations on nuclear matters in the United States is present in the debate and adoption of the Atomic Energy Act of 1954, the dissolution of the Joint (Congressional) Committee on Atomic Energy, and in the creation of the DOE, NNSA, and NRC. Congress is also involved in relevant hearings and the passing of annual budgets for defense (namely the National Defense Authorization Acts and defense appropriations bills).[33] Congress was also involved in the statutory restriction on designing new nuclear weapons.

United Kingdom

The United Kingdom has a well-developed nuclear-weapon program. It is unique among the nuclear-weapon states in that its regulatory agency, the Office for Nuclear Regulation (ONR), has dual jurisdiction over defense and civil nuclear facilities for the purposes of safety, security, safeguards, health, and transport.

Legislation

The legislation governing UK nuclear matters is somewhat fragmentary and is as follows:

Main Acts of Parliament concerning all British nuclear installations:[34]

- Nuclear Installations Act 1965/69 as amended: "A site cannot have a nuclear plant unless the user has been granted a site license by the [ONR]. Only a corporate body can hold such a license."[35]
- Radiological Protection Act 1970
- Health and Safety at Work Act 1974: "Employers are responsible for ensuring the safety of their workers and the public."[36]
- Ionizing Radiations Regulations 1999: Provides for protection of workers in all industries from ionizing radiations and by the general health and safety regulation which ONR also enforces at nuclear sites.[37]
- Electricity Act 1989

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[31] "Nuclear Security Enterprise," National Nuclear Security Administration, March 3, 2010, https://nnsa.energy.gov/aboutus/ourprograms/defenseprograms/nuclearsecurityenterprise.
[32] "Nuclear Energy Advisory Committee, Department of Energy," accessed August 14, 2017, https://www.energy.gov/ne/services/nuclear-energy-advisory-committee.
[33] Thanks to Leonard Spector for this insight.
[34] "Legal Framework for the Nuclear Industry in Great Britain" (The Institution of Engineering and Technology, n.d.), www.theiet.org/factfiles/energy/legal-frame-nuc-page.cfm?type=pdf.
[35] "Legal Framework and Regulations - Office of Nuclear Regulation," accessed August 18, 2017, http://www.onr.org.uk/legal-framework-and-regulations.htm.
[36] Ibid.
[37] Ibid.

- Environmental Protection Act 1990
- Radioactive Substances Act 1993
- Environment Act 1995
- Radioactive Material (Road Transport) (Great Britain) Regulations 1996
- Packaging, Labelling and Carriage of Radioactive Material by Rail Regulations 1996
- Environmental Impact Assessment for Decommissioning Regulations 1999
- Health Protection Agency Act 2004
- Energy Act 2004
- Energy Act 2013

Organizations

The organizations responsible for civil nuclear matters are the private companies that operate the nuclear power plants,[38] and the Office for Nuclear Regulation.

The AWE is a government-owned contractor-operated entity that maintains the UK nuclear-weapon stockpile. It is responsible for the entire lifecycle of the weapons and works with the Royal Navy on aspects of their delivery system.[39]

AWE is owned by the Ministry of Defense (MOD), but operated by the private company AWE Management Limited. AWE Management Limited consists of the Jacobs Engineering Group, the Lockheed Martin Corporation, and the Serco Group.[40] The AWE is also subject to the same regulatory authority (i.e. the Office for Nuclear Regulation) as the civil nuclear industry.[41] This is because any nuclear facility licensed by the ONR falls under its regulatory jurisdiction, so when the AWE was re-licensed by the ONR to private contractors, the AWE became the ONR's responsibility.[42]

Previously, the MOD was responsible for the management of AWE, specifically under the supervision of the procurement executive and the assistant chief scientific advisor (nuclear), an arrangement that allowed AWE to avoid civil nuclear regulation. However, the 1991 Atomic Weapons Establishment Act transferred the AWE's administration from government to the private sector, effectively subjecting it to civil nuclear regulation but at the cost of parliamentary oversight.[43]

In addition, the assistant chief scientific advisor is no longer the senior MOD civil servant in charge of overseeing Aldermaston, the facility responsible for the design, production, maintenance, and decommissioning of UK nuclear warheads. Now Aldermaston is led by one of the directors in the MOD's Directorate of Strategic Technologies.[44] The MOD has also recently outsourced "elements of

