

Harvard University
John F. Kennedy School of Government
Controlling the World's Most Dangerous Weapons
HKS IGA-232, GOV 1735
Fall 2022
Prof. Matthew Bunn

Time: Tuesday and Thursday, 9:00-10:15AM EDT

Location: Littauer 280

Objective and Approach

Preventing nuclear war is one of the truly existential challenges facing the human species. But with Russia's war on Ukraine and nuclear saber-rattling, the danger is higher today than it has been since the Cuban Missile Crisis 60 years ago this October. Nuclear dangers are rising as tensions among nuclear powers increase, nuclear agreements are challenged or discarded, and new technologies and arms competitions create new uncertainties. From Iran to North Korea, from U.S.-Russian and U.S.-Chinese nuclear competition to Syria's deadly chemical assaults, decisions about nuclear, chemical, and biological weapons can make the difference between war or peace and between safety or grave danger for people around the world. This course will give students an understanding of these weapons and the global efforts to prevent their use and control their spread.

This is a discussion-based class, and class participation is part of the grade. I expect all students to offer their ideas and comment on the ideas of others. I hope to work closely with students to build a class community based on inclusion and mutual respect, in which we can all learn from each other.



In this course, students will learn to use an integrated, risk-informed approach to assessing policy options when difficult choices need to be made in the face of large uncertainties. This will help prepare students for careers dealing with choices about these deadly weapons. Indeed, past students in this course are working today to reduce nuclear dangers in several U.S. government departments, in the foreign ministries of other governments, in international organizations, in think-tanks, and in academia.

To take such a risk-informed approach, students need to understand at least the basics of nuclear weapons, materials, and delivery systems; the strengths and weaknesses of different policy tools, ranging from treaties and diplomacy to sanctions and war; and ideas about how states behave, to help understand how an ally or adversary might react to a particular offer or threat. We seek to achieve these learning objectives with a combination of discussions of fundamental concepts, explorations of real-world cases, simulations, and more. Students will be confronted with

difficult and realistic policy challenges and asked to develop recommendations about what to do, both individually and in groups.

The first half of this course will introduce the technical aspects of nuclear weapons as well as the basics of nuclear deterrence, arms control, and efforts to stem the spread of nuclear weapons. It will pay particular attention to emerging great-power competition and its implications for deterrence and arms control. That will culminate in a week-long arms control negotiating simulation. The second half of the course will go into more depth on efforts to prevent the spread of nuclear weapons to additional states and to terrorist groups and will also explore the control of chemical and biological weapons.

Acknowledgement: I co-developed this course and taught it for over a decade with William H. Tobey. Tobey served on the National Security Council staff in the administrations of Presidents Ronald Reagan, George H.W. Bush, and George W. Bush, and in the latter administration led the nonproliferation programs of the National Nuclear Security Administration. He is now leading analyses of nuclear policy at Los Alamos National Laboratory.

Faculty

I am the James R. Schlesinger Professor of the Practice of Energy, National Security, and Foreign Policy at HKS, and I have been working on these issues for four decades, in and out of government. I have served in the White House Office of Science and Technology Policy, at the U.S. National Academy of Sciences, as the editor of *Arms Control Today*, and as an advisor to a range of U.S. government agencies and laboratories. You can find out more, and get the full text of many of my writings and presentations, on my Harvard Scholar [page](#).

Office Hours and Contact Information

I will have office hours on Wednesdays from 4-5:30 and on some Thursdays (when my other class is not meeting) from 3-5:30. Students can sign up for times on-line on the course page. If those office hours are inconvenient for you, make an appointment for another time through my assistant Matthew Parent, (matthew_parent@hks.harvard.edu, phone: 413-219-8242). My phone is 617-495-9916, and my e-mail is matthew_bunn@harvard.edu. The course assistant for this class is JJ Henkin (jhenkin@hks.harvard.edu).

Assignments and Grading

There are six graded assignments for this course. The first assignment is a problem set intended to familiarize students with some of the key numbers associated with nuclear weapons production and effects, and how those numbers might influence policy choices. Two of the other assignments are policy memos laying out options and making a recommendation related to a particular policy problem that will be provided in class; these are group assignments. Two of the assignments are participation in class simulations, one focused on a nuclear arms control negotiation and the other focused on U.S. interagency decision-making with respect to an urgent nuclear issue. Students will receive somewhat different assignments for the simulations, depending on the roles they are to play. I will provide detailed instructions the week before the simulations. There will be extra work during the week of the negotiation simulation, and a short reflection will be required immediately afterward. The final assignment is a take-home final exam, which students will have a week to complete.

Written assignments must be submitted electronically by 5:00 p.m. on the dates listed below. In accordance with HKS policy, late papers will receive reduced grades, except in exceptional circumstances approved by the instructor.

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|---------------------|----------------------------------|
| #1: September 16 | Problem set (5% of course grade) |
| #2: September 30 | First recommendation memo (15%) |
| #3: Sept. 30-Oct. 7 | First simulation exercise (15%) |
| #4: November 4 | Second recommendation memo (15%) |
| #5: November 29 | Second simulation exercise (10%) |
| #6: December 2-9 | Take-home final exam (25%) |

The last 15% of the course grade will be based on participation in class discussion. Note that there are multiple ways to participate, including in class and by offering ideas and articles on the class web page.

Class Schedule

Class	Date:	Subject:
<i>Part 1: Weapons, Technologies, and Regimes</i>		
1	1 Sep	Why this course matters: Nuclear, biological, and chemical weapons and global security in a risk-based framework
2	6 Sep	Nuclear weapons design and construction, nuclear materials, nuclear effects
3	8 Sep	Nuclear materials production, safeguards, threats, and diplomacy: North Korea Part I, 1988-2000
4	13 Sep	Why states decide to get, or not to get, nuclear weapons
5	15 Sep	The Nonproliferation Treaty (NPT) and the nonproliferation regime
<i>Part 2: Nuclear Power Competition, Deterrence, Arms Control</i>		
6	20 Sep	Nuclear deterrence, nuclear dangers, and nuclear doctrine
7	22 Sep	Nuclear delivery systems and defenses
8	27 Sep	Nuclear arms control and disarmament
9	29 Sep	Nuclear balances in an evolving world
10	4 Oct	Arms Control Negotiation Simulation
11	6 Oct	Arms Control Negotiation Simulation
12	11 Oct	Simulation readout; future of nuclear weapons policy
13	13 Oct	Nuclear dangers in South Asia
14	18 Oct	North Korea Parts II, III, IV...

Part 3: Stemming the spread		
15	20 Oct	Nuclear energy and nuclear safeguards
16	25 Oct	Sanctions for nonproliferation
17	27 Oct	Stopping black-market nuclear technology transfer
18	1 Nov	Preemptive and preventive strikes; and active options short of war
19	3 Nov	Coping with Iran's nuclear program
20	8 Nov	Nonproliferation successes: Libya, South Africa, and more
21	10 Nov	Tools beyond treaties
22	15 Nov	Chemical and biological weapons (guest)
23	17 Nov	Preventing nuclear terrorism
24	22 Nov	Nonproliferation policy-making processes (guest)
	24 Nov	Thanksgiving-Holiday
25	29 Nov	Simulation: Interagency meeting on an urgent nuclear issue
26	1 Dec	Semester wrap-up: what have we learned?

Optional Additional Classes

We will offer optional additional classes and review sessions on selected Fridays, 3-4:15PM, in Weil Town Hall. (This will give you the chance to hit "Quorum Call" just afterward.) These will be announced on the Monday before or earlier.

Norms, Expectations, and Readings

HKS is a professional school, training professionals. As such, students are expected to: attend all classes; be on time; submit assignments on time; and do their best to prepare professional products for their assignments. We expect students to build a culture of cooperation and mutual respect in class, including all races, nationalities, genders, past experiences, and other characteristics. Group work will be an important element; please let us know if groups are not working well. This is a discussion-based class, and *class participation is very important*. To be able to participate in the discussion, students are expected to have done the reading *before* each class. (Students need only read the *required* readings; the Recommended readings that will be available on the class page are only for those students who want to explore a particular topic further.)

To maximize learning and engagement, in this class, put your computers and personal electronics away. (On a few occasions, with advanced warning, we may ask you to use your phones for a poll or other activity.) Most classes will be a combination of lecture and discussion, sometimes with work in small groups. I hope that all of you will participate actively, as research shows that leads to greater learning, other students can learn from your insights, and speaking up in discussions is a key professional skill. (As noted above, I also encourage students to participate in discussion on the class page, including by posting articles that may be of interest to other students.) I will not always call first on the first people to raise their hands, as I will be seeking to

encourage balanced participation by all students. On occasion, I will cold call students; at the start of some classes, I will ask a few students to summarize key takeaways from the readings. While I encourage class participation, I also discourage anyone from taking more than their share of class time; be considerate of your classmates. I encourage students to offer additional suggestions for class norms and approaches to maximize learning.

Most of the course readings are available on the internet. Those that are not will be posted on the class web page. There is no textbook for this course. One good general resource is Joseph F. Pilat and Nathan Busch, *The Routledge Handbook of Nuclear Proliferation and Policy* (Abingdon, Oxon, U.K.: Routledge, 2015). A good (though dated) overview of U.S. nuclear weapons policy and its intersections with nonproliferation is provided in George Bunn and Christopher F. Chyba, eds., *U.S. Nuclear Weapons Policy: Confronting Today's Threats* (Washington, D.C.: Brookings, 2006). Students who are particularly interested may consider purchasing them.

Up-to-date information on issues regularly being shaped by new developments is an important element of policy in this area; course readings will be updated accordingly, and students are encouraged to post interesting items they encounter on the class page.

Note: the readings in this course present a range of views. I will certainly assign readings that I disagree with; indeed, some of the readings disagree with each other. Use your critical reading skills, asking whether the evidence the authors offer seems adequate to support their arguments, and what you think the risks and benefits of the policies the authors advocate might be.

An Important Reminder About Citing Sources: Students *must* be familiar with and observe Kennedy School and Harvard rules regarding the citation of sources. While policy memos in the real world would usually not have footnotes, in this academic environment, they should. Any sentences or paragraphs taken verbatim from the writing of (or interviews with) any other person or persons, or from your own writing that has been published or submitted elsewhere, must be placed in quotation marks and each one must have its source identified with a footnote or endnote that includes the usual bibliographic information: author's name, title of article or chapter, venue (book, journal, magazine, website, report, thesis, term paper, private letter), date, and page numbers if applicable. (Note: In my view, a URL by itself is not an adequate reference, as (1) it tells the reader little until the reader clicks on it to see what it is, and (2) URLs go dead frequently. Please provide author, title, date, and publication, to the extent these are available.) Changing the wording of a sentence or passage slightly does not evade the requirement for citation (nor reduce the chance of detection). Indeed, whenever you are drawing an important argument or insight from someone else, even if you put it into your own words, a reference to the source is required. All of these requirements also apply to material taken from websites. Including material from others in assignments, exams, or term papers without appropriate quotation marks and citations is regarded, as a matter of School and University policy, as a serious violation of academic and professional standards and can lead to serious consequences.

Nuclear Weapons Policy News Sources

In class, we will frequently be discussing events in the news, and students should keep up with at least the biggest news stories unfolding relating to nuclear weapons, nuclear arms control, and nonproliferation. (In some cases, a news story to be discussed will be distributed before class.) Particularly useful sources for proliferation-related news include:

Proliferation News. Prepared by the Carnegie Endowment for International Peace's Nuclear Policy program, this source alone will allow students to keep up with the most important nonproliferation news. Students can sign up for the free e-mail service, or go to the website at <http://carnegieendowment.org/publications/pronews/>.

ArmsControlWonk. Founded by Dr. Jeffrey Lewis (former executive director of the HKS Managing the Atom project), this blog provides in-depth commentary and analysis on a variety of nuclear developments. <http://www.armscontrolwonk.com>

ReThink Media Nuclear News. You can subscribe to this daily e-mail compilation by e-mailing jasmineo@rethinkmedia.org

Nonproliferation Policy Education Center Twitter Feed. Aggregates stories related to nuclear nonproliferation, including energy issues. <https://twitter.com/nuclearpolicy> and also emails a weekly summary. (Many of the sources above also have twitter feeds.) Belfer Center for Science and International Affairs resources:

Managing the Atom <http://www.belfercenter.org/project/managing-atom>

Readings and other media (to be updated as the semester proceeds)

1 September: Why this course matters: Nuclear, biological, and chemical weapons risks that must be managed

Required:

William J. Perry, "My Personal Journey at the Nuclear Brink," *European Leadership Network*, 17 June 2013, http://www.europeanleadershipnetwork.org/my-personal-journey-at-the-nuclear-brink-by-bill-perry_633.html. (From a former U.S. Secretary of Defense, this recounts his experiences in several nuclear crises; Perry later expanded it into a book.)

Yamaoko Michiko, "We Must Doubt as Well as Trust," in Lequita Vance-Watkins and Mariko Aratani, eds., *White Flash/Black Rain: Women of Japan Relive the Bomb* (Minneapolis: Milkweed Editions, 1995), pp. 71-75 (Offers a personal account of the suffering nuclear weapons inflict.)

Francesca Giovannini, "A Hurting Stalemate? The Risks of Nuclear Weapon Use in the Ukraine Crisis," *Bulletin of the Atomic Scientists*, March 2, 2022, <https://thebulletin.org/2022/03/a-hurting-stalemate-the-risks-of-nuclear-weapon-use-in-the-ukraine-crisis/>

Matthew Bunn, "Nuclear Dangers and the Emerging Threat Environment," presentation, August 9, 2022. (On class Canvas page; provides a summary of the current landscape of nuclear dangers that we will discuss in this class.)

Matthew Bunn, "A Risk-Informed Approach to Nonproliferation Policy" (memo, on class Canvas page). (Outlines the approach to thinking about these issues we will emphasize in this class.)

Recommended:

Tom Lehrer, “Who’s Next?” (musical satire), 1964. (See if you can spot the countries that were thought then to be pursuing nuclear weapons who are no longer considered major worries.)
<https://www.youtube.com/watch?v=oRLON3ddZIw>

Madelyn R. Creedon, Robert Einhorn, Kate Hewitt, Bonnie Jenkins, Bruce Jones, Suzanne Maloney, Michael E. O’Hanlon, Jung H. Pak, Frank A. Rose, and Strobe Talbott, “Managing Risk: Nuclear Weapons in the New Geopolitics” (Washington, D.C.: Brookings, February 2019), <https://www.brookings.edu/research/managing-risk-nuclear-weapons-in-the-new-geopolitics/> (A somewhat pessimistic overview, in the form of an interview with a panel of experts – of special interest because three of the participants are now senior Biden administration officials, and the others are seasoned past U.S. government officials.)

Graham Allison, “Nuclear Disorder: Surveying Atomic Threats,” *Foreign Affairs*, January/February 2010, pp. 74-85.

http://belfercenter.ksg.harvard.edu/publication/19819/nuclear_disorder.html

(Although this is more than ten years old, it provides a useful overview of concerns about different nuclear threats; since then, concerns over U.S.-Russian nuclear relations, North Korea’s nuclear capabilities, and the nuclear arms competition between India and Pakistan have grown.)

Thomas C. Reed and Danny B. Stillman, *The Nuclear Express: A Political History of the Bomb and its Proliferation* (Osceola, WI: Zenith Press, 2009). (A useful overview of proliferation history – with some controversial judgments.)

6 September: Nuclear weapons design and construction, nuclear materials, nuclear effects

Required:

Watch Bunn video on these topics on class web page. (The YouTube version has 1.7 million views!)

International Panel on Fissile Materials, “Appendix: Fissile Materials and Nuclear Weapons,” in *Global Fissile Materials Report 2015: Nuclear Weapon and Fissile Material Stockpiles and Production* (Princeton, N.J.: IPFM, 2015), pp. 40-47. (A useful basic description of how nuclear weapons work and the nuclear materials necessary to make them.)

<http://fissilematerials.org/library/gfmr15.pdf>

Lynn Eden, “Complete Ruin,” in Lynn Eden, *Whole World on Fire: Organizations, Knowledge, and Nuclear Weapons Devastation* (Ithaca, N.Y.: Cornell, 2006), pp. 13-36. (A good overview of the impact of a nuclear weapon. The entire book is recommended, offering a fascinating discussion of the organizational reasons why U.S. analyses of strategic requirements largely ignored mass fires, one of the most devastating effects of nuclear weapons.)

M.V. Ramana, “A Nuclear Blast Over Bombay,” in Beatrice Fihn, ed., *Unspeakable Suffering: The Humanitarian Impact of Nuclear Weapons* (Geneva: Reaching Critical Will, 2013), pp. 94-97. (A useful brief summary of the impacts in a developing world context.)

