Veto Players, Nuclear Energy, and Nonproliferation

Domestic Institutional Barriers to a Japanese Bomb

Jacques E.C. Hymans

Early research on nuclear proliferation typically asserted that states' decisions to acquire nuclear weapons were a simple function of their international security needs, assuming adequate technical capacity to act on those needs. Starting in the mid-1980s, however, scholars started to notice that the causes of states' nuclear weapons choices were not so straightforward.[1] Today, the overwhelming majority of scholarly work on nuclear proliferation argues that states do not directly respond to the international environment in making their nuclear weapons choices, but rather that they "filter security challenges through one or more domestic prisms."[2] The particular "domestic prisms" noted by scholars include top state leaders' national identity conceptions,[3] the economic interests of their core political support bases,[4] the empire-building desires of state bureaucracies,[5] and wider societal norms.[6]

The recent research on the role of domestic actors in shaping states' nuclear preferences has greatly enhanced scholars' ability to explain the patterns of proliferation and nonproliferation around the world. One limitation of the recent literature, however, is that different theoretical models have tended to assert, or to assume, the primacy of one or another type of domestic actor in

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1. For a review of the evolution of the proliferation literature, see Jacques E.C. Hymans, "Nuclear Proliferation and Non-Proliferation," in Robert A. Denemark, ed., *The International Studies Encyclopedia* (London: Blackwell, 2010), pp. 5447–5466.
2. William C. Potter and Gaukhar Mukhatzhanova, "In Search of Proliferation Trends and Tendencies," in Potter and Mukhatzhanova, eds., *Forecasting Nuclear Proliferation in the 21st Century,* Vol. 2: *A Comparative Perspective* (Stanford, Calif.: Stanford University Press, 2010), p. 339.
3. Jacques E.C. Hymans, *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy* (Cambridge: Cambridge University Press, 2006).
4. Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton, N.J.: Princeton University Press, 2007).
5. Jim Walsh, "Bombs Unbuilt: Power, Ideas, and Institutions in International Politics," Ph.D. dissertation, Massachusetts Institute of Technology, 2001. See also Jim Walsh, "Learning from Past Success: The NPT and the Future of Non-Proliferation," paper prepared for the Weapons of Mass Destruction Commission, Stockholm, Sweden, October 2005.
6. Maria Rost Rublee, *Nonproliferation Norms: Why States Choose Nuclear Restraint* (Athens: University of Georgia Press, 2009).

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determining states' nuclear choices. Therefore, case study authors attempting to apply these insights have typically ended up either privileging one model over the others or retreating into vague claims of "multicausality."[7]

In this article, I offer a demand-side analysis of nuclear proliferation and nonproliferation that turns away from the prior models' narrow focus on gauging the preferences of specific domestic political actors. Instead, I highlight the proliferation implications of the systems of political actors that constitute domestic nuclear policy arenas. In particular, I argue that the likelihood of a decision to acquire the bomb by a given state depends crucially on the state's institutionalized level of nuclear policy flexibility, which in turn stems above all from the overall number of historically constructed "veto players" who must agree before a radical nuclear policy change can happen.[8] It is a standard claim in recent comparative politics studies that, to quote Andrew MacIntyre, "the wider the dispersal of veto authority, the greater the risk of policy rigidity."[9] Yet this perspective has been almost totally absent from the nuclear proliferation literature, which has implicitly assumed that a state's nuclear policies will reflect whatever the prevailing political winds happen to be at the moment.[10]

The previous literature on the preferences of domestic actors is still vitally important. After all, key political actors must have a strong will to build a nuclear arsenal, or else that step will not be taken. But my point in this article is that when the nuclear policymaking arena contains a large number of entrenched veto players, they all need to agree before a nuclear weapons project can be set in motion. This dramatically lowers the chances of such action occurring. Ceteris paribus, the more veto players, the less likely the decision to seek nuclear weapons.

The historical institutionalist, veto players approach introduced in this article has great potential to improve efforts at proliferation forecasting, a central ambition of intelligence analysts and one that scholars have shown increasing interest in as well.[11] The key insight for forecasting is that the more institution-

7. Potter and Mukhatzhanova, "In Search of Proliferation Trends and Tendencies," p. 337.
8. George Tsebelis, "Veto Players and Institutional Analysis," *Governance,* Vol. 13, No. 4 (October 2000), pp. 441–474. See also Steffen Ganghof, "Promises and Pitfalls of Veto Player Analysis," *Swiss Political Science Review,* Vol. 9, No. 2 (June 2003), pp. 1–25.
9. Andrew MacIntyre, "Institutions and Investors: The Politics of the Economic Crisis in Southeast Asia," *International Organization,* Vol. 55, No. 1 (Winter 2001), p. 81.
10. A rare suggestion of the utility of a veto players analysis is made in Hymans, *The Psychology of Nuclear Proliferation,* pp. 226–227.
11. See, for example, Potter and Mukhatzhanova, *Forecasting Nuclear Proliferation in the 21st Century.* See also Gerald Schneider, Nils Petter Gleditsch, and Sabine Carey, "Forecasting in International Relations: One Quest, Three Approaches," *Conflict Management and Peace Science,* Vol. 28, No. 1 (March 2011), pp. 5–14.

alized veto players in a given country, the less likely that any subtle political shifts will lead suddenly to the state's acquisition of nuclear weapons. The existence of many domestic veto players may not rule out a state's potential to go for the bomb, but it does relegate such a scenario to the "perfect storm" category that is common in Hollywood movies but extremely rare in real life.

Another key implication of the historical institutionalist, veto players approach being applied here is to strongly reaffirm the importance of not coloring analyses of states' proliferation intentions with inferences drawn from supply-side developments. Scholars often point to the acquisition of sensitive, dual-use nuclear technologies as evidence that a state is, at the very least, starting to warm up for a transcendental decision to get nuclear weapons. It is certainly true that states do sometimes engage in nuclear hedging strategies. Yet the historical institutionalist, veto players perspective raises the possibility that what may appear at first glance to be nuclear hedging is actually merely the legacy of past choices combined with contemporary policy rigidity—and if this is the case, then the proliferation implications can be quite benign. Indeed, the chances of ultimate nuclear weapons acquisition by a nonnuclear weapons state that has a large fissile material production operation but also high levels of nuclear policy rigidity (i.e., many veto players) are probably much lower in the long run than the chances of acquisition by a state that has only a minor nuclear infrastructure but retains high levels of nuclear policy flexibility (i.e., few veto players).

This article demonstrates the empirical relevance of the above general theoretical points first through a global overview of the shape of nuclear policymaking arenas, and then through a detailed examination of the puzzling case of Japan. Japan has one of the largest and most advanced nuclear infrastructures in the world and is often flagged as a potential proliferation threat.[12] Indeed, because of the advancement of its nuclear technology, Japan is even often designated as a "virtual" nuclear weapons state.[13] Particularly worrisome to analysts has been Japan's long persistence in building a complete—but also, so far, completely civilian—nuclear fuel cycle, which has led to its accumulation of a very large stockpile of separated plutonium. Although this was once a common policy mix, most other states have long since abandoned it either by getting nuclear weapons (e.g., India) or by abandoning the old dream of building the "plutonium economy" (e.g., Germany). Policymakers

12. See, for example, Kurt M. Campbell and Tsuyoshi Sunohara, "Japan: Thinking the Unthinkable," in Campbell, Robert J. Einhorn, and Mitchell B. Reiss, eds., *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices* (Washington, D.C.: Brookings Institution Press, 2004), pp. 218–253.
13. Ibid., p. 243.

and analysts often surmise that Japan will also eventually "resolve" this contradiction in its policy in one way or another, with pessimists tending to think it will do so by acquiring the bomb and optimists tending to think it will do so by curtailing its plutonium economy ambitions.[14] By contrast, my historical institutionalist, veto players analysis leads me to argue that Japan's traditional nuclear policy orientation could well continue indefinitely. Although there has been considerable change in the shape of the Japanese nuclear policymaking arena over the past fifty years, that change has overwhelmingly been in the direction of the further strengthening and increase in the number of veto players, making it ever harder for political elites to bring about a radical break from the state's traditional nuclear policies. It is therefore extremely difficult to foresee Japan either "going nuclear" or "going nonnuclear," however popular either of those options may become. In addition, the existence of so many veto players means at least that Japan could not make such a radical policy shift without a long period of discussion and political wrangling, in which international actors could also have their say.

To some readers, it may seem counterintuitive to be discussing Japan's potential acquisition of nuclear weapons at a time when the country is reeling from the devastating 2011 disaster at the Fukushima Dai-Ichi nuclear plant. This serious crisis, however, will eventually pass, and this article is focused on the long-term importance of a state's institutionalized level of nuclear policy flexibility. Moreover, the article's focus on nuclear policy flexibility has implications not only for nuclear weapons decisionmaking, but also for other sorts of radical policy shifts, such as a potential decision to end the quest for the "plutonium economy" or even to leave the nuclear energy field altogether—ideas that have been raised in the wake of the Fukushima disaster.

The Shape of Nuclear Policymaking Arenas: A Global Overview

Over the years, scholars have sporadically investigated the question of whether democracies or dictatorships are more likely to seek the bomb, but most studies have found the variable to have weak causal effects.[15] These neg-

14. The pessimists' case is made by Gavan McCormack, "Japan as a Plutonium Superpower," *Japan Focus,* December 24, 2007, http://www.japanfocus.org/-Gavan-McCormack/2602. The (sober) optimists' case is made by Hitoshi Yoshioka, "The Rise and Fall of Fast Breeder Development in Japan," *Science Studies,* Vol. 9, No. 2 (1996), pp. 14–26. See also Masafumi Takubo, "Wake Up, Stop Dreaming: Reassessing Japan's Reprocessing Program," *Nonproliferation Review,* Vol. 15, No. 1 (March 2008), pp. 71–94.

15. See, however, Steven E. Miller and Scott D. Sagan, "Nuclear Power without Nuclear Proliferation?" *Daedalus,* Vol. 138, No. 4 (Fall 2009), especially p. 11.

ative findings have probably discouraged further research into the effects of domestic institutions on proliferation.

The lack of a clear historical divide between the nuclear policy choices of democracies and dictatorships becomes less surprising, however, when one realizes that the modal institutional framework for nuclear policymaking was traditionally remarkably undemocratic, even in the most advanced democracies. Starting with the Manhattan Project, whose nature and purpose were kept largely hidden from Congress until after Hiroshima,[16] most states historically attempted to separate the nuclear issue from the grubby give-and-take of normal politics and to place it instead into the supposedly responsible hands of the top leader.[17] The extreme pyramidal structure of nuclear policymaking institutions—usually spearheaded by the state's "Atomic Energy Commission" (AEC), which was placed under the direct control of the top leader—was justified as a necessity in light of the great importance of this complex technology for future national development, and the great dangers that could arise from the technology's mishandling or misuse. Even in the many states that both publicly and privately rejected the idea of trying to build nuclear weapons, nuclear institutions were generally built in line with the top-down, centralized, secretive Manhattan Project model.[18]

The key point here is that even though the regime-type variable may not be significant, this should not be taken to mean that domestic institutional variables are not significant. For instance, take the case of India's nuclear institutions, whose origins are well documented by Itty Abraham's *The Making of the Indian Atomic Bomb*.[19] India's foundational Atomic Energy Act of 1948 was intended to produce a centralized, undemocratic, secretive nuclear estate. First, it made all atomic research, technology, and materials, including raw minerals in the ground, the monopoly of the Indian central government. Second, it created a specialized Indian Atomic Energy Commission, with a collegiate directorate, under the direct control of the prime minister. Third, it gave the commission a spectacular degree of autonomy from other parts of the state, including the right to conduct its own international diplomacy; exemptions from standard workplace, health, environment, industrial, and other sorts of regula-

16. Robert S. Norris, "Unprecedented Security Measures," in Cynthia C. Kelly, ed., *The Manhattan Project: The Birth of the Atomic Bomb in the Words of Its Creators* (New York: Black Dog and Leventhal, 2007), pp. 233–235.
17. Daniel Poneman, *Nuclear Power in the Developing World* (London: Allen and Unwin, 1982).
18. The more general phenomenon of international diffusion of organizational forms for scientific research and development is traced by Gili S. Drori, John W. Meyer, Francisco O. Ramirez, and Evan Schofer, *Science in the Modern World Polity: Institutionalization and Globalization* (Stanford, Calif.: Stanford University Press, 2003).
19. See Itty Abraham, *The Making of the Indian Atomic Bomb: Science, Secrecy, and the Postcolonial State* (London: Zed, 1998).

tions; and a practically unlimited ability to deploy "state secrecy" claims to block parliamentary oversight.[20] This, even though India was a democracy and at that time still strongly against nuclear weapons.

