

# THE NUCLEAR THRESHOLD STATES

## Challenges and Opportunities Posed by Brazil and Japan

**Maria Rost Rublee**

*“Nuclear threshold states”—those that have chosen nuclear restraint despite having significant nuclear capabilities—seem like the perfect partners for the reinvigorated drive toward global nuclear disarmament. Having chosen nuclear restraint, threshold states may embrace disarmament as a way to guarantee the viability of their choice (which may be impossible in a proliferating world). Supporting disarmament efforts affirms their restraint, both self-congratulating and self-fulfilling. Additionally, the commitment to their non-nuclear status springs at least in part from a moral stance against nuclear weapons that lends itself to energetic support of global disarmament. However, threshold states also offer significant challenges to the movement for nuclear weapons elimination, in particular in relation to acquisition of enrichment and reprocessing facilities. This article analyzes both the challenges and opportunities posed by threshold states by examining the cases of Brazil and Japan.*

KEYWORDS: Nuclear disarmament; nuclear energy; nonproliferation; nuclear fuel cycle; Brazil; Japan

The global drive for disarmament, reinvigorated by President Barack Obama’s Prague speech, now seems more hopeful than at any time over the past several decades. This article seeks to analyze both the promise and challenges to the disarmament campaign offered by the nuclear threshold states—that is, states that have chosen nuclear restraint despite having significant nuclear capacity.<sup>1</sup>

On the one hand, having made the political decision to stay non-nuclear, threshold states may embrace the disarmament initiative as a way to ensure the continued viability of their choice (which may not be possible in a proliferating world). Supporting disarmament efforts could be seen as an affirmation of their restraint, both self-congratulating and self-fulfilling. Additionally, the commitment to their non-nuclear status springs at least in part from a moral stance against nuclear weapons, which would lend itself to energetic support of global disarmament. On the other hand, disarmament initiatives could be seen as stripping the threshold states of their virtual nuclear capability, constraining their future choices. In addition, many of these states have large investments in the nuclear fuel cycle. Because global disarmament efforts may eventually seek to lock down even the civilian fuel cycle, they could be seen as a direct economic and energy threat by the threshold states.<sup>2</sup>

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To assess both the opportunities and challenges that threshold states offer in the push to achieve “nuclear zero,” this article will closely examine two major threshold states—Brazil and Japan—to analyze what factors will contribute to their support or opposition to global nuclear disarmament initiatives.

To begin, however, the relationship between nuclear disarmament and nonproliferation needs to be explored. Serious discussion and action in nuclear nonproliferation and disarmament in the past concentrated heavily on the nonproliferation side of the bargain, but the end of the Cold War brought optimism for more equal progress. However, multiple challenges overwhelmed the push for global nuclear disarmament, from concern over the nuclear weapons programs of two state parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)—North Korea and Iraq—to nuclear weapons tests by two NPT holdout states—India and Pakistan. In particular, the administration of George W. Bush focused heavily on nonproliferation and counterproliferation, to the exclusion of global disarmament negotiations. For example, at the 2004 NPT Preparatory Committee (PrepCom) meeting, U.S. Undersecretary of State John Bolton argued that states were focusing on Article VI violations “that did not exist.”<sup>3</sup> It is not hard to understand the frustration of non-nuclear weapon states (NNWS) that wanted balance between the obligation of nonproliferation and the obligation of disarmament.

However, just as it was mistaken to focus exclusively on nonproliferation, it would also be incorrect to focus entirely on disarmament to the exclusion of nonproliferation. Indeed, global nuclear disarmament is impossible without success in nuclear nonproliferation. Should Iran acquire and operationalize nuclear weapons, the likelihood of Israeli disarmament falls to almost zero—and several other states in the Middle East may rush to join Iran as nuclear powers.<sup>4</sup> The task of disarmament grows more difficult with each additional state that joins the nuclear club.<sup>5</sup> Surprise and stringent inspections of civilian nuclear facilities ensure that countries do not cheat and create a nuclear “breakout” capability; just as important, the inspections create confidence in the global community that nuclear power resources are not being used for nuclear weapons. This creates a positive environment for disarmament because nuclear weapon states (NWS) are unlikely to disarm if they fear others are engaging in nuclear hedging.<sup>6</sup> Inspections also foster greater global confidence in the International Atomic Energy Agency (IAEA), the likely candidate to verify disarmament measures, such as a Fissile Material Cutoff Treaty (FMCT). Certainly the bargain swings the other way as well: NNWS are less likely to adhere to strict rules and inspections forever if the NWS do not show progress on their obligations. Nuclear disarmament and nonproliferation require each other, as the case of the threshold states will illustrate.

## **Brazil and Nuclear Disarmament**

Brazil’s support of global nuclear disarmament began early as a member of both the Eighteen-Nation Committee on Disarmament and the Conference of the Committee on Disarmament.<sup>7</sup> It was the first country to promote a nuclear-weapon-free zone in Latin

America, beginning its active support in 1961. In 1962, Brazil presented a draft resolution to the UN General Assembly calling on Latin American states to reject nuclear weapons.<sup>8</sup> A year later, Brazilian President João Goulart announced the Five Presidents' Declaration, an agreement among the presidents of Brazil, Mexico, Chile, Ecuador, and Bolivia to create a multilateral pact "whereby their countries would undertake not to manufacture, receive, store, or test nuclear weapons or nuclear launching devices."<sup>9</sup> But the Brazilian leadership role in advocating for a nuclear-free Latin America was a casualty of the military coup of 1964. The military regime did not oppose multilateral action for disarmament, but also did not advocate for it.<sup>10</sup> In negotiations for the Treaty of Tlatelolco, the military government advocated for very strict conditions for entry into force. Once the treaty was finalized, Brazil signed it but did not waive the condition of universal ratification before adhering to it, as most other signatories did.<sup>11</sup> The military government began a nuclear weapons program in the late 1970s, but it was terminated in the early 1990s under the democratically elected civilian government. Since terminating the program and signing the NPT in 1998, Brazil has become an energetic supporter of nuclear disarmament.<sup>12</sup>

### *Brazil: Opportunities for Disarmament*

Although Brazil was a relative latecomer to the NPT and has been involved in a significant dispute with the IAEA, it offers a number of opportunities to further the drive for global nuclear disarmament. In particular, there are three ways that Brazil can assist in the effort: active leadership, outreach to problem states, and a model constitution.

*Leadership.* Brasilia has provided both regional and international leadership in the push for global nuclear disarmament. As an active member of the New Agenda Coalition (NAC), it has joined with other like-minded states to forcefully call on NWS to move more quickly toward disarmament. The NAC was formed in 1998 and is widely credited with fostering the success of the 2000 NPT Review Conference, which produced the "Thirteen Practical Steps" toward nuclear disarmament. Brazil remains active in the NAC, which most recently has submitted working papers at the 2009 NPT PrepCom in preparation for the 2010 NPT Review Conference. The country takes leadership roles in a number of international forums focused on nuclear disarmament, including the Conference on Disarmament (which it chaired in 2000), the 2005 NPT Review Conference (which it chaired), and the International Panel on Fissile Materials (which top Brazilian nuclear expert José Goldemberg co-chaired until 2007).<sup>13</sup> Brazil is also a member of the Nuclear Suppliers Group (NSG) and the Missile Technology Control Regime.

