

Brazil, the United States and Nuclear Nonproliferation: American Foreign Policy at the Crossroads

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In this article, Amy Finkelstein examines the implications of West Germany's 1975 decision to sell to Brazil, a nonsignatory of the Nuclear Non-Proliferation Treaty, sensitive nuclear technology. After first focusing on the agreement itself and Brazil's motivations for acquiring a nuclear reactor capable of producing weapons-grade material, Finkelstein argues that past American policies harmed both U.S.-Brazil relations and America's desire for nuclear nonproliferation. The author explores present U.S. policy options and suggests that, because of Brazil's current external debt problems, the Reagan Administration has a unique opportunity to offer the Brazilian government economic aid in exchange for limiting the arrangements with Germany.

The West German Government . . . is planning to sign a multibillion dollar agreement later this month to provide Brazil with a complete nuclear industry and technology that would produce atomic bombs as well as electricity. . . . This is a reckless move that could set off a nuclear race in Latin America, trigger the nuclear arming of half a dozen nations elsewhere and endanger the security of the United States and the world as a whole.¹

The fifteen-year "Agreement of Cooperation in the Peaceful Use of Nuclear Energy" signed by West Germany and Brazil in 1975 is one of the most controversial commercial contracts ever concluded. For although the Germans treated it as an ordinary, albeit extremely lucrative, arrangement, the agreement to transfer, for the first time, a complete, self-sufficient nuclear fuel cycle "package" had far-reaching hemispheric and global political and military implications. By providing Brazil, a non-signatory and vociferous opponent of the Nuclear Non-Proliferation Treaty (NPT), with sensitive nuclear technologies which could be adapted to produce

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1. "Nuclear Madness," *New York Times*, 13 June 1975, p. 36.

weapons-grade fissile material, the agreement called into question the relevance of the current international nonproliferation regime. It also threatened to trigger a deadly arms race in heretofore nuclear-weapons-free Latin America.

News of the agreement shocked many Americans. The peril of nuclear proliferation was no longer thousands of miles away in distant India but was now firmly lodged in what the United States had long considered as its "backyard." The conclusion of this agreement over vigorous U.S. objections demonstrated that the United States could no longer dictate the actions of its "special friends" to the south by the mere force of its moral suasion.

The post-1974 world is one of shifting power configurations, new international actors and increasing demands from countries with newly-found political and economic leverage. Whether American policymakers will be able to recognize this new international paradigm and defuse the potentially deadly consequences of the German-Brazilian agreement is a question that will play a large role in determining what type of world our children will inherit. Recognizing and making overtures to Brazil's new status as a major world power does not exclude inducing it to forego implementing the sensitive technologies provided by the agreement.

THE WEST GERMAN-BRAZILIAN AGREEMENT

The agreement, signed by foreign ministers Hans Dietrich Genscher and Antonio Azeredo da Silveira in Bonn on June 27, 1975, opened the way for a series of commercial contracts between West Germany and Brazil. It provided for the creation of several integrated companies which were to participate in every phase of the nuclear energy industry, from prospecting for uranium to constructing the reactors. The deal also included intensive training for the Brazilian scientific community. It was intended eventually to provide Brazil with an autonomous nuclear industry.²

The deal called for the construction of two giant 1300 megawatt (MWe) pressurized-water reactors by the German Kraftwerk Union AG and the Brazilian state utility, Nuclebrás. The Brazilians were given the option of purchasing an additional six reactors over the course of the following twenty years. The package also provided for an extensive exploration effort to recover uranium ore from the sprawling inland state of Goiás where

2. For the best studies of the Brazilian-West German deal see Norman Gall, "Atoms for Brazil, Danger for All," *Foreign Policy*, no. 23 (Summer 1976), pp. 155-201; William W. Lowrance, "Nuclear Futures for Sale: To Brazil from West Germany," 1975, *International Security* 1 (Summer 1976): 147-66; Edward Wonder, "Nuclear Commerce and Nuclear Proliferation, Germany and Brazil, 1975," *Orbis* 21 (Summer 1977): 277-306.

deposits were reported to be as high as fifty thousand tons. (Estimates have since been lowered.) The agreement guaranteed that 20 percent of any ore discovered would be delivered to German utilities.

Despite its unprecedented scale — the contracts totaled over 12 billion deutsche marks (DM) — the agreement was still essentially commercial at this point. Yet the inclusion of enrichment and reprocessing technologies made it something else entirely. Enrichment facilities are used to increase the U-235 — the fissile form of uranium — from the 0.7 percent naturally occurring in uranium up to the 3 percent appropriate for reactor fuel. With certain modifications, however, such facilities can be utilized to further concentrate the U-235, making it appropriate for nuclear explosives. Reprocessing facilities are used to receive the spent radioactive fuel from the reactors and recover unburned fuel for recycling. Unfortunately, this process also yields plutonium, Pu-239, a substance of particular concern since relatively small amounts can be used in any chemical form or concentration for nuclear weapons.³

Not only did the agreement include plans to construct pilot plants for both enrichment and reprocessing, but the uranium enrichment facility was to be based upon the commercially unproven Becker “jet nozzle” technique. In addition to branding the process unsafe, critics also questioned the commercial feasibility of this highly energy-intensive experimental method. It required over twenty times the electricity needed for the demonstrably effective gas centrifuge technique. Apparently, the Brazilians preferred the gas centrifuge, but the few nations and international consortia possessing this technology were unwilling to sell it.⁴ Not to be denied the entire fuel cycle, Brazil settled for the Becker jet nozzle. One skeptical critic commented that “the Germans have sold an enrichment process that does not work to enrich Brazilian uranium that does not exist.”⁵

Given the inclusion of these potentially explosive processes, it is important to examine the nature of the “safeguards” agreement. Safeguards are measures, such as surveillance by international inspectors, that are designed to prevent a nation’s domestic nuclear program from being diverted into a weapons program. Defending his country’s decision to transfer nuclear technology to a non-signatory of the NPT, a German official argued that

3. Lowrance, p. 149. It is estimated that less than ten kilograms of plutonium are required to make nuclear explosives. Reprocessing facilities produce hundreds of kilograms of plutonium annually. For detailed discussions of the technical aspects of the nuclear fuel cycle and the dangers of diversion see Anne W. Marks, ed., *NPT: Paradoxes and Problems* (Washington, D.C.: Carnegie Endowment for International Peace, 1975), and William O. Doub and Joseph M. Dukert, “Making Nuclear Energy Safe and Secure,” *Foreign Affairs* 53 (July 1975): 756-72.

4. The Dutch, partners with Great Britain and West Germany in the enrichment consortium, URENCO, vetoed the proposed sale of the gas centrifuge process to Brazil.

5. Lowrance, p. 150.

"Brazil is ready to submit to far-reaching controls beyond those existing in international agreements."⁶ The safeguards eventually agreed upon — partly as a result of considerable American pressure — did in fact go beyond those stipulated by the International Atomic Energy Agency (IAEA).⁷ In addition to the requisite safeguards, the agreement provided that IAEA inspectors be allowed to monitor all nuclear facilities for the entire useful life of these installations.⁸ Furthermore, any additional facilities built by the Brazilians with German technical "know-how" would also be subject to IAEA inspection. This trilateral agreement between Brazil, West Germany and the IAEA came into force on February 24, 1976, at which time commercial execution of the contract began.

A consortium of five German banks provided the financing for the first two power plants, which cost over DM 4 billion. Down payment was a mere 10 percent, and the loan, given at a low 7.25 percent interest rate, was to be repaid over a period of twelve years after the plants began to produce electricity. Bonn thus assumed a substantial financial risk for these reactors. On an ironic note, the Kreditanstalt für Weideraufbau, which was to finance half the debt, drew one-third of its contribution from a special fund to finance German exports left over from the Marshall Plan.⁹

The Germans underwrote these reactors because they expected that the long-term benefits which would accrue to both their nuclear industry and to the German economy would more than compensate for this initial outlay. In the first place, Germany, with no native uranium deposits, was anxious to diversify its foreign sources and thus was willing to supply not only Brazil, but also South Africa with nuclear technology in exchange for uranium ore.¹⁰ As noted above, the agreement guaranteed Germany 20 percent of any uranium ore found in Brazil.

In the second place, the execution of this agreement would help the troubled German nuclear energy industry. It generated contracts for over three hundred firms and assured the stability of thirteen thousand jobs at the ailing Kraftwerk Union. The Germans estimated that each 1300 MWe

6. David Binder, "U.S. Wins Safeguards in German Nuclear Deal With Brazil," *New York Times*, 4 June 1975, p. 16.

7. Among many other conditions, the IAEA requires that nuclear materials will not be diverted for military purposes and that sensitive items can only be transferred to third parties which subscribe to IAEA safeguards. Lowrance, pp. 155-56.