Nuclear institutions were extremely well insulated from democratic processes in countries from the United States to India because nuclear policy was deemed too weighty to be left up to the passions of politics. Ironically, the result was that nuclear policy in many states was left up to the passions of the top political leadership. Facing few if any institutionalized veto players capable of blocking their wishes, top leaders had the freedom to suddenly turn their state's nuclear infrastructures toward military ends if they cared to do so. And in India, at least, they eventually did.[21]

In addition to giving the top leaders great power, the typical institutional structure of the nuclear policymaking arena provided nuclear scientists and engineers far greater influence than their colleagues in other technical fields.[22] On major policy choices, however, top leaders could usually brush aside the demands of their scientific and technical underlings if they did not agree.[23]

Top-down, centralized, and secretive nuclear institutions, and thus very flexible nuclear policies, were once ubiquitous around the world, and are still quite evident in many countries. Advanced industrialized countries with large nuclear energy and nuclear technology sectors, however, have gradually moved away from the traditional model. In these states, environmental movements concerned with the risks of nuclear accidents, nuclear waste, and nuclear proliferation have gradually forced states to accept checks and balances in the policymaking process and to make their civilian nuclear efforts more transparent. Meanwhile, neoliberal forces concerned with the risks of big government have gradually achieved a substantial privatization of the nuclear industry, although it remains highly regulated. Neoliberal ideas are also responsible for the gradual shift in the locus of nuclear research and development away from closed state nuclear bureaucracies and to an open-bid contract model or to international consortia.[24] Needless to say, top political leaders and state nuclear bureaucracies also still exist as formidable players in these states.

As a consequence, in many advanced industrialized countries, nuclear en-

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20. Ibid., chap. 2.
21. On the crucial impact of top leaders' nuclear sentiments in India and elsewhere, see Hymans, *The Psychology of Nuclear Proliferation,* chap. 7.
22. On the role of India's "strategic enclave" in Indian nuclear politics, see George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation* (Berkeley: University of California Press, 1999).
23. On the other hand, for the implementation of those policies, the attitudes of scientific and technical workers were, and remain today, absolutely crucial. For more on this, see Jacques E.C. Hymans, *Achieving Nuclear Ambitions: Scientists, Politicians, and Proliferation* (Cambridge: Cambridge University Press, forthcoming).
24. On these trends in the U.S. case, for example, see Robert J. Duffy, *Nuclear Politics in America: A History and Theory of Government Regulation* (Lawrence: University Press of Kansas, 1997).

ergy has become an open and hotly contested, indeed fractious, policy arena with several veto players, leading in most cases to much slower and less extensive nuclear development than was the case during the early decades of the nuclear age.[25] I contend that this more complicated shape of the nuclear policymaking arena can also constrain top leaders from making sudden choices to switch from civilian to military uses of the atom.

My point here needs to be distinguished from the idea that advanced industrialized countries are less interested in nuclear matters than they once were. Indeed, at least up until the 2011 Japanese triple disaster of earthquake, tsunami, and nuclear meltdown, many commentators were asserting that the world was on the cusp of a "nuclear renaissance."[26] After the disaster, many have opined that the market for nuclear power plants will dry up, as occurred after the Chernobyl accident of 1986.[27] Opinion swings are certainly worth tracking, but it is also necessary to recognize that in countries with large numbers of nuclear veto players, whichever direction the political winds end up blowing, abrupt, radical nuclear policy reorientations are very difficult to achieve and are therefore rare. This point is especially relevant for understanding the historical evolution of nuclear policy in Japan, to which I now turn.

A Rising Number of Veto Players in Japan's Nuclear Policy Arena

Among the advanced industrialized countries without nuclear weapons arsenals, Japan is the one most routinely labeled a potential proliferant state by both international security scholars and Japan specialists. For instance, international security expert Graham Allison writes, "Although Japan's political culture is unambiguously against nuclear weapons, in 2002 then-Prime Minister Junichiro Koizumi demonstrated how quickly that could change when he observed publicly, 'It is significant that although we could have them, we don't.'"[28] For his part, Japanese politics scholar Richard Samuels notes that the Japanese government showed willingness to acquire the bomb in response to the North Korean nuclear test of 2006, but in the end decided to "continue to

25. Ibid.; and Steve Cohn, "The Political Economy of Nuclear Power (1945–1990): The Rise and Fall of an Official Technology," *Journal of Economic Issues,* Vol. 24, No. 3 (September 1990), pp. 781–811.
26. Eben Harrell, "Forget Chernobyl, Nuclear Energy Is Making a Comeback," *Time,* February 14, 2008, http://www.time.com/time/specials/2007/article/0,28804,1712863_1712864_1712893,00.html.
27. Jürg Dedial, "Emotionen und Emissionen" [Emotions and emissions], *Neue Zürcher Zeitung,* July 2–3, 2011, p. 1.
28. Graham Allison, "Nuclear Disorder: Surveying Atomic Threats," *Foreign Affairs,* Vol. 89, No. 1 (January/February 2010), p. 76.

hedge on the military side by cultivating US protection—for now."[29] Many other authors sound similar notes.[30]

By contrast, I argue that it would take much more than a mood swing among top politicians to change Japan's traditional nuclear policy. This is because ever since the 1950s there has been incessant growth in the number of nuclear veto players in Japan, with the result that the country's traditional nuclear policy orientation has become extremely difficult to change—and next to impossible to change quickly or quietly. It is certainly important to try to gauge the nuclear preferences of Japanese political elites, but it is also important to identify the other veto players whose preferences would have to align with those of top politicians for a major nuclear policy change to happen.

STARTING ASSUMPTIONS

My analysis of the Japanese nuclear policymaking arena rests on four basic assumptions that I draw from the general comparative politics literature on veto players. In the course of the historical narrative, I also endeavor to show the realism of these assumptions in the case of Japan.

First, as emphasized above, the goal is to identify the number of veto players because this is directly related to policy rigidity. Ceteris paribus, the more veto players, the more policy rigidity.

Second, it is necessary to count the number of veto players in specific policy arenas rather than across all policy domains. Quantitative data sets that assess a single number of veto points to a given state in a given year mask the great variation in the institutionalization of different domestic policy arenas.[31] The need for sector-specific veto players analysis is particularly important when it comes to nuclear policymaking, in light of the uniqueness of nuclear institutional arrangements.

Third, although the formal theory literature has a tendency to equate the term "veto players" with politicians or political parties, in fact, veto players

29. Richard J. Samuels, *Securing Japan: Tokyo's Grand Strategy and the Future of East Asia* (Ithaca, N.Y.: Cornell University Press, 2007), p. 176.

30. Apart from the works previously mentioned, other significant recent efforts include Michael Green and Katsuhisa Furukawa, "Japan: New Nuclear Realism," in Muthiah Alagappa, ed., *The Long Shadow: Nuclear Weapons and Security in 21st Century Asia* (Stanford, Calif.: Stanford University Press, 2008), pp. 347–372; Llewelyn Hughes, "Why Japan Will Not Go Nuclear (Yet): International and Domestic Constraints on the Nuclearization of Japan," *International Security,* Vol. 31, No. 4 (Spring 2007), pp. 67–96; Mike M. Mochizuki, "Japan Tests the Nuclear Taboo," *Nonproliferation Review,* Vol. 14, No. 2 (July 2007), pp. 303–328; Kenneth Pyle, "Author's Response: The Primacy of Foreign Policy in Modern Japan," *Asia Policy,* No. 4 (July 2007), especially p. 209; Solingen, *Nuclear Logics,* chap. 3; and Matake Kamiya, "Nuclear Japan: Oxymoron or Coming Soon?" *Washington Quarterly,* Vol. 26, No. 1 (Winter 2002–03), pp. 63–75.

31. For a critical review of some of these data sets, see Nara Pavão, "Review: Counting Veto Players," *APSA-CP Newsletter,* Vol. 21, No. 1 (Winter 2010), pp. 25–27.

may encompass a wide variety of political actors. For instance, in the case of Asian developmental states such as Japan, state bureaucracies are widely recognized to be very important veto players in many key policy arenas. In these states, some private corporations may also sometimes enjoy an effective veto over policies that concern them.[32]

Fourth, time is a particularly important variable for understanding the institutionalization of veto players. This is because after veto players emerge, they tend to benefit from increasing returns processes that reinforce their status yet further.[33] Therefore, the most appropriate means of developing the analysis is through a historical narrative.[34]

Having made my theoretical preliminaries explicit, I now turn to the historical narrative of the case of Japan.

The Nakasone Vision: Prime Minister as Sole Veto Player

As noted above, nuclear institutions worldwide have historically tended to feature steeply pyramidal structures that place great power in the hands of the top leader and shut most others out of the policymaking process. In the case of Japan, too, such a pyramidal, single veto player institutional setup was the initial vision promoted by the conservative politician Yasuhiro Nakasone, who more than any other individual was responsible for the shape of Japan's early nuclear program.

On August 6, 1945, Nakasone was a young Home Ministry bureaucrat serving in the Japanese navy on the island of Shikoku. From there, he witnessed the destruction of Hiroshima: "I saw the mushroom cloud of the atomic bomb. That image will never fade from my memory. That lit a fire within me to develop atomic energy."[35] Presumably, as Nakasone contemplated that billowing cloud, the uses he imagined for atomic energy in Japan extended beyond the production of clean and affordable electricity.

Over the course of his extraordinarily long and successful career in politics,

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32. Joseph J. St. Marie, Kenneth N. Hansen, and John P. Tuman, "The Asian Economic Crisis and Bureaucratic Development: A Veto Player Analysis," *International Relations of the Asia-Pacific,* Vol. 7, No. 1 (January 2007), pp. 1–22. For a general introduction to the developmental state, see Meredith Woo-Cumings, ed., *The Developmental State* (Ithaca, N.Y.: Cornell University Press, 1999).
33. Paul Pierson, *Politics in Time: History, Institutions, and Social Analysis* (Princeton, N.J.: Princeton University Press, 2004).
34. Tim Büthe, "Taking Temporality Seriously: Modeling History and the Use of Narratives as Evidence," *American Political Science Review,* Vol. 96, No. 3 (September 2002), pp. 481–493. For a broader introduction to the theory and method of historical institutionalism, see Kathleen Thelen, "Historical Institutionalism in Comparative Politics," *Annual Review of Political Science,* Vol. 2 (1999), pp. 369–404.
35. Quoted in Morris Low, *Science and the Building of a New Japan* (New York: Palgrave Macmillan, 2005), p. 40.