The main focus of Brazil's disarmament efforts has been to push the NWS to fulfill their end of the NPT bargain. Policy makers have been critical of the discriminatory nature of the NPT, which is part of the reason why Brasilia took so long to sign and ratify it. In fact, the Brazilian Congress ratified the NPT based on the understanding that "effective measures will be taken with a view to the cessation of the nuclear arms race at an early date and the total elimination of nuclear weapons."<sup>14</sup> The country's diplomats make

continued, explicit references to the grand bargain of nonproliferation for disarmament in their calls for greater action. For example, an official statement by the Brazilian ambassador to an NPT Review Conference warned, "The decision made by 182 state parties to the NPT to forgo the option of nuclear weapons as instruments of security cannot live with the continued possession of nuclear weapons by the five nuclear weapons states."<sup>15</sup>

*Outreach to problem states.* While Brazil's willingness to directly confront the NWS may not endear it to them, it is precisely this boldness that presents opportunities for advances in disarmament. One of the many challenges in getting to zero is to convince states outside the regime to join it as non-nuclear states; another is to coax NPT members thought to be flirting with military capabilities (such as Iran) to forgo such an option. These countries are unlikely to be persuaded to give up their suspected nuclear weapons ambitions by the NWS, who are seen as hypocritical and slow-moving in relinquishing their own arsenals. Indeed, social psychology research indicates that conflict polarizes actors and leads them to reject normative influence from those with whom they clash.<sup>16</sup> Therefore, Brazil's credentials as an independent state—one that is clearly not a mouthpiece of Washington—make it an ideal candidate for outreach to these tough cases.

This is especially the case because Brazil already has nurtured diplomatic relationships with Middle Eastern countries, including Iran. For example, in November 2008, the two countries began planning an Iranian presidential visit to Brazil to "strengthen bilateral relations between the two nations" and focus on their expanding trade (which increased fourfold in five years to \$2 billion).<sup>17</sup> The scheduled visit was canceled due to Iranian President Mahmoud Ahmadinejad's domestic political problems, but the Brazilian Foreign Ministry expressed hope that it would be rescheduled and hinted that President Luiz Inácio da Silva of Brazil (known as President Lula) may visit Tehran in the future.<sup>18</sup> Brazil has sought to expand not only economic ties with Iran, but also "scientific, industrial, technological, and cultural cooperation."<sup>19</sup> In addition, Brasilia has argued that Iran is a critical player in the Middle East peace process and must be included.<sup>20</sup> Iran has responded warmly to the Brazilian overtures: the Iranian foreign minister noted that "Brazil has a special place in Iran's foreign policy," and Ahmadinejad stated that he is "determined to develop comprehensive cooperation with Brazil."<sup>21</sup>

Brazil has also strengthened ties with another state that presents obstacles to nuclear disarmament: North Korea. Brazil established diplomatic relations with Pyongyang in 2001, and in 2005, North Korea opened an embassy in Brasilia and a business office in São Paulo. The North Korean foreign trade minister visited Brazil in late 2005, when the two countries signed a trade agreement.<sup>22</sup> The relations were characterized as "enthusiastic" until the North Korean nuclear test in October 2006; Brazil condemned the test and called on Pyongyang to sign the Comprehensive Nuclear-Test-Ban Treaty (CTBT) and return to the six-party talks.<sup>23</sup> Relations gradually thawed, with Brasilia opening an embassy in Pyongyang in July 2009. (North Korea's second nuclear test only delayed the embassy's opening by several weeks.) The countries plan to continue expansion of economic ties; trade between Brazil and North Korea in 2008 alone totaled \$381 million.<sup>24</sup>

These established relationships, which hold the promise of legitimacy and economic gain for both Iran and North Korea, make Brazil an ideal candidate to counsel caution on military nuclear capability. This is particularly true given that Brazil is not a close U.S. ally (as NATO members France and Germany might be painted). In addition, Brazil can speak from experience about the economic benefits of giving up a nuclear weapons program, as well as the ability to pursue regional and global status without a military nuclear capability. Actors are more likely to accept and act on normative messages from those they like or with whom they believe they share similarities.<sup>25</sup> Brazil's willingness to apply normative pressure on Iran and North Korea is another matter, however. During his July 2009 tour in South America, the Israeli Foreign Minister Avigdor Lieberman asked Brasilia to use its influence with Iran to get Tehran to rethink its nuclear ambitions.<sup>26</sup> While Brazilian officials stressed Iran's right to a peaceful nuclear program, President Lula acknowledged that his country had influence with Iran, and it was reported that Lula would question Ahmadinejad about the Iranian nuclear program during his state visit to Brazil.<sup>27</sup>

*Model constitution.* Another opportunity that Brazil offers the disarmament movement is the example provided by its constitution. Adopted in 1988 under the civilian government, Brazil's constitution is among the most stringent in the world on the issue of nuclear weapons. Brazilian diplomat Achilles Zaluar notes that the Brazilian constitution "forbids the manufacture or possession of nuclear weapons. Budget funds cannot be allocated to such activities, and a president who secretly orders a nuclear weapon program could even be impeached."<sup>28</sup> The constitution also places all nuclear activities under the authority of the national Congress. Analysts George Perkovich and James Acton note that these constitutional constraints on military nuclear capability could be a model for other states and would provide an additional "societal barrier against cheating."<sup>29</sup>

### *Brazil: Challenges for Disarmament*

Despite its vocal support for nuclear disarmament, as a threshold state Brazil poses a number of potential challenges to global nuclear disarmament. The three most important are its atypical stance on safeguards, its uranium enrichment program, and its plan for nuclear-powered submarines.

*Safeguards.* Brazil and Argentina enjoy a unique safeguards arrangement for their nuclear facilities. The two countries agreed in 1991 to use nuclear energy for non-military purposes, and they established the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) for verification purposes.<sup>30</sup> The relationship of the IAEA to ABACC was established shortly afterward: "Argentina, Brazil, ABACC and the IAEA signed a comprehensive safeguards agreement (Quadripartite Agreement), which entered into force in March 1994 and that allows the IAEA to apply its safeguards regime in both countries taking into account the findings of the SCCC [ABACC's Common System of Accounting and Control]."<sup>31</sup> However, even ABACC personnel have noted the difficulty in ensuring that both organizations can reach independent conclusions while avoiding overlap of inspections:

In spite of good cooperation between both agencies [IAEA and ABACC], an important challenge that faces both organizations is to implement fully the provisions of the Quadripartite Agreement. The need to reach independent conclusion and to avoid unnecessary duplication of ABACC safeguards is still a provision to be fully accomplished. [Despite] the good will of all parties, an institutional framework that [allows] the IAEA to verify the SCCC findings is not yet envisaged and should be considered seriously.<sup>32</sup>