Alan Robock and Owen Brian Toon, “Local Nuclear War, Global Suffering,” *Scientific American*, January 2010, pp. 74-81 (skim). (A good summary of research suggesting that the

smoke from burning cities in a nuclear conflict could cause major climate and agriculture impacts, greatly increasing the damage from a nuclear war.)

<http://climate.envsci.rutgers.edu/pdf/RobockToonSciAmJan2010.pdf>

A useful resource: <http://www.nuclearsecrecy.com/nukemap>. (With this on-line tool, you can examine the effects of a nuclear weapon of any size detonated at any point in the world you choose, for both air bursts and ground bursts. A 3D version is also available.)

Recommended:

Erik Barnouw, “Hiroshima/Nagasaki, August 1945,” (film, 15 minutes), Columbia University, 1969, <https://archive.org/details/hiroshimanagasakiagust1945#>. (Highly recommended. A powerful 15 minutes of footage of the aftermath of the bombings.)

Matthew Bunn and Nickolas Roth, “The Effects of a Single Terrorist Nuclear Bomb,” *Bulletin of the Atomic Scientists*, September 28, 2017, <https://thebulletin.org/2017/09/the-effects-of-a-single-terrorist-nuclear-bomb/>. (An account of the human effects of a bomb on a city.)

Samuel Glasstone and Phillip J. Dolan, *The Effects of Nuclear Weapons*, 3rd Ed. (Washington, D.C.: U.S. Department of Defense and Energy Research and Development Administration, 1977), <http://fissilematerials.org/library/gla77.pdf> (The definitive U.S. government textbook.)

Office of Technology Assessment, *The Effects of Nuclear War* (Washington, DC: OTA, May 1979), especially pp. 15-46. <http://www.princeton.edu/~ota/disk3/1979/7906/7906.PDF> (Useful overview of all of the effects of nuclear weapons.)

John Hersey, *Hiroshima* (New York: Knopf, 1946) (Very much worth reading. Hersey’s account of the experiences of six particular survivors told the world about the horrors of nuclear weapons. The full text of the book originally appeared in *The New Yorker*, and is available online there; <https://www.newyorker.com/magazine/1946/08/31/hiroshima>.)

Robert Serber, *The Los Alamos Primer: The First Lectures on How to Build an Atomic Bomb* (Berkeley: University of California Press, 1992). (Literally the notes for the lectures Serber gave to the scientists arriving at Los Alamos to work on the atomic bomb – with further explanations from Serber. Only for the physics-inclined.)

Office of Technology Assessment, “Technical Aspects of Nuclear Proliferation,” in *Technologies Underlying Weapons of Mass Destruction* (Washington, DC: OTA, December 1993), especially pp. 119-129, 149-158. <http://www.fas.org/spp/starwars/ota/9344.html> (Helpful brief introduction to key technological aspects of nuclear proliferation.)

Donald R. Cotter, “Peacetime Operations: Safety and Security,” in Ashton B. Carter, John D. Steinbruner, and Charles A. Zraket, eds., *Managing Nuclear Operations* (Washington, D.C.: Brookings, 1987), section on pp. 42-53. (Useful discussion of Permissive Action Links and other features to prevent accidental detonations or unauthorized use of nuclear weapons.)

“Always/Never: The Quest for Safety, Control, and Survivability,” video, Sandia National Laboratory, 2015. (A fascinating history of the development of safety and security features for U.S. nuclear weapons, and the accidents that drove the effort.)

Part 1: <https://www.youtube.com/watch?v=DQEB3LJ5psk>

Part 2: https://www.youtube.com/watch?v=sb2qo5m_hTY

Part 3: https://www.youtube.com/watch?v=0a1exo_vU_k

Alexander Glaser, “Nuclear Weapons Effects” [lecture slides],
http://www.princeton.edu/~aglaser/lecture2007_weaponeffects.pdf (Very nice summary slides.)

Frederic Solomon, M.D., and Robert Q. Marston, M.D., *The Medical Implications of Nuclear War* (Washington, D.C.: National Academy Press, 1986), esp. Theodore Postol, Chapter 1, “Possible Fatalities from Superfires Following Nuclear Attacks in or near Urban Areas,”
http://www.nap.edu/openbook.php?record_id=940&page=15 (Detailed account of mass fires and their dangers; the whole study provides a useful overview of the awesome challenge of medical response to nuclear attacks.)

8 September: Nuclear material production, safeguards, threats, and diplomacy: North Korea, 1992-1994

(Although this case occurred long ago, I start with it as it (a) sets the stage for what is happening with North Korea today; (b) involves both the plutonium and uranium paths to the bomb, which are important to understand from the beginning; and (c) involves many of the key tools of nonproliferation policy, from diplomacy to possible military strikes.)

Required:

Watch Bunn video on how plutonium and highly enriched uranium are made, on class web page.

Three short memos on the North Korean situation as of 1994 (on class web page). (After reading these memos, think for a bit about a few questions: If you were the North Korean leader in 1994, what would you want in return for freezing your nuclear weapons program? What would you want in return for actually dismantling it? If you were a U.S. official, what risks would you see in the option of taking military action against the North Korean nuclear facility? What would the risks be of the option of demanding that North Korea dismantle its nuclear program, imposing sanctions as a “stick” to convince them, but not offering much in the way of a carrot? What would the risks be of negotiating a deal involving real compromises with the North Koreans, including freezing but not dismantling their program for the time being, and offering them substantial carrots?)

“Standing at the Brink in North Korea: The Counterproliferation Imperative,” in Ashton B. Carter and William J. Perry, *Preventive Defense: A New Security Strategy for America* (Washington, D.C.: Brookings Institution Press, 1999), pp. 123-142. (A first-person account of briefing the President on the options the United States had to choose from in mid-1994 – involving sending additional forces to the region in preparation for the North Korea response to a possible military strike.)

Susan Rosegrant, “Carrots, Sticks, and Question Marks: Negotiating the North Korean Crisis (A)” Harvard Kennedy School Case C18-95-1297.0, 1st 24 pages (the remainder is Recommended:, but not essential for class). (A good step-by-step summary of the unfolding crisis from the U.S. perspective.)

Houston G. Wood, Alexander Glaser, and R. Scott Kemp, "The Gas Centrifuge and Nuclear Weapons Proliferation," *Physics Today*, pp. 40-45. (As the title implies, a good introduction to the main tool for the HEU path to the bomb – the gas centrifuge.)

http://ptonline.aip.org/journals/doc/PHTOAD-ft/vol_61/iss_9/40_1.shtml

Recommended:

"Carrots, Sticks, and Question Marks: Negotiating the North Korean Crisis (B)" Harvard Kennedy School Case C18-95-1298.0, 17 pp. (Further follow-up on the case.)

R. Scott Kemp, "The Nonproliferation Emperor Has No Clothes: The Gas Centrifuge, Supply-Side Controls, and the Future of Nuclear Proliferation," *International Security*, Vol. 38, No. 4., pp. 39-78. (A remarkable account arguing that enrichment is not as technically challenging as often claimed, and that quite a number of countries have managed to design and build centrifuges with small numbers of people in short periods of time.)

<http://dspace.mit.edu/handle/1721.1/89182>

Office of Technology Assessment, "Technical Aspects of Nuclear Proliferation," in *Technologies Underlying Weapons of Mass Destruction* (Washington, DC: OTA, December 1993), pp. 129-149. (A good summary of the plutonium production and uranium enrichment.)

<http://www.fas.org/spp/starwars/ota/9344.html>

Peter Zimmerman, "Proliferation: Bronze Medal Technology is Enough," *Orbis*, Vol. 38, No. 1 (Winter 1994), pp. 67-83. (A useful reminder that the basic technology of nuclear weapons is now decades old and not at the cutting edge of technology.) <http://ezp-prod1.hul.harvard.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=mth&AN=9409027514&site=ehost-live&scope=site>

Daniel B. Poneman, Joel S. Wit, and Robert L. Gallucci, *Going Critical: The First North Korean Nuclear Crisis* (Washington, D.C.: Brookings, 2004).

Leon V. Sigal, *Disarming Strangers: Nuclear Diplomacy With North Korea* (Princeton: Princeton University Press, 1998), esp. pp. 90-123, 150-161, 184-191.

William J. Perry, *Review of United States Policy Toward North Korea: Findings and Recommendations* (Washington, D.C.: U.S. Department of State, 12 October 1999), http://belfercenter.hks.harvard.edu/publication/2017/review_of_united_states_policy_toward_north_korea.html

Victor D. Cha and David C. Kang, *Nuclear North Korea: A Debate on Engagement Strategies* (New York: Columbia, 2005) 280 pp.

13 September: Why states decide to get, or not to get, nuclear weapons

Required:

Scott Sagan, "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. (An exploration of models of states wanting nuclear weapons for security, to increase their status, and to serve domestic political ends. For those interested in an update on the literature, see Sagan's review in the Recommended: below.)

https://fsi.stanford.edu/sites/default/files/Why_Do_States_Build_Nuclear_Weapons.pdf

Matthew Bunn, "Realist, Idealist, and Integrative Approaches to Proliferation Policy" (unpublished, 2003), available on class web page. (A description of the implications and weaknesses of different theories of why states proliferate, and a proposal of a debate-based model.)

Maria Rost Rublee, "Taking Stock of the Nuclear Nonproliferation Regime: Using Social Psychology to Understand Regime Effectiveness," *International Studies Review*, Vol. 10 (2008), pp. 420-450. (An argument about the importance of norms in influencing state decision-making about whether to proliferate.) <https://tinyurl.com/yew59222>

Recommended:

Scott Sagan, "The Causes of Nuclear Weapons Proliferation," *Annual Review of Political Science* 2011, Vol. 14, pp. 225-44.

http://iis-db.stanford.edu/pubs/23205/Sagan_Causesof_NuclearWeaponsProliferation.pdf (An excellent survey of how the literature evolved after his seminal 1996/1997 paper.)

Mark Bell, "Examining Explanations for Nuclear Proliferation," *International Studies Quarterly*, (2015), 0, pp. 1-10, <http://isq.oxfordjournals.org.ezp-prod1.hul.harvard.edu/content/isq/early/2015/12/14/isq.sqv007.full.pdf> (A detailed case that the statistical analyses of proliferation offer less insight than may at first appear. See also the important discussion of this article here: <http://www.isanet.org/Publications/ISQ/Posts/ID/5003/What-Drives-Nuclear-Proliferation>)

Målfriid Braut-Hegghammer, *Unclear Physics: Why Iraq and Libya Failed to Build Nuclear Weapons* (Ithaca, N.Y.: Cornell University Press, 2016).

Ethel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton, N.J.: Princeton University Press, 2007). (An argument that whether the leadership coalition prefers to integrate with the world, politically and economically, or remain apart, is key to whether they choose to pursue nuclear weapons.)

Maria Rost Rublee, *Nonproliferation Norms: Why States Choose Nuclear Restraint* (Athens, Georgia: University of Georgia Press, 2009). (A book-length version of the argument about the importance of norms.)

Jacques E.C. Hymans, *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy* (Cambridge, U.K.: Cambridge University Press, 2009). (Hymans argues that leader psychology and sense of personal and national identity is key to whether they choose to pursue

nuclear weapons: only leaders who are nationalists and see their state in opposition to much of the world tend to do so.)

Jacques E.C. Hymans, *Achieving Nuclear Ambitions: Scientists, Politicians, and Proliferation* (Cambridge, U.K.: Cambridge University Press, 2012). (Seeks to explain why early nuclear weapons programs were quick and successful, while later ones, after technology had developed and spread, took longer and were often unsuccessful. Argues that developing world dictatorships often tried to micromanage the scientists and engineers in ways that interfered with getting the bomb.)

William C. Potter and Gaukhar Mukhatzhanova, eds., *Forecasting Nuclear Proliferation in the 21st Century: Vol. 1: The Role of Theory, and Vol. 2: A Comparative Perspective* (Stanford: Stanford University Press, 2010). (Both volumes of this book are quite useful, providing a strong overview of the literature on why states get or do not get nuclear weapons and on the cases of particular countries.)

Philipp Bleek, *When Did (and Didn't) States Proliferate? Chronicling the Spread of Nuclear Weapons* (Cambridge, Mass: Project on Managing the Atom, Belfer Center for Science and International Affairs, Belfer Center for Science and International Affairs, Harvard Kennedy School, and the James Martin Center for Nonproliferation Studies, Middlebury Institute of International Studies, Monterey, Calif., June 2017), <https://www.belfercenter.org/publication/when-did-and-didnt-states-proliferate> (The best available dataset on which countries explored, pursued, or acquired nuclear weapons, and when.)

Jim Walsh, *Bombs Unbuilt: Power, Ideas, and Institutions in International Politics*, unpublished Ph.D. dissertation, Massachusetts Institute of Technology, 2001. (A remarkable analysis of why states do not build nuclear weapons, breaking countries' programs down into many smaller decisions that are either in the direction toward or away from nuclear weapons.)

Mitchell Reiss, *Bridled Ambition: Why States Constrain Their Nuclear Capabilities* (Washington D.C.: Woodrow Wilson Center Press, 1995), esp. Chapter 7, "Conclusion," pp. 321-333. (Another very useful analysis of what states choose not to build nuclear weapons.)

William C. Potter and Gaukhar Mukhatzhanova, "Divining Nuclear Intentions: A Review Essay," *International Security*, Vol. 33, No. 1, Summer 2008, pp. 139-169. (A useful summary of the literature, based in part on the papers from the *Forecasting Nuclear Proliferation in the 21st Century* volumes.)

Ariel E. Levite, "Never Say Never Again: Nuclear Reversal Revisited," *International Security*, Vol. 27, No. 3, Winter 2002/2003, pp. 59-88. (A classic. Just because a country stopped its nuclear weapons effort for the time being doesn't mean that will last forever.)

15 September: The Nonproliferation Treaty (NPT) and the global nonproliferation regime

Required:

"Treaty on the Non-Proliferation of Nuclear Weapons"
<http://www.un.org/events/npt2005/npttreaty.html>

George Bunn, "The Nuclear Nonproliferation Regime and Its History," Chapter 3 in George Bunn and Christopher Chyba, eds., *U.S. Nuclear Weapons Policy: Confronting Today's Threats*

(Washington, D.C.: Brookings, 2006), pp. 75-88, 94-103. (Perhaps the best available overview of the regime, by one of the NPT's negotiators – and my father.)

Andrew J. Coe and Jane Vaynman, "Collusion and the Nuclear Nonproliferation Regime," *Journal of Politics*, Vol. 77, No. 4 (2015), pp. 93-95. (These three pages present the key ideas about why the nuclear superpowers colluded to create the nonproliferation regime when they did, and why it has been in most states' interest to go along. The rest of the article is recommended, not required.)

Susan Koch, "Extended Deterrence and the Future of the Nonproliferation Treaty," https://cgsc.llnl.gov/content/assets/docs/Security_Assurances_and_NPT_8-29.pdf (This article describes the importance of U.S. assurances that it will defend its allies to their choices not to build their own nuclear weapons.)

Graham T. Allison, "Flight of Fancy," in *Annals of the American Academy of Political and Social Science*, Vol. 607 (September 2006), pp. 162-166, <http://www.jstor.org.ezp-prod1.hul.harvard.edu/stable/25097846> (Though old, this provides a useful crystallization of the view that the NPT regime is fragile and might collapse.)

Matthew Bunn, "The Success and Resilience of the NPT." (Memo, on the Canvas page; an argument that the NPT regime has been successful and shows strong signs of resilience.)

Recommended:

Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: An Enduring Debate* (New York: Norton, 2012). (3rd edition of a classic: exploring the arguments as to whether nuclear proliferation makes the world more dangerous – the dominant view – or safer.)

Jim Walsh, "Learning From Past Success: The NPT and the Future of Non-Proliferation," No. 41 (Stockholm: Weapons of Mass Destruction Commission, October 2005), <http://www.blixassociates.com/wp-content/uploads/2011/03/no41.pdf> (An excellent overview of evidence for the NPT's success, and a very interesting theory of the reasons for that success.)

Steven E. Miller, "Nuclear Collisions: Discord, Reform & the Nuclear Nonproliferation Regime," *American Academy of Arts & Sciences*, 2012, <http://www.amacad.org/pdfs/nonproliferation.pdf> (Now several years old, this is still an excellent summary of the debates between nuclear weapon states and non-nuclear-weapon states over the NPT and its future.)

Nicholas L. Miller, *Stopping the Bomb: The Sources and Effectiveness of U.S. Nonproliferation Policy* (Ithaca, NY: Cornell, 2018). (A theory of the factors that changed U.S. nonproliferation policy in the mid-1960s and mid-1970s, with an historical account of the origins and early years of the NPT – and then a theory of how well the new U.S. policies worked, with both statistics and case studies.)