Nakasone was to remain doggedly committed to promoting nuclear research. He considered it his personal mission to return Japan to its former great power status, and he believed that mastery of the nuclear fuel cycle was necessary to that end.[36] Although we do not know that it was Nakasone's settled intention to arm Japan with nuclear weapons, it is clear that he wanted at least to build both a technology base and an institutional framework that would permit a future Japanese prime minister to make a quick and irrevocable decision for a military nuclear breakout.[37] The prospect of creating the self-sustaining "plutonium economy" was also attractive to Nakasone and other Japanese state elites because of the lack of domestic energy resources in Japan.[38] Finally, centralizing power over nuclear energy could be an effective lever for prime ministers to strengthen themselves more generally in relation to the bureaucracy and legislature, which was another key political objective for Nakasone.[39]

In 1954, Nakasone's Kaishinto (Progressive) Party held a swing vote position in the national Diet between the two main conservative parties, the Liberal Party and the Democratic Party (the fused Liberal Democratic Party [LDP] was not to be founded until 1955). This lucky position allowed Nakasone to swing the bigger parties over to his top policy priority of nuclear development.[40] In March 1954, the coalition government dedicated significant startup funding for nuclear development, including uranium prospection inside Japan. In May of that year, it established the Preparatory Council for the Use of Atomic Energy, under Nakasone's guidance. In October, the Joint Diet Atomic Energy Committee was formed, with Nakasone as its chairman. And with the passage of a series of important bills in the Diet over the course of 1955, a legal structure for the nuclear program was established.[41]

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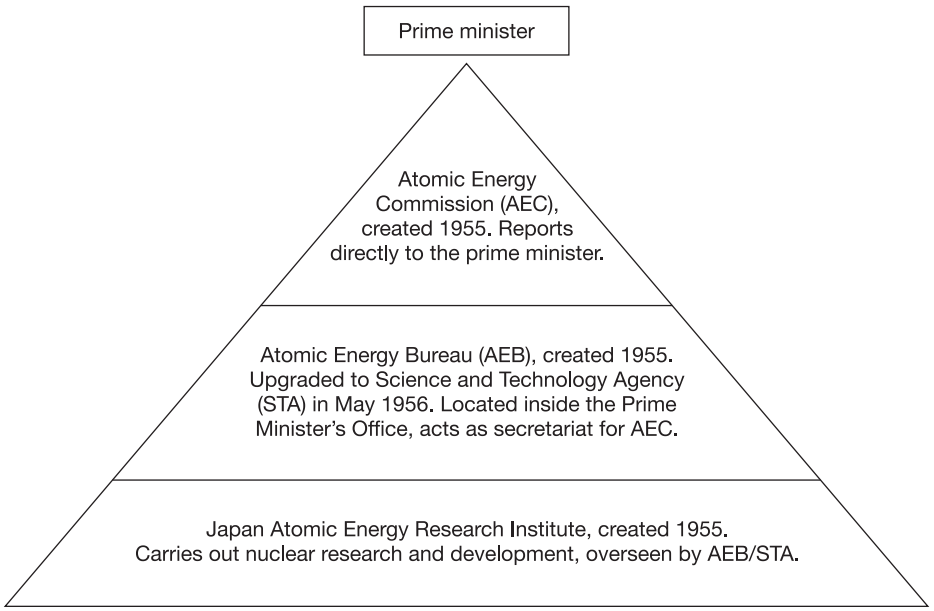
36. Ibid., pp. 66–67; and Morris F. Low, "Japan: The Political Economy of Japanese Science: Nakasone, Physicists, and the State," in Etel Solingen, ed., *Scientists and the State: Domestic Structures and the International Context* (Ann Arbor: University of Michigan Press, 1994), p. 116.
37. Hitoshi Yoshioka argues that there is in fact no doubt about Nakasone's wish for Japan to develop and stockpile nuclear weapons in the 1950s. Yoshioka, "Nuclear Power Research and the Scientists' Role," in Shigeru Nakayama, ed., *A Social History of Science and Technology in Contemporary Japan,* Vol. 2: *Road to Self-Reliance, 1952–1959* (Melbourne: Trans Pacific, 2005), p. 111.
38. Motoya Kitamura, "Japan's Plutonium Program: A Proliferation Threat?" *Nonproliferation Review,* Vol. 3, No. 2 (Winter 1996), pp. 2–3.
39. Morris Low points out that Nakasone's desire to create a more presidential system even went so far as to found the League for the Promotion of the Public Election of the Prime Minister in 1963. Low, *Science and the Building of a New Japan*, p. 129. On Nakasone's overall political vision, see also Kenneth B. Pyle, "In Pursuit of a Grand Design: Nakasone Betwixt the Past and the Future," *Journal of Japanese Studies,* Vol. 13, No. 2 (Summer 1987), pp. 243–270.
40. Low, *Science and the Building of a New Japan,* p. 152. Confirmed by Yoshinori Ihara, former deputy minister, Science and Technology Agency, and deputy commissioner general, Atomic Energy Commission, Tokyo, interview by author, February 10, 2009.
41. Hitoshi Yoshioka, "Forming a Nuclear Regime and Introducing Commercial Reactors," in Nakayama, *A Social History of Science and Technology in Contemporary Japan,* Vol. 2, pp. 80–81.

Figure 1. Initial Institutional Configuration of the Japanese Nuclear Program



The general thrust of Japan's initial institutional setup as voted by the Diet in the mid-1950s largely followed Nakasone's vision of a top-down, centralized, protected nuclear estate. Figure 1 illustrates the initial institutional configuration.

As demonstrated in figure 1, core nuclear policymaking and research activities were to be undertaken directly under the watchful eye of the prime minister. The AEC, appointed by the prime minister, was given full powers to formulate broad nuclear policy, although its Basic Law required it to promote "peaceful" applications of the atom—a sop to Japan's antibomb public opinion.[42] The AEC chairman was also to serve simultaneously as director of the Science and Technology Agency (STA), a ministerial position. The STA, despite its grand title, was focused narrowly on the nuclear energy dossier.[43] The STA's main tasks were twofold: first, to assist the AEC's formulation of Japan's

42. Susan E. Pickett, "Japan's Nuclear Energy Policy: From Firm Commitment to Difficult Dilemma Addressing Growing Stocks of Plutonium, Program Delays, Domestic Opposition, and International Pressure," *Energy Policy,* Vol. 30, No. 15 (December 2002), p. 1337.
43. Ihara, interview by author, March 16, 2010. Later, again thanks to Nakasone, STA was to add the dossier for space exploration—another technological development project with clear strategic weapons implications. Low, *Science and the Building of a New Japan,* p. 195.

long-term nuclear policy, and second, to translate the AEC's broad policy guidelines into specific research and development orders to be carried out by the Japan Atomic Energy Research Institute (JAERI). The products of JAERI's research would then be transferred out for use by industry, academia, or other state institutions. In short, the initial institutional setup created by the Diet generally followed Nakasone's vision and placed the prime minister in the nuclear policy driver's seat.

THE MESSIER REALITY: THREE VETO PLAYERS IN THE 1950s–60s

The first person named as both AEC chairman and STA director was a larger-than-life character: Matsutaro Shoriki, the president of the Yomiuri newspaper company and founder of Japan's professional baseball league.[44] According to the Nakasone vision for nuclear policymaking that had been implemented by the Diet, Shoriki was supposed to be working for the prime minister. In practice, however, the newly established institutions of Japanese nuclear policymaking were not yet strong enough to subordinate such a powerful personality as Shoriki, who wasted no time before implementing his own vision for the Japanese nuclear policy arena.

Shoriki shared Nakasone's policy goal of building a big nuclear energy program in Japan. But in contrast to Nakasone's desire to create a top-down, state-centric nuclear institutional structure, the businessman Shoriki wanted to turn private industry into a full partner—and indeed a veto player—in the nuclear policymaking process. In March 1956, Shoriki helped to bring together a wide range of private-sector actors, notably the utilities such as the Tokyo Electric Power Company (TEPCO) and the heavy industry manufacturers, under one banner in the Japan Atomic Industrial Forum (JAIF). The electrical utilities, which had recently been reborn as private corporations thanks to a decision by the U.S. military occupation authorities in the aftermath of the war, responded especially eagerly to Shoriki's initiative. Their desire to unite in the nuclear field stemmed from their perception of the emerging state-run nuclear program as a potential mortal threat to their newly won autonomy.[45]

After the formation of the JAIF, industry quickly became not just a pressure group, but an integral part of the nuclear policymaking process. Already in February 1956, merely a month after the formal establishment of the AEC, Shoriki and his pro-business allies had begun heavily criticizing what they termed the "government-owned, government-operated" character

44. Nakasone was effectively delegated by the prime minister to make this selection. See Low, *Science and the Building of a New Japan*, p. 114.
45. Yoshioka, "Forming a Nuclear Regime and Introducing Commercial Reactors," pp. 87–89.

of JAERI.[46] In June 1956, the JAERI was reconstituted as a special statutory corporation formally under the auspices of STA, but now also with industry as a full partner.[47] Private industry's assumption of a portion of JAERI's budget was a small price to pay for neutralizing a key element of the state-centric Nakasone vision. Rather than sitting at the bottom of the nuclear pyramid as mere takers of the products of the state's nuclear research, private industry was now in a position to oversee that research.

In addition to promoting industry to the status of veto player in the nuclear policymaking arena, the AEC soon became a veto player in its own right. From the outset, the AEC had held the statutory responsibility to direct Japan's nuclear policy, but Nakasone had anticipated that it would do so in line with the wishes of the prime minister through the medium of the AEC chairman/STA director, whom the prime minister would appoint. The institutional evolution of the new unified conservative party, the LDP, upended these expectations, however. The new LDP quickly came to be controlled by parliamentary "factions" that were the "central organizational units within the party."[48] As a result of the centrality of the party factions, ministerial-level appointments such as the double-hatted AEC chairman/STA director came to be made only after intense bargaining among the factions. Therefore, ministers did not owe their positions to the prime minister, so the prime minister's power over them was very weak in comparison to that of prime ministers in other parliamentary democracies.[49] Thus, with the rise of LDP faction politics, another key element of the Nakasone vision failed to materialize. The AEC was still headed by a politician, but rather than acting in accordance with the wishes of the prime minister, they tended to hew to the AEC/STA's self-interest, because where you stand depends on where you sit.[50]

The AEC's emergence as a veto player was particularly consequential because of the AEC's explicit statutory mission to promote the peaceful uses of nuclear energy in Japan. I noted earlier that this language had initially been a mere sop to antibomb public opinion, but the AEC's greater autonomy gave that language real meaning. For instance, Hiromi Arisawa, an original member

46. Note that industry was already contributing a substantial portion of JAERI's budget. Richard J. Samuels, *The Business of the Japanese State: Energy Markets in Comparative and Historical Perspective* (Ithaca, N.Y.: Cornell University Press, 1987), p. 237.
47. Ibid.
48. Masaru Kohno, *Japan's Postwar Party Politics* (Princeton, N.J.: Princeton University Press, 1997), p. 91.
49. Ellis S. Krauss and Robert J. Pekkanen, *The Rise and Fall of Japan's LDP: Political Party Organizations as Historical Institutions* (Ithaca, N.Y.: Cornell University Press, 2011), chap. 4.
50. Graham T. Allison, "Conceptual Models and the Cuban Missile Crisis," *American Political Science Review,* Vol. 63, No. 3 (September 1969), pp. 689–718.

of the AEC who served for seventeen years, told the *Asahi* newspaper upon his retirement in 1972, "We were pressed repeatedly for permission to do basic research on how to make an atomic bomb. They tried to persuade us to do so by saying that such research was permissible under the Constitution. Naturally, I always refused."[51] It would be hard to find a clearer indication of the AEC's veto power than this.