8. Lowrance, p. 155.

9. Gall, p. 158.

10. According to Robert Gillette, West Germany supplied South Africa with the same experimental Becker jet-nozzle enrichment technique in exchange for uranium ore. The Germans were also reported to have assisted the South Africans to develop their own technology. See Robert Gillette, "Uranium Enrichment: With Help South Africa is Progressing," *Science*, 13 June 1975, pp. 1090-91.

nuclear power plant provided 39,000 man years of employment.¹¹ Furthermore, Germany already had expended considerable resources on research and development. Bonn hoped that by providing Brazil with the first two reactors at concessionary rates it might conclude additional full-price contracts and thus be able to recoup some of the fixed cost of its multi-billion dollar investment. As *Die Zeit* reported, "the federal government had invested DM 15 billion in nuclear energy research — of which at least half was for basic research — and now this was finally to pay off."¹²

Finally, not only did German officials expect that this deal would lead to additional nuclear contracts, but also that it would serve as the springboard for other German industries to break into the lucrative Brazilian market.

Given these economic inducements, it is not difficult to see why the Germans were willing to risk American disapproval in order to complete the agreement. They concluded their final negotiations with Brazil on February 12, 1975, and a week later presented their decision as a *fait accompli* to United States Ambassador Martin Hillenbrand. The vehemence of the U.S. reaction, however, may have caught the Germans somewhat by surprise. On April 7, the Ford Administration dispatched a four-man delegation to try to persuade Bonn to cancel the deal.

American protest focused upon Germany's provision of enrichment and reprocessing facilities. The U.S. delegation argued that the proliferation dangers of such technologies were immense, especially given Brazil's repressive military government, the possibility for terrorist diversion and Brazil's struggle with Argentina for continental supremacy. Neither Brazil nor Germany were able to provide adequate economic reasons to justify the inclusion of these technologies.

Brazil had long proclaimed its right to use so-called "peaceful nuclear explosives" (PNEs). The Brazilians viewed PNEs as an economic panacea, claiming the process could be used for massive earth-moving projects in the Amazon Basin as well as to release oil from shale rock and to augment the flow rate of natural gas from underground reserves. At the time of the agreement, a Brazilian foreign office spokesman said that Brazil "intends to detonate explosives for peaceful purposes."¹³ The United States argued that the commercial feasibility of PNEs had never been demonstrated. More significantly, American officials insisted that it was impossible to distinguish a PNE from a nuclear weapon. The only real difference between the two lay in the use to which they were put. Just one short year before,

11. "Peaceful Fuel Export Policies of the Federal Republic of Germany," found in General Accounting Office, *Overview of Nuclear Export Policies of Major Supplier Nations* (Washington, D.C.: General Accounting Office, 1977), appendix 1.

12. "Querschüsse aus den USA," *Die Zeit*, 20 June 1975, quoted in Gall, p. 158.

13. "Nuclear Madness," *New York Times*, 13 June 1975, p. 36.

India, utilizing the plutonium discharged from its small Canadian-built reactor, had exploded a "peaceful device," shaking not only the Rajasthan desert but the international establishment. In so doing, India, for all intents and purposes, had become the world's sixth nuclear state. The only difference between a nation with a PNE and a nation with a bomb is that the latter possesses a delivery system. French-supplied Mirage jets provide Brazil with such a system.¹⁴

When the Ford Administration realized that Bonn was too firmly committed to cancel the deal it switched tactics and urged the Germans to insist upon the full safeguards mentioned above. Congress was less willing to acquiesce. Many in Congress felt that Kissinger and Ford should not shrink from a high-level confrontation and that the United States should even reconsider its NATO commitment to West Germany in order to demonstrate its seriousness.¹⁵ Senator John O. Pastore, chairman of the Joint Committee on Atomic Energy, warned that the United States would reevaluate its military relationship with Germany if Bonn, "creates a likely peril in our backyard while we are heavily engaged in their backyard to defend them against likely peril."¹⁶ Siding with Congress, the *New York Times* took the editorial position that, "should Bonn perpetrate this nightmare upon the world, it will put at risk three decades of effort in gaining the high regard of its neighbors and allies. It will pay a political price that will far outweigh economic gain."¹⁷

West German government and industrial officials seemed nonplussed by these threats. They countered that Washington's protests did not stem from altruistic concerns, but rather from commercial self-interest. The German press attacked the United States for fighting in the international marketplace with "heavy gloves" — charging its diplomats were behaving like employees of American companies. They dismissed U.S. protests as merely a case of sour grapes.¹⁸ The Germans argued that their companies simply had outmaneuvered Westinghouse and General Electric (by providing technologies the United States firms were not permitted to offer) and now the U.S. government was intervening on behalf of its defeated industry.

The United States' claim that commercial self-interest was not the paramount concern was complicated by the disclosure that Bechtel Power Corporation had sent a representative to Brazil in March 1975 to discuss

14. Steven M. Gorman, "Security Influence and Nuclear Weapons: The Case of Argentina and Brazil," *Parameters* 9 (March 1979): 58.

15. Wonder, p. 289. See also David Binder, "U.S. Wins Safeguards in German Nuclear Deal with Brazil," *New York Times*, 4 June 1975, p. 16.

16. U.S., Congress, Senate, 94th Congress, 1st Session, 3 June 1975, *Congressional Record*: 59313.

17. "Nuclear Madness," p. 14.

18. Gall, p. 167.

constructing an enrichment plant.¹⁹ Although the United States would never have allowed Bechtel to build this facility, it is easy to see why the timing of this disclosure caused some embarrassment and enhanced the German position.

The Germans' defense was essentially rhetorical. They advanced the argument that by requiring Brazil, which previously had opposed the very principle of IAEA inspection, to submit to safeguards, they actually had furthered nonproliferation objectives. German spokesmen rationalized their decision by claiming that the "day of industrial nations' hegemony is over . . . [and] that if the developed nations refuse to supply the technology the developing countries will make it themselves."²⁰ Another official made the self-serving argument that Germany "must combat the development gap . . . and hasten the advance of the underdeveloped."²¹ Somehow, it seems unlikely that "combatting the development gap" was foremost in Foreign Minister Genscher's mind when he signed the agreement. Quite simply, given what they contended to be the inevitable spread of nuclear technology, the Germans viewed a policy of restraint as self-defeating. If Brazil were to be supplied with the full fuel cycle anyway, why should Germany forego such a lucrative contract? The German officials perceived the transaction simply as "nuclear commerce," a matter of marks and pfennigs.²² The German people, who are adamant opponents of nuclear energy, greeted the deal with deafening silence.

The Brazilians, for their part, viewed the United States' intervention as merely another attempt by the superpower to the north to stifle their economic development and squelch their drive for *grandeza*. They felt that the United States was motivated by the desire to preserve the status quo and to freeze the then-existing world order, leaving Brazil on the doorstep of world power status. For Brazil, independence was the bottom line of the agreement, independence from oil embargoes and enriched uranium embargoes. Energy independence was considered essential for both economic development and national security. The Brazilians dismissed American protests as simply the hypocritical mutterings of a nation bent upon enforcing Brazil's dependent status.

Despite German charges of commercial self-interest and Brazil's accusation of nuclear hegemony, Washington's objections appear to have been reasonable given the dangers the deal held for a world still shaken by the Indian

19. Robert Gillette, "Nuclear Exports: A U.S. Firm's Troublesome Flirtation with Brazil," *Science*, 25 July 1975, pp. 267-69 and David Burnham, "U.S. Seems to Bar A Nuclear Deal," *New York Times*, 11 December 1975, p. 19.

20. Lowrance, p. 154.

21. Gall, p. 166.

22. Lowrance, p. 157.

nuclear explosion. The agreement called for the "sensitive line" to be crossed twice, providing Brazil with two avenues through which to acquire materials suitable for nuclear explosives.²³ Once Brazil possesses the capability to produce highly enriched uranium or to extract plutonium, little can be done to prevent the manufacture of nuclear weapons. Brazil may not opt for nuclear weapons in 1985 or 1995 or even in 2005, but the possession of these sensitive technologies provides it the option in perpetuity.

Although Brazil submitted to full-scope safeguards, technical safeguards per se are not very effective. The safeguards system is essentially one of accounting for nuclear materials. Its only force lies in deterrence through the possibility of discovery. The IAEA, however, is hopelessly overextended; its small staff of seventy cannot effectively police all the nuclear facilities under its supervision.²⁴ The IAEA is helpless to prevent a nation determined to acquire nuclear weapons from achieving such an end. Despite the safeguard agreement's know-how provision, once Brazilian scientists master German technology, they will be able to replicate nuclear facilities free of any international supervision. It will then be impossible to say whether these facilities have been constructed from acquired know-how or indigenous expertise.

The Germans ensured the consummation of the agreement by including the "sweeteners" of sensitive technologies. An ominous precedent had thus been set — one which could open up a Pandora's box of demands for full fuel cycle technology. Once enrichment facilities were sold to Brazil, then why not also to Iraq? If they were sold to Iraq, why not to Libya? Countries with contracts calling for the construction of power plants and an exogenous supply of enriched uranium now could threaten to cancel these agreements if they were not provided enriching and re-processing facilities. On what basis could suppliers discriminate between countries? Every nation claims it wants nuclear facilities solely to produce nuclear energy. Even oil-rich Iraq had said that its Isis and Osirak reactors were merely a matter of energy diversification. The German sale has thus eased the line of restraint among the nuclear suppliers and made it likely that similar deals will follow in its wake.