Matthew Bunn, "The Impact of States Outside the NPT Regime." (Memo, on the Canvas page.)

Lewis A. Dunn, "The NPT: Assessing the Past, Building the Future," *Nonproliferation Review*, Vol. 16, No. 2 (July 2009), pp. 143-172, https://www.nonproliferation.org/wp-content/uploads/npr/npr_16-2_dunn.pdf. (Useful assessment of the impact of each of the key articles of the NPT, though now somewhat old.)

Beatrice Fihn, “Nobel Peace Prize Acceptance Speech,” December 10, 2017, <https://www.wagingpeace.org/beatrice-fihn-nobel-peace-prize-acceptance-speech/> (Statement in favor of the treaty prohibiting all nuclear weapons, from a key leader of the movement that brought it into being.)

Rebecca Davis Gibbons, “The Humanitarian Turn in Nuclear Disarmament and the Treaty on the Prohibition of Nuclear Weapons,” *Nonproliferation Review*, Vol. 25, Nos. 1-2 (2018), pp. 11-36, <https://www.tandfonline.com/doi/pdf/10.1080/10736700.2018.1486960> (One of the best accounts of the steps that led to the negotiation of the nuclear weapons ban treaty.)

Scott Sagan and Benjamin A. Valentino, “The Nuclear Weapons Ban Treaty: Opportunities Lost,” *Bulletin of the Atomic Scientists*, July 16, 2017, <https://thebulletin.org/2017/07/the-nuclear-weapons-ban-treaty-opportunities-lost/> (A thoughtful critique of the ban treaty.)

Heather Williams, “A Nuclear Babel: Narratives Around the Treaty on the Prohibition of Nuclear Weapons,” *Nonproliferation Review*, Vol. 25, No. 1-2: (2018), <https://www-tandfonline-com.ezp-prod1.hul.harvard.edu/doi/full/10.1080/10736700.2018.1477453> (A framework for bridging divides between ban treaty supporters and opponents.)

Michael Krepon, “Proliferation Optimism vs. Pessimism Revisited,” *Arms Control Wonk*, March 30, 2018, <https://www.armscontrolwonk.com/archive/1204999/proliferation-optimism-vs-pessimism-revisited/>

Avner Cohen and William Burr, “The Untold Story of Israel’s Bomb,” *Washington Post*, 30 April 2006, http://www.washingtonpost.com/wp-dyn/content/article/2006/04/28/AR2006042801326_pf.html

Subrata Ghoshroy, “Taking Stock: The U.S.-India Nuclear Deal 10 Years Later,” *Bulletin of the Atomic Scientists*, 16 February 2016, <http://thebulletin.org/taking-stock-us-india-nuclear-deal-10-years-later9165>

Jeffrey W. Knopf, ed., *Security Assurances and Nuclear Nonproliferation* (Stanford, Calif.: Stanford University Press, 2012).

“Nuclear-Weapon-Free Zones,” *Disarmament Forum* (United Nations Institute for Disarmament Research), 2011, No. 2, <http://www.unidir.org/files/publications/pdfs/nuclear-weapon-free-zones-en-314.pdf>

Thomas Graham, “The Nuclear Non-Proliferation Treaty and the Comprehensive Test Ban Treaty, the Relationship,” in Pierce S. Corden, David Hafemeister, and Peter Zimmerman, *Nuclear Weapon Issues in the 21st Century*, conference proceedings (Washington, D.C.: American Institute of Physics, 2014), <https://aip.scitation.org/doi/pdf/10.1063/1.4876457>

“Agree to Disagree: Banning WMD in the Middle East,” *Bulletin of the Atomic Scientists*, June-August 2013 <http://thebulletin.org/banning-wmd-middle-east> (A variety of perspectives on the proposal for a Weapons of Mass Destruction Free Zone in the Middle East, which has been a central element of NPT politics for over 20 years.)

Martin B. Malin and Steven E. Miller, “A WMD Free Zone in the Middle East: From the Outside Looking In”; Sameh Aboul-Enein, “Making Progress on the Middle East Nuclear- and WMD-Free Zone: Egypt’s NPT Pillar”; “Where do We Go From Here? A New Israeli Approach to Tension-Reduction in the Middle East”; and Paolo Foradori, “Conclusion: Keep the Ball Rolling” in Paolo Foradori and Martin B. Malin, eds., *A WMD Free Zone in the Middle East*:

Regional Perspectives (Cambridge, Mass.: Project on Managing the Atom, Harvard University, November 2013), http://belfercenter.ksg.harvard.edu/files/dp_2013-09.pdf

George Bunn, “The NPT: Banning Transfers of Nuclear Weapons Takes Two Decades,” and “The NPT Finally Brings Widespread International Safeguards on Reactors,” in *Arms Control by Committee: Managing Negotiations with the Russians* (Stanford: Stanford University Press, 1992). (Explaining the history of key provisions of the NPT.)

Roland Popp, Liviu Horowitz, and Andreas Wenger, eds., *Negotiating the Nuclear Nonproliferation Treaty: Origins of the Nuclear Order* (Abingdon, Oxon, U.K.: Routledge, 2016).

William C. Potter and Sarah Bidgood, *Once and Future Partners: The United States, Russia, and Nuclear Non-Proliferation* (London: International Institute for Strategic Studies, 2018), especially Lewis A. Dunn, “Negotiating and Sustaining the Non-Proliferation Treaty: Challenges and Lessons for U.S.-Russia Cooperation,” pp. 117-134. (Another version of the history of the NPT negotiation.)

20 September: Nuclear deterrence, nuclear dangers, and nuclear doctrine

Required:

Matthew Bunn, “Understanding Potential Pathways to Nuclear War Through the Ideas of Wohlstetter, Schelling, and Sagan,” unpublished memo, 2019.

Heather Williams, Vipin Narang, Mark Bell, Jane Vaynman, and others, “Nuclear Deterrence 101” (Washington, D.C.: Program on Nuclear Issues, Center for Strategic and International Studies, 2021), <https://nuclearnetwork.csis.org/projects/deterrence-101/> (Video, 3 parts, 1.5 hours total.)

Eric Schlosser, “What if Russia Uses Nuclear Weapons in Ukraine? A Look at the Grim Scenarios – and the U.S. Playbook for Each,” *The Atlantic*, June 20, 2022, <https://www.theatlantic.com/ideas/archive/2022/06/russia-ukraine-nuclear-weapon-us-response/661315/>

Rebecca Hersman, “Wormhole Escalation in the New Nuclear Age,” *Texas National Security Review*, Summer 2020, <https://tnsr.org/2020/07/wormhole-escalation-in-the-new-nuclear-age/#article> (A fascinating look at how disinformation campaigns and related sub-conventional tools in the new digital age could cause sudden and unexpected escalation, perhaps including to the nuclear level.)

Kristin ven Bruusgaard, “The Myth of Russia’s Lowered Nuclear Threshold,” *War on the Rocks*, September 22, 2017, <https://warontherocks.com/2017/09/the-myth-of-russias-lowered-nuclear-threshold/> (As the title suggests, this article argues that Russian military plans do not call for use of nuclear weapons except in extreme circumstances.)

Liping Xia, “China’s Nuclear Doctrine: Debates and Evolution,” Carnegie Endowment for International Peace, June 30, 2016, <https://carnegieendowment.org/2016/06/30/china-s-nuclear-doctrine-debates-and-evolution-pub-63967> (Describes China’s approach, sometimes described as “the minimum means of reprisal.” Note: only the section entitled “The Key Features of China’s Nuclear Doctrine” is required.)

Recommended:

Robert Jervis, "Eric Schlosser and the Illusion of Nuclear Weapons Safety," *The Nation*, October 15, 2013, <https://www.thenation.com/article/eric-schlosser-and-illusion-nuclear-weapons-safety/> (A brief description of key dangers from accidents, unauthorized use, and false alarms, reviewing Eric Schlosser's book *Command and Control*; Jervis is a leading international relations scholar and thinker on nuclear strategy, author of *The Illogic of American Nuclear Strategy*.)

Mark S. Bell and Julia MacDonald, "How to Think About Nuclear Crises," *Texas National Security Review*, Vol. 2, No. 2 (February 2019), pp. 40-64, <https://tnsr.org/2019/02/how-to-think-about-nuclear-crises/> (A very useful typology of crises, based on higher or lower "controllability" and higher or lower "incentives for nuclear first use.")

Elizabeth Sherwood-Randall, "The Age of Strategic Instability: How Novel Technologies Disrupt the Nuclear Balance," *Foreign Affairs*, July 2020, <https://www.foreignaffairs.com/articles/russia-fsu/2020-07-21/age-strategic-instability> (A brief exploration of the impact of technologies such as cyber, hypersonics, and counter-space weapons on the stability of nuclear balances.)

Vincent Boulanin, Lora Saalman, Petr Topychkanov, Fei Su, and Moa Peldán Carlsson, *Artificial Intelligence, Strategic Stability, and Nuclear Risk* (Stockholm: Stockholm International Peace Research Institute, June 2020), <https://www.sipri.org/publications/2020/other-publications/artificial-intelligence-strategic-stability-and-nuclear-risk> (A detailed exploration of the potential impacts of artificial intelligence on nuclear balances.)

Heather Williams, "Strategic Stability, Uncertainty, and the Future of Arms Control," *Survival*, Vol. 60, No. 2, pp. 45-54. <https://www.tandfonline.com/doi/pdf/10.1080/00396338.2018.1448561?needAccess=true> (A brief assessment of the Trump administration nuclear posture review in the context of broader U.S. shifts in thinking about the strategic environment.)

Wilfred Wan, ed., "Nuclear Risk Reduction: Closing Pathways to Nuclear Use" (Geneva: United Nations Institute for Disarmament Research, 2020), <https://undir.org/publication/nuclear-risk-reduction-closing-pathways-use> (An important study that surveys the literature on ways nuclear wars might start and proposals to reduce the danger.)

Jeffrey Lewis, "Minimum Deterrence," *Bulletin of the Atomic Scientists*, Vol. 64, No. 3 (July/August 2008), pp. 38-41 http://www.newamerica.net/publications/articles/2008/minimum_deterrence_7552 (A useful brief presentation of the argument that deterrence only requires a modest number of survivable nuclear weapons.)

McGeorge Bundy, "To Cap the Volcano," *Foreign Affairs*, Vol. 48, No. 1, October 1969, <http://ezp-prod1.hul.harvard.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=5802706&site=ehost-live&scope=site> (A classic argument that beyond a few survivable nuclear weapons, more does not help for nuclear deterrence.)

Keith B. Payne et al., *Minimum Deterrence: Examining the Evidence* (Fairfax, Vir.: National Institute for Public Policy, 2013), Executive Summary, pp. xiii-xxv. <http://www.nipp.org/Final%20for%20Distro%207.17.pdf> (A fierce critique of the minimum deterrence argument.)

Ashton B. Carter, “Nuclear Deterrence: Still the Bedrock of U.S. Security,” *American Interest*, Vol. 12, No. 6 (April 2017), <https://www.the-american-interest.com/2017/04/06/nuclear-deterrence-still-the-bedrock-of-us-security/> (A strong statement on the need for nuclear deterrence from the former Secretary of Defense.)

Patricia Lewis, Heather Williams, Benoit Pelopidas, and Susan Aghlani, *Too Close for Comfort: Cases of Near Nuclear Use and Options for Policy* (London: Chatham House, April 2014), <https://www.chathamhouse.org/2014/04/too-close-comfort-cases-near-nuclear-use-and-options-policy> (Outlines situations that nearly led to the use of nuclear weapons, and offers suggestions for reducing the risk.)

Bruno Tertrais, “‘On the Brink’ – Really? Revisiting Nuclear Close Calls Since 1945,” *Washington Quarterly*, Vol. 17, No. 2 (Summer 2017), pp. 51-66, <https://www.frstrategie.org/sites/default/files/documents/publications/autres/2017/2017-tertrais-twq-on-the-brink.pdf>

Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton, N.J.: Princeton University Press, 2014). (Describes the somewhat different nuclear doctrines that regional powers adopt.)

James M. Acton, “Escalation Through Entanglement: How the Vulnerability of Command and Control Systems Raises the Risks of an Inadvertent Nuclear War,” *International Security*, Vol. 43, No. 1 (Summer 2018), pp. 56-99. (Explores how the mingling of command systems for conventional and nuclear forces means that attacks on command systems in a conventional conflict could create risks of escalation to nuclear use.) <https://direct.mit.edu/isec/article-abstract/43/1/56/12199>

Caitlin Talmadge, “Would China Go Nuclear? Assessing the Risk of Chinese Nuclear Escalation in a Conventional War with the United States,” *International Security*, Vol. 41, No. 4 (April 2017), pp. 50-92, <https://muse-jhu-edu.ezp-prod1.hul.harvard.edu/article/657918/pdf>

Fiona S. Cunningham and M. Taylor Fravel, “Assuring Assured Retaliation: China’s Nuclear Posture and U.S.-China Strategic Stability,” *International Security* 40, no. 2 (2015): 7-50, https://www.mitpressjournals-org.ezp-prod1.hul.harvard.edu/doi/pdf/10.1162/ISEC_a_00215

Kristen ven Bruusgaard and Jaclyn A. Kerr, “Crisis Stability and the Impact of the Information Ecosystem,” in Harold A. Trikunus, Herbert Lin, and Benjamin Loehrke, eds., *Three Tweets to Midnight: Effects of the Global Information Ecosystem on the Risk of Nuclear Conflict* (Stanford, Calif.: Hoover Institution Press, 2020), https://www.hoover.org/sites/default/files/research/docs/trinkunas_threetweetstomidnight_137-158_ch.7.pdf

Nina Tannenwald, “The Nuclear Taboo: The United States and the Normative Basis of Nuclear Non-Use,” *International Organization*, Vol. 53, No. 3 (1999), pp. 433-468.

Michael Krepon, “Sechser and Fuhrman: Deterrence Yes; Coercion No,” *Arms Control Wonk*, June 13, 2017, <https://www.armscontrolwonk.com/archive/1203367/sechser-coercion-no/> (Useful short summary of recent book on what nuclear threats can and cannot accomplish.)

Mark S. Bell and Nicholas L. Miller, “Questioning the Effect of Nuclear Weapons on Conflict,” *Journal of Conflict Resolution*, Vol. 59, No. 1 (2015), pp. 74-92. (Argues that neither the idea that nuclear-armed states never fight each other nor the “stability-instability paradox”

idea that a stable nuclear balance may lead to more violence at low levels of conflict, since each side would be confident the other would not escalate, seems to be supported by the data.)

Adm. James A. Winnefeld Jr., "A Commonsense Policy for Avoiding a Disastrous Nuclear Decision," Carnegie Endowment for International Peace, September 10, 2019. <https://carnegieendowment.org/2019/09/10/commonsense-policy-for-avoiding-disastrous-nuclear-decision-pub-79799> (Argues for a policy of "decide under attack," in which the President might make a decision about retaliation as missiles were headed to the United States, but the launches themselves would come later. Adm. Winnefeld retired as Vice Chairman of the Joint Chiefs of Staff.)

Robert S. McNamara, "Forty Years After 13 Days," *Arms Control Today*, November 2002 (with additional oral history and documents) at "The Cuban Missile Crisis: Revisited on the Anniversary," http://www.armscontrol.org/act/2002_11/cubanmissile (Reflections on the dangers of the Cuban Missile Crisis by the Secretary of Defense at the time.)