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[38] Office for Nuclear Regulation, "A Guide to Nuclear Regulation in the UK," accessed August 14, 2017, http://www.onr.org.uk/documents/a-guide-to-nuclear-regulation-in-the-uk.pdf, 5-11.
[39] Jenny Nielsen and John Simpson, "The United Kingdom," in *Governing the Bomb: Civilian Control and Democratic Accountability of Nuclear Weapons*, ed. Hans Born, Bates Gill, and Heiner Hânggi, 1 edition (Oxford: Oxford University Press, 2010), p. 97.
[40] "Our Company | Atomic Weapons Establishment," accessed August 14, 2017, http://www.awe.co.uk/about-us/our-company/.
[41] "Our Regulators | AWE," accessed August 28, 2017, http://www.awe.co.uk/our-responsibilities/our-regulators/.
[42] "Relicensing the Atomic Weapons Establishment," accessed August 24, 2017, http://www.onr.org.uk/awe/awe00-03.htm.
[43] *Governing the Bomb*, p. 97. See also "Relicensing the Atomic Weapons Establishment," accessed August 24, 2017, http://www.onr.org.uk/awe/awe00-03.htm.
[44] *Governing the Bomb*, p. 97.

the Strategic Weapons Systems support at the Royal Naval Armament Depot, Coulport, to an industrial alliance, composed of AWE plc, Babcock and Lockheed Martin Strategic Systems UK."[45]

Regarding the role of the Royal Navy and the direct maintenance of nuclear weapons: the "Director Submarines (DSM) is appointed by Chief of Material Fleet (COM(F)) as the Chief Nuclear Engineer within MOD with responsibility for ensuring the safe delivery, design approval and through life support of the equipment delivering the DNP. [The] First Sea Lord is responsible for ensuring the safety of activity, personnel, equipment and platforms in generating the submarine operating capability, including the submarines and HM Naval Bases (HMNBs) Clyde and Devonport. This responsibility is discharged via [the] Assistant Chief of Naval Staff (Support) for the Naval Bases and [the] Assistant Chief of Naval Staff (Surface Ships & Submarines) for operational submarines."[46]

Regulation

The ONR regulates the safety and security of both the civil and military nuclear industries in the United Kingdom. It was established by Parliament's 2013 Energy Act and the subsequent 2014 Commencement Order,[47] which consolidated the relevant responsibilities of the Health and Safety Executive's Nuclear Directorate, the Office for Civil Nuclear Security, the UK Safeguards Office, and the Department for Transport's Radioactive Materials Transport Team and into the newly established ONR. The ONR reports to the secretary of state for work and pensions.[48]

Other legislation that forms the basis for the nuclear industry include the Health and Safety at Work Act 1974, the Nuclear Installations Act 1965, the Ionizing Radiations Regulations 1999, and the Nuclear Industries Security regulations 2003.[49]

Ministerial responsibilities for the ONR's activities—mainly those concerning its governance and finance—fall mainly upon the secretary of state for work and pensions. However, the secretary of state for energy and climate change answers to Parliament regarding the UK civil nuclear regulatory framework and policies, including "civil nuclear safety and security; emergency planning and response; nuclear safeguards; and the transport of radioactive material by road, rail and inland waterways." The secretary of state for defense is "accountable to Parliament for nuclear safety and security at nuclear sites operated wholly or mainly for defense purposes" on behalf of the ONR.[50]

In addition, the MoD's Defense Safety Nuclear Regulator (DSNR) is responsible for the safety of nuclear materials and sites not licensed by the ONR. Most relevant are its duties in the regulation of

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[45] "Defence Codex Issue 17 (2015)," accessed August 18, 2017, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/464372/427202_Codex17_web.pdf.
[46] "General Agreement between Ministry of Defence and Office for Nuclear Regulation," accessed September 3, 2017, http://www.onr.org.uk/documents/2015/mod-agreement.pdf.
[47] "The Energy Act 2013 (Commencement No. 1) Order 2014," accessed September 3, 2017, http://www.legislation.gov.uk/uksi/2014/251/pdfs/uksi_20140251_en.pdf.
[48] "Office for Nuclear Regulation - About Us," accessed August 14, 2017, http://www.onr.org.uk/about.htm.
[49] "Legal Framework and Regulations - Office of Nuclear Regulation," accessed August 18, 2017, http://www.onr.org.uk/legal-framework-and-regulations.htm.
[50] "Office of Nuclear Regulation / Department of Work and Pensions Framework Document," accessed August 18, 2017, http://www.onr.org.uk/documents/2014/onr-dwp-framework.pdf, p. 4.

nuclear safety through the life of the submarine Nuclear Reactor Plant and on nuclear weapons[51] – namely, "Defense Nuclear Material Transport; Nuclear Reactor Plant Design Through Life; Nuclear Weapon Design Through Life."[52]