Moreover, the deal created the frightening specter of horizontal transfer among non-nuclear weapons states. Oil-dependent Brazil could — and a few years later would — supply nuclear technology to Iraq in exchange for concessionary oil rates. Iraq in turn could transfer this technology to

23. George H. Quester, "Nuclear Power in Latin America," *Current History* 81 (February 1982): 53.

24. For examinations of the efficacy of technical safeguards see Doub and Dukert; Paul L. Joskow, "The International Nuclear Market Today: The End of the American Monopoly," *Foreign Affairs* 54 (July 1976): 788-803; Paul Lellouche, "International Nuclear Politics," *Foreign Affairs* 58 (Winter 1979): 336-50.

Pakistan to speed the construction of the so-called "Islamic bomb." One week after the detonation of its PNE, India, in fact, had concluded a deal with Argentina calling for the exchange of nuclear technology.²⁵ Thus the destabilizing effects of the Brazilian–West German deal could assume global proportions.

This is not to overlook the destabilizing effect the agreement would have in Latin America itself. Within the context of their geopolitical struggle for ascendancy, Brazil had surpassed Argentina in virtually every measure of power but one: nuclear capability. In 1968, Argentina had purchased from Siemens of West Germany a 319 MWe reactor. It was constructed in Atucha outside of Buenos Aires. This reactor ran on natural, rather than on enriched uranium. Not only did a natural uranium reactor offer uranium-rich Argentina the opportunity for nuclear "independence," but it could be operated free of the meddlesome monitoring of IAEA inspection. This type of reactor also has a significant military advantage in that it lends itself especially well to the production of weapons-grade plutonium.²⁶

In January 1973, the Argentine reactor became the first operating nuclear power plant in Latin America. It has been estimated that by the time of the Brazilian–West German deal, the Atucha reactor had produced the equivalent of several hundred kilograms of plutonium.²⁷ (A mere ten kilograms are sufficient for a sizeable warhead.) If Argentina saw in Brazil's move to acquire sensitive technology the desire to produce the continent's first nuclear weapon, the Argentines might well feel inclined to beat them to the punch. They had the capability as well as the opportunity, especially since they were not a party to the NPT and their reactor operated outside IAEA jurisdiction. An article in the June 1975 issue of *Estrategia* clearly shows that members of Argentina's military establishment perceived Brazil's decision to acquire enrichment and reprocessing technology as bellicose:

Given the available facts, it is possible to affirm that Brazil has taken the firm decision to join the Nuclear Club, that is,

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25. See Robert Gillette, "India and Argentina: Developing a Nuclear Affinity," *Science*, 28 June 1974, pp. 1351-53. Ten days after detonating its first nuclear explosive, India signed a five-year cooperative agreement with Argentina. The agreement provided for joint research projects and exchanges of scientists and unclassified information. Both nations opted for the natural uranium cycle rather than the enriched uranium cycle. As subsequently discussed, natural uranium lends itself more easily to the production of nuclear explosives than does enriched uranium.
 26. Natural uranium reactors are designed for the frequent and easy replacement of fuel rods while the reactor is running. This feature minimizes the buildup of plutonium-240, a spontaneously fissioning isotope that is troublesome in explosives since it can cause premature detonation. See Gillette, "India and Argentina," p. 84.
 27. John R. Redick, "The Tlatelolco Regime and Nonproliferation in Latin America," *International Organization* 35 (Winter 1981): 106.

to make an atom bomb under the concept of peaceful use. . . . The decision to manufacture the nuclear explosive and the opportunity are critical for Argentina, since our neighbor's nuclear device, without a counterpoise, will effect [sic] our Security palpably and decidedly.²⁸

BACKGROUND TO THE AGREEMENT

In the spring of 1975, four disparate and seemingly unrelated factors converged, creating an atmosphere ripe for the transfer of sensitive technology from Germany to Brazil. These factors were the inability of the international nonproliferation regime to cope with a changing nuclear picture, the sudden transformation of the nuclear industry's market structure, a critical miscalculation by American policymakers and, finally, Brazil's emergence as a world power.

The Nuclear Non-Proliferation Treaty, which entered into force on March 5, 1970, is the centerpiece of the current international nonproliferation regime. It is predicated upon the explicit distinction between the nuclear weapons states and those states not possessing nuclear weapons. The Treaty attempts to address both the desire of the states without weapons to obtain the benefits of nuclear technology and the goal of the weapons states to limit the "nuclear club." In essence, the non-weapons states pledged not to pursue weapons technology in exchange for the promise that the benefits of nuclear energy would be made available to them.²⁹

The NPT is an important starting point for preventing horizontal proliferation. Unfortunately, there are many problems with the Treaty. Not least among these is that two weapons states — China and France — and many of the states most likely to develop nuclear weapons are not parties to the NPT. These non-weapons states include Israel, Pakistan and South Africa as well as Brazil, Chile and Argentina. While the NPT might help ensure that the non-weapons states adhering to the Treaty remain weaponless, it does not encourage the adherence of nations which,

28. Juan A. Gugliamelli, "Y si Brasil fabrica bomba atomica?," *Estrategia*, May-June 1975, pp. 13-14, quoted in Gall, p.189.

29. For a provocative treatment of the central issues of the Nuclear Non-Proliferation Treaty see Matthew H. Adler, "Keeping the Match Away from the Fuse: A U.S.-Soviet Response to South Asian Nonproliferation," *Columbia Human Rights Law Review* 12 (Fall-Winter 1980): 249-51. The salient features of the NPT are as follows. The nuclear weapon states pledge not to transfer nuclear weapons, while the non-nuclear weapon states party to the Treaty pledge not to receive nuclear weapons or manufacture them. Each non-nuclear weapon state further pledges to accept supervision on all of its energy facilities in order to prevent diversion of nuclear energy from peaceful uses to weapons production. The safeguards are managed by the Vienna-based International Atomic Energy Agency. In exchange for foregoing the option to develop nuclear weapons, the non-weapon states are guaranteed access to peaceful nuclear technology. Finally, the nuclear weapon states pledge good faith efforts to disarm.

like Brazil, believe that the NPT's discriminatory nature limits their opportunity for economic development.

Every aspect of the NPT is discriminatory. All nuclear reactors in non-weapons states are subject to IAEA supervision and verification, while the great powers are allowed to maintain theirs in utter secrecy. The NPT bans horizontal proliferation but only commits the superpowers to a "good faith" effort toward vertical nuclear disarmament. Non-weapons states are obliged to renounce building their own "plowshare" type explosives for "peaceful purposes," that is, PNEs. According to one observer, Brazil refused to sign the NPT because the Treaty "intended to legitimate the unacceptable distribution of power, requiring the control of the pacific use of nuclear energy, without imposing any obstacle to the growth of nuclear weapons among the world powers."³⁰ The Treaty would "disarm the unarmed," leaving those which Brazil believed to be the true proliferators to continue their arms escalation.

Brazil's objections to the NPT were couched in the terminology of the emerging North-South confrontation. Brazilian spokesmen railed against what they saw as nuclear hegemony. They called for the superpowers to disarm and proposed that a substantial portion of the resources freed by this disarmament be set aside for the benefit of the developing countries.³¹ Brazil especially resented the "freezing" of the current international power structure; as a non-weapons state, it never would be allowed into the *sanctum sanctorum* of international decisionmaking. Such a status was inimical to Brazil's self-perception and its drive for *grandeza*.

The Brazilian government saw no advantage to signing the NPT and knew it would lose absolutely nothing by declining to sign.³² The Treaty's discriminatory nature backfired; it not only had provided Brazil with no incentive to sign, but actually had encouraged this nascent world power to circumvent the NPT mechanism. Flexing the burgeoning muscles of its new economic clout, Brasilia turned its resentment of the international power hierarchy as reflected in the discriminatory nature of the NPT into decisive action.

Still, Brazil needed a willing supplier and Germany, a party to the NPT, jumped at the chance to assume this role. Bonn evaded the restrictions of the NPT by according it a minimalist and legalistic interpretation. Article 3 of the NPT states that transferred nuclear technology which is

30. Luiz Pinguelli Rosa, "Nuclear Energy in Latin America: The Brazilian Case," *The United Nations Human and Social Development Program*, 1979, p. 7.

31. Jon H. Rosenbaum and Glenn M. Cooper, "Brazil and the Nuclear Non-Proliferation Treaty," *International Affairs*, no. 46 (January 1970), p. 78. See also William Epstein, *The Last Chance: Nuclear Proliferation and Arms Control* (New York: The Free Press, 1976), p. 112.