Complicating the imprecise relationship with the IAEA is Brazil's rejection of the Additional Protocol, which gives expanded right of access to the IAEA for both nuclear sites (declared and undeclared) and information related to the country's nuclear program. Brasilia has given a number of reasons for its refusal to support or sign the Additional Protocol. Diplomats argue not only that the Additional Protocol could hamper commercial nuclear development, but also that it creates unnecessary financial burdens on developing countries by creating more regulations that must be adhered to. Given that Brazil considers itself a leader in safeguarding practices, Brasilia argues the Additional Protocol is unnecessary.<sup>33</sup> In addition, Brazil asserts that adding to the original inspection requirements of NNWS while the NWS fail to adhere to their original promise to seriously pursue disarmament is unacceptable—a position held by other NNWS, including South Africa. As a Brazilian ambassador said, "The strengthening of the safeguards system and the maintenance of a robust nonproliferation regime for all weapons of mass destruction is not sustainable without parallel positive development in the fields of arms control and disarmament."<sup>34</sup> Finally, the intrusive nature of the Additional Protocol is an affront to Brazilian national pride: Brazil does not want its autonomy curtailed even further.<sup>35</sup>

Why is the Brazilian position on the Additional Protocol a challenge for disarmament? As the case of Iraq in the early 1990s shows, the original inspection requirements are not robust enough to ensure civilian nuclear technology is not misused for military purposes.<sup>36</sup> As discussed earlier, verification that civilian nuclear programs are for peaceful purposes only is critical to disarmament—in the short run, to provide confidence for NWS to move toward disarmament, and in the long run, to ensure that all states remain nuclear-free. Brazil's opposition to the Additional Protocol also complicates NSG efforts to ensure enrichment and reprocessing technologies are exported only to responsible countries. One of the proposed criteria for blocking such transfers would be that the importing country had not signed the Additional Protocol, but Brazil opposed it.<sup>37</sup>

In the context of pursuing credible universal disarmament, national enrichment facilities will need to be subject to comprehensive safeguards. Therefore, Brazil's hesitancy on the Additional Protocol is in tension with its desire for disarmament and its defense of the right for all countries to access the complete fuel cycle: the latter two require the Additional Protocol.

*Uranium enrichment.* Brazil is one of only eight countries in the world capable of enriching uranium. Its uranium enrichment facility, Resende, is a small commercial plant designed to enrich uranium to 3.5–4.0 percent. The goal is to create low-enriched uranium (LEU) to fuel its nuclear power plants, and eventually to sell LEU in the commercial market. In addition to making use of the substantial investment in the nuclear program made

during the military years, the civilian power program is intended to help diversify Brazil's energy supply. Currently hydroelectric dams provide 95 percent of Brazil's energy, but low rainfalls in past seasons have led to severe energy rationing and blackouts.<sup>38</sup> Brazil's need for reliable energy is unquestioned, and no serious doubts exist about Brazil's intent to use Resende only for LEU.

The particular disarmament challenge related to Brazil's uranium enrichment revolves around safeguards at the Resende facility. In early 2004, while the facility was still under construction, Brazil denied IAEA inspectors full visual access to the equipment.<sup>39</sup> During the initial visits, Brazilian authorities shrouded the centrifuges with panels, hiding both the rotors and casings of the centrifuges. Brazilian authorities insisted that full visual access of the centrifuges was not necessary to determine whether diversion was taking place. They cited the need to protect proprietary technology as justification for shrouding the centrifuges.<sup>40</sup>

The claim is that Brazilian centrifuges are innovative, with rotors that "levitate, spinning frictionlessly, thanks to actively controlled electromagnetic bearings," which make them 25 percent more efficient than typical centrifuges.<sup>41</sup> Brazilian scientists argue that the technology is completely indigenous, developed by the Navy. However, others argue that Brazil wants to hide the centrifuges because they are based on a design by the European enrichment consortium URENCO, which would be evident without the shrouding.<sup>42</sup> If this were the case, it would undermine Brazil's claim to indigenous development of the centrifuges, as well as raise questions about how the design was acquired. Brazilian officials emphatically deny the charge, but others remain puzzled about why Brazil insists on shrouding the centrifuges. As MIT physicist Thomas L. Neff noted, "The Brazilians say they have proprietary technology. Well, others have proprietary technology, and they don't seem to think that is a problem. No one else conceals their centrifuges from the IAEA."<sup>43</sup> Even Brazilian scientists have noted that the shielding that the IAEA permitted on the Navy's small-scale enrichment facility may not be appropriate at a commercial plant because of "a substantial increase of the installed capacity and, consequently, a significant reduction of the time required for the production of a relevant amount of highly enriched uranium."<sup>44</sup>

Although Brazil and the IAEA worked out an agreement later that year (which allowed for a reduction in size of the shrouding panels), Resende remains a challenge for global nuclear disarmament. First, although few if any expect Brazil to secretly create nuclear weapons, the lack of full access to the plant means that the potential remains. For example, panels could hide a hidden supply of uranium, allowing Brazil to secretly stockpile LEU, which would give the country a "breakout capacity" because creating highly enriched uranium (HEU) from LEU takes less time than enrichment to LEU.<sup>45</sup> More important, however, is the precedent created by Brazil's rejection of full visual inspections. Other countries may demand similar concessions on inspections—countries that *are* interested in building a secret breakout capacity. In a larger sense, if the IAEA faces serious challenges to its inspection authority, the future for disarmament becomes bleaker. Disarmament will require intrusive inspections that go to the heart of state national security; if some countries do not trust the IAEA to conduct basic visual inspections in

small commercial enrichment facilities, other states may wonder why they should allow the same agency into their nuclear weapons stockpiles.

*Nuclear submarines.* Brazil's plan for nuclear submarines is another potential challenge to global nuclear disarmament. While nuclear submarines no longer have to be fueled with HEU, the "fuel would be near the 20 percent enrichment HEU/LEU threshold, and so relatively simple to convert."<sup>46</sup> Not only is the actual fuel a concern in terms of acquiring a breakout capability, but the question of inspections further complicates the issue. Since Resende would have to produce 20 percent enriched uranium, this "would require significantly more intrusive inspections, containment, and surveillance."<sup>47</sup> Given the Brazilian authorities' reluctance to provide even basic visual access, such negotiations could be very challenging. In addition, "the question of how nuclear material could be withdrawn from safeguards for military, non-explosive purposes would be difficult to resolve."<sup>48</sup>

Perkovich and Acton argue that nuclear submarines complicate the goal of disarmament:

Would these states, or any other non-nuclear-weapons states that might be inclined to consider the use of naval reactors in the future, be prepared to renounce them permanently in order to help bring about a nuclear-weapons-free world as part of a non-discriminatory agreement? Or would they be willing to give international inspectors unprecedented access to some of their most sensitive technologies in order to assuage international concerns?<sup>49</sup>

However, Brazil may be reluctant to give up its investment—both monetary and national prestige—in nuclear submarines. The formal program began in 1979, but languished due to lack of funds. However, in 2008, Brazil committed \$160 million to the program, with more promised.<sup>50</sup> President Lula announced that the country would "soon" have a nuclear submarine, but experts place a realistic completion date at 2020 or later.<sup>51</sup> Nevertheless, the armed forces are heavily invested in the program: a top Brazilian general said, "Brazil's number one military priority is the development of a nuclear submarine."<sup>52</sup> Given the extended time frame, this particular challenge is less urgent than the questions over safeguards at Resende. However, the tension between nuclear submarines and disarmament remains.