Lisbeth Gronlund, David Wright, and Steve Fetter, "How to Limit Presidential Authority to Order the Use of Nuclear Weapons," *Bulletin of the Atomic Scientists*, January 23, 2018, <https://thebulletin.org/2018/01/how-to-limit-presidential-authority-to-order-the-use-of-nuclear-weapons/>

James N. Miller and Richard Fontaine, *A New Era in U.S.-Russia Strategic Stability: How Changing Geopolitics and Emerging Technologies are Reshaping Pathways to Crisis and Conflict* (Washington, D.C.: Center for a New American Security, September 2017), <https://www.cnas.org/publications/reports/a-new-era-in-u-s-russian-strategic-stability>

Dmimitri Trenin, "Strategic Stability in the Changing World," Carnegie Moscow Center, March 2019, https://carnegieendowment.org/files/3-15_Trenin_StrategicStability.pdf

Kristin ven Bruusgard, "Russian Strategic Deterrence," *Survival*, Vol. 58, No. 4 (2016), pp. 7-26, <https://www.tandfonline.com/doi/full/10.1080/00396338.2016.1207945>

Lora Saalman, "Placing a Renminbi Sign on Strategic Stability and Nuclear Reductions," in in Elbridge A. Colby and Michael S. Gerson, eds., *Strategic Stability: Contending Interpretations* (Carlisle, Penn.: Strategic Studies Institute and U.S. Army War College Press, 2013), <https://www.jstor.org/stable/pdf/resrep12086.12.pdf>

James Acton, "Reclaiming Strategic Stability," in Elbridge A. Colby and Michael S. Gerson, eds., *Strategic Stability: Contending Interpretations* (Carlisle, Penn.: Strategic Studies Institute and U.S. Army War College Press, 2013), <http://www.strategicstudiesinstitute.army.mil/pdf/files/pub1144.pdf>

Keir A. Lieber and Daryl G. Press, "The Nukes We Need: Preserving the American Deterrent," *Foreign Affairs*, Vol. 88, No. 6 (November/December 2009), pp. 39-51. http://www.alternatewars.com/BBOW/ABC_Weapons/TheNukesWeNeed.pdf
(Also recommended: the exchange of letters over this article in the March/April 2010 issue, <http://www.heinonline.org.ezp-prod1.hul.harvard.edu/HOL/Page?handle=hein.journals/fora89&id=1&size=2&collection=journals&index=journals/fora>)

Mark Bell, "Beyond Emboldenment: How Acquiring Nuclear Weapons Can Change Foreign Policy," *International Security*, Vol. 40, No. 1 (Summer 2015), pp. 87-119. (Nuclear weapons can allow states to change their foreign policies in a variety of ways.)

Alexei Arbatov and Vladimir Dvorkin, *Beyond Nuclear Deterrence: Transforming the U.S.-Russian Equation* (Washington, D.C.: Carnegie Endowment for International Peace, 2006). (A perspective from Russian arms control advocates on reducing the dangers of the nuclear balance.)

Matthew Bunn, Valentin Kuznetsov, Yuri Morozov, Gary Samore, Simon Saradzhyan, William Tobey, Victor Yesin, and Pavel Zolotarev, *Transcending Mutual Deterrence in the U.S.-Russian Relationship* (Cambridge, Mass.: Belfer Center for Science and International Affairs, Harvard Kennedy School, and Institute for USA and Canada Studies, September 2013), <http://belfercenter.ksg.harvard.edu/files/MAD%20English.pdf>

Graham T. Allison and Philip D. Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis*, 2nd ed. (Reading, Mass.: Longman, 1999).

Martin Sherwin, *Gambling with Armageddon: Nuclear Roulette from Hiroshima to the Cuban Missile Crisis* (New York: Knopf, 2020).

Eric Schlosser, *Command and Control: Nuclear Weapons, the Damascus Accident, and the Illusion of Safety* (New York: Penguin, 2013). (A thoroughly reported account of the dangers of nuclear weapons accidents and false alarms, and the efforts to cope with them over the years.)

Daniel Ellsberg, *The Doomsday Machine: Confessions of a Nuclear War Planner* (New York: Bloomsbury Publishing, 2017). (A remarkable account of how dangerous U.S. policies actually were in the 1950s and 1960s, including pre-delegating authority to launch to many regional commanders and instructing them to launch if they thought nuclear war might be under way and they unable to communicate with Washington. Many other interesting details.)

For students wishing to delve deeper into the classics of deterrence theory:

Lawrence Freedman and Jeffrey Michaels, *The Evolution of Nuclear Strategy*, 4th Ed. (Basingstoke, U.K.: Palgrave MacMillan, 2019) (A terrific description of the U.S. debates over nuclear doctrine and forces during the Cold War; the 4th edition, with Jeffrey Michaels added as co-author, provides new details and more of the story in the Soviet Union and other nuclear weapon states.)

Fred Kaplan, *The Wizards of Armageddon* (New York: Simon and Schuster, 1983). (The same topic, told in a more story-focused, journalistic style.)

Fred Kaplan, *The Bomb: Presidents, Generals, and the Secret History of Nuclear War* (New York: Simon and Schuster, 2020) (Arguably a companion to *The Wizards of Armageddon*, in this volume Kaplan describes what U.S. senior officials and officers actually planned and considered, rather than what the strategists recommended. Includes a remarkable account of U.S. consideration of a nuclear first strike on the Soviet Union during the Berlin crisis of 1961. Not yet a classic, but describes the policies affected by the classic writings.)

Bernard Brodie, ed., *The Absolute Weapon: Atomic Power and World Order* (New York: Harcourt Brace, 1946). (Written in the months just after the atomic bombings, remarkably prescient essays on the effect nuclear weapons might have on world politics. A .pdf of Gen. Eisenhower's copy of the preliminary draft is available here: <https://www.osti.gov/opennet/servlets/purl/16380564>.)

Albert Wohlstetter, "The Delicate Balance of Terror," *Foreign Affairs*, Vol. 37, No. 2, January 1959. (A classic description of the danger of nuclear forces vulnerable to enemy attack; highlights the nuclear fears of the early Cold War, and the belief, still common, that deterrence is delicate and difficult to maintain.)

Thomas C. Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1960), <http://elcenia.com/iamapirate/schelling.pdf> (Another classic. Highlights the increased risk of war if both sides believe that if war came, they would be much better off if they were the one that struck first, a concept known as "crisis instability." For that concept, see especially the 1st two pages of "The Reciprocal Fear of Surprise Attack" (pp. 207-208), and the 1st 13 pages of "Surprise Attack and Disarmament," (pp. 230-242).)

Thomas C. Schelling, *Arms and Influence* (New Haven: Yale University Press, Revised Edition 2008 [original 1966]). (Many ideas influenced by the crises and conflicts of the Cold War up to that point, including explorations of "brinksmanship" and "the threat that leaves something to chance.")

Thomas C. Schelling and Morton H. Halperin, *Strategy and Arms Control* (1985 ed.) (Washington, D.C.: Pergamon-Brassey's, 1985), pp. 9-31. (Originally published in 1961, this prescient volume explores most debates about deterrence and arms control that have occurred since.)

Herman Kahn, *On Thermonuclear War* (Princeton: Princeton University Press, 1960). (Outlines many deterrence concepts that influenced U.S. nuclear war planning.)

Herman Kahn, *On Escalation: Metaphors and Scenarios* (Westport, Conn.: Praeger, 1965). (This volume explored the concept of an "escalation ladder" and how states might use their willingness to escalate further to "win" in nuclear crises or conflicts.)

Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospects of Armageddon* (Ithaca, N.Y.: Cornell University Press, 1989). (Explores how nuclear weapons, which offer countries the ability to destroy their adversaries without first defeating their military forces, might change warfare and statecraft. For a discussion of these ideas 30 years later, see this roundtable in the *Texas National Security Review*: <https://tnsr.org/roundtable/book-review-roundtable-the-meaning-of-the-nuclear-revolution-30-years-later/#>)

Robert Jervis, *The Illogic of American Nuclear Strategy* (Ithaca, N.Y.: Cornell University Press, 1984). (Argues that because survivable nuclear forces enable states to destroy each other, preparations for limited nuclear war-fighting and strikes against other countries nuclear forces are illogical and dangerous.)

Scott D. Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons* (Princeton: Princeton University Press, 1993) [especially the chapter, "The Limits of Safety," pp. 250-279.] (Through an exploration of particular incidents, assesses the nuclear risks that may arise accidentally, rather than by intention.)

Charles L. Glaser, *Analyzing Strategic Nuclear Policy* (Princeton, N.J.: Princeton University Press, 1990) (A clear, careful discussion of key debates about counterforce, extended deterrence, missile defenses, and more.)

Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton: Princeton University Press, 2014). (Outlines a theory that puts regional nuclear postures and strategies in three categories: “catalytic” (designed to draw in help from a powerful outside actor such as the United States); “assured retaliation” (designed to ensure that the forces could survive a nuclear strike and retaliate); and “asymmetric escalation” (designed to deter certain non-nuclear attacks by threatening first use of nuclear weapons against them).)

Note: Reflecting much of the writing on nuclear weapons during the Cold War, 100% of the above “classics” are by men, all but Narang’s book are by white men, and all but *The Evolution of Nuclear Strategy* are by Americans. This cultural situation and its possible impact on thinking was described in:

Carol Cohn, “Sex and Death in the Rational World of Defense Intellectuals,” *Signs: Journal of Women in Culture and Society*, Vol. 12, No. 4 (Summer 1987), pp. 687-718, https://www.jstor.org/stable/3174209?seq=2#metadata_info_tab_contents

(Note: I was part of the group of “defense intellectuals” that Cohn observed for this article.)

Two classics from female authors include:

Roberta Wohlstetter, *Pearl Harbor: Warning and Decision* (Stanford: Stanford University Press, 1962). (The experience of Pearl Harbor deeply colored U.S. fears of a surprise attack during the Cold War, and this book was by far the most influential study of the episode.)

Nina Tannenwald, *The Nuclear Taboo: The United States and the Non-Use of Nuclear Weapons Since 1945* (Cambridge, U.K.: Cambridge University Press, 2007). (Later than the other classics noted here, but still part of the “canon” today. Tannenwald argues that the norm of avoiding the use of nuclear weapons has become so strong over time that it shapes state behavior in substantial ways.)

22 September: Nuclear delivery systems and defenses

Required:

Kingston Rief and Travis Sharp, “Pruning the Nuclear Triad? Pros and Cons of Submarines, Bombers, and Missiles,” Center for Arms Control and Nonproliferation, May 16, 2013, <https://armscontrolcenter.org/pruning-the-nuclear-triad-pros-and-cons-of-submarines-bombers-and-missiles/>

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David Wright and Cameron Tracy, “The Physics and Hype of Hypersonic Weapons,” *Scientific American*, August 1, 2021, <https://www.scientificamerican.com/article/the-physics-and-hype-of-hypersonic-weapons/>

Hans M. Kristensen and Matt Korda, “Status of World Nuclear Forces,” February 2022, <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>

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“U.S. Missile Defense System in Europe May Be Used Against Russia – Putin,” *TASS*, 18 June 2016, <http://tass.ru/en/politics/883251>

Laura Grego and David Wright, “Why a Missile Defense System in Space is a Bad Idea,” *Politico*, August 10, 2018, <https://www.politico.com/story/2018/08/10/space-missile-defense-system-opinion-768941>

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Hans M. Kristensen and Matt Korda, “Chinese Nuclear Forces, 2020,” *Bulletin of the Atomic Scientists*, Vol. 76, No. 6 (December 2020) pp. 443-457, <https://www.tandfonline.com/doi/pdf/10.1080/00963402.2020.1846432?>

Hans M. Kristensen and Matt Korda “China’s Nuclear Missile Silo Expansion: From Minimum Deterrence to Medium Deterrence,” *Bulletin of the Atomic Scientists*, September 1, 2021, <https://thebulletin.org/2021/09/chinas-nuclear-missile-silo-expansion-from-minimum-deterrence-to-medium-deterrence/>

Hans M. Kristensen and Matt Korda, “Russian Nuclear Forces, 2022,” *Bulletin of the Atomic Scientists*, Vol. 78, No. 2 (February 2022), pp. 98-121, <https://www.tandfonline.com/doi/pdf/10.1080/00963402.2022.2038907?>

Hans M. Kristensen and Matt Korda, “United States Nuclear Forces, 2022,” *Bulletin of the Atomic Scientists*, Vol. 78, No. 3 (May 2022), pp. 162-184, <https://www.tandfonline.com/doi/pdf/10.1080/00963402.2022.2062943?>

Recommended:

Steve Fetter, “A Ballistic Missile Primer,” unpublished, 1990, <https://fetter.it-prod-webhosting.aws.umd.edu/sites/default/files/fetter/files/1990-MissilePrimer.pdf> (For the technically inclined.)

“2019 Missile Defense Review,” U.S. Department of Defense, Washington, DC, https://www.defense.gov/Portals/1/Interactive/2018/11-2019-Missile-Defense-Review/The%202019%20MDR_Executive%20Summary.pdf (particularly the Executive Summary)

Jonathan Masters, “CFR Backgrounder: Ballistic Missile Defense,” August 15, 2014 <http://www.cfr.org/missile-defense/ballistic-missile-defense/p30607>

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Dean A. Wilkening, “Does Missile Defense in Europe Threaten Russia?” *Survival*, Vol. 54, No. 1 (February-March 2012), pp. 31-52.

Bruce W. MacDonald and Charles D. Ferguson, “Chinese Strategic Missile Defense: Will it Happen, and What Would it Mean?” *Arms Control Today*, November 2015, https://www.armscontrol.org/ACT/2015_11/Features/Chinese-Strategic-Missile-Defense-Will-It-Happen-and-What-Would-It-Mean

2020 *Ballistic and Cruise Missile Threat* (Wright-Patterson Air Force Base, Ohio: National Air and Space Intelligence Center, July 2020), <https://content.govdelivery.com/accounts/USDODAF/bulletins/2bd554a>

Leonard Spector, “The Missile Technology Control Regime and Shifting Proliferation Challenges,” *Arms Control Today*, April 2018, <https://www.armscontrol.org/act/2018-04/features/missile-technology-control-regime-shifting-proliferation-challenges>

Center for Strategic and International Studies Missile Defense Project, “Missiles of the World” <https://missilethreat.csis.org/missile/> (A useful compendium of information on different countries’ missiles.)

Center for Strategic and International Studies Missile Defense Project, “Defense Systems” <https://missilethreat.csis.org/defsys/> (An overview of information on different systems for missile defense.)

U.S. Department of Defense, Director of Operational Test and Evaluation, “2014 Assessment of the Ballistic Missile Defense System” (Washington, D.C.: U.S. DOD, March 2015), <https://www.documentcloud.org/documents/3033790-2014-Assessment-of-the-Ballistic-Missile-Defense.html> (This version is detailed, laying out the status of systems specifically; the most recent updates are quite brief, indicating what progress has and has not been made in recent times. See “Missile Defense System” in *FY 2021 Report of the Office of the Director of Operational Test and Evaluation* (Washington, D.C.: U.S. DOD, 2021), <https://www.dote.osd.mil/Portals/97/pub/reports/FY2021/other/2021mds.pdf?>.)

A.M. Sessler, chair, *Countermeasures: A Technical Evaluation of the Operational Effectiveness of the Planned U.S. National Missile Defense System* (Cambridge, Mass: Union of Concerned Scientists and MIT Security Studies Program, April 2000) http://www.ucsusa.org/assets/documents/nwgs/cm_all.pdf

27 September: Nuclear arms control and disarmament

Required:

Ernest J. Moniz and Sam Nunn, “The Return of Doomsday: The New Nuclear Arms Race—and How Washington and Moscow Can Stop It,” *Foreign Affairs*, August 2019. <https://www.foreignaffairs.com/articles/russian-federation/2019-08-06/return-doomsday>

Daryl Kimball and Kingston Rief, “U.S.-Russian Nuclear Arms Control Agreements at a Glance,” Arms Control Association, April 2020, <https://www.armscontrol.org/factsheets/USRussiaNuclearAgreements> (Note, this summary excludes the 1972 ABM Treaty, an important past arms control agreement.)

Heather Williams, “Strategic Stability, Uncertainty, and the Future of Arms Control,” *Survival*, Vol. 60, No. 2 (March 2018), pp. 45-64,

<https://www.tandfonline.com/doi/pdf/10.1080/00396338.2018.1448561> (An exploration of the implications of broader thinking about strategic stability that includes non-nuclear technologies that affect nuclear balances, including the implications for arms control.)

Naomi Egel and Jane Vaynman, “Reconsidering Arms Control Orthodoxy,” *War on the Rocks*, March 26, 2021, <https://warontherocks.com/2021/03/reconsidering-arms-control-orthodoxy/> (The authors argue that arms control is possible even in times of bad relations; that mutual interest is not necessarily enough to overcome the “security-transparency tradeoff” involved in verification; that the format for talks (bilateral, a few parties, or fully multilateral) should be tailored to the challenge concerned; and that the United States should be willing to discuss – possibly through asymmetric tradeoffs – capabilities it has previously refused to limit.)

Nina Tannenwald, “Life Beyond Arms Control: Moving Toward a Global Regime of Nuclear Restraint & Responsibility,” *Daedalus*, Vol. 149, No. 2, Spring 2020, pp. 205-221, <https://direct.mit.edu/daed/article/149/2/205/27324/Life-beyond-Arms-Control-Moving-toward-a-Global>. (An exploration of approaches to arms restraint if arms control treaties are no longer possible.)

George P. Schultz, William J. Perry, Henry Kissinger, and Sam Nunn, “A World Free of Nuclear Weapons,” *Wall Street Journal*, 4 January 2007 <https://www.wsj.com/articles/SB116787515251566636?ns=prod/accounts-wsj> (The op-ed from senior U.S. statesmen that helped to revive discussion of going to zero nuclear weapons.)