32. Marshal Artur da Costa e Silva, Brazilian President from 1967-1969, expressed this sentiment in 1969. See Rosenbaum and Cooper, p. 81.

used to produce fissile materials must be subjected to certain safeguards. In the case of exports to nonparties to the Treaty, the transferred materials or technology must be subjected to IAEA safeguards.³³ By insisting that Brazil sign the stringent safeguards agreement described above, the Germans had fulfilled their legal obligations and had even gone one step beyond this obligation. They had observed the letter of the NPT but ignored its spirit, which is, after all, to prevent horizontal proliferation. The nonproliferation regime had failed in two distinct respects: its discriminatory nature motivated Brazil's refusal to sign the Treaty, and its failure to simply ban the transfer of sensitive materials from a party state to a nonparty state gave legal sanction to the Brazilian–West German deal.

While the nonproliferation regime had failed to provide non-nuclear weapons states such as Brazil with adequate incentives to forego sensitive technologies, the changing market structure of the nuclear industry provided strong incentives for suppliers like Germany to furnish such technologies. The early 1970s had witnessed the sudden transformation of the international nuclear industry from a virtual United States monopoly to a highly concentrated oligopoly. As of 1974, U.S. companies had built 70 percent of the world's reactors and won two-thirds of the export orders. By 1975, non-American firms had captured more than half of the export contracts. Seemingly overnight, the nuclear market had become intensely competitive; the key to continued survival was to export.³⁴

Inflation had caused the start-up costs for European nuclear industries to skyrocket. Their domestic markets were far too small to realize the benefits of scale economies. Domestic opposition to nuclear energy added further incentive to export. In fact, exporting seemed to present the only solution to an industry beset with economic and political woes. Not only would supplier nations be able to recoup in part the multi-billion dollar public investment made in support of research, development and demonstration of nuclear technology, but through exports it would be possible to maintain the future economic viability of their respective nuclear industries.³⁵

German authorities consider nuclear exports to be essential to the well-being of the entire nation and thus has been willing to underwrite nuclear sales, including those to Argentina and Brazil. It has been estimated that in order to remain viable the German nuclear industry must export between two and four reactors annually.³⁶ Since the European and North American

33. Wonder, pp. 291-301.

34. *Ibid.*, p. 284.

35. *Ibid.*, pp. 282-84.

36. See the General Accounting Office study on the German export policy cited above. See also Joseph A. Yager, *International Cooperation in Nuclear Energy* (Washington, D.C.: The Brookings Institution, 1981), p. 189.

markets were saturated, European companies turned their sights to the Third World. Since very few developing countries could afford nuclear reactors, those which could were saturated with offers.

It was against this backdrop of cutthroat competition that West Germany concluded its deal with Brazil. It is easy to understand how such an atmosphere encouraged the transfer of proliferation-sensitive sweeteners. By 1975, the nuclear market had become a buyer's market characterized by few sales, enormous financial stakes and intensely competing suppliers. Export-dependent companies were desperate to sell, so desperate that proliferation concerns were relegated to a decidedly secondary position.

Nonetheless, the Brazilian-German deal might never have occurred if American policymakers had not made a critical error in the summer of 1974. Voicing concern about the capacity of the United States government's enrichment plants to supply fuel for future reactors, but probably equally concerned about the recent Indian explosion, the U.S. Atomic Energy Commission (AEC) shifted some long-term shipment guarantees to a conditional status. The United States, it seems, wanted time to rethink its nuclear export policy. But the timing of this announcement could not have been worse. It followed by only a few months the Arab oil embargo and thus accentuated the already uncertain energy picture. The moratorium on enriched fuel exports contributed to Brasilia's decision to turn to Germany in its effort to secure nuclear autonomy.

In 1967, Brazil had awarded its first nuclear contract to Westinghouse. The American company began building a 600 MWe plant, Angra I, on the coast above São Paulo at Angra dos Reis, with start-up scheduled for 1978. Westinghouse assumed that it also had secured the orders for Brazil's next two reactors, Angras II and III. The enriched uranium for all three plants was to be supplied by the AEC.

But in July 1974, claiming that the surge in reactor orders in the early 1970s had led to a projected commercial demand for enriched uranium which outstripped the capacity of its three enrichment plants, the AEC suspended signing contracts for future deliveries. In addition, the AEC retroactively classified as conditional the enrichment contracts for forty-five foreign reactors, including those for Angras II and III.

Testifying before Congress in July 1975, a spokesman for Westinghouse said, "we thought . . . that we pretty well had that business locked up until the question of contracts between Brazil and the U.S. government for slightly enriched uranium fuel came to a sudden halt and the Brazilians were denied firm contracts. . . . At that point, any further industrial discussions between [Westinghouse] and the Brazilians ceased and Brazil started discussions with West Germany."³⁷ While Westinghouse may not

37. Testimony of A.L. Bethel of Westinghouse, in U.S., Congress, House, Committee on Interior and Insular Affairs, *International Proliferation of Nuclear Technology*, quoted in Gall, p. 164.

have had Brazil's future reactors "locked up" by July 1974, the United States government's sudden cutoff of future enrichment commitments created "both a reason and an opportunity for Brazil and West Germany to act together to implement separate strategic aims."³⁸ Intensive negotiations between Bonn and Brasilia began only after the American moratorium.

Myron B. Kratzer, the top State Department science official, testified before Congress that the United States had run out of enriching capacity. "We saw it coming. We did not take action."³⁹ Perhaps the AEC still was operating under the incorrect assumption of United States monopoly control and reasoned that if the United States ran out of capacity, recipient nations would simply have to wait for it to produce more fuel. Until the commercialization of European enrichment projects in the early 1970s, this portion of the fuel cycle had been an exclusive U.S. domain. This situation, however, had changed rapidly and, if the United States could not be trusted to supply enriched fuel, recipient nations now had the option to select from other ready and willing sources. Moreover, they might choose to bypass this entire process by acquiring their own enrichment technology.

According to other top officials, most notably Assistant Secretary of State for Oceans and Environmental Affairs Dixie Lee Ray, America's real error was not the AEC's miscalculation but rather the Ford Administration's decision to ban the export of enrichment technology. She argued that, given the aggressive stance of America's chief nuclear competitors, the U.S. policy was both "simplistic" and "self-defeating." The United States, it seemed, had "clear indications" that Brazil was looking for a supplier of enrichment technology, but had remained adamant in its policy that such technology should not be transferred. Ray concluded that instead of preventing the West German deal, "we drove them to it."⁴⁰

Ray's criticism illuminated one of the central dilemmas which confronted and continues to confront American policymakers: should the United States export sensitive technology in order to maintain at least some leverage and control over the uses to which such technology is put? Or should it take a strong stand against such technology transfer, hoping that other suppliers will follow its lead? Both Ford and Carter followed the latter course, while Reagan has advocated the former. Responding to Ray's

38. Gall, p. 164.

39. Testimony by Myron B. Kratzer, Assistant Secretary of State for Oceans and International Affairs, in U.S., Congress, Senate, Committee on Foreign Relations, *International Organization and Security Relations*, quoted in Gall, p. 164.

40. Gillette, "Nuclear Exports: A U.S. Firm's Troublesome Flirtation with Brazil," p. 269. See also David Binder, "U.S. Wins Safeguards in German Nuclear Deal with Brazil," *New York Times*, 4 June 1975, p. 16. Ray later resigned her post to protest the Ford Administration's "self-defeating" policy.

attack, a State Department official expressed the prevalent view of the time: "America may have to sacrifice a sale or two along the way, but what we're trying to do is to create a climate of responsibility."⁴¹

"Responsible" was hardly the word Brasilia would have chosen to characterize U.S. nuclear policy. First of all, the United States government had retroactively classified firm contracts as conditional, leaving what Victor Gilinsky, former head of the Nuclear Regulatory Commission, termed a "residual uncertainty about the reliability of U.S. fuel supplies."⁴²

In the second place, American policy appeared to vacillate wildly, initially extolling the virtues of nuclear energy and then emphasizing its dangerous side-effects. The United States once had proclaimed the manifold uses of PNEs and then moved to have them banned; it lauded reprocessing as a means to alleviate the dangers of plutonium storage and then sought to abolish this process. "Not only did the U.S. let the genie out of the bottle," wrote David Lilienthal, first chairman of the AEC, "but her salesmen have proselytized the genie's magic powers as a 'safe and cheap source' of energy supply."⁴³ And now it must have seemed to Brazil that the United States was attempting to shove the genie back into its bottle, or at least not allow the genie to bestow his magic powers upon "unsafe" countries.

Finally, the United States appeared terribly hypocritical to Brazil. While preaching the gospel of nonproliferation, the United States had failed to ratify Protocol I of the Treaty of Tlatelolco which called for the United States to "apply the status of denuclearization" to its territories in Latin America.⁴⁴ Nonproliferation was wonderful, but only so long as others made the sacrifice.

The final and most important of the factors which converged to create an atmosphere conducive to the transfer of sensitive technology was Brazil's emergence as a regional and world power. In 1975, Brazil was just reaching the crest of the legendary decade of her "economic miracle." Between 1965 and 1974, Brazil's industrial growth averaged 13 percent a year and her per capita GNP rose by a breathtaking 7 percent annually.⁴⁵ Brazil's GDP of \$150 billion ranked eighth among the world's market economies and first among developing nations. Brazil's energy consumption rose even more precipitously during this decade of rapid development. Continued

41. See Gillette, p. 269.

42. Victor Gilinsky, "Plutonium Proliferation and the Price of Reprocessing," *Foreign Affairs* 57 (Winter 1978/1979): 378.