## Japan

Japanese views on nuclear disarmament were shaped irrevocably by the U.S. atomic bombings of Hiroshima and Nagasaki.<sup>53</sup> The "nuclear allergy" that developed as a result has created an inhospitable political environment for Japanese acquisition of nuclear weapons, as well as strong grassroots efforts to demand Japanese leadership on nuclear disarmament.<sup>54</sup> Despite the negative sentiment toward nuclear capability, the country has developed an impressive civilian nuclear industry that provides more than 30 percent of



Japan's energy. Japan's approach to disarmament is starkly different from Brazil's: in contrast to Brasilia's boldness and insistence on immediate progress on nuclear disarmament, Tokyo takes a much lower-key, cooperative style with an emphasis on incremental movement toward disarmament. Nevertheless, as with Brazil, Japan offers both opportunities and challenges to the drive for global nuclear disarmament.

### *Japan: Opportunities for Disarmament*

The three most important Japanese contributions to the disarmament movement are leadership, financial and technical support, and keeping alive the memory of Hiroshima and Nagasaki.

*Leadership.* Japan has engaged in active nuclear disarmament diplomacy, but in a different way than Brazil's bold manner. Indeed, Japan was invited to join the NAC but declined, in part because Tokyo did not want to offend the United States. Instead, Japan's efforts have been called timid and passive.<sup>55</sup> Japanese diplomats respond that while Japan's approach is not flashy or confrontational, it focuses on results: "Compared to a high profile 'confrontational performance,' Japan may have appeared to be playing a less spectacular role, yet, such efforts by Japan certainly deserve to be commended. Indeed, what the Japanese public wants to see its government to be doing is not just a stage performance but 'honest efforts' for real progress in nuclear disarmament."<sup>56</sup> Japan's reliance on U.S. nuclear deterrence clearly plays a role in limiting Japanese assertiveness on the issue. Nevertheless, the country has devoted considerable resources to the effort, with a long list of products.

I argue that Japan *has* exerted leadership in the disarmament movement, not in confrontational stances designed to push negotiations forward, but rather in the creation of spaces for discussions and negotiations so that common understandings can result in greater progress. Tokyo has an impressive list of financial and intellectual sponsorship of such open spaces for dialogue. Since 1983, Japan has sponsored study visits to Hiroshima and Nagasaki through the UN Programme of Fellowships on Disarmament, which has trained more than 650 diplomats from 150 different countries in disarmament issues.<sup>57</sup> Since 1989, Japan has sponsored an annual UN Conference on Disarmament Issues in a Japanese city, "providing a valuable opportunity for distinguished disarmament experts from around the world to engage in useful discussions."<sup>58</sup> Tokyo has hosted the annual Asian Export Control Seminar since 1993.<sup>59</sup> After the Indian and Pakistani nuclear tests in 1998, the government cosponsored the Tokyo Forum meetings with nongovernmental organizations (NGOs).<sup>60</sup> Japan hosted the annual Asian Senior-level Talks on Non-Proliferation (ASTOP) for six years; it also cosponsored two international conferences with the IAEA on nuclear security in Asian countries during the same time period.<sup>61</sup> In February 2007, Tokyo arranged a seminar, "NPT on Trial: How Should We Respond to the Challenge of Maintaining and Strengthening the Treaty Regime?" in Vienna, "to provide an opportunity for an informal exchange of views on key issues among participants and to

prepare the ground for a smooth start to the First Session of Preparatory Committee of the 2010 NPT Review Conference."<sup>62</sup> Tokyo has also declared its intention to host an international nuclear disarmament conference in early 2010 to generate momentum for the NPT Review Conference later that year.<sup>63</sup> The cost—in both financial and human capital—of consistently and enthusiastically calling parties together to wrestle with the complex issues of disarmament is not insignificant and displays a commitment that few other states have been willing to make.

In a change of direction, recently the Japanese government moved beyond its comfort zone and announced a bold plan for advancing disarmament. In April 2009, Minister of Foreign Affairs Hirofumi Nakasone announced his "11 Benchmarks for Global Nuclear Disarmament."<sup>64</sup> Whether this is a one-time departure from traditional, more unassuming overtures or a signal that Tokyo is willing to play a direct leadership role is unclear, but the plan was well received as an improved update to the Thirteen Practical Steps.<sup>65</sup>

*Financial and technical support.* In addition to financially supporting the creation of venues to discuss disarmament, the Japanese government has provided monetary and technical aid to a wide array of important disarmament initiatives. In the 1990s, Tokyo committed \$1 billion to the Korean Peninsula Energy Development Organization to assist North Korea in developing light water nuclear power reactors. In the mid-1990s, Japan also spent approximately \$100 million helping Russia and other former Soviet republics to "disassemble nuclear warheads and safely dispose of nuclear waste material."<sup>66</sup> Almost a decade later, Tokyo provided an additional \$200 million to help dispose of excess Russian weapons-grade plutonium and to dismantle decommissioned Russian nuclear submarines.<sup>67</sup> To emphasize the importance of the CTBT, Japan has given technical assistance to several developing countries in the field of earthquake monitoring so that they can fulfill their CTBT responsibilities.<sup>68</sup> The country also financed a large portion of the costs of the CTBT negotiations.<sup>69</sup> Tokyo provided "generous financial support" to negotiations for the Central Asian Nuclear-Weapon-Free Zone.<sup>70</sup> Such committed monetary aid underscores Japan's dedication to disarmament; given the fact that disarmament measures cost money, the Japanese commitment is invaluable to the movement.

*Keeping the memory alive.* The world's only experience with the wartime use of nuclear weapons was sixty-five years ago. The horror of Hiroshima and Nagasaki precipitated a global grassroots movement against nuclear weapons, but as the experience recedes deeper into history, memories of it fade. For this reason, the Japanese ability to keep alive the memory of Hiroshima and Nagasaki is an important contribution to the disarmament movement. Indeed, this is one of the central goals of Japanese nuclear diplomacy. As Nakasone stated in announcing his eleven benchmarks, "It is Japan's mission to convey to all people around the world the facts of the calamity of nuclear bombings that happened in August 1945 in Hiroshima and Nagasaki, across the boundaries of various political viewpoints and ideologies."<sup>71</sup>

Japan carries out this mission in numerous ways. In its sponsorship of diplomatic study visits to Hiroshima and Nagasaki (through the UN Programme of Fellowships on Disarmament), Tokyo arranges visits for the fellows at the memorial museums at the atomic bomb hypocenters, meetings with survivors, and lectures on the social and medical legacies. According to a Ministry of Foreign Affairs report, the visits are sponsored so that young diplomats have an “opportunity to witness the horrendous and long-lasting consequences caused by atomic bombs.”<sup>72</sup> The government has supported universities, NGOs, and local governments in arranging exhibitions around the world related to the atomic bombings, including the “Hiroshima-Nagasaki A-bomb” exhibitions in La Paz, Bolivia, in August 2006 and a joint exhibition, “Against Nuclear Arms,” with Kazakhstan at UN Headquarters in 2009.<sup>73</sup> Local governments assist as well:

The city of Hiroshima spends approximately 2 billion yen each year (approximately U.S. \$18.4 million) on outreach and education efforts through its Peace Cultural Foundation, including a number of international initiatives: a new multidisciplinary set of courses on the effects of nuclear war held at universities around the world, special travelling museum exhibitions, and non-nuclear lobbying through the Conference of Mayors.<sup>74</sup>

### *Japan: Challenges to Disarmament*

Despite its unique history and consistent commitment to supporting disarmament, as a threshold state Japan poses a number of challenges to global nuclear disarmament. The three most important are its plutonium program, reliance on U.S. nuclear deterrence, and potential for nuclear acquisition.