Recommended:

James Timbie, “A Way Forward,” *Daedalus*, Vol. 149, No. 2 (Spring 2020), pp. 190-204. (Interesting ideas on a next round of arms control, dealing not only with strategic nuclear weapons but other issues affecting strategic stability. All the articles in this special issue of *Daedalus* are very much worth reading.) <https://tinyurl.com/yf7l59er>

John D. Maurer, “The Purposes of Arms Control,” *Texas National Security Review*, Vol. 2, Issue 1., November 2018, <https://2llqix3cnhb21kcxpr2u9o1k-wpengine.netdna-ssl.com/wp-content/uploads/2018/11/TNSR-Vol-2-Issue-1-Maurer.pdf>

Rose Gottemoeller, “Rethinking Nuclear Arms Control,” *Washington Quarterly*, Vol. 43, No. 3 (September 2020), pp. 139-159, https://cgsr.llnl.gov/content/assets/docs/Gottemoeller_TWQ_43-3.pdf

Matthew Bunn, “For Security’s Sake: Saving U.S.-Russian Nuclear Arms Control,” presentation, Oak Ridge National Laboratory, October 11, 2018, https://scholar.harvard.edu/files/matthew_bunn/files/for_securitys_sake_saving_us-russian_nuclear_arms_control_presentation_10-11-18.pdf

Lewis A. Dunn, “The Strategic Elimination of Nuclear Weapons: An Alternative Global Agenda for Nuclear Disarmament,” *Nonproliferation Review*, Vol. 24, No. 5-6 (May 2018), with a broad range of responses and commentaries, <https://www.tandfonline.com/doi/full/10.1080/10736700.2018.1440733> (Dunn argues that even if nuclear weapons cannot readily be physically eliminated, they can be made irrelevant as

“instruments of strategy, power, and security” by 2045, 100 years after the Hiroshima and Nagasaki attacks, and outlines steps in that direction.)

Beatrice Fihn, “The Logic of Banning Nuclear Weapons,” *Survival*, Vol. 59, No. 1 (2017), <https://www.tandfonline.com/doi/full/10.1080/00396338.2017.1282671>

Keith B. Payne, “Why the ‘Nuclear Utopians’ are Wrong,” *Wall Street Journal*, March 15, 2015 <http://www.wsj.com/articles/keith-payne-the-nuclear-utopians-are-wrong-1426457846> (Subscription required, but full text available free from ProQuest through the Harvard Libraries.)

Amy Woolf, “Russian Compliance with the Intermediate Nuclear Forces (INF) Treaty: Background and Issues for Congress,” Congressional Research Service, Washington, DC, August 2, 2019, <https://fas.org/sgp/crs/nuke/R43832.pdf>

Sergey Rogov, “Can the U.S. and Russia Find a Path Forward on Arms Control?” *Foreign Affairs*, May 22, 2018, <https://www.foreignaffairs.com/articles/russian-federation/2018-05-22/can-us-and-russia-find-path-forward-arms-control> (A useful summary of the near-breakdown in U.S.-Russian arms control – though it will take more than Russia offering inspections of the relevant missile to resolve Russia’s violation of the INF Treaty.)

George P. Schultz, William J. Perry, Henry Kissinger, and Sam Nunn, “Toward a Nuclear-Free World,” *Wall Street Journal*, 15 January 2008 <http://www.nti.org/analysis/opinions/toward-nuclear-free-world/>

George P. Schultz, William J. Perry, Henry Kissinger, and Sam Nunn, “Deterrence in the Age of Nuclear Proliferation,” *Wall Street Journal*, 7 March 2011, <http://search.proquest.com.ezp-prod1.hul.harvard.edu/docview/855148212/13F97594B8659E3E0F1/1?accountid=11311>

George P. Schultz, William J. Perry, Henry Kissinger, and Sam Nunn, “Next Steps in Reducing Nuclear Risks,” *Wall Street Journal*, 5 March 2013, <http://online.wsj.com/article/SB10001424127887324338604578325912939001772.html>

Union of Concerned Scientists, “Reducing the Danger of Nuclear War: Taking Nuclear Weapons Off High Alert” (Cambridge, Mass.: UCS, 2016), <https://www.ucsusa.org/sites/default/files/attach/2016/02/Reducing-Risk-Nuclear-War-full-report.pdf>

Robert J. Berls, Jr., and Leon Ratz, *Rising Nuclear Dangers: Steps to Reduce Risks in the Euro-Atlantic Region* (Washington, D.C.: Nuclear Threat Initiative, December 2016), http://www.nti.org/media/documents/NTI_Rising_Nuclear_Dangers_Paper_FINAL_12-5-16.pdf

29 September: Nuclear Balances in an Evolving World

[Readings to come.]

4 October: Simulation**6 October: Simulation**

During this week, students will participate in a negotiation simulation involving a scenario in which there are new arms control talks involving the United States, Russia, and China. Readings and instructions will be provided.

11 October: Simulation readout; future of nuclear weapons policy

Required:

U.S. Department of Defense, “Fact Sheet: 2022 Nuclear Posture Review and Missile Defense Review” (Washington, D.C.: U.S. Department of Defense, March 29, 2022), <https://media.defense.gov/2022/Mar/29/2002965339/-1/-1/1/FACT-SHEET-2022-NUCLEAR-POSTURE-REVIEW-AND-MISSILE-DEFENSE-REVIEW.PDF> (A very brief set of points about these reviews, which, as of August 2022, had not yet been publicly released.)

Office of the Secretary of Defense, *Nuclear Posture Review* (Washington, D.C.: U.S. Department of Defense, February 2018), <https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF>, Secretary’s Preface, Executive Summary, and pp. 19-24. (Both continuity and change in the Trump administration’s nuclear policy.)

Thomas Countryman, “An Assessment of the New Nuclear Posture Review,” speech, February 20, 2018, <https://www.armscontrol.org/events/2018-02/assessment-new-nuclear-posture-review> (A critique of the Trump document from the then-chairman of the Arms Control Association and former Assistant Secretary of State for Nonproliferation.)

Cheryl Rofer, “Low-Yield Nukes are a Danger, Not a Deterrent,” *Foreign Policy*, February 11, 2020, <https://foreignpolicy.com/2020/02/11/deterrence-nuclear-war-low-yield-nukes-danger-not-deterrent/>.

Frank Miller, “Addressing Fears About the Nuclear Posture Review and Limited Nuclear Use,” *War on the Rocks*, February 28, 2018, <https://warontherocks.com/2018/02/addressing-fears-nuclear-posture-review-limited-nuclear-use/>. (A defense of the new initiatives in the Trump nuclear posture review from a former Defense Department nuclear official who advised the review.)

Rebecca Hersman, Eric Brewer, and Suzanne Claeys, “NC3: Challenges Facing the Future System” (Washington, D.C.: Center for Strategic and International Studies, July 2020), <https://www.csis.org/analysis/nc3-challenges-facing-future-system>

Ernest J. Moniz, Sam Nunn, Steve Andreasen, Samantha Pitts-Kiefer, Leon Ratz, Brian Rose, and Lynn Rusten, *A Roadmap for America’s Nuclear Policy and Posture* (Washington, D.C.:

March 2018) http://www.nti.org/media/pdfs/NTI_Paper_Roadmap_for_Nuclear_Policy_and_Posture_FINAL.pdf?_id=1532986315 (Proposals on a broad range of key aspects of U.S. nuclear policy.)

Recommended:

Congressional Budget Office, *Approaches for Managing the Costs of U.S. Nuclear Forces, 2017-2046* (Washington, D.C.: CBO, October 2017), <https://www.cbo.gov/system/files/115th-congress-2017-2018/reports/53211-nuclearforces.pdf> (Current plans to modernize U.S. nuclear forces will cost \$1.2 trillion over 30 years; there are options to save money, but saving a major portion of the total would require substantial changes in U.S. nuclear forces.)

Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century* (Palo Alto, Calif.: Stanford University Press, 2015). (A thoughtful version of the argument that the United States needs a robust nuclear force.)

Anya Loukianova Fink and Olga Oliker, "Russia's Nuclear Weapons in a Multipolar World: Guarantors of Sovereignty, Great Power Status & More," *Daedalus*, Vol. 149, No. 2 (Spring 2020), pp. 37-55.

Robert Joseph, "Trump Nuclear Posture Outlines Reasoned Steps to Ensure Deterrence After Years of Neglect," *The Hill*, February 6, 2018, <http://thehill.com/opinion/national-security/372301-trump-nuclear-posture-sets-forth-reasoned-steps-to-ensure> (A supportive take on the Trump nuclear posture review.)

Bruce G. Blair, with Jessica Sleight and Emma Claire Foley, *The End of Nuclear War-Fighting: Moving to a Deterrence-Only Posture: An Alternative Nuclear Posture Review* (Washington, D.C.: Program on Science and Global Security, Princeton University, and Global Zero, September 2018), <https://www.globalzero.org/wp-content/uploads/2018/09/ANPR-Final.pdf> (A very different take on what U.S. nuclear posture should be, from the organization Global Zero, a coalition seeking to eliminate nuclear weapons.)

13 October: Nuclear Dangers in South Asia

Required:

Vipin Narang, "Pakistan's Nuclear Posture: Implications for South Asian Stability," Policy Brief (Cambridge, Mass.: Belfer Center for Science and International Affairs, Harvard Kennedy School, January 2010).
https://www.belfercenter.org/sites/default/files/files/publication/Pakistans_Nuclear_Posture_policy_brief.pdf

Vipin Narang, remarks on Indian nuclear policy potentially evolving toward counterforce strikes against Pakistan, Carnegie Endowment International Nuclear Policy Conference, March 2017 <http://carnegieendowment.org/2017/03/20/plenary-beyond-nuclear-threshold-causes-and-consequences-of-first-use-pub-64779> (beginning at 13:40; for a written text rather than a video, see: <https://southasianvoices.org/sav-dc-nukefest2017-potential-indian-nuclear-first-use/>)

Michael Krepon, "The Counterforce Compulsion in South Asia," *Arms Control Wonk*, April 12, 2017 (response to Narang), <http://www.armscontrolwonk.com/archive/1203018/the-counterforce-compulsion-in-south-asia/>

Scott Sagan and others, “Kargil: The War Gets Serious” (video), December 2015,
<https://www.youtube.com/watch?v=ZEwrAIVx4VQ>.

Stimson Center, “Confidence-Building and Nuclear Risk-Reduction Measures in South Asia,”
 (Washington, D.C.: Henry L. Stimson Center, June 14, 2012)
<https://www.stimson.org/2012/confidence-building-and-nuclear-risk-reduction-measures-south-asia/>.

Recommended:

Sumit Ganguly and S. Paul Kapur, *India, Pakistan, and the Bomb: Debating Nuclear Stability in South Asia* (New York: Columbia University Press, 2010).

Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton, N.J.: Princeton University Press, 2014), esp. pp. 55-120.

Shashank Joshi, “Pakistan’s Tactical Nuclear Nightmare: Déjà Vu?” *Washington Quarterly*, Vol. 36, No. 3 (Summer 2013), pp. 159-172
http://csis.org/files/publication/TWQ_13Summer_Joshi.pdf

Mansoor Ahmed, “Pakistan’s Tactical Nuclear Weapons and Their Impact on Strategic Stability”
 (Washington, D.C.: Carnegie Endowment for International Peace, June 30, 2016),
<https://carnegieendowment.org/2016/06/30/pakistan-s-tactical-nuclear-weapons-and-their-impact-on-stability-pub-63911>

Sumit Ganguly and Devin T. Hagerty, *Fearful Symmetry: India-Pakistan Crises in the Shadow of Nuclear Weapons* (Seattle: University of Washington Press, 2005).

“Reagan, Bush, and Pakistan’s Bomb,” in Peter Clausen, *Nonproliferation and the National Interest: America’s Response to the Spread of Nuclear Weapons* (New York: HarperCollins, 1993), pp. 164-171.

Ashton B. Carter, “America’s New Strategic Partner?” *Foreign Affairs*, July/August 2006,
<http://www.jstor.org/stable/20032039>.

Daryl G. Kimball and Joseph Cirincione, “A Nonproliferation Disaster” (Washington, D.C.: Center for American Progress, 11 December 2006) <http://www.americanprogress.org/issues/security/news/2006/12/11/2403/a-nonproliferation-disaster/>

C. Raja Mohan, “10 Years of Indo-US Civil Nuclear Deal: Transformation of the Bilateral Relationship is the Real Big Deal,” *Indian Express*, July 20, 2015,
<http://indianexpress.com/article/explained/10-yrs-of-indo-us-civil-nuclear-deal-transformation-of-the-bilateral-relationship-is-the-real-big-deal/>

18 October: North Korea Parts II, III... 2001-Present

Required:

Hans M. Kristensen and Matt Korda, “Nuclear Notebook: How Many Nuclear Weapons Does North Korea Have in 2021?” *Bulletin of the Atomic Scientists*, July 21, 2021,
<https://thebulletin.org/premium/2021-07/nuclear-notebook-how-many-nuclear-weapons-does-north-korea-have-in-2021/>

Victor Cha, *The Impossible State: North Korea, Past and Future* (New York: Harper-Collins, 2012), pp. 255-274.

Six Party Talks Joint Statement, 19 September 2005,
http://www.chinadaily.com.cn/english/doc/2005-09/19/content_479150.htm

Singapore summit statement, June 12, 2018: <https://www.whitehouse.gov/briefings-statements/joint-statement-president-donald-j-trump-united-states-america-chairman-kim-jong-un-democratic-peoples-republic-korea-singapore-summit/>

William H. Tobey, “Kim Got What He Wanted in Singapore. Trump Didn’t,” *Foreign Policy*, June 13, 2018, <https://www.belfercenter.org/publication/kim-got-what-he-wanted-singapore-trump-didnt>

Sue Mi Terry, “Assessment of the Trump-Kim Hanoi Summit,” *Critical Questions*, Center for Strategic and International Studies, February 28, 2019, <https://www.csis.org/analysis/assessment-trump-kim-hanoi-summit>

Ankit Panda, “Biden’s Next Steps on North Korea Contain a Dose of Realism” (Washington, D.C.: Carnegie Endowment for International Peace, May 6, 2021),
<https://carnegieendowment.org/2021/05/06/biden-s-next-steps-on-north-korea-contain-dose-of-realism-pub-84485>

Recommended:

Mark E. Manyin, Emma Chantlett-Avery, Mary Beth D. Nikitin, *Nuclear Negotiations With North Korea* (Washington, D.C.: Congressional Research Service, May 4, 2021),
<https://fas.org/sgp/crs/nuke/R45033.pdf>

Arms Control Association, “Chronology of U.S.-North Korean Nuclear and Missile Diplomacy,” July 2020, <http://www.armscontrol.org/factsheets/dprkchron>

38 North: <http://38north.org/> (Useful source for analysis related to North Korea generally.)

Toby Dalton and Youngjun Kim, “Negotiating Arms Control With North Korea: Why and How?” *The Korean Journal of Defense Analysis*, Vol. 33, No. 1 (March 2021), pp. 1-21,
<https://tinyurl.com/yhnz588j>

Robert Einhorn, “The Rollout of the Biden Administration’s North Korea Policy Review Leaves Unanswered Questions” (Washington, D.C.: Brookings, May 4, 2021),
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Ankit Panda, *Kim Jong Un and the Bomb: Survival and Deterrence in North Korea* (Oxford: Oxford University Press, 2020).

Mark Fitzpatrick, “Kim Jong-Un’s Singapore Sting,” *Survival*, pp. 29-36,
<https://www.tandfonline.com/doi/full/10.1080/00396338.2018.1494977>

Graham Allison, “Grading the Singapore Summit: Compared to What?” *The National Interest*, June 15, 2018. <https://nationalinterest.org/feature/grading-the-singapore-summit-compared-what-26275>

Jeffrey Lewis, “Rockets and the Leap Day Deal,” *armscontrolwonk.com*, 23 March 2012,
<http://lewis.armscontrolwonk.com/archive/5098/rockets-and-the-leap-day-deal>

Joby Warrick, “Did Kim Jong Un’s ‘Historic’ Missile Get a Boost From Old Soviet Weapons?” *Washington Post*, February 16, 2018, https://www.washingtonpost.com/world/national-security/did-kim-jong-uns-historic-missile-get-a-boost-from-old-soviet-weapons/2018/02/15/b8085ba6-1291-11e8-9570-29c9830535e5_story.html?utm_term=.5719492aed04

Olli Heinonen, “Development of the Yongbyon Uranium Enrichment Plant Between 2009 and 2021,” *38 North*, July 16, 2021, <https://www.38north.org/2021/07/development-of-the-yongbyon-uranium-enrichment-plant-between-2009-and-2021/>

John S. Park, “Inside Multilateralism: The Six-Party Talks,” *Washington Quarterly*, Vol. 28, No. 4 (Autumn 2005), pp. 75-91 http://catalogo.casd.difesa.it/GEIDFile/05autumn_park.PDF?Archive=191987991916&File=05autumn_park_PDF

Mike Chinoy, *Meltdown: The Inside Story of the North Korean Nuclear Crisis* (New York: St. Martin’s Press, 2008), 432 pp.