Note that in contrast to the AEC, the STA was not a veto player, because the STA was institutionally under the aegis of the AEC, and the two shared the same head. The STA was certainly powerful as it had a big budget and staff and manned the AEC secretariat. Nonetheless, its power did not rise to the level of veto power.

All of the veto players up to the early 1960s—the prime minister usually represented by the nuclear policy expert Nakasone, the AEC led initially by Shoriki, and private industry represented by the JAIF—agreed on the primary goal of building Japan's nuclear infrastructure quickly and fully, including a strong intention to master the entire nuclear fuel cycle.[52] Therefore, on the whole, relations among them were amicable, certainly in comparison with their relations with Japan's strongly antinuclear (but nearly powerless) left-wing opposition parties. The Nakasone vision, however, saw the state on top of private industry, in part to allow a quick shift to a military nuclear program if necessary. Yet private industry resisted being placed in a subordinate position, and the AEC generally concurred with this view.

A clear example of the consequences of the expanding number of veto players during this period can be seen in the policymaking process that led to the construction of Japan's first commercial power reactor, which was the most important concrete step taken by the Shoriki AEC. After the AEC's first meeting in January 1956, but without bothering to consult his fellow commissioners on the issue, Shoriki made the surprise announcement that Japan must produce commercial nuclear power within five years. The only conceivable way for this to happen would be to import a reactor from abroad.[53] This decision was a major victory for industry, especially the energy-hungry utilities, and it was a loss for the Nakasone vision of state-led research leading to the implementation of indigenous nuclear technology.[54] Shoriki won a further victory

51. Arisawa, quoted in Selig S. Harrison, "Japan and Nuclear Weapons," in Harrison, ed., *Japan's Nuclear Future: The Plutonium Debate and East Asian Security* (Washington, D.C.: Brookings Institution Press, 1993), p. 12.
52. Pickett, "Japan's Nuclear Energy Policy," p. 1338.
53. Samuels, *The Business of the Japanese State,* p. 236.
54. Yoshioka expresses puzzlement that Nakasone did not fight harder for developing a reactor based on indigenous technology at this stage. Yoshioka, "Nuclear Power Research and the Scientists' Role," p. 111.

for industry over the Nakasone vision when he succeeded in placing responsibility for the new reactor into the hands of the Japan Atomic Power Company, 80 percent of which was to be privately held.[55]

The above-mentioned decisions were pleasing to industry, but Shoriki then proceeded hastily to announce his decision in favor of importing a British-engineered "Calder Hall" reactor type.[56] This decision went contrary to the wishes of the Japanese industrial consortia, which had been forming alliances with American manufacturers and generally favored the technological direction the Americans were taking.[57] The choice for the British reactor, however, was very much in line with the Nakasone vision, because unlike the enriched uranium-fueled, light water–moderated reactors in development in the United States at the time, the Calder Hall natural uranium-fueled, graphite-moderated, gas-cooled reactor type could produce great quantities of plutonium, and even weapons-grade plutonium under a special operating mode.[58] At the time, the United Kingdom itself was weaponizing the plutonium produced in the Calder Hall plant hooked up to its electricity grid.[59] Calder Hall's plutonium capabilities were uninteresting to the utilities, but they were highly interesting to some state actors and notably to Nakasone, who had one eye on developing energy independence and the other on the possibility of acquiring nuclear weapons.[60] In short, Shoriki's decision on the first reactor struck a careful balance among the interests of the nuclear veto players.

The only problem with Shoriki's compromise was that the Calder Hall reactor turned out to be a technical dud. By the early 1960s, the reactor project had become mired in troubles, as skeptical academic scientists had been predicting all along.[61] Faced with the challenge of provisioning energy to a Japanese economy in full high-growth mode, the utilities could not wait any longer either for Calder Hall or for JAERI's indigenous reactor technology to come online. They instead demanded to be allowed to import turnkey American-designed, light water nuclear power plants.[62] On this point, the utilities found an ally in the powerful Ministry of International Trade and Industry (MITI),

55. Samuels, *The Business of the Japanese State,* p. 239.
56. Yoshioka, "Forming a Nuclear Regime and Introducing Commercial Reactors," pp. 91–92.
57. Ibid., p. 84.
58. Ibid., p. 86.
59. See Paul Brown, "First Nuclear Power Plant to Close," *Guardian,* March 21, 2003, http://www.guardian.co.uk/uk/2003/mar/21/nuclear.world.
60. Low, *Science and the Building of a New Japan,* pp. 113, 162–163. Some years later, North Korea would also recognize the military utility of the Calder Hall model. Its Yongbyon nuclear reactor is a close copy.
61. Yoshioka, "Forming a Nuclear Regime and Introducing Commercial Reactors," pp. 94–95.
62. Toshiaki Enomoto, "History of Nuclear Development in Japan," unpublished manuscript, Japan Electric Power Information Center, Tokyo, November 2008.

which shared their goal of maximizing electricity production and also favored nuclear power as a way of breaking out of Japan's energy import dependence.[63] In this battle the MITI/utilities alliance prevailed, and thereafter all of the nuclear power plants introduced in Japan have been of the more proliferation-resistant American light water type.[64]

The import of American-made reactors was a stopgap measure; all of the veto players wanted Japan eventually to develop its own nuclear technology. Yet once again, the Nakasone vision and industry clashed over whether that technological development should be conducted by the state on its own or in concert with industry. Industry won this battle, too, and in 1967, the Power Reactor and Nuclear Fuel Corporation (PNC) was created as a special mixed public-private corporation with the electrical utilities in the driver's seat. At first, PNC was tasked to design a new, entirely Japanese power reactor; later, it was also made responsible for research and development on fast breeder reactors, as well as on plutonium fuel production, reprocessing, and uranium enrichment, among other fuel cycle tasks.[65] The Japanese state's severe dependence on the private sector in such sensitive technology areas was anomalous in the world at this time.[66]

Another major attack on the Nakasone vision took place in 1967 over the question of the ownership of spent fuel, which contains plutonium. Until the mid-1960s, all states had chosen to monopolize such a militarily sensitive item as plutonium. In 1964, however, the United States changed its laws to permit domestic commercial fuel reprocessing operations. Thereafter a debate in Japan began on the subject. In 1967, the AEC peremptorily reasserted state control over the spent fuel, but the utilities, joined by the Ministry of Finance, strenuously objected.[67] If the utilities owned the fuel elements and the reactors, they reasoned, they should also own the plutonium that was created by the irradiation of their own fuel elements in their own reactors. The utilities–Ministry of Finance coalition succeeded in forcing the AEC to beat a hasty re-

63. On MITI as an autonomous bureaucratic actor, see especially Chalmers Johnson, *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925–1975* (Stanford, Calif.: Stanford University Press, 1982).
64. In the late 1970s, MITI briefly supported introducing the Canadian-engineered natural uranium, heavy water–fueled CANDU reactor, which was much more promising as a plutonium producer, but the utilities easily beat back this initiative. See Samuels, *The Business of the Japanese State*, pp. 248–250.
65. Ibid., p. 242.
66. The United States had a great deal of private-sector research in sensitive nuclear technology areas, but it also had a large public-sector nuclear research effort that was well insulated from the private sector. On the American military-industrial-university research complex, see Thomas P. Hughes, *Rescuing Prometheus* (New York: Vintage, 2000).
67. Enomoto, "History of Nuclear Development in Japan."

treat on the matter, and on July 15, 1968, the AEC formally legalized private ownership of spent fuel and fissile materials.[68]

Industry's success in this battle raises a very important point about Japan's nuclear proliferation potential that is missed by many Western analysts. Although "Japan" has a great deal of plutonium, most of this plutonium is actually the property of private corporations: Japan's electrical utilities.[69] Indeed, in a spectacular demonstration of their property rights, the utilities decided in the mid-1970s to contract out the task of reprocessing to Britain and France.[70] Therefore, to this day, the vast majority of "Japan's" plutonium is still located in Europe: at least 24 tons out of Japan's total separated plutonium stockpile of about 35 tons.[71] Japan's European plutonium has started to come back, but only very slowly in light of the technical, security, and political challenges of transporting such a sensitive material.[72] Moreover, some of the largest sensitive fuel cycle facilities in Japan, such as the Rokkasho reprocessing and enrichment plants, are also owned by the utilities via the consortium Japan Nuclear Fuel Limited (JNFL).

The fact that the vast majority of Japan's plutonium is actually in private hands, and therefore not readily available for a nuclear weapons breakout, has been unduly soft-pedaled by the proliferation literature. In addition, private industry has an oversight role over the rest of Japan's plutonium, so the prime minister is not well positioned to order the sudden militarization of that portion of the stockpile either. I return to this key point toward the end of the article.

MITI joins in: four veto players in the 1970s–80s

I have identified three veto players in Japanese nuclear policymaking during the 1950s and 1960s: the prime minister, the AEC, and industry. I also noted the role of MITI in supporting the utilities' push to import light water reactors. MITI has always been one of the most powerful bureaucracies in the Japanese

68. Yoshioka, "Forming a Nuclear Regime and Introducing Commercial Reactors," p. 97.
69. The question of why the Japanese utilities have remained entirely private is the central empirical puzzle discussed by Samuels in his *The Business of the Japanese State.*
70. Meanwhile they founded a new company, the Japan Nuclear Fuel Service Company, to undertake research for a second, this time fully private domestic reprocessing plant. Hitoshi Yoshioka, "The Development of Nuclear Fuel-Cycle Technology," in Shigeru Nakayama and Yoshioka, eds., *A Social History of Science and Technology in Contemporary Japan*, Vol. 4: *Transformation Period, 1970–1979* (Melbourne: Trans Pacific, 2006), pp. 237–241.
71. See Tadahiro Katsuta and Tatsujiro Suzuki, "Japan's Spent Fuel and Plutonium Management Challenges," International Panel on Fissile Materials (IFPM) Research Report, No. 2 (Princeton, N.J.: IFPM, September 2006), p. 14.
72. William Walker, "Destination Unknown: Rokkasho and the International Future of Nuclear Reprocessing," *International Affairs*, Vol. 82, No. 4 (July 2006), pp. 743–761.

state. It would not be right, however, to characterize MITI as a veto player in the nuclear policymaking arena from the outset. Indeed, during the early years of the nuclear age, MITI was consistently on the losing end of the battles over how to structure the nuclear policymaking arena. For instance, it fought against the creation of the STA and lost.[73] It also tried to win control over uranium mining, but the STA was given oversight responsibilities of that activity as well.[74] In addition, the institutionalization of industry as a nuclear veto player undermined MITI's hopes of using the new technology to reassert state control over the utilities.[75]

MITI's role in nuclear policy changed dramatically after a 1974 radiation leak aboard the STA's nuclear-powered ship *Mutsu* during the ship's high-profile inaugural departure from port.[76] The accident gave MITI the chance it had been waiting for to hit the STA hard. After a long struggle between the bureaucracies, in 1978 the Diet passed a series of reforms of the nuclear estate. For the media, the biggest change was the creation of a new Nuclear Safety Commission (NSC) on the AEC model, but in truth the NSC was a largely toothless body dependent on others for its information. The much more consequential reform was the handing over to MITI of the STA's key power over the utilities—its authority over permits and licenses for new nuclear power plant construction.[77] Thus, by the late 1970s, MITI had definitively become a veto player in the nuclear power game.[78]