*Plutonium program.* Japan is energy poor and can only supply 4 percent of its energy needs through domestic sources (given that it imports LEU for its power plants).<sup>75</sup> As a result, the country has created one of the most advanced civilian nuclear power programs in the world, with a focus on reprocessing plutonium for use in power plants, as well as planned fast breeder reactors (which create more plutonium than they consume).<sup>76</sup> As a Japanese nuclear industry official has argued, “Nuclear energy and the recovery and reuse of plutonium as a nuclear fuel will significantly enhance energy security and reduce reliance on foreign fossil-fuel sources.”<sup>77</sup> The focus of Japan’s reprocessing program is the Rokkasho Reprocessing Plant, originally expected to begin operations in 2005 but, as of November 2009, still not fully functional. Once operational, Rokkasho will be able to process 800 tons of spent fuel each year, approximately 80 percent of the spent fuel Japan produces annually but almost as much as the total spent fuel reprocessed in the past three decades.<sup>78</sup> Rokkasho was built with concerns about proliferation in mind: the facility separates the plutonium and combines it with uranium so that mixed oxide (MOX) fuel is “created under a single roof.”<sup>79</sup> (This is more proliferation resistant than a program in which plutonium is separated in one plant and then combined with uranium in another because the plutonium could be diverted between plants.) The MOX will then be used to

fuel a portion of Japan's nuclear power plants; the goal is to have fifteen to eighteen reactors (out of the country's fifty-three) using MOX by 2015.<sup>80</sup>

Rokkasho, as with all of Japan's nuclear facilities, will be under IAEA inspections. In contrast with Brasilia, Tokyo strongly supports the Model Additional Protocol and was the first non-nuclear weapon state to sign it. As Foreign Minister Nakasone said,

Japan believes that it is important to enhance transparency over the nuclear activities of individual countries by ensuring that all countries promoting peaceful uses of nuclear energy implement the highest level of the IAEA safeguards, specifically, the NPT Comprehensive Safeguards Agreements and the Model Additional Protocol, and Japan has been actively working towards their universalization. On various occasions, including the IAEA seminars and the Asian Senior-Level Talks on Nonproliferation, Japan has shared its knowledge and experiences concerning the implementation of the IAEA safeguards with other countries. Japan will continue such efforts.<sup>81</sup>

The challenge to disarmament posed by Japan's plutonium program is not concern over safeguards, as with Brazil; rather, the concern is the inherent proliferation risk of reprocessing plutonium. If Tokyo decided to pursue nuclear weapons, Rokkasho would make it very easy to do so. It is not difficult to separate out plutonium from MOX, so the plant is less proliferation resistant than assumed.<sup>82</sup> This would be difficult to do secretly, but Japan could withdraw from the NPT after it establishes its own nuclear fuel supply without worries about energy security. As will be discussed below, Japan joining the nuclear weapons club would likely end movement toward disarmament, at least for the short term. In addition, because reprocessing can create fissile material for weapons as well as power plants, the Japanese insistence on reprocessing keeps the door open for other countries, as Shinichi Ogawa and Michael Schiffer point out:

Despite all evidence of good intentions, Japan's policy may be setting a poor precedent. Its pursuit of the nuclear fuel cycle may legitimize the actions of other countries to pursue similar technologies and ultimately attain "breakout" capability. They too may seek to build up similarly robust civilian energy programs that, at the flip of the switch, could be militarized.<sup>83</sup>

In fact, Ogawa and Schiffer note that Iran has already used Japan as an example several times in its justification of its own nuclear program. In addition, both South Korea and Taiwan have raised the issue of following Japan's lead in developing enrichment and reprocessing capabilities; both states had nuclear weapons programs that were stopped only through U.S. pressure.<sup>84</sup> Additionally, some argue that Japan plays a pivotal role in plutonium commerce; if Japan were to discontinue its plutonium program, "it might then be possible to build an international consensus to eliminate commerce in plutonium as well as bomb-grade uranium."<sup>85</sup> By emphasizing the importance of plutonium, it is argued, the Japanese set a risky example for the rest of the world—and thus undermine disarmament.

*Reliance on U.S. extended deterrence.* Despite its committed actions on behalf of disarmament, Tokyo remains just as committed to the U.S. nuclear umbrella. In his

groundbreaking speech about the eleven benchmarks for global disarmament, Foreign Minister Nakasone emphasized the importance of the U.S. nuclear deterrence:

When we advance nuclear disarmament and nonproliferation, it is of course necessary to take into consideration the security environment that we face in reality. In light of the situation in East Asia, it goes without saying that the extended deterrent, including nuclear deterrence under the Japan-U.S. security arrangements, is of critical importance for Japan.<sup>86</sup>

Despite decades of impassioned calls from domestic peace groups to reduce or eliminate reliance on the U.S. nuclear umbrella, the government shows no signs of doing so. In fact, the North Korean nuclear test of October 2006 led a number of Japanese experts to consider asking the United States to station nuclear weapons on Japanese soil (which would require, among other things, modification of Japan's Three Non-Nuclear Principles).<sup>87</sup>

Japanese reliance on U.S. extended deterrence is corrosive to global disarmament, for a number of reasons. First, Japan's moral weight on disarmament is weakened by its reliance on U.S. nuclear weapons. For example, after Japan criticized and levied sanctions against India after its 1998 nuclear tests, Indian defense experts accused Japan of hypocrisy, given Japan's reliance on nuclear weapons for security.<sup>88</sup> As one expert noted, "the voice of Japan calling for reduction and elimination of U.S. nuclear weapons is diminished because Japan is depending on the U.S. nuclear umbrella."<sup>89</sup> More important, Japan's dependence on U.S. nuclear deterrence has led it to dilute its own stand on disarmament. Sociologist Anthony DiFilippo notes the contradiction in Japan's disarmament policy:

[Tokyo is] seeking the abolition of nuclear weapons while refusing to relinquish Japan's perceived security under the U.S. nuclear umbrella, and opposing a nuclear free zone for northeast Asia. The continued existence of this contradiction in Japanese policy has caused Tokyo to accept a gradualist path to nuclear disarmament, much preferred by the United States and the other nuclear weapons countries than the more expeditious course advocated by NAC. The gradualist position is fully consistent with virtually all politicians' views that nuclear weapons should be abolished—someday.<sup>90</sup>