Oversight

Various parliamentary committees in the House of Commons exercise oversight of the UK nuclear arsenal. These include the House of Commons Defense Committee (HCDC), the Public Accounts Committee (PAC), and the House of Lords Science and Technology Committee. Although "the House of Commons has the authority to refuse to endorse government expenditure on defense, [it] rarely exercises this power. It generally only performs an audit after the executive has already made the decisions."[53] This reticence to intervene is reinforced by the committees' limits to their powers. While the HCDC is the ultimate legislative body that can examine the "administration, policy and expenditure" of the MOD, it does not have the power of appropriation to ensure its recommendations are carried out.[54] The PAC audits departmental accounts to make sure that the MOD's expenditure complies with legal and parliamentary requirements.[55] However, both committees lack the power to enforce their recommendations, so the executive branch is not obliged to heed them. It must be mentioned though, that the House of Commons engaged in heated debate on whether to renew the Trident nuclear deterrent system (Members of Parliament eventually voted in favor of renewing the deterrent).[56] Although the British nuclear weapons program began in secrecy from 1945 to 1952, there have been frequent Parliamentary debates for 65 years over UK nuclear status, the morality, cost effectiveness and reliability of nuclear deterrence, and, since the late 1960s, conformity with NPT obligations, while the possibility of unilateral nuclear disarmament has remained a constant theme in British politics, especially within the Labour Party and energetic and well-informed sections of civil society[57].

In addition, the House of Lords Science and Technology Committee has the authority to initiate inquiries into nuclear research and technology in the civil nuclear industry.[58]

Secrecy

The Official Secrets Act 1989 forbids people from transmitting and receiving unauthorized official

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[51] General Agreement between Ministry of Defence and Office for Nuclear Regulation," accessed September 3, 2017, http://www.onr.org.uk/documents/2015/mod-agreement.pdf, p. 5.
[52] Ibid., p. 6.
[53] *Governing the Bomb*, pp. 88-89.
[54] Ibid., p. 89.
[55] Ibid.
[56] As Paul Ingram wrote: "The government published a Defense White Paper in December 2006 outlining its decision to start the process of replacing its fleet of nuclear armed Trident submarines. This was voted upon by Parliament in March 2007, with a significant majority in favor. The MOD gave annual reports to Parliament on the project, and Parliament was informed of significant milestones. It was given a second opportunity to vote on the renewal of the Trident system in July 2016, when again it voted in favor." Paul Ingram, private email to author, August 28, 2017. See also Rowena Mason and Anushka Asthana, "Commons Votes for Trident Renewal by Majority of 355," The Guardian, July 18, 2016, sec. UK news, http://www.theguardian.com/uk-news/2016/jul/18/mps-vote-in-favour-of-trident-renewal-nuclear-deterrent.
[57] Thanks to Paul Schulte for this information.
[58] "What Are the Future Priorities for Nuclear Research and Technologies? - News from Parliament," UK Parliament, accessed August 14, 2017, http://www.parliament.uk/business/committees/committees-a-z/lords-select/science-and-technology-committee/news-parliament-2015/nuclear-research-technologies-inquiry-launch/.

information, including those related to nuclear matters.[59] Although the Freedom of Information Act 2000 (FOIA) technically allows citizens to request government information older than thirty years, the FOIA exempts information relating to national security and defense from forced disclosure.[60] The FOIA allows the government to actively mislead or simply refuse to inform Parliament, so that it does not have the information to debate or inquire into nuclear issues.[61] The HCDC has explicitly stated that, without adequate information, it cannot effectively exercise oversight over the use of government funds in the nuclear field.[62] And although the HCDC has the power to interrogate officials, they can invoke FOIA exemptions to avoid disclosing sensitive information.[63]

Policy making

Governance and policy making with respect to nuclear weapons is conducted by the Director General Nuclear (DGN) in the Executive Committee of the Ministry of Defense and the Nuclear Deterrence and Security Ministerial Subcommittee of the National Security Council. The Executive Committee of the MOD is responsible for addressing the major "managerial and strategic policy issues" affecting the MOD.[64]

Within it, the DGN is responsible for coordinating policy for the nuclear defense program, managing the nuclear-equipment program, supporting "ministerial engagement with Parliament, the public and the media" on nuclear weapons and the wider nuclear defense program, "sponsor[ing] new specialized delivery bodies," and liaising with the US and French governments on nuclear cooperation.[65]

The nuclear deterrence and security ministerial subcommittee – officially, the "NSC (Nuclear Deterrence and Security" – falls under the remit of the National Security Council (headed by the prime minister), which is the "main forum for collective discussion of the government's objectives for national security." The subcommittee is one of four, with the other three covering: (1) threats, hazards, resilience, and contingencies; (2) matters relating to cyber programs and policy development; and (3) matters relating to the implementing the Strategic Defense and Security Review and the National Security Strategy.[66]

On a more general level though, defense policy is normally decided by a small committee of the prime minister and several senior ministers, before being confirmed by the entire cabinet. Policies on nuclear-weapon procurement however, because of their technical nature, are initiated by the secretary of state for defense.[67] It must be noted, however, that the prime minister takes primary responsibility for the main procurement decisions for nuclear-weapon systems.[68]