43. Gall, p. 190.

44. The Treaty for the Prohibition of Nuclear Weapons in Latin America (The Treaty of Tlatelolco) was signed in 1967.

45. See the 1981 *World Bank Report* (Washington, D.C.: International Bank for Reconstruction and Development, 1981), p. 70.

growth, Brazil's main goal, was predicated upon a reliable and secure source of energy.

Brazil's energy vulnerability and dependence had been vividly demonstrated by the events of the mid-1970s. First, Brazil, which imported over 80 percent of its oil needs, was hurt by the Arab oil embargo of 1973-1974. The embargo resulted in the quadrupling of prices, adding \$3 billion to Brazil's annual import bills.⁴⁶ It also raised doubts as to the future security of such supplies. A few months later, the U.S. moratorium on enriched fuel exports delivered the second blow, hammering home the dangers inherent in Brazil's dependence upon external energy sources. Such dependency called into question Brazil's future economic growth, and her leaders believed, her very national security.

The solution was clear: Brazil needed an indigenous source of energy. Hydroelectric power was deemed insufficient to meet Brazil's growing needs, while solar power was regarded as a mere chimera.⁴⁷ The answer lay in the acquisition of a self-sufficient nuclear industry. The Brazilian government's *White Paper on Nuclear Energy* summarized the position that an independent fuel source was imperative.

Recent historical developments have demonstrated the dangers of relying heavily on external sources of the basic input needs of the economy. . . . To avoid what happened in the case of oil it was imperative that the solution in the case of nuclear energy be one that enables the country to reach indispensable autarky in the medium term. It was not acceptable to replace one form of dependence for another. [Brazil's] economic growth cannot be dependent upon third countries' decisions as to price and supplies of essential fuels.⁴⁸

The creation of an autonomous energy supply was essential to realize the paramount goals of "economic development" and "national security" which, according to former President Castello Branco, were "linked" by the "relationship of mutual causality."⁴⁹ The Brazilians maintained that

46. See John Goldemberg, "Brazil: Energy Options and Current Outlook," *Science*, 14 April 1978, pp. 158-64.

47. Nuclebrás president Nogueira Batista was quoted as saying that by 1980 "our hydroelectric resources would be exhausted. . . . The fact is that the installation of our nuclear reactors near the centers of consumption will enable these energy resources to be used right there without costly and wasteful long-distance transmission." Norman Gall noted that, had Brazil pursued such a course, it could have been precisely the country in which a breakthrough in "nonconventional sources," especially solar and photosynthetic power, might have occurred. See Gall, p. 195.

48. The *White Paper* was issued by Brazil in March of 1977. See Jonathan Kendall, "Brazil Bitter at U.S. Effort to Impose Nuclear Curb," *New York Times* 28 March 1977, p. 1.

49. Wayne A. Selcher, "The National Security Doctrine and the Policies of the Brazilian Government," *Parameters* 7 (January 1977): 12.

security created a climate of tranquility which facilitated development, while the rate and potential of growth in turn conditioned the level of security. An underdeveloped Brazil was perceived as a vulnerable Brazil subject to general unrest and communist subversion. Thus energy independence would ensure both economic development and further the nation's security aims.

Equally significant in terms of national security, the full fuel cycle provided Brazil with the undeniable option to pursue nuclear weapons development. As a result of its much greater demographic and economic growth and its relative political stability, Brazil had achieved a commanding superiority over Argentina in the conventional arms race. Yet the Brazilians worried that the Argentines would view this growing disparity in national strengths of the two countries as sufficient motivation to develop nuclear weapons. In 1975, Argentina was clearly Latin America's most advanced country in every aspect of nuclear technology. Brazil saw military intent in Argentina's option to go the route of natural uranium. "It is difficult to escape the conclusion," John R. Redick wrote in 1975, "that each step of Argentina's nuclear energy program appears to have been designed to lend itself most readily to weapons development."⁵⁰ Brazilian military experts realized that Argentina, with the hundreds of kilograms of plutonium in its possession and its advanced level of scientific sophistication, could develop a sizeable nuclear force in a relatively short time.⁵¹ So while both nations publicly renounced nuclear weapons, in 1975 Brazil clearly wished to keep its options open in the event that Argentina made the initial move.

Finally, for Brazil, with its long-standing aspirations for *grandeza*, nuclear energy provided the symbolic representation, if not the substance, of great power status. One spokesman commented that "the prestige of national power arising from the existence of nuclear installations in a country is undeniable, however remote is its intention of making nuclear weapons."⁵² By 1975, nuclear power had become a symbol of modernity

50. John Redick, "Regional Nuclear Arms Control in Latin America," *International Organizations* 26 (Spring 1975): 430.

51. Gorman, pp. 52-64. Gorman contends that, if Argentina and Brazil pursued the nuclear weapons option, Brazil would have a considerable military advantage. Argentina, it seems, could not develop the credible ability to cause 25 percent casualties in Brazil since the Brazilian population is so diffused. On the other hand, Brazil could affect 42 percent of Argentina's population by nuclear strikes against Buenos Aires alone. The important point to note is that both Brazil and Argentina have kept a watchful eye on one another's nuclear program. The decision by one nation to produce nuclear weapons would be matched by the other nation.

52. Rosa, p. 2. See also William Courtney's "Brazil and Argentina," in *Nonproliferation and U.S. Foreign Policy*, ed. Joseph Yager (Washington, D.C.: The Brookings Institution, 1981), pp. 242-80 for a discussion of why Brazil considered nuclear energy as a means to enhance her stature.

and technical competence as well as a source of prestige and status. For reasons of independence, development, security and prestige, acquiring the full nuclear fuel cycle was the logical step for Brazil to take in 1975.

AMERICAN POLICY UNDER PRESIDENTS FORD AND CARTER

In the early 1970s, it appeared that the number of nuclear weapons states had stabilized at five following the Chinese test of 1964. Despite the non-adherence of several significant states, the NPT was a landmark agreement, and the problem of nuclear proliferation seemed quiescent. Neither the Nixon Administration nor most outside experts felt it necessary to accord a high priority to reinforcing nonproliferation policy. The NPT and IAEA seemed to be working to quell horizontal proliferation, while the SALT I accords showed that the superpowers were willing to fulfill their NPT obligation by working to reduce vertical proliferation.⁵³

India's detonation of a "peaceful nuclear device" in May 1974 shattered this complacency by establishing once and for all the direct and tangible relationship between nuclear power and nuclear weapons.⁵⁴ The Indians utilized the technology and materials they had acquired through foreign assistance for their "peaceful" nuclear power program.

President Ford responded by calling for a reevaluation of United States nuclear export policy. He set the tenor of future American policy in late 1974 when he instructed American companies not to supply Brazil with sensitive technology. Horizontal proliferation had become an issue of paramount concern. Ford chose to attack this problem by going to its source; that is, the United States would attempt to prevent non-nuclear weapons states from acquiring the sensitive technologies which could be adapted to weapons production. Ford argued that "avoidance of proliferation must take preference over economic interests."⁵⁵

While such a policy might have worked a decade earlier, in 1975 unilateral denial was not very effective given the more competitive structure of the nuclear industry. The United States discovered this when West Germany — interpreting U.S. policy as calling for unnecessary self-denial — proceeded to supply Brazil with its requested technology. The Ford Administration attempted to reverse Germany's decision but succeeded

53. Joseph S. Nye, "Nonproliferation: A Long-Term Strategy," *Foreign Affairs* 56 (April 1978): 605.

54. Most experts hold that this relationship between nuclear power and nuclear proliferation is both explicit and tangible. For a contrasting view see Peter de Leon, "Nuclear Power and Nuclear Weapons: The Tenuous Link," *Comparative Strategy* 3 (1981): 45-68 and Gerard Smith and George Rathjens, "Reassessing Nuclear Nonproliferation Policy," *Foreign Affairs* 59 (Spring 1981): 875-94.

55. Gilinsky, pp. 377-78.

only in creating resentment in both Bonn and Brasilia. It soon acquiesced and settled for ensuring that a stringent safeguards requirement be included in the accord.

Once the deal was accepted as a *fait accompli*, the Ford Administration took two distinct policy initiatives. It moved to ensure that the Brazilian–West German deal would be the first and last of its kind and at the same time decided to reevaluate United States–Brazilian relations. As part of the first initiative, the United States proposed creating multinational fuel-cycle centers as an alternative to bilateral agreements. Such centers, by supplying recipient nations with their requisite enriched fuel, would obviate the need for national enrichment facilities. The multinational nature of the fuel-cycle centers would enable supplier nations to share in the economic returns, while recipient nations would benefit from having a safer, more reliable fuel supply, independent of the caprices of any one nation's domestic policy.