Japanese experts note that the Disarmament section of Japan's Ministry of Foreign Affairs is fearful of pushing too hard on disarmament because of concerns over U.S. displeasure.<sup>91</sup> Thus, to the extent that more forceful Japanese leadership could advance regional or global disarmament, the hesitancy created by their dependence on the U.S. nuclear umbrella is an obstacle to disarmament. This is illustrated by the recent rift in the International Commission on Nuclear Nonproliferation and Disarmament, sponsored by Canberra and Tokyo. Most experts on the commission wanted to call on NWS to adopt a no-first-use policy, but the Japanese co-chair, former foreign minister Yoriko Kawaguchi, "refused to back the proposal, reflecting common official fears in Japan that the change would diminish the protection offered by the US nuclear umbrella from large armies in countries such as North Korea."<sup>92</sup> Indeed, it could be argued that reliance on the United States not only keeps Japan from taking more robust positions, but also leads it to oppose

measures that could move disarmament forward. For example, Tokyo opposes a nuclear-free zone in Northeast Asia, declined to join the NAC for fear of seeming too confrontational, and adopts a more minimalist position on the Fissile Material Cutoff Treaty.<sup>93</sup> Thus, dependence on U.S. extended deterrence both softens Japan's position on disarmament and weakens its credibility on the stands that Tokyo does take.

With the sweeping defeat of the Liberal Democratic Party in August 2009 elections, however, changes may occur in Japanese policies. The winning party, the Democratic Party of Japan (DPJ) has promised less reliance on the United States and a greater emphasis on global nuclear disarmament.<sup>94</sup> In fact, in October 2009, 61 percent of Lower House DPJ members surveyed wanted to end reliance on the U.S. nuclear protection, while fewer than 30 percent surveyed wanted to remain under the U.S. nuclear umbrella.<sup>95</sup> While radical changes are unlikely, and DPJ leadership has emphasized it will continue to partner with Washington on security, it is important to note the potential for evolution in Tokyo's positions on these issues.

*Threat of nuclear acquisition.* Concerns over a nuclear-armed Japan arise occasionally, but with two rounds of North Korean nuclear tests, unease has grown. However, North Korea is not Japan's main security concern, and short of a nuclear attack by North Korea, the country is unlikely to push Tokyo into a nuclear option.<sup>96</sup> Rather, possible U.S. abandonment of Japan and anxiety over China's rise are far more likely to trigger a Japanese nuclear response, although even these are unlikely to do so.<sup>97</sup> A combination of abandonment and anxiety might be the most lethal threat to Japan's nuclear restraint. If Washington makes a strategic decision to align with Beijing over Tokyo, Japanese elites may rethink how best to ensure their country's security. As one Japanese nuclear expert noted, if the United States wants to keep Japan non-nuclear, "Don't abandon us for China."<sup>98</sup>

The threat of nuclear acquisition is compounded by Japan's other challenges to disarmament. Many experts question why Japan insists on having a plutonium reprocessing and fast breeder program when it is inordinately expensive and unpopular both domestically and internationally; the implication is that Tokyo may want a nuclear breakout capacity. Statements made by Japanese officials that link Japan's plutonium stockpile with a nuclear weapons capability amplify this concern. For example, in 2002, Ozawa Ichiro (leader of the DPJ from 2006 to 2009) publicly stated that he had told a member of the Chinese Communist Party that Japan could use its civilian plutonium stockpiles for nuclear weapons: "It would be easy for us to produce nuclear warheads. We can produce thousands of nuclear warheads overnight. We may have enough plutonium at nuclear power plants for 3,000 or 4,000 rounds."<sup>99</sup> While analysts around the world understand Ozawa was exaggerating, they are concerned that Japanese politicians see Japan's plutonium stockpile as a virtual nuclear weapons capability. In addition, Japan's reliance on the U.S. nuclear guarantee amplifies fears that if that guarantee were perceived to soften, it may lead Tokyo to pursue its own nuclear deterrent. This fear has been raised as a stumbling block to even gradual U.S. disarmament: U.S. disarmament could trigger Japanese nuclearization if Tokyo believes the United States no longer has enough weapons to maintain the nuclear umbrella over Northeast Asia.<sup>100</sup>

Thus, threat of nuclear acquisition by Japan hinders global disarmament in a number of ways. First, if there is a serious global perception that Japan may soon acquire nuclear weapons, it may plunge both nonproliferation and disarmament into disarray. If Japan—the only country to be attacked with nuclear weapons, the only country to argue for nonproliferation and disarmament from a tragic historical experience, one of the main financial supporters of the regime—were to be seen as potentially withdrawing from the NPT, many other threshold states may wonder if the ship is sinking and whether it is time for them to leave as well. While we would probably not see a race to nuclearization, at the very least, most countries would wonder whether tackling the many difficult issues related to disarmament was worth it, given the Japanese defection. The threat of Japanese nuclear acquisition challenges global disarmament in another way: by threatening to slow down U.S. nuclear disarmament. Pentagon planners have already expressed concern over Obama's plan to reduce nuclear weapons stocks. If they are able to convince U.S. policy makers that U.S. disarmament could trigger Japanese nuclear armament, it could significantly slow the pace of U.S. nuclear reductions, which could slow the pace for global nuclear disarmament.

### **Nuclear Disarmament and the Threshold States**

As nuclear threshold states, Brazil and Japan share a number of commonalities. Both have exercised leadership in the disarmament movement, and both offer inspiration for a world without nuclear weapons. Both have advanced nuclear facilities with the ability to create fissile material, including for weapons if they so choose. Yet both states have remained part of the nuclear nonproliferation regime as NNWS. However, the countries are also quite dissimilar in a number of ways—a lesson in itself that threshold states cannot all be expected to act and react the same way to disarmament challenges. On the positive side, Brazil speaks boldly and can credibly serve as a bridge to potential problem states. In contrast, Japan speaks softly but consistently initiates open space for serious discussion of disarmament. On the challenges side, Brazil opposes the universalization of the Additional Protocol (which Japan strongly supports), and Brazil refuses to give full visual access to IAEA inspectors (whereas Japan offers complete access to the IAEA). On the other hand, Japan continues a fast breeder program despite a massive plutonium stockpile (while Brazil has no fissile material stockpile) and drags its feet on a nuclear-weapon-free zone in its region (whereas Brazil was the first to propose such a zone in its region).