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[59] *Governing the Bomb*, p. 92.
[60] Ibid.
[61] Ibid., p. 91
[62] Ibid.
[63] Ibid.
[64] "Our Governance - Ministry of Defence - GOV.UK," accessed August 18, 2017, https://www.gov.uk/government/organisations/ministry-of-defence/about/our-governance.
[65] "Julian Kelly - GOV.UK," accessed August 14, 2017, https://www.gov.uk/government/people/julian-kelly.
[66] "National Security Council - GOV.UK," accessed August 14, 2017, https://www.gov.uk/government/groups/national-security-council.
[67] *Governing the Bomb*, p. 88.
[68] Thanks to Paul Ingram for this information.

The authority to use nuclear weapons is held solely by the prime minister.[69] However, the possibility of a vote of no confidence (leading to the PM's immediate resignation) means that the prime minister normally seeks parliamentary approval for important security decisions, so that the government can "retain public and external legitimacy."[70] A precedent has been set recently whereby parliamentary approval has been sought prior to major military intervention, most notably in Iraq in 2003 and the bombing of Syria in 2013.[71]

Evidence of a relationship between policy makers and professional and advisory agencies is present in the Nuclear Research Advisory Council (NRAC) and the Defense Nuclear Safety Committee. The NRAC reviews the AWE's nuclear-weapons research and maintenance program. The NRAC consists of eight members and a chairman who will typically be scientists or engineers in the nuclear field or in missile research.[72]

The Defense Nuclear Safety Committee provides independent advice to the secretary of state for defense on nuclear-safety issues associated with defense nuclear programs.[73]

France[74]

Legislation

Legislation in France regarding nuclear matters is reflected in Law No. 2005-1550 of 12 December 2005 Modifying Various Provisions Related to Defense, which ratified the amendment of the existing defense code in France that regulates military applications of nuclear materials. Act No. 2006-686 of 13 June 2006 on Transparency and Security in the Nuclear Field (the "TSN" Act) established France's Nuclear Safety Authority.[75] Other important pieces of legislation are the Programme Act No. 2006-739 of 28 June 2006 on the Sustainable Management of Radioactive Materials and Wastes, Law No. 80-572 of 25 July 1980 on the Protection and Control of Nuclear Material, and Law 2008-696 of 15 July 2008 about Archives (specifically Article 17/L.213-2.II) which constrains the dissemination of information regarding nuclear history from the archives[76].

Regulation

Regulation of the civilian nuclear activities is the responsibility of the Nuclear Safety Authority (ASN). It

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[69] "National Security Strategy and Strategic Defence and Security Review 2015," accessed August 14, 2017, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/478933/52309_Cm_9161_NSS_SD_Review_web_only.pdf, 34.
[70] *Governing the Bomb*, p. 87.
[71] Thanks to Paul Ingram for this information.
[72] "About Us - Nuclear Research Advisory Council - GOV.UK," accessed August 14, 2017, https://www.gov.uk/government/organisations/nuclear-research-advisory-council/about.
[73] "About Us - Defence Nuclear Safety Committee - GOV.UK," accessed August 14, 2017, https://www.gov.uk/government/organisations/defence-nuclear-safety-committee/about.
[74] We are aware that some sections on France might be dated, and are working to update this section once we have the most recent information.
[75] "Nuclear Legislation in OECD Member Countries - France," accessed August 14, 2017, https://www.oecd-nea.org/law/legislation/france.html, p. 39.
[76] "Loi N° 2008-696 Du 15 Juillet 2008 Relative Aux Archives (Law 2008-696 of 15 July 2008 about Archives) - Article 17," juillet 2008.

is an independent administrative regulatory body whose authority is derived from the TSN Act.[77] Its authority has been expanded by the Energy Transition for Green Growth Act of 17 August 2015, which gave the ASN the "powers of enforcement and sanction."[78] It is obliged to report to Parliament annually on the "State of Nuclear Safety and Radiation Protection," while its Chairman reports to committees of the National Assembly and the Senate and to the Parliamentary Office[79].

Organizations

The organizations responsible for managing French nuclear weapons are the Ministry of Defense and the Atomic Energy and Alternative Energies Commission (CEA).