The Ford Administration also called for “supplier restraint” among nuclear supplier nations. The Indian explosion had provided the catalyst for the formation of the Nuclear Supplier Group — also known as the London Club — comprised of the United States, France, Great Britain, Canada, Japan, West Germany and the Soviet Union.⁵⁶ The early meetings were marked by disagreement between the United States and Canada on the one hand, who pushed for comprehensive measures, and France and Germany on the other, who opposed any measure which could inhibit their sales activities. After the Brazilian-German deal, the United States redoubled its efforts to coordinate supplier policies. While they failed to have the London Club ban outright sales of enrichment or reprocessing facilities, U.S. representatives succeeded in having the supplier nations pledge mutual consultation and promise to use available safeguards. Of course, Germany contended that it had complied with both of these restrictions, even if it had consulted with the United States only after the fact.

More significantly, the United States succeeded in convincing France to announce in 1976 that it would not enter into any bilateral fuel-technology deals. A year later, the United States successfully pressured France into canceling a deal with Pakistan which would have provided the latter with an enrichment plant. West Germany, however, would make no such concession. Nonetheless, the Ford Administration had correctly recognized and isolated one of the most critical aspects of horizontal proliferation — supplier restraint — and had worked to create a uniform and coordinated supplier policy.

56. See Wonder, pp. 301-06 for a detailed discussion of the Nuclear Supplier Group.

The Brazilian–West German deal also prompted a long-overdue analysis of U.S.–Brazilian relations. On the one hand, the United States and Brazil had enjoyed a close relationship since the 1964 military coup. The United States lent considerable financial assistance to Brazil after the coup, while Brazil staunchly supported U.S. policies, particularly those directed against communist subversion. On the other hand, the “economic miracle,” which had resulted in part from this new alliance, had tended to erode rather than strengthen the U.S.–Brazilian relationship.⁵⁷ Brazil’s successful integration into the world economy weakened official ties to the United States. Bilateral assistance became irrelevant as private banks and multinational corporations fell over one another to invest in the thriving Brazilian economy. Moreover, the new Brazilian leadership found its “junior role” both undesirable and increasingly unnecessary.

Rapid economic growth was Brazil’s consuming passion; its foreign policy became one of “ecumenical pragmatism” no longer rooted to the limiting confines of the Cold War. Araujo Castro, Brazil’s ambassador to the United States, defined his country’s dominant foreign policy objective as trying to remove “all obstacles, whatsoever, that may counter its full economic, technological and scientific development.”⁵⁸ Dependence upon enriched uranium and high tariffs numbered among the “obstacles” the United States posed.

Despite the changing situation, the United States did not reevaluate its policy toward the hemisphere’s second leading power until the signing of the nuclear accord. This had the unfortunate effect of reinforcing the apparent connection between nuclear power and international respect. In February 1976, Secretary of State Henry Kissinger traveled to Brazil and signed a ten-point agreement which, in effect, recognized Brazil as a major power. The agreement established mechanisms for semi-annual consultations at the foreign ministerial level and binational governmental agencies to advance cooperation.⁵⁹

Brazil had actively sought such an agreement for two years, yet it was not until Brazil became a nuclear nation that the United States acceded to this wish. Brazil is the only Latin American nation to receive such special treatment from Washington. During his visit, Kissinger toasted Brazil as a “nation of greatness,” adding that the United States “welcomes Brazil’s new role in world affairs.”⁶⁰ Had the United States welcomed

57. Albert Fishlow, “Flying Down to Rio: Perspectives of U.S.–Brazil Relations,” *Foreign Affairs* 56 (Winter 1978/1979): 387-405.

58. *Ibid.*, p. 193.

59. Gall, p. 162.

60. *Ibid.*, p. 162.

this role a few years earlier, perhaps Brazil would have been less eager to force its welcome by going nuclear.

President Carter, a nuclear engineer, arrived in Washington with the deep-seated belief that horizontal proliferation posed the gravest danger to world security. Without adequately evaluating the consequences of his initiatives, Carter embarked upon a virtual crusade to prevent nuclear proliferation. Brazil was to serve as the test case. While Carter had the right idea, he appeared utterly unversed in the intricacies of international diplomacy and succeeded only in producing a result completely antithetical to his original position.

As one of his first official acts, Carter sent Vice President Mondale to Bonn in March 1977 to try to persuade the Germans to withhold the sensitive technologies or at least to place them in multinational hands. Not only did Chancellor Schmidt turn a deaf ear, but by dispatching Mondale to Bonn instead of Brasilia, Carter alienated Brazil. Carter's program backfired. The Brazilian nuclear program, which according to one critic seemed to be "going nowhere fast" and might have faltered from external difficulties and high costs, was now certain to continue, if only as a show of defiance.⁶¹ Carter's direct intervention ignited Brazilian nationalism and united the country in an effort to resist his initiatives. Brazil's major opposition party, Brazil Democratic Movement (MDB), which previously voiced concern about the nuclear deal, publicly condemned U.S. policy. Its leader, Paulo Brossard, contended that "it is not possible to accept [Carter's call for cancelling the agreement] without protesting the interference in matters that are the exclusive concern of my country."⁶²

Some ranking Brazilian officials saw the Carter Administration's attempt to alter the nuclear accord as part of a wider effort aimed at preventing Brazil from achieving its destiny as a great industrial power. In response to Carter's interference, Air Force Chief of Staff Delio Jardim de Mattos asserted that "Brazil's effort to emerge from underdevelopment will not be blocked by any difficulty, not even the incomprehension of our traditional allies."⁶³

Carter's human rights stance compounded the problems inherent in his nonproliferation policy. Brazil responded to Carter's human rights policy, which it regarded as intolerable outside interference in its internal affairs,

61. Allen Hammond, "Brazil's Nuclear Program: Carter's Non-proliferation Policy Backfires," *Science*, 18 February 1977, pp. 657-59.

62. *Ibid.*, p. 658. See also William Perry, "New Hemispheric Realities: Latin America Outgrows U.S. Policy," *International Security* 5 (Spring 1980): 43-56 for a consideration as to why Carter's policy backfired.

63. Kendall, p. 1.

by cancelling its twenty-five-year-old military assistance pact with the United States. Carter's policy again had succeeded in galvanizing Brazil to resist his "heavy-handed" initiatives. Even the leftist coalition, which had complained bitterly about the use of torture, came out against a State Department report delineating Brazil's human rights abuses, calling the report an "affront to Brazilian sovereignty." In the same statement, the opposition voiced its full support of the military government on the "inviolability of the nuclear accord."⁶⁴

Although there was no visible narrowing of the differences between the countries on the issues of human rights and nonproliferation, Carter's trip to Brasilia in March 1978 helped reduce the tension between the two nations and signaled a change in his tactics. Carter had come to realize that further frontal assaults would only prove counterproductive. Meeting with Brazilian President Ernesto Geisel, he asserted that the United States still opposed Brazil's plan to pursue full nuclear development. Yet he added that he was not challenging Brazil's right to purchase the technology, but "as a friend to both countries," the United States "reserved the right to express its concern over the spread of nuclear weapons." The right of Brazil to have a very advanced nuclear power capability was one that "we don't dispute, but on the other hand don't approve."⁶⁵ Rather than insisting that the West German deal be nullified, the President now was taking a more low-key approach in the hope that he could somehow dissuade Brazil from following her stated path. At the minimum, Carter hoped to keep official channels open in the event Brazil did become a nuclear weapons state.

On April 7, 1978, a week after his trip to Brazil, Carter unveiled the goals of his new nonproliferation policy, later institutionalized in the Nuclear Nonproliferation Act of 1978.⁶⁶ An important aspect of this policy was Carter's call to "increase U.S. capacity to provide nuclear fuel, particularly enriched uranium, to provide adequate and timely supplies to countries that need them so that they will not be encouraged to process

64. Ibid.

65. "Transcript of President Carter's remarks to Brazilian President Ernesto Geisel," *New York Times*, 31 March 1978, p. 12.

66. The major provisions of the 1978 Nuclear Non-Proliferation Act included: The indefinite deferral of reprocessing of spent fuels and recycling of plutonium; deferral of commercial development of breeder reactors; development of alternative breeder-type reactors such as those using the uranium/thorium cycle; upgrading enrichment capacity; establishing the Nonproliferation Alternative Systems Assessment Program (NASAP) to explore "proliferation-resistant" nuclear technology; and the proposal for an International Nuclear Fuel Cycle Evaluation (INFCE) to look into proliferation-resistant technologies and to reduce international tensions which had resulted from differences over nuclear policies.

their own materials."⁶⁷ The Nonproliferation Act was intended to reassure other nations that the United States would be a reliable supplier of nuclear fuel and equipment for those "who genuinely share our desire for non-proliferation."⁶⁸ Carter pledged to supply Brazil with enriched uranium if it would annul its contract for the sensitive technologies. While continuing to renounce any intention to utilize the nuclear technology for weapons production, Brazil steadfastly refused Carter's overtures.⁶⁹ Brazil was unwilling to resume its position of dependency on U.S.-supplied fuel, particularly when this supply seemed less reliable than ever under Carter. Moreover, Carter's interference had elevated nuclear independence to the status of national independence; on no condition would Brazil back down now.