The combined punch of the AEC, MITI, and industry in the nuclear policymaking arena from the early 1970s onward ensured the primacy of economic considerations in nuclear policymaking and effectively pushed the original national security–tinged Nakasone vision into the dustbin of history. Henceforth, when top politicians got involved in the issue, it was mainly in the service of pork barrel politics.[79] The nuclear sector had arrived at the ideal-typical state-business "reciprocal consent" relationship that Richard Samuels describes so

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73. Samuels, *The Business of the Japanese State,* p. 236.
74. Ibid., p. 237.
75. Ibid.
76. Hitoshi Yoshioka, "Nuclear Power Plant Location Disputes," in Nakayama and Yoshioka, *A Social History of Science and Technology in Contemporary Japan,* Vol. 4, p. 223.
77. Hitoshi Yoshioka, "Reorganization of the Administration and Regulation of Nuclear Development," in Nakayama and Yoshioka, *A Social History of Science and Technology in Contemporary Japan,* Vol. 4, pp. 192–195.
78. Again, I am not claiming that STA was ever a veto player; it was a powerful voice, but as the AEC oversaw the STA, the AEC was the veto player. Thus the removal of the STA's licensing power undermined the AEC's power, but the AEC still retained veto player status because of its statutory role of setting overall Japanese nuclear policy.
79. The interest of national politicians such as Kakuei Tanaka in bringing nuclear facilities to their districts up until the 1970s is noted in Daniel P. Aldrich, *Site Fights: Divisive Facilities and Civil Society in Japan and the West* (Ithaca, N.Y.: Cornell University Press, 2008), p. 42.

well in his 1987 book, *The Business of the Japanese State*, which, parenthetically, despite its extensive coverage of the complex wrangling over nuclear policy, does not even mention the possibility of a Japanese nuclear weapons option. That silence on the nuclear weapons angle was not an oversight on Samuels's part, but rather a reflection of the fact that, at least after the 1960s, actual Japanese nuclear policy was overwhelmingly driven by economic considerations.[80]

This is not to deny the importance of the symbolic politics of nuclear weapons in Japan after the 1960s. Indeed, it is ironic that during the very same period when the Nakasone dream of a top-down command and control structure able to order a rapid nuclear weapons breakout was moving toward definitive eclipse, Japanese politicians became embroiled in a struggle over whether or not to join the new Nonproliferation Treaty (NPT).[81] A vocal group of conservative politicians viewed the NPT as an act of great power discrimination and as an unfair reminder of Japan's defeat in World War II. This group succeeded in delaying Japan's ratification until 1976, eight years after the treaty was drafted.[82] There is a glaring contrast, however, between the conservatives' desperation to retain at least a narrow legal loophole for an eventual nuclear weapons drive—as can also be seen in their strained claims for the legality of Japanese nuclear weapons under Article 9 of the constitution—and their general lack of interest in the real evolution of the nuclear policymaking arena in Japan. Indeed, even if Japan had not signed the NPT, the emergence of MITI into a veto player, when added to the already existing veto players of industry and the AEC, plus the faction-ridden nature of the LDP, meant that Japanese prime ministers were already much more institutionally constrained from deciding to acquire the bomb than their counterparts in almost any other state. Of course, Japan's eventual ratification of the NPT did add another important layer of institutional obstacles on top of the already formidable domestic constraints facing any politician who might be tempted by the thought of acquiring the bomb.[83]

As a result of the diffusion of power over nuclear affairs away from the prime minister, not even Nakasone made a significant effort to change Japan's basic nuclear policy mix after becoming a very strong prime minister from

80. On the policy deliberations of the 1960s that resulted essentially in the dismissal of the nuclear weapons option, see Kusunoki Ayako, "The Sato Cabinet and the Making of Japan's Non-Nuclear Policy," *Journal of American-East Asian Relations,* Vol. 15, Nos. 1–2 (Spring–Winter 2008), pp. 25–50.
81. The domestic Japanese battle over the NPT is well described in Shuko Ogawa, "The Long and Winding Road: Japan's Non-Nuclear Policy," Noma-Reischauer Prize master's thesis in East Asian Studies, Harvard University, 2003.
82. Ibid. pp. 8–9.
83. Estimates of the level of constraint imposed by Japan's NPT membership vary widely. A modest case for the strength of these constraints is made in Rublee, *Nonproliferation Norms.*

1982 to 1987. Given Nakasone's continuing commitment to the nuclear weapons option even today,[84] it is clear that the reason why his premiership did not lead to significant nuclear policy changes was that there was no institutional space available for him to make them.

THE 1990s: PREFECTURAL GOVERNORS AS A FIFTH VETO PLAYER

Until the late 1980s, despite the large number of veto players, Japan's civilian nuclear energy development proceeded relatively smoothly because all of the veto players agreed on this goal. Watching the rapid increase in the number of Japanese nuclear power plants over the decades, many foreign analysts mistakenly attributed this to Japan's purportedly strong top-down lines of command.[85] By the mid-1990s, however, "not in my backyard" (NIMBY) opposition was becoming a major hurdle to nuclear facility siting and even ongoing nuclear operations in Japan.[86] Indeed, NIMBY-motivated prefectural governors were becoming yet another veto player in Japan's increasingly crowded nuclear policymaking arena.

Prefectural governors in Japan have always had considerable powers on paper in the U.S.-influenced Japanese constitution.[87] In the nuclear area, the foundation of the governors' veto power is the all-important Nuclear Safety Agreement, which allows the operation of nuclear facilities on a given plot of land. These agreements are negotiated between the plant operator and the prefectural governor, but the governor is in the catbird's seat in this negotiation, because, as Susan Pickett writes, "If the governor decides to veto a facility plan, the plan is for all practical purposes terminated. . . . The power of the governor is so encompassing that if the governor vetoes a license, a new law would have to be passed in the [national] Diet in order to override that veto."[88]

Governors had already learned to leverage their power over nuclear facilities siting and demanded billions of yen in side payments from private companies and the central government beginning in the 1970s.[89] After Chernobyl and a series of smaller nuclear accidents and regulatory violations in Japan, how-

84. "Nakasone Proposes Japan Consider Nuclear Weapons," *Japan Times,* September 6, 2006, http://search.japantimes.co.jp/cgi-bin/nn20060906a4.html.
85. See, for instance, Linda Cohen, Mathew D. McCubbins, and Frances M. Rosenbluth, "The Politics of Nuclear Power in Japan and the United States," in Peter F. Cowhey and McCubbins, eds., *Structure and Policy in Japan and the United States* (Cambridge: Cambridge University Press, 1995), p. 178.
86. Peter Dauvergne, "Nuclear Power Development in Japan: 'Outside Forces' and the Politics of Reciprocal Consent," *Asian Survey,* Vol. 33, No. 6 (June 1993), pp. 576–591.
87. Lam Peng Er, "Local Governance: The Role of Referenda and the Rise of Independent Governors," in Glenn D. Hook, ed., *Contested Governance in Japan: Sites and Issues* (London: RoutledgeCurzon, 2005), pp. 71–89.
88. Pickett, "Japan's Nuclear Energy Policy," p. 1347.
89. Aldrich, *Site Fights,* chap. 5; and Pickett, "Japan's Nuclear Energy Policy," pp. 1347–1349.

ever, many governors came to feel that no side payment could be big enough to accept a nuclear facility in their backyard. Growing local and prefectural-level opposition to nuclear power plant construction caused Japan's nuclear expansion to slow to a crawl, and almost all new nuclear construction was confined to existing nuclear sites. Nuclear expansion became even more difficult after an innovative 1996 local referendum in Maki, a town in Niigata Prefecture, nixed the sale of land to the Tohoku Electric Power Company, thus blocking it from constructing a nuclear power plant on that site. The Maki referendum led to a wave of similar local referendums not only on new power plant and waste siting but also on, for instance, the introduction of mixed oxide fuel into existing plants.[90]

In sum, since the mid-1990s the central government has proven "all but helpless" in the face of bottom-up opposition to nuclear power expansion.[91] Local and prefectural opposition is a key reason why Japan today has only about half of the number of nuclear power plants that 1970s-era estimates forecasted by the year 2000.[92] Even the major fuel cycle facilities that were deeply desired by the national-level veto players—the Rokkasho enrichment and reprocessing plants, and the Monju fast breeder reactor—have operated only irregularly, if at all, because of a combination of technical problems and local and prefectural antinuclear suspicions. If gaining local and prefectural acceptance for civilian nuclear power development has been this difficult, gaining it for nuclear weapons development seems nearly out of the question.

The veto player role of the governors is limited to nuclear activities being carried out in areas under their jurisdiction. This power is considerable, but it should also be noted that assorted attempts by governors to expand their local concerns into a broader national-level debate on Japan's nuclear policy have failed. For instance, the governors of Fukui, Niigata, and Fukushima Prefectures, representing 60 percent of Japan's installed nuclear capacity, issued a letter calling for a national pause in nuclear power development, and in August 2005 Fukushima Governor Eisaku Sato submitted a "public comment" on the AEC's "Framework for Nuclear Energy Policy," arguing against the "rush to operate a new reprocessing facility when there is still no solution for disposing of the 40 tons of plutonium Japan already possesses."[93] The governors' calls for a national debate were ignored by the national-level veto play-

90. Pickett, "Japan's Nuclear Energy Policy," pp. 1350–1351.
91. Daniel Aldrich, "The Limits of Flexible and Adaptive Institutions: The Japanese Government's Role in Nuclear Power Plant Siting in the Postwar Period," in S. Hayden Lesbirel and Daigee Shaw, eds., *Managing Conflict in Facility Siting: An International Comparison* (Cheltenham, U.K.: Edward Elgar, 2005), p. 128.
92. Ibid., p. 129.
93. Pickett, "Japan's Nuclear Energy Policy," p. 1351; and Sato, cited in Citizens' Nuclear Information Center, "Japanese NGOs Send Petition to IAEA," press release, January 5, 2006.

ers, however. The fact that Fukushima was the site of the 2011 nuclear disaster makes Sato's failure to generate national-level momentum against the reliance on nuclear power much more poignant.

THE 2000s: INSTITUTIONAL OVERHAUL, BUT STILL MANY VETO PLAYERS

Starting in the mid-1990s, Japan launched a major overhaul of its political system and state administration. As a result of these broad institutional changes, the nuclear policymaking arena today looks different than before. But still, its fundamental characteristic of a wide variety of veto players has persisted. The recent Fukushima nuclear disaster is likely to lead to yet more reforms, but as of August 2011 no concrete actions have been taken, in large measure because of the difficulty of satisfying the large number of veto players.

In this section, I consider the effects of the recent reforms on each of the veto players one by one: MITI/METI, the AEC, the utilities and heavy manufacturers, and national-level and subnational-level politicians.

MITI/METI. First, the reforms have tended to consolidate MITI, now dubbed the Ministry of Economy, Trade, and Industry (METI), as the single most important state veto player in the nuclear arena. The METI nuclear budget has risen sharply from its 1990s average of about ¥100 billion to close to ¥150 billion today, a substantial amount when one considers that METI does not operate any significant nuclear facilities.

By contrast, the STA has actually been abolished. Most of its former nuclear functions are now housed within the Ministry of Education, now named the Ministry of Education, Culture, Sports, Science, and Technology (MEXT), but the budget for those activities is steadily declining.[94]

Symbolic of METI's new centrality in nuclear policy was the transfer of responsibility for the safety of the Monju fast breeder reactor—by far the largest single nuclear project of the STA, and now of MEXT—over to METI. Under the old regime, MITI/METI regulated the safety performance of commercial nuclear power plants, but STA regulated itself. Now, METI inspectors have established a full-time presence at Monju, and therefore it is they, not MEXT, who can decide if and when Monju can operate.