Victor Cha, *The Impossible State: North Korea, Past and Future* (New York: Harper-Collins, 2012).

20 October: Nuclear safeguards and nuclear energy

Required:

Watch Bunn video on how safeguards work.

Matthew Bunn, “Perspectives on Proliferation Resistance (And Terror-Resistance): Fuel Cycles and Advanced Reactors,” presentation, National Academies Committee on Advanced Reactors and Fuel Cycles, May 17, 2021. (On class Canvas page)

Nicholas Miller, “Why Nuclear Energy Programs Rarely Lead to Proliferation,” *International Security*, Vol. 42, No. 2 (Fall 2017), pp. 40-77.

Laura Rockwood, “The IAEA’s State-Level Concept and the Law of Unintended Consequences,” *Arms Control Today*, September 2014, <http://www.armscontrol.org/node/6556>

David Albright and Paul Brannan, “The Al-Kibar Reactor: Extraordinary Camouflage, Troubling Implications” (Washington, D.C.: Institute for Science and International Security, 12 May 2008) http://www.isis-online.org/publications/syria/SyriaReactorReport_12May2008.pdf

Recommended:

Nuclear energy and proliferation:

Matthew Bunn, “Civil Nuclear Energy and Nuclear Weapons Programs: The Record” (unpublished memo) http://ocw.mit.edu/courses/nuclear-engineering/22-812j-managing-nuclear-technology-spring-2004/readings/prolif_history.pdf

Mohammed ElBaradei, “Nuclear Energy: The Need for a New Framework,” remarks to the International Conference on Nuclear Fuel Supply: Challenges and Opportunities, 17 April 2008, <http://www.iaea.org/NewsCenter/Statements/2008/ebsp2008n004.html>

Chapter 7, “Assessing the Proliferation Risks of Civilian Nuclear Programmes,” pp. 141-150, and Chapter 8, “Policy Options for Preventing a Proliferation Cascade,” pp. 151-164, in Mark Fitzpatrick, ed., *Nuclear Programmes in the Middle East: In the Shadow of Iran* (London: International Institute for Strategic Studies, 2008).

Rebecca Davis Gibbons, “Supply to Deny: The Benefits of Nuclear Assistance for Nuclear Nonproliferation,” *Journal of Global Security Studies*, Vol. 5, No. 2 (April 2020), pp. 282-298.

Stephen Herzog, “The Nuclear Fuel Cycle and the Proliferation ‘Danger Zone,’” *Journal for Peace and Nuclear Disarmament*, Vol. 3, No. 1 (May 2020), pp. 60-86,
<https://doi.org/10.1080/25751654.2020.1766164>

Harold Feiveson, Alexander Glaser, Marvin Miller, and Lawrence Scheinman, *Can Future Nuclear Power be Made Proliferation Resistant?* (College Park, Md.: Center for International and Security Studies at Maryland, University of Maryland, July 2008),
http://cisssm.umd.edu/papers/files/future_nuclear_power.pdf

Sarah Burkhard, Erica Wenig, David Albright, and Andrea Stricker, “Nuclear Infrastructure and Proliferation Risks of the United Arab Emirates, Turkey, and Egypt” (Washington, D.C.: Institute for Science and International Security, August 25, 2017), http://isis-online.org/uploads/isis-reports/documents/Middle_East_Proliferation_Assessments_25Aug2017_Final.pdf

Matthew Fuhrman, “Spreading Temptation: Proliferation and Peaceful Nuclear Cooperation Agreements,” *International Security*, Vol. 34, No. 1 (Summer 2009), pp. 7-41,
http://belfercenter.ksg.harvard.edu/files/IS3401_pp007-041_Fuhrmann.pdf

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Henry Sokolski, ed., *Falling Behind: International Scrutiny of the Peaceful Atom* (Carlisle, Penn.: U.S. Army Strategic Studies Institute, February 2008), <http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?pubID=841> (esp. Chapters 3, 4, 5, and 11).

25 October: Sanctions for nonproliferation

Required:

Nicholas L. Miller, “The Secret Success of U.S. Nonproliferation Sanctions,” *International Organization*, Vol. 68, No. 4 (Fall 2014), pp. 913-944. (Makes a persuasive case that there would be more states with nuclear weapons today had the United States not adopted a policy of imposing sanctions on countries that try to get the bomb.)

Jordan Chandler Hirsh, Review of Juan Zarate, *Treasury’s War: The Unleashing of a New Era of Financial Warfare*, *Washington Post*, September 28, 2013, <https://tinyurl.com/yj3x4rtg> (Highlights how Treasury can and does scare financial institutions off from doing business with certain entities with little requirement for proof.)

Richard Nephew, *The Art of Sanctions: A View from the Field* (New York: Columbia, 2017), Chapters 3, 4, and 6. (A useful account from a practitioner who knows the detailed complexities of imposing and then lifting sanctions in order to try to coerce states to stop nuclear programs.)

Recommended:

Etel Solingen, ed., *Sanctions, Statecraft, and Nuclear Proliferation* (Cambridge, U.K.: Cambridge University Press, 2012.)

Kenneth Katzman, “Iran Sanctions” (Washington, D.C.: Congressional Research Service, April 6, 2021).

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Juan Zarate, *Treasury’s War: Unleashing a New Era of Financial Warfare* (New York: PublicAffairs, 2013).

27 October: Stopping black-market nuclear technology transfer

Required:

Matthew Bunn and William C. Potter, "Introduction: The Problem of Black-Market Nuclear Networks," in *Preventing-Black-Market Trade in Nuclear Technology* (Cambridge, U.K.: Cambridge University Press, 2018).

"A.Q. Khan and Onward Proliferation From Pakistan," in Mark Fitzpatrick, ed., *Nuclear Black Markets: Pakistan, A.Q. Khan, and the Rise of Proliferation Networks: A Net Assessment* (London: International Institute for Strategic Studies, 2007), pp. 65-91.

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Recommended:

Matthew Bunn, "Corruption and Nuclear Proliferation," in Robert Rotberg, ed., *Corruption, Global Security, and World Order* (Washington, D.C.: Brookings, 2009), pp. 124-166.

R. Scott Kemp, "The Nonproliferation Emperor Has No Clothes: The Gas Centrifuge, Supply-Side Controls, and the Future of Nuclear Proliferation," *International Security*, Vol. 38, No. 4., pp. 39-78. <http://dspace.mit.edu/handle/1721.1/89182>

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David Albright, Sarah Burkhard, Spencer Faragasso, Linda Keenan, and Andrea Stricker, *Illicit Trade Networks: Vol. 1, Connecting the Dots* (Washington, D.C.: Institute for Science and International Security, February 2021), https://isis-online.org/uploads/isis-reports/documents/Illicit_Trade_Networks_Vol1_Connecting_the_Dots_February_2020_FINAL.pdf

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Douglas Frantz and Catherine Collins, *The Nuclear Jihadist: The True Story of the Man Who Sold the World's Most Dangerous Secrets...And How We Could Have Stopped Him* (New York: Twelve, 2007).

Catherine Collins and Douglas Frantz, *Fallout: The True Story of the CIA's Secret War on Nuclear Trafficking* (New York: Free Press, 2011).

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Todd E. Perry, "The Growing Role of Customs Organizations in International Strategic Trade Controls," in James E. Doyle, ed., *Nuclear Safeguards, Security, and Nonproliferation: Achieving Security With Technology and Policy* (Oxford, U.K.: Elsevier, 2008), pp. 549-560.

1 November: Preemptive and Preventive Attacks and Active Options Short of War

Required:

Sarah E. Kreps and Matthew Fuhrmann, "Attacking the Atom: Does Bombing Nuclear Facilities Affect Proliferation?" *Journal of Strategic Studies*, Vol. 34, No. 2 (April 2011), pp. 161-187.

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Recommended:

Martin B. Malin, "The Effectiveness and Legitimacy of the Use of Force to Prevent Nuclear Proliferation," in Christopher Daase and Oliver Meier, eds., *Arms Control in the 21st Century*, (New York: Routledge, 2012), pp. 81-122.

Målfrid Braut-Hegghammer, "Cheater's Dilemma: Iraq, Weapons of Mass Destruction, and the Path to War," *International Security*, Vol. 45, No. 1 (Summer 2020), pp. 51-89.

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Harald Müller, "WMD Crisis: Law Instead of Lawless Self-Help," No. 37 (Stockholm: Weapons of Mass Destruction Commission, 2005), 16 pp.

<https://web.archive.org/web/20160610161859/http://www.blixassociates.com/wp-content/uploads/2011/03/No37.pdf>

John C. Yoo and Robert J. Delahunty. "The 'Bush Doctrine': Can Preventive War Be Justified?" *Harvard Journal of Law & Public Policy*, Vol. 32 (2009), pp. 843-865. <http://scholarship.law.berkeley.edu/cgi/viewcontent.cgi?article=1774&context=facpubs>

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Richard Betts, "The Osirak Fallacy," *The National Interest*, Vol. 83 (Spring 2006), pp. 22-25 <https://nationalinterest.org/article/the-osirak-fallacy-1093>

Jeremy Tamsett, "The Israeli Bombing of Osiraq Reconsidered: Successful Counterproliferation?" *Nonproliferation Review* vol. 11 (Fall-Winter 2004), pp. 70-85. <http://dx.doi.org.ezp-prod1.hul.harvard.edu/10.1080/10736700408436979>

3 November: Coping with Iran's nuclear program

Required:

Watch Bunn video on Iran's nuclear programs, history, and issues.

International Crisis Group, “The Iran Nuclear Deal at Five: A Revival?” (Brussels: International Crisis Group, January 2021), https://d2071andvip0wj.cloudfront.net/220-iran-nuclear-deal-at-five_0.pdf, Executive Summary and pp. 20-26. (This report is of special interest as the head of the International Crisis Group when it was written, Robert Malley, is now President Biden’s special envoy for Iran.)

Kelsey Davenport, “The Last Chance to Restore Compliance with the 2015 Iran Nuclear Deal,” *Arms Control Today*, Vol. 14, No. 5 (July 2022), <https://www.armscontrol.org/issue-briefs/2022-07/last-chance-restore-compliance-2015-iran-nuclear-deal>

Sahar Nowrouzzadeh, Reid Pauly, and Mahsa Rouhi, “This is Why Trump’s Strategy for Iran Will Fail,” *The National Interest*, December 21, 2017, <https://nationalinterest.org/feature/why-trumps-strategy-iran-will-fail-23748>. (A summary of the point that to change behavior by inflicting pain, you have to have a credible promise to stop.)

Barry R. Posen, “We Can Live With a Nuclear Iran,” *New York Times*, 27 February 2006 <https://www.nytimes.com/2006/02/27/opinion/we-can-live-with-a-nuclear-iran.html> (Good crystallization of the argument that a nuclear-armed Iran would not be as big a disaster as many people believe.)

Matthew Kroenig, “Time to Attack Iran,” *Foreign Affairs*, 1 Jan. 2012. <https://www.foreignaffairs.com/articles/middle-east/2012-01-01/time-attack-iran> (Summary of the case for the military option, as of 2012.)

Stephen Walt, “The Worst Case for War with Iran,” *Foreign Policy.com*, December 21, 2011, http://walt.foreignpolicy.com/posts/2011/12/21/the_worst_case_for_war_with_iran (A cogent reply to Kroenig’s argument.)

Ayatollah Ali Seyed Khamenei, “We Won’t Negotiate, Nor Will the U.S. Dare to Launch a War Against Us,” (speech with subtitles), August 16, 2018, <http://english.khamenei.ir/news/5885/We-won-t-negotiate-nor-will-U-S-dare-launch-a-war-against-us> (Useful for getting a feel for Khamenei’s perspective; this is the one where he criticizes President Rouhani for crossing the “red lines” Khamenei laid out for negotiations.)

Recommended:

U.S. Institute of Peace, *The Iran Primer*, <https://iranprimer.usip.org/> (Very useful resource for a variety of aspects of the Iran issue; has both concise but well-informed analysis of key topics and recent news across the top.)

Aaron Arnold, Matthew Bunn, Caitlin Chase, Steven E. Miller, Rolf Mowatt-Larssen, and William H. Tobey, *The Iran Nuclear Archive: Impressions and Implications* (Cambridge, Mass: Belfer Center for Science and International Affairs, Harvard Kennedy School, April 2019), pp. 1-13, https://www.belfercenter.org/sites/default/files/files/publication/The%20Iran%20Nuclear%20Archive_0.pdf (Summarizes what was revealed about Iran’s past nuclear weapons program by the archive of documents Israel acquired from Iran.)

“Joint Comprehensive Plan of Action,” Vienna, July 14, 2015, http://eeas.europa.eu/statements-eeas/docs/iran_agreement/iran_joint-comprehensive-plan-of-action_en.pdf (Worth actually reading the main provisions; the Belfer Center’s “Definitive Guide” can help with understanding them.)

Gary Samore, lead author and editor, *The Iran Nuclear Deal: A Definitive Guide* (Cambridge, Mass.: Belfer Center for Science and International Affairs, Harvard Kennedy School, Nov. 2017), <https://www.belfercenter.org/sites/default/files/files/publication/IranDealGuide2017.pdf>. (The best overall summary of the terms of the deal.)

Kenneth Katzman, “Iran Sanctions,” *Congressional Research Service*, August 7, 2018. <https://fas.org/sgp/crs/mideast/RS20871.pdf> (Summary, pp. 20-23, 28-33, 43-48). (Good account of the complexity of the U.S. laws imposing sanctions on Iran, and on companies abroad that do business with Iran.)

Mahsa Rouhi, “Will Iran Follow North Korea’s Path and Ditch the NPT?” *Foreign Policy*, March 16, 2020, <https://foreignpolicy.com/2020/03/16/will-iran-follow-north-korea-path-ditch-npt-nuclear-bomb/>. (Describes Iranian thinking about the limited benefits it is receiving from remaining a party to the NPT.)

Secretary of State Mike Pompeo, “After the Deal: A New Iran Strategy,” May 21, 2018. <https://www.state.gov/after-the-deal-a-new-iran-strategy/> (Lays out the Trump Administration’s demands for changes in Iran’s behavior.)

David Sanger, Eric Schmitt, and Ronen Bergman, “Long-planned and Bigger Than Thought: Strike on Iran’s Nuclear Program,” *New York Times*, July 10, 2020, <https://www.nytimes.com/2020/07/10/world/middleeast/iran-nuclear-trump.html> (A useful account of one element of the sabotage campaign against Iran’s nuclear program.)

International Atomic Energy Agency, *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran*, (Vienna: IAEA, 8 November 2011), <http://www.iaea.org/Publications/Documents/Board/2011/gov2011-65.pdf> (Read the Annex on weaponization activities; though old, this is the most detailed version the IAEA has made publicly available.)

International Atomic Energy Agency, *Final Assessment on Past and Present Outstanding Issues Regarding Iran’s Nuclear Programme* GOV/2015/68 (Vienna: IAEA, December 2, 2015), <https://www.iaea.org/sites/default/files/gov-2015-68.pdf> (The IAEA’s “final” assessment of Iran’s weaponization-related work left many issues still unresolved.)

International Atomic Energy Agency, *NPT Safeguards Agreement with the Islamic Republic of Iran*, GOV/2022/26 (Vienna: IAEA, 30 May 2022), <https://www.iaea.org/sites/default/files/22/06/gov2022-26.pdf> (The IAEA concludes that Iran’s answers on uranium particles found at undeclared sites are not “technically credible,” and concludes that it cannot confirm “the correctness and completeness” of Iran’s declarations regarding its nuclear program – IAEA-speak for “we can’t confirm they aren’t hiding something.”)

International Atomic Energy Agency, *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015)*, GOV/2022/24 (Vienna: IAEA, 30 May 2022), <https://www.iaea.org/sites/default/files/22/06/gov2022-24.pdf>

(At present, each reporting period, the IAEA provides two reports – one on implementation of Iran’s traditional safeguards agreement, and one on the additional monitoring measures under the JCPOA. This is the latter report, and it describes how much enriched uranium Iran has built up and how many centrifuges it has installed.)