Under President Carter, United States–Brazilian relations reached their lowest level. Brazilians viewed U.S. policies as meddlesome, self-righteous and heavy-handed efforts to maintain Brazil's economic dependence. As Albert Fishlow noted, the central requirement for an effective policy with Brazil is to place such issues as nonproliferation within the broader framework of Brazil's economic preoccupations. Failure to do so allowed the Brazilian government to capitalize on each initiative as an infringement of Brazil's sovereignty and a constraint on national development.⁷⁰ By the end of the Carter presidency, the United States and Brazil had reached an impasse.

CHANGING CONDITIONS AND A NEW OPPORTUNITY

The situation has changed markedly since the end of the Carter Administration. Resignation is no longer necessary since it is no longer inevitable that Brazil will operate sensitive nuclear facilities. In fact, the situation today is such that, if the Reagan Administration so chooses, it has a very real opportunity to deflect the dangers of the Brazilian–West German deal. It is not too late. Construction has not yet begun on Brazil's commercial-scale enriching and reprocessing facilities. Construction need never begin.

The Brazilians originally held unrealistically high expectations for their nuclear program. According to the originally announced conception of

67. Congressional Research Service, *Nuclear Proliferation Handbook*. Prepared for the Subcommittee on International Economic Policy and Trade, Committee on Government Affairs. (Washington, D.C.: Library of Congress, 1977). For a defense of Carter's nuclear program see Nye, pp. 601-23. For the opposing view see Lellouche, pp. 336-50; Perry, pp. 43-56; and Smith and Rathjens, pp. 875-94.

68. Carter's Message to Congress, 27 April 1977.

69. Bruce Handler, *New York Times*, 5 September 1978, p. 54.

70. Fishlow, pp. 393-403.

this program, Brazil would operate over sixty reactors by the year 2000. These reactors were expected to be the principal source of Brazil's enormous energy needs.⁷¹ However, in the years since the signing of the Brazilian–West German accord, optimism has steadily given way to realism.

The Brazilian nuclear program has been plagued by lengthy and costly delays. Testing was done in late 1980 on Brazil's first reactor, the United States–supplied 600 MWe Angra I. Its start-up date, estimated for 1981, was pushed further into the future. Work on Angra II was postponed due to "unstable geological conditions." (Angra II is located in dangerous proximity to a seismic fault.) A new site was found for Angra III, with a 1988 completion date targeted but unlikely.⁷² A recent study estimated that, even if Brazil's nuclear program continued without further delay, nuclear power would supply barely 2 percent of the nation's energy by 1985 and little more by 2000.⁷³

In 1975, the total cost of the entire West German package had been estimated at \$5 billion. By 1978, the estimate had risen to \$15 billion. In 1980, it stood at \$30 billion.⁷⁴ While Brazil's economy has suffered far less than other developing nations from the oil shocks of 1973–1974 and 1979–1980, its growth no longer seems limitless. Today's economy cannot afford the considerable expense of a massive nuclear program, particularly when the returns are so uncertain. Moreover, with Brazil's rate of growth slowing and its projected electricity needs no longer so enormous, it may not need such a costly program. It is far more expensive to produce enriched uranium than to import it.

The continuing problems of the Angra reactors have sparked intense controversy within Brazil. By mid-1980, there had been three major congressional investigations into the nuclear program. Additional challenges are mounted on a regular basis by the nation's media.⁷⁵ Brazil's gradual political liberalization program (*abertura*) will likely lead to increased internal opposition to both the scope and the direction of the nuclear program. The centerpiece of *abertura* was the national election of November 15, 1982, Brazil's first in seventeen years. Opposition parties less enthralled with nuclear energy than the government's Social Democratic Party gained control of several major states. With Carter no longer in a position to incite their nationalistic ire, the supporters of these opposition parties are likely to grow more vocal in their objections to nuclear energy.⁷⁶

71. Rosa, p. 1.

72. Redick, "The Tlatelolco Regime," pp. 125–26.

73. Courtney, p. 260.

74. Redick, "The Tlatelolco Regime," p. 126.

75. *Ibid.*

76. See the following articles by Warren Hoge in the *New York Times* for an analysis of the November 15, 1982 Brazilian elections: "In Rio, an Old Enemy Irks the Army," 10 November 1982, p.

Brazil has not been alone in its nuclear malaise. Since the mid-1970s, there has been a prolonged world-wide "nuclear depression."⁷⁷ Due to conservation and modernization of equipment, electricity needs have been growing far more slowly than GNP. Projections of the amount of nuclear power to be used in the future have fallen dramatically.⁷⁸ According to the *New York Times*, no new reactors have been ordered in the United States since 1978, and 102 have been cancelled since 1972, including eighteen in 1982.⁷⁹

In Brazil, nuclear power is no longer seen as a panacea for all the nation's energy problems. As a result of the increased cost of nuclear energy, the various risks associated with its production and the problem-filled Brazilian program, alternative sources of energy, particularly hydroelectric power, have grown increasingly attractive in recent years. Brazil's Third National Development Program, announced in late 1979, placed a heavy emphasis on hydroelectric development at the expense of the nuclear program. Under "Plan 95" of Electrobrás (the Brazilian National Electric Utility), 69,000 MWe of hydroelectric facilities would be added by 1990 in addition to the existing 22,000 MWe. The most optimistic estimate for nuclear power, by contrast, is that in 2000 it would provide 10,000 MWe. This would account for less than 3 percent of the nation's projected energy needs.⁸⁰

At the time of the signing of the Brazilian-West German nuclear accord, work was beginning on the massive Itaipù Dam. While the nuclear project has floundered, this dam, the world's largest, began churning out power on December 1, 1982.⁸¹ The contrast between the two programs has been so vivid that Planning Minister Antonio Delfim Netto has severely slashed the nuclear program's budget.⁸²

The World Bank reported in 1981 that Brazil has begun making massive investments in other alternative energy sources such as the conversion of cane sugar to alcohol. Shale and coal are also considered to be primary options for energy diversification. In addition, Brazil has signed several commercial contracts with Bolivia to import natural gas. Still, hydroelectric power, the potential of which World Bank experts estimate to be an

5; "As Brazilians Vote, Military Gets Touchy on Revenge," 14 November 1982, Section IV, p. 3; and "Brazil's Election Brings Victories for Opposition," 25 November 1982, p. 1.

77. See Lellouche, pp. 336-50.

78. Amory Lovins, L. Hunter Lovins and Leonard Ross, "Nuclear Power and Nuclear Bombs," *Foreign Affairs* 58 (Summer 1980): 1136-77.

79. Janet Lowenthal, "Nuclear Power's New Peril," *New York Times*, 20 December 1982, p. 19. Ms. Lowenthal is executive director of the Nuclear Information and Resource Center.

80. Redick, "The Tlatelolco Regime," p. 125.

81. Edward Schumacher, "Paraguay Town's Fortunes Ebb as Dam Rises," *New York Times*, 14 November 1982, p. 8.

82. Redick, "The Tlatelolco Regime," p. 127.

incredible 200,000 MWe (ten times its present capacity), remains the most promising option.⁸³

This is not to imply that Brazil intends to abandon its nuclear program. In fact, it has begun to consider potential sites for Angras IV and V. The important point is that nuclear energy will supply only part, and a very small part at that, of Brazil's future energy needs. That being the case, there is little economic justification for building and maintaining the costly enrichment and reprocessing facilities.

The "independence" of an autonomous nuclear industry has become far less attractive from an economic perspective. With the signing in May 1980 of the Argentine-Brazilian agreement for nuclear cooperation, it also has become less vital from a security standpoint.⁸⁴ If fully implemented, this agreement could contribute significantly to hemispheric security and to the goal of nonproliferation. Ironically, it was the United States' disputes with Brazil over the West German deal which prompted Argentine statements of support for Brazil and the suggestion for cooperation. The real breakthrough, however, came in October 1979 when the two countries settled their protracted dispute over the Itaipu Dam. The dam, located ten miles north of Argentina, had become a symbol of Brazil's penetration into and domination of the strategic River Plate Basin. Settling this dispute was an essential prerequisite for further cooperation.

The Argentine-Brazilian nuclear accord called for an exchange of technicians, joint personnel training and exchanges of information on component fabrication, plant security and the physical protection of nuclear material. It also provided for the joint German-Brazilian company, NUCLEP, to construct the core vessel for Argentina's third reactor and accorded Argentina access to Brazil's Computerized Information Center, which gathers and disseminates much of the western world's nuclear information. The accord also opened the way for further cooperation between the two nations, particularly on energy-related concerns. While Brazil furnishes less than 10 percent of its fuel oil needs, Argentina is a major producer of both oil and natural gas. Since the signing of the accord, discussions have been underway for the building of a natural gas pipeline from Neuquen, where recent discoveries have more than doubled Argentina's proven reserves, into Brazil.