The STA's demise was not inevitable. In the early days of the administrative reform process, it had even apparently been tapped for a promotion to full ministry status, just as its homologue, the Self-Defense Agency, was to become the Defense Ministry.[95] If the STA had become a full ministry, one can be sure that outside analysts would have mistakenly portrayed this as an indica-

94. My thanks to Tadahiro Katsuta for these data.
95. Ihara, interview by author, February 10, 2009.

tion that Japan was warming up to go for nuclear weapons. In any case, the opposite happened, as the STA's bungled response to the Monju sodium leak accident of 1995 rendered it politically vulnerable at a time of administrative "streamlining."

The continuing rise of METI is particularly important because, of all the veto players today, METI is the one most committed to the traditional plutonium-for-peaceful-purposes policy. Even during the high point of neoliberal sentiments in Japan under Prime Minister Koizumi in the early-to-mid-2000s, when some METI officials dared to suggest that the continuing pursuit of a plutonium economy was a waste of money, their superiors quickly silenced them.[96]

Why does METI continue to support a policy that many others view as self-contradictory? In brief, METI's focus on Japan's foreign trade explains its lack of interest in a nuclear weapons arsenal, while its focus on Japan's energy scarcity explains its interest in developing a self-sustaining plutonium economy.[97] But in addition, METI recognizes that there are other veto players, and this affects its policy preferences. For instance, METI knows that prefectural governors, egged on by NIMBY sentiments, are blocking any plan for permanent storage of nuclear waste in Japan. So it supports the retention of the plutonium economy ambition as a means of helping the nuclear industry to continue burning nuclear fuel without classifying its by-products as waste. By avoiding this classification, the utilities can continue piling up their spent fuel in the "temporary" storage sites that local and prefectural governments have reluctantly accepted.[98] Thus, here again, the interacting preferences of Japan's multiple veto players are serving to reinforce the default option of sustaining the traditional policy.

AEC. The AEC has also retained its veto player role. Still charged by statute with promoting the exclusively peaceful uses of nuclear power in Japan, the AEC has achieved freedom from political control, so it is now able to defend its statutory mandate with even greater gusto.

As noted previously, traditionally the AEC chairman also had the role of director of the STA, and this double-hatted role was always filled by an elected politician. Since a 2001 reform, however, the AEC chairman (or, hypothetically, chairwoman) is no longer a government minister. Instead, the position of AEC chairman has become somewhat akin to that of central bank governor: ap-

96. Walker, "Destination Unknown," p. 751.
97. Kent Calder, "Japan's Energy Angst: Asia's Changing Energy Prospects and the View from Tokyo," paper presented at the National Bureau of Asian Research conference, Seattle, Washington, September 28, 2004, http://www.nautilus.org/aesnet/2005/AUG0305/Japan_Energy_Security.pdf.
98. METI official, interview by author, Honolulu, Hawaii, July 31, 2010.

pointed by the prime minister with the approval of the Diet, but subsequently almost impossible to replace until the three-year term has expired. The other AEC commissioners are appointed in the same manner, staggered across the years, which gives the body continuity and prevents quick policy shifts.

Given this new mode of appointment, the AEC chairman—currently a former University of Tokyo professor of nuclear engineering—is clearly freer than before to take a position that is frankly contrary to that of the government. The AEC's policies since 2001 reflect this new situation. For instance, in the mid-2000s, the AEC invited a representative of the Citizens' Nuclear Information Council—which, as a stridently antinuclear nongovernmental organization, is not exactly a favorite of the nuclear iron triangle of METI, industry, and national politicians—to become a member of the important Long-Term Nuclear Program advisory committee.[99] Moreover, at least one current AEC commissioner actually favors putting an end to Japan's pursuit of the "plutonium economy."[100]

The AEC has also retained important powers. For instance, it formally retains the right to set Japanese nuclear policy in line with its mission to promote nuclear energy for peaceful purposes. Another AEC power is to approve MEXT's selection of the directors of the new Japan Atomic Energy Agency (JAEA), a fusion of the old JAERI and PNC (later the Japan Nuclear Fuel Cycle Development Institute).[101] The AEC has not made much of this power so far, but it could.

It must also be noted, however, that without a cabinet minister at its helm, the AEC now has less practical power than it used to. In earlier days, because of the double-hatted STA director/AEC chairman system, a statement by the AEC was equivalent to a statement by the cabinet. By contrast, the AEC's 2005 Long-Term Plan was in danger of sinking into irrelevance until the AEC chairman was able to convince the cabinet to formally endorse it. Initially, the politicians had wanted simply to take note of the plan in the grandly named, but merely advisory Council for Science and Technology Policy.[102] Even when the cabinet did endorse the plan, it used wording that reflected the ambiguous jurisdiction over this sphere: "The Government decides to respect the

99. Hideyuki Ban, "I Join the 'Long-Term Nuclear Program,'" *Nuke Info Tokyo,* No. 101 (July/August 2004), p. 5, http://cnic.jp/english/newsletter/nit101/index.html.
100. Tatsujiro Suzuki, "The Fast Reactor and Its Fuel Cycle Developments in Japan: Can Japan Unlock Its Development Path?" *Science and Global Security,* Vol. 17, No. 1 (January 2009), pp. 68–76. Suzuki was named vice chairman of the AEC in January 2010.
101. Shunsuke Kondo, commissioner of the Atomic Energy Commission, interview by author, Tokyo, January 30, 2009.
102. Ibid.

'Framework for Nuclear Energy Policy,' which was decided by the Atomic Energy Commission on October 11, 2005."[103]

Still, the bottom line is that the AEC retains, and is in a position to assert, its veto over major policy deviations from its statutory goal of promoting the peaceful uses of nuclear energy.

INDUSTRY. One of the most dramatic changes in the past two decades has been the splintering of the traditional united voice of industry and its replacement by two separate private-sector veto players—the utilities, on the one hand, and the heavy equipment manufacturers, on the other.

As noted earlier, ever since Shoriki's day the industry association JAIF had provided a powerful voice for the nuclear industry as a whole. Industry was able to exercise such unity because (1) the utilities were not in competition with one another; (2) each utility focused on specific reactor types made by different heavy equipment manufacturers, which greatly reduced competition among the latter for the utilities' business; and (3) given their lack of significant nuclear exports, the manufacturers had no choice but to follow the utilities' lead on nuclear policy matters.[104]

The partial deregulation of the electrical power industry since 1995, however, has caused relations between the utilities and heavy equipment manufacturers to sour. As the utilities are now able to contract with independent power producers rather than having to build all new generation capacities themselves, they have become more cost conscious when it comes to new facility investments, and this leads to strife with the heavy equipment manufacturers.[105]

Symbolic of the end of industry unity is a nearly $400 million lawsuit filed by the utility Chubu Electric Power against the equipment manufacturer Hitachi over a faulty reactor turbine that caused an accident at the Hamaoka nuclear power station in 2006.[106] That these two industrial behemoths would take a fight into open court would have been unthinkable under the old regime.[107]

As for the JAIF itself, the best that can be said for it is that it still exists. It was thoroughly reorganized and downsized in 2006, and it no longer serves as

103. For the full text in English, see Japan Atomic Energy Commission, "Framework for Nuclear Energy Policy," http://www.aec.go.jp/jicst/NC/tyoki/tyoki_e.htm.
104. Junichiro Fujiwara, professor of law at Keio University, interview by author, Tokyo, February 19, 2009.
105. Ikuo Kurihara, "Restructuring of the Electric Power Industry and the Current State of the Power Market in Japan," paper presented at the Power Engineering Society general meeting (IEEE), Montreal, Quebec (June 2006).
106. Mio Kimuro, "Chubu Electric Sued Hitachi for Compensation Arising from Faulty Rotors at Hamaoka-5," *Atoms in Japan*, September 24, 2008.
107. Fujiwara, interview by author.

the powerful mechanism for industry consensus building that it did in the past.[108]

Theoretically, the disruption of industry unity could be a major victory for METI in its long struggle for control of the nuclear sector. Indeed, one can clearly sense METI's *Schadenfreude* about the deepening division between the utilities and manufacturers in METI's National Nuclear Energy Plan of August 2006, which emphasizes the need to "break down the three-way standoff among government, electric power utilities, and plant makers, to achieve true communication and a shared vision among players. The government must take the first step by indicating the overall direction."[109] The truth is that METI had been longing for such a "three-way standoff" for many years.

If METI has been following a divide-and-conquer strategy, however, it has not achieved its goal. For although the utilities were more powerful when they could count the manufacturers as their stable ally, they remain a nuclear veto player because they own so much of Japan's nuclear estate, including most of its plutonium and also, via the JNFL consortium, the Rokkasho fuel cycle facilities.

Moreover, the utilities are now less likely to strike compromises with the interests of the manufacturers, whose views are more strongly pronuclear and closer to METI's. For instance, fuel reprocessing is one key area in which the utilities, in search of industry unity, have historically bent over backwards in deference to the preferences of the manufacturers. The utilities were already skeptical of the economic benefits of a privately held commercial reprocessing facility in the 1970s, but they bowed to the wishes of Mitsubishi Chemical, Sumitomo Chemical, and others to create the JNFL consortium to build the reprocessing facility at Rokkasho-mura.[110] After deregulation and the end of industry unity, however, the utilities began more openly indicating their discontent about continued investments in Rokkasho. As a result of the utilities' growing coolness toward the "plutonium economy," METI found itself having to push the Diet to create a special "reprocessing fund" worth ¥12.7 trillion in May 2005. In this act, the Japanese government agreed to pay all existing debts and future costs associated with the Rokkasho facility. The money is coming from special surcharges on electricity transmission and household consumption.[111]

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108. Kazuhisa Mori, former chairman of JAIF, interview by author, Tokyo, February 24, 2009.
109. "Main Points and Policy Package in 'Japan's Nuclear Energy National Plan,'" report by METI's Nuclear Energy Subcommittee (Tokyo: Ministry of Economy, Trade, and Industry, September 2006), http://www.enecho.meti.go.jp/english/report/rikkokugaiyou.pdf.
110. Mori, interview by author, February 24, 2009.
111. Katsuta and Suzuki, "Japan's Spent Fuel and Plutonium Management Challenges," p. 12.

The utilities are thus a point of weakness in the plutonium economy coalition, but not so much that they could actually leave it. Again, part of the reason lies in the complexity of an arena with multiple veto players. For instance, as mentioned above, the utilities understand that because of NIMBY sentiments and the veto player role of subnational governments, dropping the plutonium economy goal would cause the reclassification of spent fuel as mere waste; and with nowhere to permanently store the waste, the viability of even regular nuclear power plant operations would become questionable. The utilities' fear of NIMBY sentiments imperiling an energy source in which they have invested so much will undoubtedly be even higher now that the Fukushima nuclear disaster has given nuclear power a bad name.[112] So, despite their lack of enthusiasm for continuing their Sisyphean labors at Rokkasho, the utilities can be expected to cling to METI and its traditionalist policy ever more tightly in the coming years. The ultimate threat of state nationalization of the utilities as punishment for the Fukushima disaster, while basically empty, should also help to keep them investing in Rokkasho.[113]

Turning now to the heavy equipment manufacturers, they have recently emerged as a veto player in their own right. This elevation in their status has come as the result of their recent emergence as global exporters of nuclear equipment. In particular, in 2006 Toshiba executed a $4.2 billion takeover of Westinghouse from British Nuclear Fuels Limited.[114] Mitsubishi has also inked a strategic partnership with Areva, the French nuclear power plant maker, and Hitachi merged its nuclear operations with General Electric. Thus, for better or worse, Japan now sits at the epicenter of the global nuclear energy industry. Given the economic stakes involved, the government simply cannot ignore the manufacturers' nuclear policy preferences, and TEPCO and the other utilities can no longer treat them as mere hired help.