“Final Report of the Panel of Experts Established Pursuant to Resolution 1929 (2010),”

S/2014/394 (New York: United Nations, 11 June 2014),

http://www.un.org/ga/search/view_doc.asp?symbol=S/2014/394 (This is the last UN report on Iran’s efforts to bust the sanctions against it that was prepared before the JCPOA went into force; the JCPOA lifted UN sanctions, so this committee ceased to exist.)

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<http://www.iaea.org/Publications/Documents/Infcircs/2013/infcirc854.pdf> (especially par. 1-10; 44-73). (Gives a useful idea of Iran’s legalistic approach in replying to the IAEA.)

Mark Fitzpatrick, “A Good Deal,” *Survival*, Vol. 57, No. 5 (2015)

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http://www.roa.org/site/DocServer/20071203_NIE_release.pdf?docID=5341 (This was the estimate that famously concluded that Iran had ended the part of its program about the actual design of nuclear weapons in 2003.)

Ariane M. Tabatabai and Annie Tracy Samuel, “What the Iran-Iraq War Tells us about the Future of the Iran Nuclear Deal,” *International Security*, Vol. 42, No. 1 (Summer 2017), pp. 152-185. (An exploration of the lessons Iran learned from being alone after being attacked by Saddam Hussein’s Iraq, and what those lessons meant for Iran’s nuclear program.)

Kelsey Davenport, “Official Proposals on the Iran Nuclear Issue, 2003-2013,” January 2022, http://www.armscontrol.org/factsheets/Iran_Nuclear_Proposals

Steven Erlanger, “The Iran Nuclear Talks, Explained,” *New York Times*, April 5, 2021 (updated September 12, 2021), <https://www.nytimes.com/2021/04/05/world/europe/iran-nuclear-talks-explained.html>? (A useful overview of the issues and the process of the talks.)

Chuck Freilich, “A Better Iran Deal Has to be Better for Iran, Too,” *Jerusalem Post*, July 19, 2018, <https://www.jpost.com/Opinion/A-better-Iran-deal-has-to-be-better-for-Iran-too-562979>

David Albright, Paul Brannan, and Jacqueline Shire, “Can Military Strikes Destroy Iran’s Gas Centrifuge Program? Probably Not” (Washington, D.C.: Institute for Science and International Security, 7 August 2008)

http://www.isis-online.org/publications/iran/Centrifuge_Manufacturing_7August2008.pdf

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Matthew Bunn and Abbas Maleki, "How to Avoid a War with Iran," *Foreign Policy*, 21 May 2012, http://www.foreignpolicy.com/articles/2012/05/21/how_to_avoid_a_war_with_iran%20

Simon Henderson and Olli Heinonen, *Nuclear Iran: A Glossary of Terms*, Policy Focus 121 (Washington, D.C.: Washington Institute for Near East Policy and Belfer Center for Science and International Affairs, Harvard University, August 2012), http://belfercenter.ksg.harvard.edu/publication/22269/nuclear_iran.html (Much, much more than a glossary of terms – lots of interesting detail on Iran's programs.)

Patrick Clawson and Michael Eisenstadt, *The Last Resort: Consequences of Preventive Military Action Against Iran* (Washington, D.C.: Washington Institute for Near East Policy, June 2008) <http://www.theisraelproject.org/atf/cf/%7B84DC5887-741E-4056-8D91-A389164BC94E%7D/POLICYFOCUS84.PDF>

Trita Parsi, *Treacherous Alliance: The Secret Dealings of Israel, Iran, and the United States* (New Haven, Conn.: Yale, 2007)

Trita Parsi, *A Single Roll of the Dice: Obama's Diplomacy With Iran* (New Haven, Conn.: Yale, 2012).

Barbara Slavin, *Bitter Friends, Bosom Enemies: Iran, the U.S., and the Twisted Path to Confrontation* (New York: St. Martin's Press, 2007)

Thérèse Delpeche, *Iran and the Bomb: The Abdication of International Responsibility* (New York: Columbia, 2007), 148 pp. Translated by Roy Schwartz.

8 November: Nonproliferation successes: Libya, Ukraine, South Africa, and more

Required:

"Conclusion," pp. 321-334 in Mitchell Reiss, *Bridled Ambition: Why States Constrain Their Nuclear Capabilities* (Washington, D.C.: Wilson Center, 1995).

Libya:

William Tobey, "A Message From Tripoli: How Libya Gave Up Its WMD," Parts 1-5, *Bulletin of Atomic Scientists*, December 3, 2014 <http://thebulletin.org/message-tripoli-how-libya-gave-its-wmd7834>

Or

Målfrid Braut-Hegghammer, "Libya's Nuclear Turnaround: Perspectives From Tripoli," *Middle East Journal*, Vol. 62, No. 1 (Winter 2008), pp. 55-72, https://www.jstor.org/stable/25482472?seq=1#metadata_info_tab_contents

Or

Bruce W. Jentleson and Christopher A. Whytock, "Who 'Won' Libya? The Force-Diplomacy Debate and Its Implications for Theory and Policy," *International Security*, Vol. 30, No. 3 (Winter 2005/2006), pp. 47-86 http://belfercenter.ksg.harvard.edu/files/is3003_pp047-086.pdf

(Note the “or” above: only ONE of these readings is required.)

Ukraine:

“The Decision to Denuclearize: How Ukraine Became a Non-Nuclear-Weapons State,” Harvard Kennedy School Case C14-98-1425.0, 28 pp.

Or

Mariana Budjeryn, “The Power of the NPT: International Norms and Ukraine’s Nuclear Disarmament,” *Nonproliferation Review*, Vol. 22 No. 2 (2015), pp. 203-237,

<https://www.tandfonline.com/doi/full/10.1080/10736700.2015.1119968>

Or

William C. Potter, *The Politics of Nuclear Renunciation: The Cases of Belarus, Kazakhstan, and Ukraine* (Washington DC: Henry L. Stimson Center, Occasional Paper No. 22, April 1995),

<https://www.stimson.org/sites/default/files/file-attachments/Occasional%20Paper%20No.%2022%20April%201995.pdf> Ukraine, pp. 8-9, 19-26, 42-49, and Conclusion, 50-52)

(Again, note the “or” above: only ONE of these readings is required, not both.)

South Africa:

Peter Liberman, “The Rise and Fall of the South African Bomb,” *International Security*, Fall 2001, 45-86;

Or

“Nuclear Rollback,” pp. 183-193, in David Albright with Andrea Stricker, *Revisiting South Africa’s Nuclear Weapons Program: Its History, Dismantlement, and Lessons for Today* (Washington, D.C.: Institute for Science and International Security, 2016), <http://isis-online.org/uploads/isis-reports/documents/RevisitingSouthAfricasNuclearWeaponsProgram.pdf>

Recommended:

Kurt M. Campbell, Robert J. Einhorn, and Mitchell B. Reiss, eds., *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices* (Washington, D.C.: Brookings, 2004), especially the introductory and concluding chapters.

William C. Potter and Gaukhar Mukhatzhanova, eds., *Forecasting Nuclear Proliferation in the 21st Century: A Comparative Perspective: Vol. 2* (Stanford: Stanford University Press, 2010). (This book includes detailed chapters on almost all of the key cases of nonproliferation success.)

Harald Müller and Andreas Schmidt, “The Little-Known Story of Deproliferation: Why States Give up Nuclear Weapons Activities,” in William C. Potter and Gaukhar Mukhatzhanova, eds., *Forecasting Nuclear Proliferation in the 21st Century: The Role of Theory: Vol. 1* (Stanford: Stanford University Press, 2010).

Japan:

Jacques E.C. Hymans, “Veto Players, Nuclear Energy, and Nonproliferation: Domestic Institutional Barriers to a Japanese Bomb,” *International Security*, Vol. 36, No. 2 (Fall 2011), pp. 154-189, http://belfercenter.ksg.harvard.edu/files/veto_players.pdf

Selig Harrison, "Japan and Nuclear Weapons," Chapter 1 in Selig Harrison, ed., *Japan's Nuclear Future: The Plutonium Debate and East Asian Security* (Washington, D.C.: Carnegie Endowment for International Peace, 1996), pp. 3-44.

Akira Kurosaki, "Nuclear Energy and Nuclear-Weapon Potential: A Historical Analysis of Japan in the 1960s," *Nonproliferation Review*, Vol. 24, No. 1-2, pp. 47-65,
<https://www.tandfonline.com/doi/abs/10.1080/10736700.2017.1367536>

Argentina-Brazil:

"Argentina" and "Brazil," pp. 382-406 in Joseph Cirincione, Jon B. Wolfsthal, and Miriam Rajkumar, *Deadly Arsenals: Nuclear, Biological, and Chemical Threats*, 2nd Ed. (Washington, D.C.: Carnegie Endowment for International Peace, 2005).

Togzhan Kassenova, *Brazil's Nuclear Kaleidoscope: An Evolving Identity* (Washington, D.C.: Carnegie Endowment for International Peace, 2014),
https://carnegieendowment.org/files/brazil_nuclear_kaleidoscope_lo_res.pdf

Egypt:

Robert J. Einhorn, "Egypt: Frustrated, But Still on a Non-Nuclear Course," pp. 43-82 in Kurt M. Campbell, Robert J. Einhorn, and Mitchell B. Reiss, eds., *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices* (Washington, D.C.: Brookings, 2004)

Jim Walsh, "Will Egypt Seek Nuclear Weapons? An Assessment of Motivations, Constraints, Consequences, and Policy Options," pp. 13-41 in William C. Potter and Gaukhar Mukhatzhanova, eds., *Forecasting Nuclear Proliferation in the 21st Century: A Comparative Perspective: Vol. 2* (Stanford: Stanford University Press, 2010).

South Korea:

Scott Snyder, "South Korean Nuclear Decision-Making," pp. 158-181 in William C. Potter and Gaukhar Mukhatzhanova, eds., *Forecasting Nuclear Proliferation in the 21st Century: A Comparative Perspective: Vol. 2* (Stanford: Stanford University Press, 2010).

Jonathan D. Pollack and Mitchell B. Reiss, "South Korea: The Tyranny of Geography and the Vexations of History," pp. 254-292 in Kurt M. Campbell, Robert J. Einhorn, and Mitchell B. Reiss, eds., *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices* (Washington, D.C.: Brookings, 2004).

Taiwan:

Derek J. Mitchell, "Taiwan's Hsin-Chu Program: Deterrence, Abandonment, and Honor," pp. 293-313 in Kurt M. Campbell, Robert J. Einhorn, and Mitchell B. Reiss, eds., *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices* (Washington, D.C.: Brookings, 2004)

Monte Bullard and Jing-dong Yuan, "Taiwan and Nuclear Weaponization: Incentives and Disincentives," pp. 182-202 in William C. Potter and Gaukhar Mukhatzhanova, eds., *Forecasting Nuclear Proliferation in the 21st Century: A Comparative Perspective: Vol. 2* (Stanford: Stanford University Press, 2010).

Australia:

Jim Walsh, "Surprise Down Under: The Secret History of Australia's Nuclear Ambitions," *Nonproliferation Review*, Fall 1997, pp. 1-20 <http://cns.miis.edu/npr/pdfs/walsh51.pdf>

Further on South Africa:

Uri Friedman, "Why One President Gave Up His Country's Nukes," (interview with F.W. de Klerk), *The Atlantic*, September 9, 2017, <https://www.theatlantic.com/international/archive/2017/09/north-korea-south-africa/539265/>

David Albright with Andrea Stricker, *Revisiting South Africa's Nuclear Weapons Program: Its History, Dismantlement, and Lessons for Today* (Washington, D.C.: Institute for Science and International Security, 2016), <http://isis-online.org/uploads/isis-reports/documents/RevisitingSouthAfricasNuclearWeaponsProgram.pdf>

Nic von Wielligh and Lydia von Wielligh-Steyn, *The Bomb: South Africa's Nuclear Weapons Programme* (Pretoria: Litera, 2015).

Jo-Ansie van Wyk and Anna-Mart van Wyk, "The African National Congress and Apartheid South Africa's Nuclear Weapons Program" (Washington, D.C.: Nuclear Proliferation International History Project, Woodrow Wilson Center, November 2020), https://www.wilsoncenter.org/sites/default/files/media/uploads/documents/NPIHP_Working_Paper_16_African_National_Congress_Apartheid_South_Africa_Nuclear_Program_%28November_2020%29.pdf

Jean du Preez and Thomas Maettig, "From Pariah to Poster Boy: How Plausible is a Reversal?" pp. 302-334 in William C. Potter and Gaukhar Mukhatzhanova, eds., *Forecasting Nuclear Proliferation in the 21st Century: A Comparative Perspective: Vol. 2* (Stanford: Stanford University Press, 2010).

10 November: Tools beyond treaties: Cooperative threat reduction, UNSCR 1540, Proliferation Security Initiative, and more

Required:

Matthew Bunn, Martin B. Malin, Nickolas Roth, and William H. Tobey, *Advancing Nuclear Security: Evaluating Progress and Setting New Goals* (Cambridge, Mass.: Project on Managing the Atom, Belfer Center for Science and International Affairs, Harvard University, March 2014). <http://belfercenter.ksg.harvard.edu/files/advancingnuclearsecurity.pdf> (pp. 49-60). (A brief summary of the global nuclear security regime.)

Laura Holgate, "Multilateralism and Threat Reduction: Strengthening the Global Security Architecture," Jack Ruina Memorial Lecture, MIT, October 21, 2016.

Susan J. Koch, *Proliferation Security Initiative: Origins and Evolution*, Occasional Paper 9 (Washington, D.C.: Center for the Study of Weapons of Mass Destruction, National Defense University June 2012) http://ndupress.ndu.edu/Portals/68/Documents/occasional/cswmd/CSWMD_OccasionalPaper-9.pdf

U.N. Security Council Resolution 1540 (New York: United Nations, 28 April 2004)

[http://www.un.org/ga/search/view_doc.asp?symbol=S/RES/1540%20\(2004\)](http://www.un.org/ga/search/view_doc.asp?symbol=S/RES/1540%20(2004))

James Martin Center for Nonproliferation Studies, “Global Partnership Against the Spread of Weapons and Materials of Mass Destruction (‘10 Plus 10 Over 10’ Program)” (Washington, D.C.: Nuclear Threat Initiative, updated 2018), <http://www.nti.org/treaties-and-regimes/global-partnership-against-spread-weapons-and-materials-mass-destruction-10-plus-10-over-10-program/>

Recommended:

William H. Tobey, “A History of United Nations Security Council Resolution 1540,” in Daniel Salisbury, Ian J. Stewart, and Andrea Viski, eds., *Preventing the Proliferation of WMDs: Measuring the Success of UN Security Council Resolution 1540* (Cham, Switzerland: Palgrave MacMillan, 2018), pp. 13-33.

U.S. Department of State, “Proliferation Security Initiative” (Washington, D.C.: Department of State), <https://www.state.gov/proliferation-security-initiative/>

Jeffrey Knopf, ed., *International Cooperation on WMD Nonproliferation* (Athens, Georgia: Univ. of Georgia Press, 2016). (Useful chapters exploring most of the cooperative initiatives that have been developed to supplement the NPT.)

Sara Z. Kutchesfahani, Kelsey Davenport, and Erin Connolly, *The Nuclear Security Summits: An Overview of State Actions to Curb Nuclear Terrorism 2010-2016* (Washington, D.C.: Arms Control Association and Fissile Material Working Group, July 2018), https://www.armscontrol.org/sites/default/files/files/Reports/NSS_Report2018_digital.pdf especially Laura S.H. Holgate, “A Reflective Piece on the Nuclear Security Summits,” pp. 4-9.