Under the minister of defense, "the Gendarmerie de sécurité des armements nucléaires (GSAN), a special unit of the Gendarmerie nationale, is responsible for the physical security of the weapons." The *gendarmerie nationale* is a "separate military service that combines police and territorial functions."[80] The defense procurement and technology agency *Direction générale de l'armement* [the Directorate General of Armaments] is responsible for managing the nuclear weapons. The Minister of Defense, the chiefs of the joint staff and the Nuclear Forces Division, as well as the heads of the three operational commands of submarines, air force fighter-bombers, and navy fighter-bombers also play key roles in managing the weapons.[81] The Delegate for the Nuclear Safety and Radiation Protection of Defense-Related Activities and Installations (DSND), who reports to the ministers for defense and for industry, is in charge of nuclear safety and radiation protection of defense-related activities and installations. His duties are specified in Articles R* 1412-1 to R*1412-6 of the Defense Code.[82]

The Military Applications Division (DAM) of the CEA is responsible for the design, development, production, and dismantlement of nuclear weapons throughout the lifetime of the nuclear weapons.[83]

The organizations responsible for civil-use nuclear materials are Éléctricité de France (EDF), the Nuclear Safety Authority, the DAM/CEA, the Nuclear Security Division within the Defence, Security, and Economic Intelligence Department (SDSIE) at the Ministry of Ecology, Energy, Sustainable Development, and Sea. EDF is the public limited company that operates all French nuclear power plants.[84] The Nuclear Safety Authority (ASN) regulates civilian nuclear activities. The DAM/CEA is responsible for the naval nuclear-propulsion program for submarines.[85] The Nuclear Security Division of the SDSIE oversees the protection of nuclear materials, installations, and nuclear transport[86].

On the strictly operational side of the civilian program, there are also the entities of Framatome (power

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[77] "Nuclear Legislation in OECD Member Countries - France," accessed August 14, 2017, https://www.oecd-nea.org/law/legislation/france.html, p. 39.
[78] French Nuclear Safety Authority (ASN), "Institutional Brochure on the ASN Organisation," accessed August 14, 2017, http://www.french-nuclear-safety.fr/ASN/About-ASN/The-ASN-organisation, p. 11.
[79] Ibid., p. 3.
[80] Bruno Tertrais, "France," in *Governing the Bomb*, p. 114.
[81] Ibid.
[82] "Nuclear Legislation in OECD Member Countries - France," p. 45.
[83] "Nuclear Heads - CEA / Military Applications Directorate," accessed August 17, 2017, http://www-dam.cea.fr/missions/tetes-nucleaires.html.
[84] "Nuclear Legislation in OECD Member Countries - France," p. 59.
[85] http://www-dam.cea.fr/missions/propulsion-nucleaire.html
[86] "Nuclear Legislation in OECD Member Countries - France," p. 31.

plants), Technicatome (reactors), Cogema (fissile materials), and Electricité de France (the operator of power plants).[87]

Oversight

Parliamentary oversight of nuclear weapons is limited because defense issues, especially nuclear ones, are not discussed much. Although the Parliament has the authority to discuss nuclear-weapon policy when preparing for a budget vote and or a new military planning law, these discussions do not lead to more than occasional special reports on nuclear-weapon policy, issued once every three or four years. MPs are not briefed by competent experts that would allow them to ask questions beyond the boundaries of existing policy, although the environmental and moral criticisms persist. In France, there are no equivalents to the congressional fellowship program in America (which allows for scientists to become such fellows and contribute to the formulation of federal policy)[88]. However, if the government deeps these reports as "too critical," their recommendations are rarely, if ever, implemented.[89] Oversight of non-weapons nuclear materials is exercised indirectly by the Committee for the Transparency of Information on Nuclear Safety, which is responsible for the dissemination of information regarding risks associated with nuclear activities and the potential impacts on the health of the public. It answers to the ministers responsible for nuclear safety and chairpersons of various commissions of the National Assembly and the Senate.[90]

Secrecy

There is a strong culture of secrecy surrounding military nuclear affairs because neither the people nor the media pressure the government for greater transparency in the area.[91] There is no independent polling of public opinion about nuclear weapons; only data from the Ministry of Defense. Early findings suggest a keen sense of disempowerment regarding participation in nuclear affairs among the French population under 30.[92] As mentioned earlier, the Law 2008-696 of 15 July 2008 about Archives (specifically Article 17/L.213-2.II) constrains the dissemination of information regarding nuclear history from the national archives.[93]

Because only five government or publicly controlled entities are directly responsible for nuclear materials," France has created, in effect, "a closed-off 'nuclear state.'"[94]