One commonality between the countries, however, is perhaps the most serious challenge to disarmament from any threshold state: insistence on fissile material production and the right to the complete fuel cycle. The NPT guarantees the right of all members to civilian nuclear technology. However, this right has the potential effect of undermining nonproliferation and disarmament. "The most sensitive issue in the short term is the development of indigenous abilities to produce nuclear fuel, which even when legal in NPT terms, would potentially allow a state to master the technically most difficult

part of a nuclear weapons program."<sup>101</sup> This is especially the case considering the increased interest in nuclear power, as Perkovich notes:

If the number of nuclear power reactors and states that host them grows dramatically, so too will the number of facilities for enriching uranium and, perhaps, for separating plutonium from spent reactor fuel. The same technologies and people that produce fissile material for civilian purposes can be employed to produce weapons. More broadly, as nuclear know-how, equipment, and material spread around the world, so too does the wherewithal to develop nuclear weapons. The difficulty of detecting weapons proliferation rises as the overall density of nuclear commerce, training and cooperation increases.<sup>102</sup>

Do national enrichment and reprocessing facilities represent a threat to global nuclear disarmament? Certainly more immediate challenges to nuclear elimination exist, from entry into force of the CTBT, willingness of states outside the NPT to join, and deep reductions in U.S. and Russian nuclear arsenals. But in terms of challenges posed by threshold states, the ability to create fissile material may be the gravest danger to achieving zero. Not only does enrichment and reprocessing give the countries the capability to take the nuclear option, but they also announce to the world that nationally owned enrichment and reprocessing are acceptable and perhaps necessary for a large-scale civilian nuclear program. If these types of facilities spread, it will undermine confidence in nonproliferation (as fear over breakout capabilities increases) and disarmament (as NWS hesitate to permanently renounce nuclear arms when numerous other states can create them easily).

Threshold states are unlikely to give up their right to the fuel cycle: Perkovich counts ten states unwilling to limit access to fuel-cycle capacity.<sup>103</sup> Both Brazil and Japan have articulated their intention to continue to exercise their right as responsible members of the NPT to engage in all aspects of civilian nuclear power. For Tokyo, its transparent and responsible adherence to the regime provides the solution to the puzzle: Japan has proposed a behavioral-based set of rules on enrichment and reprocessing. For states with transparent nuclear programs with "verification, safeguards, the physical protection of fissile material, and effective measures to prevent illicit trafficking," creation of fissile material is permissible.<sup>104</sup> Given Brazil's shielding of its enrichment equipment and refusal to accept the Additional Protocol, one could surmise that Brazil would not qualify under the Japanese proposal. Brazil, on the other hand, argues that civilian nuclear technology is a basic right in the NPT that cannot be curtailed. As the Brazilian ambassador argued at the 2008 NPT PrepCom, "The inalienable right of sovereign states to develop and use nuclear energy for peaceful purposes, as recognized by Article IV of the Treaty, is imperative for the implementation of the NPT."<sup>105</sup>

Nuclear experts, however, increasingly argue that unfettered access to the complete fuel cycle is not necessarily guaranteed by the NPT. Deutch et al. argue that "a better interpretation—indeed, the only one that invests each NPT article with independent meaning as part of a coherent whole—is that Article IV promotes sharing nuclear technology only to the extent consistent with the nonproliferation aims codified in Articles



I and II of the Treaty.”<sup>106</sup> Perkovich and Acton propose, “If disarmament is viewed not as an end in itself but as a means to enhance global security, then nonproliferation is essential for nuclear weapons to be safely prohibited. Developing safeguards that build confidence in the peaceful use of declared facilities and in the absence of clandestine activities is an integral part of the disarmament and nonproliferation challenges.”<sup>107</sup> Scott Sagan suggests that international management of the fuel cycle could be seen as a prerequisite for nuclear disarmament, and that “non-nuclear-weapon states also need to recognize that entering into negotiations about international control of the nuclear fuel cycle is actually part of *their* Article VI commitment.”<sup>108</sup>

Numerous proposals for international control of the fuel cycle have been circulated.<sup>109</sup> However, if the impasse between the threshold states and the NWS over fuel cycle access is to be broken, attention must be paid to threshold state concerns about the lopsided nature of NPT implementation. Without substantial progress on disarmament, international management of the fuel cycle simply increases the responsibilities of non-nuclear weapon states while stripping away their rights. Therefore, it is critical that considerable advancements are made in more basic disarmament commitments, from further reductions in stockpiles to entry into force of the CTBT, *before* threshold states are asked to compromise their right to create nuclear fuel. Even Brazil is willing to consider strengthening of the safeguards system and the nonproliferation regime, so long as it is accompanied by “parallel positive development in disarmament.”<sup>110</sup>

The balance between disarmament and nonproliferation will be a significant theme in the 2010 NPT Review Conference, and striking the right balance will be critical to success. The difficulties in doing so were foreshadowed in the 2009 NPT PrepCom. In creating formal recommendations for the upcoming conference, the PrepCom chair first produced a draft that emphasized disarmament but neglected compliance, with no discussion of full-scope safeguards. The second draft swung too far the other way, with a focus on compliance and safeguards but a lackluster emphasis on disarmament.<sup>111</sup> In the end, no formal recommendations for the conference were adopted because of lack of consensus over the right balance. However, this conflict may bode well for the 2010 NPT Review Conference because countries now have time to ponder differences and, if they approach it constructively, can bring creative solutions to the conference to help forge a compromise.<sup>112</sup> The threshold states may be key players in helping delegates find the middle ground on a number of contentious issues. Under new leadership, Tokyo may persuade the United States that it prefers no-first-use, removing one of the objections to the policy in Washington. Indeed, almost 90 percent of Lower House DPJ members surveyed want a no-first-use policy, and in October 2009, Foreign Minister Katsuya Okada raised the issue of the United States adopting a no-first-use posture.<sup>113</sup> Iran showed increased willingness to compromise in the 2009 NPT PrepCom; Brazil may use its economic and diplomatic leverage with Tehran to encourage further openness about its nuclear program.<sup>114</sup> On the issue of safeguards, threshold states will be critical to the debate. Japan will likely continue its advocacy of the Additional Protocol, but will need to convince other threshold states—such as Brazil and South Africa—that making the Additional Protocol part of basic IAEA safeguards agreements is critical to success in

disarmament. Indeed, if Tokyo changes its position on a no-first-use policy, it will have greater credibility in arguing that compromise for the sake of progress is worth it.

To achieve a successful 2010 NPT Review Conference—and substantive progress on nuclear disarmament and nonproliferation—states will need not only a positive outlook, but also perseverance and creativity. Most important, both the NWS and NNWS need to realize that the twin processes of nuclear disarmament and nonproliferation must be co-evolutionary and mutually reinforcing to ensure that the threshold states contribute to, rather than undermine, the global movement for nuclear elimination.