The preferences of the manufacturers are all the more relevant because they are the prime contractors for Japan's fuel cycle facilities. The manufacturers' central role in the design and construction of the sensitive aspects of Japan's nuclear technology, combined with their new global reach, gives them veto

112. Koichi Hasegawa, "A Comparative Study of Social Movements for a Post-nuclear Energy Era in Japan and the USA," in Jeffrey Broadbent and Vicky Brockman, eds., *East Asian Social Movements: Power, Protest, and Change in a Dynamic Region* (New York: Springer, 2011), pp. 63–79.
113. Antoni Slodkowski, "TEPCO on Shaky Ground Amid Worries of Nationalization," *Christian Science Monitor,* March 29, 2011, http://www.csmonitor.com/Business/Latest-News-Wires/2011/0329/TEPCO-on-shaky-ground-amid-worries-of-nationalization.
114. This figure rises to $5.4 billion if one includes the contribution of Toshiba's allies in the deal, the Shaw Group of the United States and Ishikawajima-Harima Heavy Industries (IHI). Recently, Toshiba moved to take over the struggling IHI. Taisuke Takeda and Tamaki Aikyo, "Toshiba-IHI Tie-Up Aims to Bolster PWR Business," *Daily Yomiuri,* March 1, 2008.

power over a potential nuclear weapons breakout. On the other hand, the prospect of a big contract to build nuclear weapons facilities could also conceivably lead the manufacturers to push for a nuclear weapons breakout. Therefore, of all the nuclear veto players, this is the one whose future preferences on nuclear weapons could possibly align with those of bomb-desiring conservative nationalist politicians at some point in the future. Indeed, as Saadia Pekkanen and Paul Kallender-Umezu have shown, it was the manufacturers who were the main drivers of the recent militarization of Japan's space policy.[115]

The manufacturers are unlikely either to be inclined or to be able to repeat their space policy feat in the nuclear arena, however. First, in the nuclear arena there are many more veto players, so the manufacturers' preferences cannot weigh so heavily on policy. Second, in contrast to the lack of civilian export opportunities for their space products, the manufacturers perceive big civilian export opportunities of their nuclear products to countries such as China and India. To make good on those opportunities, they badly need assistance from METI and also the Ministry of Foreign Affairs, neither of which is likely to be amused by proposals for a Japanese nuclear arsenal. Moreover, the growth of the civil nuclear export market is also dependent on the existence of the international nonproliferation regime, whose stability is already questionable and certainly could not survive a Japanese nuclear weapons breakout.[116] Therefore the manufacturers are highly unlikely to push for a Japanese nuclear arsenal, and indeed they represent yet another veto player that can be expected to block any such initiative.

It should be mentioned that Japan's organizational veto players are not just numerous, but also deeply intertwined. In the old days, as Chalmers Johnson put it, top government ministries, such as MITI used to send "expeditionary armies" of officials off to weaker ministries such as the STA as well as private corporations, to gather intelligence and ultimately to control them.[117] Today, as a result of the liberalization thrust of the past two decades, such flows are running in both directions, as the big corporations are now also sending their "expeditionary armies" to infiltrate the state. Nowhere is this phenomenon more obvious than in the case of the nuclear plant manufacturers and nuclear safety policy. As noted above, after the many incidents and problems of the 1990s, the

115. Saadia M. Pekkanen and Paul Kallender-Umezu, *In Defense of Japan: From the Market to the Military in Space Policy* (Stanford, Calif.: Stanford University Press, 2010).
116. Masako Toki, "Japan's Dilemma: Nuclear Trade vs. Nuclear Disarmament Advocacy," *Bulletin of the Atomic Scientists*, November 3, 2010, http://www.thebulletin.org/web-edition/features/japan%E2%80%99s-dilemma-nuclear-trade-vs-nuclear-disarmament-advocacy.
117. Johnson, *MITI and the Japanese Miracle*, pp. 75–76.

government was forced to upgrade its efforts on nuclear safety. New state agencies were created, and old ones were given enhanced regulatory powers. But to make and implement the detailed regulations necessary for this highly specialized technical field, particularly in an era of budgetary stringency, the task was largely handed over to what Johnson would term *détachés* from the nuclear manufacturers. For instance, in 2000 the NSC had seventeen officers on payroll and no technical staff. By contrast, in 2007 the NSC had sixty-six officers and forty-one technical staff, with most of the latter composed of retired engineers from the nuclear manufacturers.[118] This made a mockery of the NSC's supposed independence. METI's Nuclear and Industrial Safety Agency, its Japan Nuclear Energy Safety Organization, and the AEC have also been staffed in part by workers coming from industry.[119] The interpenetration of industry and the state is not "Japan Inc." Rather, it is a further example of the complex multilevel chess game among the various veto players. In the wake of the Fukushima disaster, the politicians may try to disentangle this mess and elevate the nuclear safety bureaucracy as yet another autonomous veto player; but if they do try, they will surely meet with strong industry resistance.[120]

THE POLITICIANS. As for the Japanese prime minister, despite the reforms of the past two decades, he remains merely one veto player among many. He cannot ride roughshod over the other nuclear policy stakeholders, as, for instance, the Indian prime minister has been able to do.

This finding is somewhat surprising because the reforms of the 1990s and 2000s were supposed to rebalance political power in Japan back toward the politicians and away from the bureaucracy. The overall structural power of the prime minister has admittedly increased over the past two decades, for instance, as a consequence of the retreat of the party factions.[121] But prime ministerial power in Japan is still very limited in comparative perspective. Ellis Krauss and Benjamin Nyblade stress that the stronger Japanese prime minister still has nowhere near the power of the British prime minister, for instance.[122]

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118. Yoshinori Ihara, interview by author, February 24, 2009.
119. Kondo, interview by author; Kentaro Morita, NISA, interview by author, Tokyo, February 9, 2009; and Masaki Nakagawa, Japan Nuclear Energy Safety organization, interview by author, Tokyo, October 20, 2008.
120. The government appears to be thinking along these lines. See "Japan Set to Integrate Two Nuclear Units into One Powerful Regulatory Body," *Mainichi Daily News,* April 6, 2011, http://mdn.mainichi.jp/mdnnews/news/20110406p2a00m0na015000c.html.
121. Krauss and Pekkanen, *The Rise and Fall of Japan's LDP,* especially pp. 284–285.
122. Ellis S. Krauss and Benjamin Nyblade, "'Presidentialization' in Japan? The Prime Minister, Media, and Elections in Japan," *British Journal of Political Science,* Vol. 35, No. 2 (February 2005), especially p. 368. For a largely concurring view, see Ian Holliday and Tomohito Shinoda, "Governing from the Centre: Core Executive Capacity in Britain and Japan," *Japanese Journal of Political Science,* Vol. 3, No. 1 (May 2002), pp. 91–111.

The general, albeit modest, increase in the prime minister's power in recent years is even less noticeable in the nuclear policymaking arena. For instance, many scholars point to the enhanced Prime Minister's Office, now dubbed the Cabinet Office, as a key foundation for greater prime ministerial power.[123] The Cabinet Office is highly relevant for nuclear policy, as it provides the AEC and NSC with their secretariats. This role was previously provided by STA bureaucrats, and it gave them considerable influence—though not veto power—over the AEC's and NSC's decisions. Yet the Cabinet Office officials who form the secretariats for the AEC and NSC are overwhelmingly METI and MEXT (ex-STA) bureaucrats who have been seconded to the Cabinet Office for a limited time frame. These bureaucrats obviously can be expected to retain their primary loyalty to their "home" ministries. Thus the big change here is actually not the rise of prime ministerial power, but rather the rise of METI's power. In short, at least in the nuclear issue-area, the Cabinet Office appears to be more a microcosm of interministerial turf battles than a genuine lever for prime ministers to exert personal power.

The continuing weakness of the top political leadership when it comes to nuclear affairs is no accident. The politicians have long well understood that having authority over nuclear matters is a decidedly mixed blessing. For decades now, prime ministers and cabinets have found themselves required to act in the wake of the long series of serious nuclear incidents to hit Japan. For instance, prior to the latest catastrophe, Japan was jolted by the *Mutsu* ship accidents, the Monju sodium leak, the TEPCO data falsification scandal, and the Kariwazaki-Kariwa earthquake of 2007. Far from using these crises to reengage in the nuclear policy arena, top political leaderships consistently responded by saddling bureaucrats both with the blame for past mistakes and with greater responsibility for overseeing the sector in the future. This was the opposite of what Nakasone would have liked them to do, but it was a very smart move politically, as the Fukushima disaster demonstrates.

In response to the Fukushima crisis, so far the prime minister and other top politicians have acted true to form, expertly placing most of the blame for problems on the plant operator, TEPCO, but simultaneously creating a joint crisis management committee that places TEPCO in charge—and therefore in line for more blame if needed.[124] Of course, the politicians could not completely escape responsibility, and in due time they will surely offer some sort

123. Tomohito Shinoda, "Japan's Cabinet Secretariat and Its Emergence as Core Executive," *Asian Survey*, Vol. 45, No. 5 (September/October 2005), pp. 800–821.
124. "Nature Strikes Back: Can Fragile Japan Endure This Hydra-Headed Disaster?" *Economist*, March 17, 2011, http://www.economist.com/node/18398748?story_id=18398748&CFID=166497239&CFTOKEN=84123810.

of nuclear policy reform package to the Diet. Yet it would be stunning if they were to propose a complete institutional reset that leaves them in the firing line for the next nuclear disaster. Indeed, Prime Minister Naoto Kan moved in the opposite direction, calling for Japan to exit the nuclear field entirely. Kan's initiative, however, was torpedoed by the other veto players within just a few hours of his July 14 speech on the topic. There could hardly be a clearer demonstration of the limits of prime ministerial power in this policy arena.

Turning now to the prefectural governors, the independence of subnational governments has been yet further entrenched by major 1990s national-level electoral reforms.[125] In addition, legal reforms have greatly strengthened civil society organizations that often espouse NIMBY sentiments.[126] Moreover, if NIMBY sentiments were on the rise even before Fukushima, they are now at stratospheric heights. In this political context, it seems evident that prefectural governors will be extremely reluctant to accept any new nuclear development on their land for the next few years at least. They will certainly also demand thorough safety checks of existing facilities, and they may even demand that some be permanently shut down. This should impede the implementation of Japan's traditional nuclear policy, and it may impede it greatly. On the other hand, the prefectural governors are still not in a position to force a nuclear policy change at the national level.

In sum, now that the dust has settled on the major political and administrative reforms of the 1990s and 2000s, it is clear that the configuration of Japan's nuclear institutions has become almost the exact opposite of the original Nakasone vision. Despite all of the institutional upheaval in Japan's nuclear policy regime over the last two decades, the bottom-line result was more of the same: a wide dispersion of power among numerous veto players. METI is central; the AEC is hanging on; the utilities have great power and enhanced freedom of action; the heavy equipment manufacturers now constitute a veto player in their own right; national-level politicians are potentially important but largely concerned with avoiding responsibility; and NIMBY-motivated prefectural governors are more powerful than ever. Some of the veto players are somewhat discontented with the traditional nuclear policy of striving for a purely civilian "plutonium economy," but their views on how the policy should change are divergent, and others—notably METI—continue to keep the faith. Thus, Japan's traditional nuclear policy appears solidly in place, even after the seismic shock of Fukushima.