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[87] *Governing the Bomb*, p. 123.
[88] Thanks to Benoît Pelopidas for this information.
[89] *Governing the Bomb*, p. 117.
[90] "Nuclear Legislation in OECD Member Countries - France," p. 54.
[91] On the French attitude to nuclear secrecy, see Benoit Pelopidas, "French Nuclear Idiosyncrasy How it affects French nuclear policies towards the UAE and Iran", *Cambridge Review of International Affairs* 25(1), March 2012, pp. 143-169.
[92] Pelopidas, Benoît. "The next Generation(s) of Europeans Facing Nuclear Weapons: Forgetful, Indifferent, but Supportive?" (Stockholm International Peace Research Institute), accessed September 3, 2017, https://www.sipri.org/sites/default/files/The-next-generation%28s%29-Europeans-facing-nuclear-weapons.pdf.
[93] "Loi N° 2008-696 Du 15 Juillet 2008 Relative Aux Archives (Law 2008-696 of 15 July 2008 about Archives) - Article 17," juillet 2008. On the effects of limits of access to information and the scholarship on nuclear matters, see "The unbearable lightness of luck. Three sources of overconfidence in the controllability of nuclear crises", *European Journal of International Security* 2:2, July 2017, pp. 240-262.
[94] *Governing the Bomb*, p. 123.

Policy making

Governance and policy making with respect to French nuclear weapons is generally restricted to the Defense and National Security Council and the chief of the president's private military staff.[95] However, the Delegation for Strategic Affairs within the Ministry of Defense also plays a role in nuclear policy making.[96]

The president derives his or her authority over nuclear weapons from two articles in the 1958 Constitution: Article 5, which states that he or she is in charge of ensuring "national independence" and "territorial integrity," and Article 15, which makes the president the "Commander-in-Chief of the Armed Forces" with the power to lead the "higher national defence councils and committees."[97]

The Defense and National Security Council meets in the form of the Nuclear Weapons Council (The *conseil des armements nucléaires*), which has been official since 2009.[98] with only six participants: The president, the prime minister, the minister of defense, the head of the Directorate General of Armaments, the head of DAM/CEA and the chairman of the joint chiefs of staff. Thus, nuclear-weapons policy has been made by an "increasingly small number of people."[99] More specifically, the prime minister implements the decisions made in this Council, embodying the control of nuclear policy by the government. Every five years, he publishes a directive along those lines. Under the prime minister there is a joint committee of the army and the CEA. The minister of defense implements the directives issued by the prime minister within the Military Nuclear Committee (*comité nucléaire militaire*). The chairman of the joint chiefs of staff is the only military officer responsible for the implementation of nuclear operations. The head of DAM/CEA is responsible for ensuring that the nuclear warheads are operational.[100]

The Council for Nuclear Defense ensures that the measures taken by the Ministry of Defense regarding nuclear security and "operational, industrial and financial imperatives" are consistent. It is under the jurisdiction of Ministry of Defense.[101]

The Delegation for Strategic Affairs (which operates under the jurisdiction of the Ministry of Defense) is responsible for preparing, in cooperation with the General Staff of the Armed Forces and the Directorate General for Armaments, the strategic policies for addressing nuclear disarmament and nonproliferation. It also works with the Ministry of Foreign Affairs on the international stage in export controls of "war material."[102]

The joint operational center on nuclear forces within the Chief of the Defense Staff has further centralized nuclear policy making.[103]

The sub-directorate for nuclear disarmament and nonproliferation is in charge of writing policy for

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[95] Ibid., p. 109.
[96] Ibid., p. 114.
[97] Ibid., p. 108.
[98] Thanks to Benoît Pelopidas for this information.
[99] Ibid., p. 110.
[100] Thanks to Benoît Pelopidas for this information.
[101] "Nuclear Legislation in OECD Member Countries - France," p. 52.
[102] "The Delegation for Strategic Affairs (DAS)," accessed August 18, 2017, http://www.defense.gouv.fr/english/actualites/communaute-defense/la-delegation-aux-affaires-strategiques-das.
[103] *Governing the Bomb*, p. 112.

nuclear nonproliferation and disarmament, and the delivery systems for weapons of mass destruction.[104]

Only the president has the power to authorize the use of nuclear weapons. He or she is given this authority by a 1964 decree based on Article 5 of the Constitution (which placed the president as the head of the Defense and National Security Council and as the commander-in-chief), which formally gave the president the legal right to use nuclear weapons.[105]

The relationship between policy makers and professional and advisory agencies is weak because academics and experts unaffiliated with the government do not have a big role in advising policy makers on nuclear matters.[106] This is because in France, there is no culture of experts moving in and out of government, as there is in the United States. As such, there is reliance on in-house personnel i.e. professional civil servants and the military to make policy.[107] Even scientists and engineers within the government are sidelined in policy making, as neither the Directorate General of Armaments (the MOD's procurement office) nor the CEA are allowed to participate in the Defence and National Security Council.[108] The problem of self-censorship of nuclear weapons scholarship is also prevalent and prevents an open discussion of nuclear weapons policy. Moreover, there is the structural problem of institutions perpetuating a narrow research agenda that does not counter official policy, mainly because the government is one of the main customers of think tanks focusing on nuclear issues[109].