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## NOTES

1. It should be noted that in contrast to traditional antinuclear movements, the current push for disarmament has been largely driven by Western elites. I thank Christine Wing for this insight.
2. Any future restrictions on national enrichment and reprocessing capabilities would likely take place in conjunction with multilateral fuel banks or other regional or global institutions to ensure countries retained access to nuclear fuel (as noted later in this article). Nonetheless, concerns about energy independence have made threshold states nervous about such proposals.
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78. On the amount of spent fuel Japan produces annually, see "Reprocessing," Japan Nuclear Fuel Limited, undated, <[www.jnfl.co.jp/english/reprocessing.html](http://www.jnfl.co.jp/english/reprocessing.html)>. On the comparison to the total amount of spent fuel reprocessed in the past thirty years, see Shinichi Ogawa and Michael Schiffer, "Japan's Plutonium Reprocessing Dilemma," *Arms Control Today*, October 2005, <[www.armscontrol.org/act/2005\\_10/Oct-Japan](http://www.armscontrol.org/act/2005_10/Oct-Japan)>. For additional analysis, see Masafumi Takubo, "Wake Up, Stop Dreaming: Reassessing Japan's Reprocessing Program," *Nonproliferation Review* 15 (March 2008), pp. 71–94.
79. Ogawa and Schiffer, "Japan's Plutonium Reprocessing Dilemma."
80. "Japan Delays MOX Nuclear Fuel Goal by 5 Years," Reuters, June 12, 2009.
81. Nakasone, "Conditions toward Zero."
82. Ogawa and Schiffer, "Japan's Plutonium Reprocessing Dilemma."
83. *Ibid.*
84. For details on the seriousness of the South Korean and Taiwanese nuclear weapons programs, and the forceful U.S. pressure required to stop the programs, see Rebecca K.C. Hersman and Robert Peters, "Nuclear U-Turns: Learning from South Korean and Taiwanese Rollback," *Nonproliferation Review* 13 (November 2006), pp. 539–53.
85. Paul L. Leventhal, "Introduction: Nuclear Power without Proliferation?" in Paul Leventhal, Sharon Tanzer, and Steven Doherty, eds., *Nuclear Power and the Spread of Nuclear Weapons* (Dulles, VA: Brassey's, 2002), p. 8.
86. Nakasone, "Conditions toward Zero."
87. Rublee, "Taking Stock of the Nuclear Nonproliferation Regime," p. 437.
88. "Japan's Proactive Peace and Security Strategies," NIRA, p. 18. See also Shinichi Ogawa, "How Japanese View Nuclear Proliferation?" *South Asian Journal* (January–March 2004).
89. Kazumi Mizumoto, "Non-Nuclear and Nuclear Disarmament Policies of Japan," in Wade L. Huntley, Kazumi Mizumoto, and Mitsuru Kurosawa, eds., *Nuclear Disarmament in the Twenty-First Century* (Hiroshima: Hiroshima Peace Institute, 2004), p. 259.
90. Anthony DiFilippo, "Breaking the NPT (Nuclear Nonproliferation Treaty) Stalemate: Japan Could Help," *Foreign Policy In Focus*, June 21, 2005.
91. Rublee, "Taking Stock of the Nuclear Nonproliferation Regime," p. 443.
92. Daniel Flitton, "Australia, Japan in Nuclear Rift," *The Age*, September 4, 2009.
93. One of the main controversies over the FMCT is whether it merely stops all future production of fissile material for weapons purposes (Japan's view, along with the United States, India, and Russia), or if it should be called the Fissile Material Treaty, incorporating all fissile material for weapons purposes, not just future production (the view of many NNWS, including Brazil and South Africa).

94. For example, at the August 2009 commemoration activities in Hiroshima, then-prime minister Taro Aso emphasized the importance of the U.S. nuclear umbrella and argued that nuclear disarmament was "unimaginable." The DPJ leader Yukio Hatoyama (now prime minister) said that Japan would strongly support Obama's drive for disarmament and argued that Japan must play a leading role. See "U.S. Nuclear Umbrella Crucial: Aso," *Japan Times*, August 7, 2009.
95. Kyodo News, "Many in DPJ Want Japan to Cut Link to U.S. Nukes," *Japan Times*, October 11, 2009, <search.japantimes.co.jp/mail/nn20091011a1.html>.
96. See, for example, Hajime Izumi and Katsuhisa Furukawa, "Not Going Nuclear: Japan's Response to North Korea's Nuclear Test," *Arms Control Today*, June 2007, <www.armscontrol.org/act/2007\_06/CoverStory>. On the likely impact of a North Korean nuclear attack against Japan, see Maria Rost Rublee, "The Future of Japanese Nuclear Policy," *Strategic Insights* 8 (April 2009), <www.nps.edu/Academics/centers/ccp/publications/OnlineJournal/2009/Apr/rubleeApr09.html>.
97. See, for example, Mochizuki, "Japan Tests the Nuclear Taboo"; and Hughes, "Why Japan Won't Go Nuclear (Yet)."
98. Interview, Japanese defense expert, Tokyo, March 2007.
99. "Tokyo Politician Warns Beijing It Can Go Nuclear 'Overnight,'" Agence-France Presse, April 8, 2002. For additional discussion, see Rublee, *Nonproliferation Norms*, pp. 74–76.
100. See, for example, George Perkovich, "Abolishing Nuclear Weapons: Why the United States Should Lead," Policy Brief No. 66, Carnegie Endowment for International Peace, October 2008, p. 3.
101. Christine Wing, "Nuclear Weapons: The Challenges Ahead," Coping with Crisis Working Paper Series, International Peace Academy, 2007, p. 10.
102. Perkovich, "Abolishing Nuclear Weapons: Why the United States Should Lead," p. 2.
103. *Ibid.*, p. 4.
104. Ogawa and Schiffer, "Japan's Plutonium Reprocessing Dilemma."
105. "Statement by the Head of the Delegation of Brazil, Ambassador Luiz Filipe de Macedo Soares," Second Session of the NPT PrepCom, Geneva, April 28, 2008.
106. John Deutch et al., "Making the World Safe for Nuclear Energy," *Survival* 46 (Winter 2004/2005), p. 67.
107. Perkovich and Acton, "What's Next?" p. 325.
108. Scott Sagan, "Good Faith and Nuclear Disarmament Negotiations," in Perkovich and Acton, eds., *Abolishing Nuclear Weapons*, p. 209.
109. For an excellent review of the most recent proposals, see Fiona Simpson, "Reforming the Nuclear Fuel Cycle: Time is Running Out," *Arms Control Today*, September 2008, <www.armscontrol.org/act/2008\_09/Simpson>.
110. "Statement by H.E. Ambassador Celina Assumpção do Valle Pereira, Deputy Permanent Representative of Brazil to the United Nations," April 8, 2002. Before the 2005 NPT Review Conference, the Brazilians also stated they would consider adopting the Additional Protocol, based on progress made on disarmament in conference. Given the failure of the conference, it is not surprising they still refuse to accept it. However, should the 2010 NPT Review Conference conclude more successfully, Brasilia may change its mind.
111. Rebecca Johnson, "Enhanced Prospects for 2010: An Analysis of the Third PrepCom and the Outlook for the 2010 NPT Review Conference," *Arms Control Today*, June 2009, <www.armscontrol.org/act/2009\_6/Johnson>.
112. *Ibid.* Johnson offers additional arguments as to why the 2009 NPT PrepCom should be seen as a success despite its lack of consensus on formal recommendations for the 2010 NPT Review Conference.
113. On the poll of Lower House DPJ members, see Kyodo News, "Many in DPJ Want Japan to Cut Link to U.S. Nukes." On Foreign Minister Okada's remarks, see Atsuko Tannai and Hiroyuki Maegawa, "International Commission Weighs No-First Use of Nukes," *Asahi Shimbun*, October 19, 2009, <www.asahi.com/english/Herald-asahi/TKY200910190053.html>.
114. *Ibid.* While Iran still posed a number of challenges to the 2009 NPT PrepCom, its delegates were more cooperative than in past sessions.