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125. Yusaku Horiuchi, "Understanding Japanese Politics from a Local Perspective," *International Political Science Review,* Vol. 30, No. 5 (2009), pp. 565–573.
126. Ibid.

Table 1. Japan's Separated Plutonium as of December 31, 2009

Location	Amount (metric tons)	Owner
British and French reprocessing plants	24.1[a]	Various electrical utilities, notably TEPCO (private industry)
Rokkasho reprocessing plant (Japan)	3.6	Electrical utilities via JNFL consortium (private industry)
Tokai fuel fabrication plant (Japan)	3.5	JAEA (state) owns the plant, but electrical utilities (private industry) own most of the fuel
Commercial power reactors (Japan)	1.5	Various electrical utilities (private industry)
Tokai reprocessing plant (Japan)	0.8	JAEA (state)
Monju and Joyo experimental reactors, Tokai FCA criticality test assembly, other locations (Japan)	0.7	JAEA (state)

[a]The reported figure is for "fissile plutonium" only. The total amount of Japanese plutonium in Europe may be nearly 40 tons.
TEPCO stands for the Tokyo Electric Power Company; JNFL stands for the Japan Nuclear Fuel Limited consortium; and JAEA stands for the Japan Atomic Energy Agency.

A Veto Players Approach to Proliferation Forecasting

To consolidate my point about the importance of considering not just technical capabilities and the top political leadership's intentions, but also the role of a wide variety of veto players for the proper analysis of Japan's potential future nuclear weapons policy, I now turn to a closer examination of the disposition of Japan's plutonium stockpile, which is the main point of concern for most nonproliferation advocates. Table 1 breaks down Japan's estimated plutonium inventory by location, amount, and owner.[127]

As table 1 indicates, by a conservative estimate "Japan" owns roughly 35 metric tons of separated plutonium.[128] This figure is often bandied about as proof of Japan's massive nuclear weapons breakout potential. But most of this plutonium is in private hands, and indeed most of it is not even in Japan. Only

127. Adapted from "Japanese Inventory of Separated Plutonium at 31 December 2009," report of the Atomic Energy Commission, translated and placed online by the Citizens' Nuclear Information Center, http://www.cnic.jp/english/newsletter/nit139/nit139articles/pudata.html.
128. This estimate actually vastly understates the stockpile because, since 2003, official statements of Japanese overseas holdings report on "fissile" plutonium only. The total amount of Japanese plutonium in Europe may be around 40 tons. See Katsuta and Suzuki, "Japan's Spent Fuel and Plutonium Management Challenges," p. 3.

about 2 tons—roughly 5 percent of the total plutonium stockpile—is actually owned by the state and present inside the country, and therefore somewhat more worrisome from a nonproliferation perspective.

Granted, 2 tons of plutonium is still a lot. By way of comparison, North Korea has been able to blackmail the international community with only a few kilograms of the material. As I have stressed in this article, however, even these 2 tons of "state" plutonium are not available to the prime minister to do with as he pleases. In contrast to North Korea or India, for instance, the institutional structure of nuclear policymaking in Japan does not give the top leader free rein to decide even how to use the plutonium that is in the hands of the state. Indeed, it is not entirely correct to describe any of Japan's plutonium as being under "state" control, because the "owner," the JAEA, is not a traditional state agency. It is, in fact, an "independent administrative organization" formally under MEXT auspices but with participation also from industry. Moreover, METI and the AEC also have a say over the selection of its board of directors. The current JAEA board reflects its complex web of allegiances. Of its nine members, four are from MEXT/STA, three are from the electrical utilities, one is from METI, and one—the president of the board—is a career academic who previously served as chairman of the Nuclear Safety Commission.[129] In short, the JAEA is not simply beholden to the top political leadership. The veto players are jealously guarding their turf.

In addition, for forecasting purposes it is necessary to assess not only how easily Japan might be able to redirect its current stockpiles of plutonium for military purposes, but also how easily it might acquire additional stockpiles and then use those for military purposes. Again, the answer is that it would be extremely difficult to imagine such a scenario. For one thing, industrial-scale fuel reprocessing is not currently possible in Japan, given that the JAEA's decrepit Tokai reprocessing plant is practically offline and the industry consortium JNFL's construction of the Rokkasho reprocessing plant continues to run into problems, which are compounded by strident local opposition. Indeed, Rokkasho's planned startup date has been postponed eighteen times over the past decades, with the latest target date set for October 2012.[130] In addition, there is a uranium enrichment plant at Rokkasho, which could be another conceivable pathway to acquiring fissile material; but this is also not a state facility, as it is mainly owned by the industry consortium JNFL, and it also has

129. See Japan Atomic Energy Agency, Board Executive Directors, http://www.jaea.go.jp/english/about/board-of-directors.shtml.
130. Masako Sawai, "Two Year Delay for Rokkasho Reprocessing Plant," *Nuke Info Tokyo*, No. 138 (September/October 2010), http://www.cnic.jp/english/newsletter/nit138/nit138articles/rokkasho.html.

been beset by technical difficulties and was shut down in December 2010, with plans to completely replace the existing centrifuges with a new design.[131]

From a proliferation perspective, the most worrisome potential future source of plutonium for the Japanese state may be the JAEA's Monju fast breeder reactor. Monju runs on plutonium fuel, but as a breeder reactor it also is designed to produce considerably more plutonium than it uses, and much of what it produces is even weapons-grade. Monju has been beset by a series of technical problems, however, which have increased the difficulty of gaining the required approvals from METI and subnational governments for its restart. In fact, Monju was fully operational only for a brief period in 1995 before being shut down by a sodium leak, then for a brief period in 2010 before shutting down again because of yet another accident. As a result of the latest accident, Monju's full startup has once again been delayed until 2014 at the earliest.[132] And even if Monju were to start running smoothly and producing plutonium, that plutonium would continue to be subject to the complicated "ownership" structure of the JAEA, which reflects a variety of veto players in this arena.

In sum, the historical institutionalist, veto players analysis conducted here allows a much more sanguine conclusion about Japan's future nuclear military potential than the nonproliferation literature's standard casual, if not scaremongering, references to "Japan's" huge plutonium stockpile. The analysis also suggests that Japan will continue to produce large quantities of plutonium for many years to come, with all of the economic costs and dangers to public health and safety that this entails. I leave it to others to decide whether the glass is half full or half empty.

Conclusion

This article has provided a new lens for understanding states' propensity to acquire nuclear weapons or to take other radical nuclear policy shifts, with a special focus on the case of Japan. Japan's persistent pursuit of a purely civilian "plutonium economy" over the past half century is a puzzling phenomenon that many analysts have interpreted as indicating a secret desire of Japanese elites to have nuclear weapons, or at least to engage in nuclear hedging. By contrast, my analysis shows that although once upon a time some top Japanese politicians, and notably Yasuhiro Nakasone, did indeed hope to create a nu-

131. Masako Sawai and Philip White, "Uranium Enrichment Plant Turns into a Big Waste Dump," *Nuke Info Tokyo,* No. 140 (January/February 2011), http://www.cnic.jp/english/newsletter/nit140/nit140articles/uranenrich.html.
132. "Accident Delays Monju Startup till '14," *Japan Times,* December 17, 2010, http://search.japantimes.co.jp/print/nn20101217b2.html.

clear weapons breakout option, their institutional vision was swamped by the intrusion of other powerful actors with very different motivations. Therefore the persistence of Japan's unusual nuclear policy mix should not be taken to indicate that Japan has been following a nuclear hedging strategy. Rather, the persistence of the traditional Japanese nuclear policy mix is mainly the product of powerful forces of inertia. The need for agreement across a wide array of domestic veto players has posed a serious obstacle to major policy shifts, either toward nuclear weapons or toward the abandonment of the "plutonium economy" ambition. Moreover, the longevity of the traditional policy is itself a force for continued policy stability.

Some sophisticated Japan watchers have opined that even though most of the country's politicians have not been seriously interested in obtaining nuclear weapons in the past, over the past twenty years of major institutional reforms, they have gradually, albeit perhaps unconsciously, put the chess pieces in place for a possible future prime minister to decide to build the bomb.[133] I have shown, however, that the recent major administrative and political reforms have not re-created the Nakasone vision of a pyramidal command and control structure over nuclear policy in Japan. In fact, they have expanded the number of veto players yet further. Over the past twenty years, Japan has not been creeping toward a nuclear weapons breakout; instead, it has steadily been encasing its traditional nuclear policy in cement. A nuclear replay of Imperial Japan's surprise attack on Pearl Harbor is a fantasy scenario.[134]

There is, of course, always the slim possibility that a major external shock could lead to a big, sudden change in Japan's nuclear policy.[135] Yet the basic framework of Japanese nuclear policy has continued essentially undisturbed by several serious shocks in the past, for instance North Korea's nuclear tests of 2006 and 2009. And, remarkably, the impact of even the Fukushima crisis has so far been faster and more decisive on Germany's nuclear policy than on Japan's. The historical institutionalist, veto players analysis introduced in this article does not provide us with a crystal ball, but it does point out the strong obstacles to radical Japanese nuclear policy change in any direction, even in the face of the most serious disaster Japan has faced since World War II. After all, even in crises, veto players tend to stand up for their perceived interests.

133. Hughes, "Why Japan Will Not Go Nuclear (Yet)."
134. Unfortunately, it remains a popular theme in the nonproliferation literature. See, for example, Thomas B. Cochran, "Adequacy of IAEA's Safeguards for Achieving Timely Detection," in Henry D. Sokolski, ed., *Falling Behind: International Scrutiny of the Peaceful Atom* (Carlisle, Pa.: Strategic Studies Institute, U.S. Army War College, 2008), pp. 121–158.
135. The durability of institutionalized foreign and security policy choices, but also their potential for radical change, is stressed in David A. Welch, *Painful Choices: A Theory of Foreign Policy Change* (Princeton, N.J.: Princeton University Press, 2005).

By way of comparison, as Andrew MacIntyre has shown, the Asian financial crisis of 1997 did not produce a uniform response by Southeast Asian states, but instead a wide variety of responses because of the varying nature and number of preexisting veto players in each country. The more diverse the set of veto players, the less flexible was the policy.[136] Therefore we should not be surprised if even a disaster of the magnitude of Fukushima leads only to minor, or even cosmetic, changes in Japan's traditional nuclear policy orientation.

Moreover, even if a major external shock surprisingly did bring about a Japanese nuclear policy revolution in the coming months or years, this revolution would surely not happen overnight or remain secret for very long. Opposition parties, the media, foreign governments, and capital markets would be well apprised that the Japanese government was trying to change its nuclear course, and they would therefore have ample time to exert various kinds of pressure on it, and also to prepare themselves for the new strategic reality should the pressures prove insufficient. That Japanese politics is almost certain not to produce any sudden nuclear policy departures is another important, policy-relevant implication of the historical institutionalist, veto players analysis introduced in this article.

Although Japan has been the main empirical focus of this article, the broader theoretical argument that I have made here is not specific to Japan. When assessing the nuclear proliferation propensities of states around the world, analysts should complement their study of the international environment and of domestic political actors' preferences with historical institutionalist analyses of the policymaking arenas in which the actors find themselves. This article's focus on the number of veto players is a start, but only a start to what needs to be done to develop a full-fledged institutionalist perspective on nuclear proliferation.

136. MacIntyre, "Institutions and Investors."