The CEA (whose Military Applications Division oversees the development and maintenance of France's nuclear weapons), answers to the minister for ecology, energy, sustainable development, and marine affairs. As a "public research establishment," the CEA is funded by the government—notably from the government's budget for weapons manufacturing—yet, as an "administratively and financially independent legal entity," it manages its own finances.[110]

Israel

Legislation

Israel has no major nuclear legislation that covers the activities of the Israeli Atomic Energy Commission (IAEC).

An executive decree by Prime Minister David Ben Gurion issued on June 13, 1952 established the IAEC. In 1966, Prime Minister Levi Eshkol overhauled and re-established the IAEC with a series of cabinet decisions and executive decrees. Those documents have been amended a few times since then, most recently in 2011. All these documents are highly classified.[111]

The only legislation in Israel governing very limited nuclear activities is the Non-Ionizing Radiation Law 2006, which aims to "protect the public and the environment from the harmful impacts of exposure to

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[104] "Nuclear Legislation in OECD Member Countries - France," p. 53.
[105] *Governing the Bomb*, p. 109.
[106] Ibid., p. 117.
[107] Ibid.
[108] Ibid., p. 110.
[109] Thanks to Benoît Pelopidas for this information.
[110] "Nuclear Legislation in OECD Member Countries - France," p. 58.
[111] Avner Cohen, "Israel," in *Governing the Bomb: Civilian Control and Democratic Accountability of Nuclear Weapons*, ed. Hans Born, Bates Gill, and Heiner Hânggi, 1 edition (Oxford: Oxford University Press, 2010), p. 157.

non-ionizing radiation." However, this law does not apply to the activities of the IAEC, which is exempted from the law (Article 31 (A) [1]). [112]

Organizations

Along with the IAEC, the Office of Security in the Ministry of Defense (MALMAB) is responsible for the security aspects of Israel's nuclear matters. It must be noted that Israel is distinct from all other nuclear-armed states in that it does not have a nuclear-power program. Although Israel has never acknowledged its nuclear weapons, it is universally presumed that IAEC activities are primarily related to its nuclear arsenal.

The IAEC is the Israeli body understood to be in charge of overseeing all national nuclear activities by maintaining the entire nuclear complex in a "cradle-to-grave" fashion.[113] The Director General of the IAEC is the chief executive of the Israeli nuclear agency, and is directly appointed by the prime minister (presumably in consultation with the minister of defense and other ministers). The appointment must be approved by the government. However, although the Director General is the chief executive, it is the prime minister—the ex officio chairman of the IAEC—who wields full minister-level responsibility over nuclear matters.[114] But the prime minister delegates the day-to-day responsibilities to another minister, most often to the minister of energy.

MALMAB is responsible for all the security aspects of the nuclear complex, which includes the policy of *amimut*, further described below.[115]

Regulation

Internal three-layered regulatory system within the IAEC are responsible for all nuclear regulation. Their work is classified and not available to the public. The two research reactors that the IAEC operates—at the Soreq Nuclear Research Center and at the Nuclear Research Center Negev—are regulated by that three-layered internal system: (1) the local Safety Supervisors, (2) the Licensing and Safety Division of the IAEC, and (3) an autonomous Commission on Nuclear Safety that reports directly to the prime minister. The local safety supervisors oversee and enforce rules about radiation safety, while the Licensing and Safety Division oversees general nuclear safety and radioactive waste management. The Commission on Nuclear Safety is stated by an "external control" on nuclear safety; it comprises "independent" experts from "medicine, industry, and academia."[116]

Oversight

A small classified subcommittee of the Defense and Foreign Affairs Committee of the Knesset and the State Comptroller's Office are responsible for the oversight of the IAEC.. The classified subcommittee is apparently one of the eight permanent subcommittees established to oversee Israel's defense

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[112] "Health and Safety Legislation | Israel Ministry of Environmental Protection," accessed August 15, 2017, http://www.sviva.gov.il/English/Legislation/Pages/HealthAndSafety.aspx.
[113] *Governing the Bom*, p. 157.
[114] Ibid.
[115] Ibid.
[116] "Safety, Environmental Protection and Health - Israel Atomic Energy Commission," accessed August 29, 2017, http://soreq.gov.il/English/Regulation_Safety/Pages/default.aspx.

bureaucracy. Although its name is classified, its only purpose, apparently, is to oversee nuclear matters. Yuval Steinitz, a former chairperson of the Foreign Affairs Committee, stated that the subcommittee is regularly briefed on all classified matters.[117] However, in practice, the subcommittees in general do not have a dedicated staff, so parliamentary oversight is loose and superficial.