Matthew Bunn, “The Nuclear Security Summit: Wins, Losses, Draws,” *Bulletin of the Atomic Scientists*, April 8, 2016, <http://thebulletin.org/nuclear-security-summit-wins-losses-and-draws9310>

Nuclear Security Summit 2016:

Communiqué: 1 April 2016,

<http://static1.squarespace.com/static/568be36505f8e2af8023adf7/t/56fef01a2eeb810fd917abb9/1459548186895/Communiqu%C3%A9.pdf>

Action Plans: 1 April, 2016, <http://www.nss2016.org/2016-action-plans/>

Gift Baskets: (multiple dates), <http://www.nss2016.org/2016-gift-baskets/>

The other chapters in Daniel Salisbury, Ian J. Stewart, and Andrea Viski, eds., *Preventing the Proliferation of WMDs: Measuring the Success of UN Security Council Resolution 1540* (Cham, Switzerland: Palgrave MacMillan, 2018)

U.S. Department of State, “Statement of Principles of the Global Initiative to Combat Nuclear Terrorism” (Washington, D.C.: U.S. Department of State, 20 November 2006) http://www.gicnt.org/documents/Statement_of_Principles.pdf

Matthew Bunn, Martin B. Malin, Nickolas Roth, and William H. Tobey, “Key Steps for Continuing Nuclear Security Progress,” CN-244-574, International Conference on Nuclear

Security: Commitments and Actions, International Atomic Energy Agency, Vienna, Austria, December 5-9, 2016, https://www.belfercenter.org/sites/default/files/files/publication/%5B3A-1%5D_FUL_574_Bunn.pdf

William Tobey, "What Lies Beneath" *Foreign Policy*, 30 April 2012, http://www.foreignpolicy.com/articles/2012/04/30/what_lies_beneath

Secretary of Energy Advisory Board, *Report of the Task Force on Nuclear Nonproliferation* (Washington, D.C.: Department of Energy, March 31, 2015), http://energy.gov/sites/prod/files/2015/04/f21/2015-03-31_FINAL_Report_SEABNuclearNonproliferationTaskForce_0.pdf

Alan Heyes, Wyn Q. Bowen, and Hugh Chalmers, "The Global Partnership Against WMD," *Royal United Services Institute for Defence and Security Studies*, Whitehall Paper 76, 2011, https://www.armscontrol.org/act/2013_04/The-Global-Partnership-on-WMD-A-Work-in-Progress

15 November: Chemical and biological weapons and their control (guest lecture)

Required:

"Tutorial: Biological Nonproliferation" (Washington, D.C.: Nuclear Threat Initiative, no date), <https://tutorials.nti.org/biological-weapons-nonproliferation/>

"Tutorial: Chemical Weapons Nonproliferation" (Washington, D.C.: Nuclear Threat Initiative, no date), <https://tutorials.nti.org/chemical-weapons-nonproliferation/>

"Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction" <http://www.opbw.org/convention/documents/btwctext.pdf>

Arms Control Association, "The Chemical Weapons Convention at a Glance" (Washington, D.C.: ACA, June 2018) <http://www.armscontrol.org/factsheets/cwcglance>

Rebecca K.C. Hersman, Suzanne Claeys, and Cyrus A. Jabbari, *Rigid Structures, Evolving Threat: Preventing the Proliferation and Use of Chemical Weapons* (Washington, D.C.: Center for Strategic and International Studies, December 2019), <https://www.csis.org/analysis/rigid-structures-evolving-threat-preventing-proliferation-and-use-chemical-weapons> (Read and download the brief version for required reading; the full report is recommended for those wanting more specifics.)

Kate Charlet, "The New Killer Pathogens: Countering the Coming Bioweapons," *Foreign Affairs*, May/June 2018, <https://www.foreignaffairs.com/articles/2018-04-16/new-killer-pathogens> (A useful overview, toning down the alarm in some quarters over new gene editing techniques; focuses mainly on state threats, not terrorist threats.)

Richard Danzig, *Preparing for Catastrophic Bioterrorism: Toward a Long-Term Strategy for Limiting the Risk* (Washington, D.C.: Center for Technology and National Security Policy, National Defense University, May 2008), pp. 1-21, 30-34. (Lays out a set of potential biological terrorism scenarios that the author argues should be used for planning biodefenses.)

Milton Leitenberg, “Bioterrorism: Hyped,” *Los Angeles Times*, 17 February 2006.
<http://articles.latimes.com/2006/feb/17/opinion/oe-leitenberg17> (Argues the bioterrorist threat is modest, and U.S. biodefense spending may be counterproductive.)

Recommended:

Arms Control Association, “Chemical Weapons: Frequently Asked Questions” (Washington, D.C.: ACA, June 2018), <https://www.armscontrol.org/factsheets/Chemical-Weapons-Frequently-Asked-Questions>

Richard Danzig, Marc Sageman, Terrance Leighton, Lloyd Hough, Hidemi Yuki, Rui Kotani, and Zachary M. Hosford, *Aum Shinrikyo: Insights into How Terrorists Develop Biological and Chemical Weapons*, 2nd ed. (Washington, D.C.: Center for a New American Security, 2012).
https://s3.amazonaws.com/files.cnas.org/documents/CNAS_AumShinrikyo_Danzig_1.pdf?mtime=20160906080509 (A remarkable study exploring how Aum Shinrikyo made their nerve gas, and the organizational oddities and mistakes that limited its impact – based on interviews with jailed participants in Aum’s program.)

Blue Ribbon Study Panel on Biodefense, *A National Blueprint for Biodefense: Leadership and Major Reform Needed to Optimize Efforts* (Washington, D.C.: Blue Ribbon Study Panel on Biodefense [now the Bipartisan Commission on Biodefense], October 2015),
<https://biodefensecommission.org/reports/a-national-blueprint-for-biodefense/>. (One of many reports which, unfortunately, led to only modest actions before the COVID-19 pandemic.)

John Hart, “Confrontation at the OPCW: How Will the International Community Handle Syria and Skripal?” *War on the Rocks*, June 18, 2018,
<https://warontherocks.com/2018/06/confrontation-at-the-opcw-how-will-the-international-community-handle-syria-and-skripal/> (Useful overview of the international chemical regime and the politics surrounding Syria’s use of chemical weapons and Russia’s attempted assassination of Sergei Skripal and his daughter in the United Kingdom.)

Daniel M. Gerstein, “How Genetic Editing Became a National Security Threat,” *Bulletin of the Atomic Scientists*, 25 April 2016, <http://thebulletin.org/how-genetic-editing-became-national-security-threat9362>

Paul Walker, “Abolishing Chemical Weapons: Progress, Challenges, and Opportunities,” *Arms Control Today*, November 2010, https://www.armscontrol.org/act/2010_11/Walker (A useful overview – but as it was written before the Syrian civil war, the issues surrounding the chemical use by the Syrian government and the Islamic State are not addressed.)

Milton Leitenberg, *Assessing the Biological Weapons and Biological Terrorism Threat* (Carlisle, Penn: Strategic Studies Institute, U.S. Army War College, December 2005)
<http://ssi.armywarcollege.edu/pdffiles/pub639.pdf> (A more detailed version of the argument that the bioterrorism threat is modest.)

Jeanne Guillemin, *Biological Weapons: From the Invention of State-Sponsored Programs to Contemporary Bioterrorism* (New York: Columbia University Press, 2006)

Gregory Koblentz, *Living Weapons: Biological Warfare and International Security* (Ithaca, N.Y.: Cornell University Press, 2009)

Gregory Koblentz, "Pathogens as Weapons," *International Security*, Vol. 28, No. 3 (Winter 2003/2004), pp. 84-122, <https://www.belfercenter.org/sites/default/files/legacy/files/koblentz.pdf>

Matthew Meselson and Julian Perry Robinson, "A Draft Convention to Prohibit Biological and Chemical Weapons Under International Criminal Law," *Fletcher Forum of World Affairs*, Vol. 28, No. 1, Winter 2004, pp. 57-72, <https://sites.fas.harvard.edu/~hsp/crim01.pdf>

"Technical Aspects of Chemical Weapons Proliferation," (pp. 15-69) and "Technical Aspects of Biological Weapons Proliferation," (pp. 71-117) in Office of Technology Assessment, *Technologies Underlying Weapons of Mass Destruction* (Washington, DC: OTA, December 1993) <http://ota.fas.org/reports/9344.pdf>

John Steinbruner, Elisa D. Harris, Nancy Gallagher, Stacy M. Okutani, *Controlling Dangerous Pathogens: A Prototype Protective Oversight System* (College Park, Md: Center for International and Security Studies at Maryland, University of Maryland, March 2007) https://drum.lib.umd.edu/bitstream/handle/1903/7949/pathogens_project_monograph.pdf?sequence=1&isAllowed=y (Makes the case for broad transparency as a central element of responding to the biological warfare threat.)

Jonathan B. Tucker and Raymond A. Zalinkas, "The Promise and Perils of Synthetic Biology," *The New Atlantis*, No. 12, Spring 2006, pp. 25-45, <http://www.thenewatlantis.com/publications/the-promise-and-perils-of-synthetic-biology>

17 November: Preventing nuclear terrorism

Required:

Matthew Bunn, Nickolas Roth, and William H. Tobey, *Revitalizing Nuclear Security in an Era of Uncertainty* (Cambridge, Mass: Project on Managing the Atom, Belfer Center for Science and International Affairs, Harvard Kennedy School, January 2019), pp. 1-9. (Arguments on the threat from the most recent in a 20-year series of reports on nuclear security worldwide.)

William H. Tobey and Pavel Zolotarev, "The Nuclear Terrorism Threat," presentation for the 2014 Nuclear Security Summit Sherpas, Pattaya, Thailand. January 13, 2014, <https://www.belfercenter.org/publication/nuclear-terrorism-threat> (The main briefing on the threat participants in the nuclear security summits received.)

Sonia Ben Ouagrham-Gormley, "Nuclear Terrorism's Fatal Assumptions," *Bulletin of the Atomic Scientists*, October 22, 2007, <https://thebulletin.org/2007/10/nuclear-terrorisms-fatal-assumptions-2/> (An argument that without the "tacit knowledge" that comes with experience in making nuclear weapons, it would be difficult for terrorists to make a nuclear bomb.)

Laura S.H. Holgate and Samantha Neakrease, "Executive Summary," in Nuclear Threat Initiative and Economist Intelligence Unit, *The NTI Nuclear Security Index: Losing Focus in a Disordered World* (Washington, D.C.: Nuclear Threat Initiative, July 2020), pp. 8-12, https://www.ntiindex.org/wp-content/uploads/2020/09/2020_NTI-Index_Report_Final.pdf (Summarizing the slowing of nuclear security progress long after the nuclear security summits.)

Rolf Mowatt-Larsen, *A State of Mind: Faith and the CIA*, 2020, pp. 215-232. (A remarkable account from the leader of the CIA team tasked with tracking down al Qaeda's nuclear, chemical, and biological efforts.)

Recommended:

Matthew Bunn, Yuri Morozov, Rolf Mowatt-Larssen, Simon Saradzhyan, William Tobey, Victor Yesin, Pavel Zolotarev, *The U.S.-Russia Joint Threat Assessment on Nuclear Terrorism*, (Cambridge, Mass.: May 2011). <http://belfercenter.ksg.harvard.edu/files/Joint-Threat-Assessment%20ENG%2027%20May%202011.pdf> (The only joint view of the issue by American and Russian experts.)

Michelle Cann, Kelsey Davenport, and Jenna Parker, *The Nuclear Security Summits: Accomplishments of the Process* (Washington, D.C.: Arms Control Association and Partnership for Global Security, March 2016), <https://www.armscontrol.org/sites/default/files/files/Reports/The-Nuclear-Security-Summits-Accomplishments-of-the-Process.pdf> (An accounting of the successes of the nuclear security summit process – though incomplete, as it was completed just before the final summit.)

Graham Allison, *Nuclear Terrorism: The Ultimate Preventable Catastrophe* (New York, N.Y.: Henry Holt & Company, 2004). (A chilling and influential account – helped convince President Obama to launch his nuclear security efforts.)

John Mueller, “The Atomic Terrorist: Assessing the Likelihood,” January 2008 <https://politicalscience.osu.edu/faculty/jmueller/APSACHGO.pdf> (Summary of the argument that nuclear terrorism is not a problem – with a risk calculation that makes all of the most important rookie mistakes in risk assessment at once, in a matter of a few pages.)

Lyudmila Zaitseva and Friedrich Steinhausler, *Nuclear Trafficking Issues in the Black Sea Region*, Non-Proliferation Papers No. 39 (Paris: EU Non-Proliferation Consortium, 2014), <http://www.sipri.org/research/disarmament/eu-consortium/publications/non-proliferation-paper-39>. (Provides a very useful overview of nuclear smuggling cases.)

Michael Levi, *On Nuclear Terrorism* (Cambridge, MA: Harvard University Press, 2007). (A useful book-length account, which argues that nuclear terrorism would be quite difficult to accomplish.)

Matthew Bunn and Scott D. Sagan, *Insider Threats* (Ithaca, N.Y.: Cornell, 2017). (An exploration of lessons learned from real-world disasters involving insider threats, in a variety of high-security fields.)

Brian M. Jenkins and John Lauder, *The Nuclear Terrorism Threat: How Real is It?* (Washington, D.C.: Nonproliferation Policy Education Center, 2016), <http://www.npolicy.org/article.php?aid=1319&rtid=2>

Ashton Carter, Michael May and William Perry, *The Day After: Action in the 24 Hours Following a Nuclear Blast in an American City* (Cambridge, Mass., and Palo Alto, Calif.: Preventive Defense Project, Harvard and Stanford Universities, May 2007) http://belfercenter.ksg.harvard.edu/files/dayafterworkshopreport_may2007.pdf

Thomas B. Cochran and Matthew G. McKinzie, “Detecting Nuclear Smuggling,” *Scientific American*, April 2008, <https://www.nature.com/scientificamerican/journal/v298/n4/pdf/scientificamerican0408-98.pdf>

Graham Allison, ed., “Confronting the Spector of Nuclear Terrorism,” special issue of *The Annals of the American Academy of Political and Social Science*, Vol. 607, September 2006.

22 November: Nonproliferation policy-making processes (guest)

Required:

Review the HKS case study and the Perry-Carter reading from the North Korea 1994 case we covered in class. They provide a good discussion of how some of those decisions were made in the mid-1990s, and the importance of particular personalities in determining outcomes (such as the focus by Ash Carter and John Deutch on constraining North Korean *capabilities*, rather than focusing only on *compliance*).

Michael S. Bell, “DOD in the Interagency System,” presentation, May 30, 2019, <https://rcnsc.ndu.edu/Portals/95/Documents/Assignments/DoD-and-Interagency-System-NDU-30-May-2019.pdf?ver=ZH7Z5emsE46q3jROxvzafA%3D%3D> (Provides a useful brief overview of how the interagency process works.)

Will Tobey's memo on responsibilities of a U.S. National Security Staff officer

Bob Graham and Jim Talent, “Government Organization and Culture” in *World At Risk*, Vintage Books, 2008, pp. 82-106, <https://policy.defense.gov/portals/11/Documents/hdasa/references/world-at-risk-study.pdf> (skim)

Hurlburt, Heather. “Bolton Leaves the National Security Council in Ruins,” *Foreign Policy*, September 13, 2019. <https://foreignpolicy.com/2019/09/13/bolton-walks-away-from-the-national-security-councils-corpse-trump/>

Recommended:

Karl F. Inderfurth and Loch K. Johnson, eds., *Fateful Decisions: Inside the National Security Council* (Oxford: Oxford University Press, 2004).

David Rothkopf, *Running the World: The Inside Story of the National Security Council* (Cambridge, Mass.: PublicAffairs, 2005).

Gabriel Marcela, ed., *Affairs of State: The Interagency and National Security* (Carlisle, Penn.: U.S. Army War College Strategic Studies Institute, December 2008). https://www.globalsecurity.org/military/library/report/2009/ssi_marcella.pdf

Jeffrey Michaels & Heather Williams, “The Nuclear Education of Donald J. Trump,” *Contemporary Security Policy*, Vol. 38, No. 1 (2017), pp. 54-77.

Joel S. Wit, Daniel B. Poneman, and Robert L. Gallucci, “An Extremely Peculiar Nation,” in *Going Critical: The First North Korean Nuclear Crisis* (Brookings Institution Press, August 2005).

Morton Halperin, “The Decision to Deploy the ABM: Bureaucratic and Domestic Politics in the Johnson Administration,” *World Politics*, Vol. 25, No. 1, October 1972, pp. 62-95. <http://www.jstor.org/stable/2010431> (Though old, this article provides a brilliant, though depressing, insider's view on how national security decision-making actually works – with key

players trading off seemingly unrelated issues in their bargaining with each other. For a broader look, see Morton H. Halperin, Priscilla A. Clapp, and Arnold Kanter, *Bureaucratic Politics and Foreign Policy*, 2nd ed. (Washington, D.C.: Brookings, 2006).)

Frank von Hippel, “Big Government and Little Analysts,” *Physics Today*, June 1995, <http://ezp-prod1.hul.harvard.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=9506161731&site=ehost-live&scope=site> (Explores how busy government officials, running from meeting to meeting, have little time to draw back and analyze the big picture.)

“Combatting Proliferation of Weapons of Mass Destruction,” Report of the Commission to Assess the Organization of the Federal Government to Combat the Proliferation of Weapons of Mass Destruction, 14 July 1999, Ch 2 & 3, <http://web.mit.edu/chemistry/deutch/policy/1998-ComWMDReport.pdf>

29 November: Simulation: Interagency meeting on an urgent nuclear issue

[Readings to be provided.]

1 December: Semester wrap-up: What have we learned?

[No readings.]