The State Comptroller's Office is the primary independent auditing and oversight authority. Because it treats almost all nuclear issues as classified, none of its nuclear reports are public. Some reports are so classified that they are not even shared with the Knesset.[118]

Secrecy

Nuclear secrecy in Israel is enshrined in the conduct of the policy of *amimut*, the policy of nuclear opacity. Under that policy, Israel has never acknowledged openly and explicitly the weapons mission of its nuclear program, a mission that virtually all outside observers attribute to Israel. Rather, ever since the mid-1960s, Israel only formally declared "not to be the first to introduce nuclear weapons in the Middle East." That means, by implications, that the government of Israel considers virtually every aspect of its nuclear activities classified.

The Office of the Military Censor enforces the policy of *amimut* on all Israeli publications.[119] Its roles include controlling the public discourse of nuclear matters by prohibiting any direct or indirect reference to nuclear weapons. Legal challenges to the Military Censor are rare, although there is the Schnitzer BAGATZ case in 1989 against the Military Censor in the Supreme Court.[120] That challenge, while successful, has had no impact on the Military Censor's policy on nuclear matters. As the security and intelligence branch of the nuclear program, MALMAB has immense power in controlling nuclear matters, including on matters of policy.[121]

Policy making

Governance and policy making processes with respect to nuclear matters in Israel, whether substantive or procedural, are largely unknown. Presumably, the Directorate for Special Means (within the Ministry of Defense) is involved in staff policy work along with the IAEC and the National Security Council. On the IAEC's website, it states obliquely that the mission of IAEC "advises the Government of Israel in areas of nuclear policy and in setting priorities in nuclear research and development."[122] The Directorate is assumed to have some functional responsibilities in connection with Israel's strategic issues.[123] The final decision maker is the prime minister, who is *ex officio* the chair of the IAEC, presumably with the

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[117] *Governing the Bomb*, p. 166.
[118] Ibid., p. 167.
[119] Ibid., p. 160.
[120] Meir Schnitzer and Aluf Benn, Israeli editor and journalist, petitioned for a formal judicial review of an article about Mossad that had been submitted to the military censor by his newspaper. In an unprecedented ruling, the Supreme Court decreed that the censor could only intervene and prevent publication if the information in question was "near certain" cause tangible harm to national security. Otherwise, mere concern that the information was classified was insufficient to merit or justify the censor's action. Ibid., 162.
[121] Ibid., p. 161.
[122] "About Us - Israel Atomic Energy Commission," accessed August 29, 2017, http://soreq.gov.il/english/About%20Us/Pages/default.aspx.
[123] *Governing the Bomb*, p. 158.

minister of defense.[124] There is no public knowledge on the division of labor between the prime minister and minister of defense on nuclear matters.

[124] Avner Cohen and Eitay Mack, "Opinion: Now Is the Time for an Israeli Nuclear Law," *Ha'aretz*, August 1, 2017, http://www.haaretz.com/opinion/.premium-1.804325.

There is practically no official public information about Israel's nuclear command-and-control structure, but most outside analysts believe that Israeli nuclear weapons are normally not fully assembled, and that there is physical and organizational separation between the nuclear and non-nuclear assets. It is also presumed that civilian officials from the IAEC (not military ones) has custodianship of nuclear assets of the weapons.[125]

The relationship between policy makers and professional/advisory agencies is flimsy because while the Israeli civilian system does have "various internal advisory and auditing bodies" that are much used, there is no public record of their proceedings. What is known, however, is that some of these advisory panels function in a more ad hoc way, while others have more permanent oversight duties.[126]

There is no evidence that the legislature has had any tangible role in deliberating on any part of the nuclear program in Israel.

Conclusion

Establishing proper legislation and exercising democratic governance has always been and will always be a uniquely fraught issue for democratic states with nuclear capabilities, especially those with nuclear weapons. There will always be an inherent tension between the needs for transparency, accountability and oversight in a democracy and the requirements for secrecy and swift, executive decisions in the realm of national security.

However, even in light of that essential tension, the three-established nuclear-armed Western democracies—the United States, the United Kingdom, and even France—have, over the decades, developed legal regimes with certain transparent governance processes over their nuclear affairs. Furthermore, all three democracies have engaged their legislatures in the formulation of legislation on both civil and military nuclear activities, subjected their nuclear activities to independent and semi-public regulatory authorities, and ensured that their methods of nuclear governance are sufficiently transparent to their people.

Israel stands as the lone anomaly among them. Israel is today the only Western democracy with known (but unacknowledged) nuclear weapons, whose legislature has played no part whatsoever in legislating or regulating its nuclear activities, whose activities are not subject to public and independent regulatory and oversight mechanisms, and whose very weapons are not even openly acknowledged.

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[125] *Governing the Bomb*, pp. 157–58.
[126] Ibid., p. 158.

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