The most significant contribution of the agreement, however, lay in its nonproliferation benefits. Bilateral competition and mutual insecurity provided both nations with incentives to produce nuclear weapons. By

83. The 1981 *World Bank Report*, p. 70.

84. The following summary of the May 1980 Argentinian-Brazilian nuclear accord is derived from Juan de Onis, "Argentina and Brazil Starting Cooperative Ventures," *New York Times*, 31 January 1980, p. 15; Quester, pp. 52-55.

establishing communication on nuclear matters, the agreement helped insure both parties against misunderstandings, miscalculations and surprises.⁸⁵ By so doing, the agreement significantly reduced Brazil's need to construct the sensitive facilities in order to meet the Argentine challenge. Brazilian President Figueiredo, toasting Argentine President Jorge Rafael Videla on the occasion of the signing, said, "Our agreement refutes forever the legend that Argentina and Brazil are engaged in a nuclear arms race and opens prospects for concrete steps in a vast area of common interest."⁸⁶

There is now little reason for Brazil to construct its sensitive facilities. Yet the contract has been signed. The Brazilian–West German deal eventually will be completed on its own slow momentum unless something is done to prevent it. This is where the second important consideration comes into play: the United States today has a genuine opportunity to induce Brazil not to construct these facilities.

United States–Brazilian relations have improved dramatically since Reagan's election. Despite continuing trade disputes and philosophical differences on a host of North–South issues, Reagan's recent trip to Brazil ushered in a new era of "mutual understanding."⁸⁷ Following his trip, the banner headline in Brasilia's *Correio Braziliense* read, "Brazil and the United States: Finally Partners."⁸⁸ This is a far cry from Carter's 1978 trip when Foreign Minister da Silveira publicly declared that Carter had traveled to Brazil on his own initiative. He most definitely had not been invited by Brasilia.⁸⁹

Reagan, dubbed the "Discreet Suitor," charmed his hosts. He told them of his great personal admiration for Brazil and noted that he was "dazzled by the progress of the Brazilian nation."⁹⁰ When Reagan travels to Brazil he sees the modern splendor of Brazil's cities; Carter was struck by the urban slums and the abused inhabitants. Reagan's foreign policy objectives, radically different from those of Carter's, are in far greater accord with Brasilia's. Rather than stressing the universal amelioration of human rights abuses, Reagan's world view clearly separates allies (anti-communists) whom he does not criticize and enemies (communists) whom he does. "Hemispheric security" is the linchpin of Reagan's Latin American

85. Quester, pp. 52-55.

86. Juan de Onis, "Argentina and Brazil Starting Cooperative Ventures," *New York Times*, 14 May 1980, p. 16.

87. Riorden Roett, "Brazil's International Relations in Perspective," *Orbis* (Spring 1982): 257-62. According to Roett, Brazil's position at the 1981 Cancun Conference made it clear that Brasilia viewed the United States as part of the North's effort to preclude structural changes in the international system that would benefit the South.

88. Warren Hoge, "Reagan, the Discreet Suitor, Finds Brazil is Willing," *New York Times*, 3 December 1982, p. 7.

89. David Vidal, *New York Times*, 30 March 1978, p. 3.

90. Warren Hoge, "Reagan, the Discreet Suitor," p. 7.

policy. Under the guidance of officials like UN Ambassador Jeanne Kirkpatrick, relations have been strengthened with "mildly repressive" authoritarian states like Argentina and Chile. Brazil's military government, ardently anti-communist, is far more inclined to cooperate with a Reagan than with a Carter. Under Reagan, the emphasis, as Assistant Secretary of State Thomas O. Enders has noted, is on United States-Brazilian cooperation and "the concert of interest" between the two hemispheric giants.⁹¹

Reagan's very different nonproliferation policy also has been a major factor in bringing the two nations closer together. As George H. Quester has contended, Reagan came into office with a far less clearly defined position on nonproliferation and thus far has been able to follow a "more moderate approach" and has made no direct moves to prevent horizontal proliferation.⁹² As we have seen, Carter's "direct" approach proved counterproductive. Reagan's indirect method might hold the answer.

Reagan's nonproliferation policy was expressed in a lengthy speech by Assistant Secretary of State James L. Malone. Malone asserted that, while the Reagan Administration's concern about nuclear proliferation is genuine, its approach is significantly different from those of its predecessors. Reagan intends to reestablish the competitiveness of American nuclear exports since "in order to influence the development of nuclear energy around the world and to insure that development is proliferation safe, [the U.S.] must be a leading participant in it."⁹³ Reagan emphasizes flexibility, arguing that potential customers should not all be treated alike.

According to Malone, Reagan's policy toward Brazil demonstrates the Administration's flexibility. His objective has been to keep his options open in order to serve the United States' nonproliferation goals and to establish a framework which would permit nuclear cooperation between the two nations. Reagan has attempted to "preserve a nonconfrontational environment" for ongoing talks in order to "create conditions conducive to the continuation of good faith." He maintains that in the aftermath of the Indian explosion the United States went too far when its restrictions "extended to our closest allies" like Brazil. The Reagan Administration, while following a "most restrictive" export policy toward potential proliferators, is more concerned with addressing the underlying causes of proliferation, such as national security, than with simply denying technology.

91. "Brazil and the U.S. Today," Address by Thomas C. Enders before the American Chamber of Commerce in São Paulo on August 14, 1981, in U.S. Department of State, *Department of State Bulletin* 81 (November 1981): 87-89.

92. Quester, p. 52.

93. "Nuclear Proliferation and Nonproliferation Strategy," Address by James L. Malone before the Annual Conference on Atomic Industrial Forum in San Francisco on December 1, 1981, in U.S. Department of State, *Department of State Bulletin* 82 (February 1982): 52-58.

Malone characterizes Reagan's approach as "nonconfrontational," "flexible," "persistent" and "patient." It is indirect in its means, but "uncompromising in its objectives."⁹⁴

Of course, it can well be argued that the reason the United States and Brazil enjoy such an amicable relationship is because, despite his rhetoric, Reagan has not interfered with the Brazilian nuclear program and has not made any attempt to prevent Brazil from constructing its sensitive facilities. If he decided to pressure Brazil, bilateral relations would quickly erode, perhaps pushing the United States back into the abyss of the Carter presidency. There is, however, one major difference from the days when Carter tried to influence Brazil's nuclear actions — Brazil's external debt of \$90 billion.

Brazil's balance-of-payments crisis in November 1982 forced it to take two steps that it had long held to be fundamentally against its political interests: it had to seek a loan from the International Monetary Fund and accept direct assistance from the United States. According to *New York Times* correspondent Warren Hoge, such actions are "giving the U.S. more leverage in Brazil than it has enjoyed in more than a decade."⁹⁵ The architects of Brazil's foreign policy had altered the patterns of trade and diplomatic initiatives in order to emphasize the less developed countries and reduce their past dependence on the United States. The global recession has severely affected Brazil's economy, forcing it to resort to short-term loans to finance its ballooning debt. Debt service on these loans, previously never higher than \$8 billion, has nearly doubled to \$15 billion in 1982.

Brazil is in desperate need of foreign assistance. The United States is the country in the best position to help, not only with direct assistance but through its private banking system and its clout with multilateral organizations such as the World Bank, the I.M.F. and the Inter-American Development Bank. Despite Brazilian economist Celso Furtado's call in the December 1982 issue of *South* for a "major restructuring of the international economic system" in order to renegotiate Third World debt and reach some compromise between the banks and the borrower nations, such a "restructuring" does not appear to be forthcoming.⁹⁶ Brazil can no longer rely on debt rollbacks or restructuring or even upon austerity measures. It is facing an economic crisis of unprecedented proportions, one which challenges its philosophy of economic growth and threatens the legitimacy of Brazil's leadership. According to the 1982 World Bank report, debt service as a percentage of exports has risen from 12.5 percent

94. Ibid.

95. "Debt Crisis in Brazil Forcing Policy Shift," *New York Times*, 12 November 1982, p. D1.

96. Celso Furtado, "How The Debtors Can Forge A New International Deal," *South*, no. 26 (December 1982), p. 65.

in 1970 to 34 percent in 1980 and is now estimated to be in excess of 40 percent.⁹⁷ Brazil has a GDP of approximately \$240 billion and an external debt of \$90 billion. It desperately needs external assistance.

A STRATEGY FOR HEMISPHERIC NONPROLIFERATION

Clearly this is an especially opportune time to further the cause of nuclear nonproliferation. The Reagan Administration should employ every means short of direct confrontation. But time is of the essence. These initiatives must be implemented immediately to give the Administration the option to pursue alternative methods if they fail to produce the desired results.

An appropriate starting point may be for the Reagan Administration to work through the regional mechanisms established under the 1967 Treaty of Tlatelolco.⁹⁸ Since 1963, when President Goulart was an instrumental force in establishing the parameters for the Treaty, Brazil consistently has supported a regional rather than a global approach to nonproliferation. Unlike the Nuclear Non-Proliferation Treaty, which Brazil opposed because it perceived the Treaty as an instrument designed by and for the benefit of the few nuclear weapons states, the creation of a "Latin American Nuclear Free Zone" was an exclusively Latin American initiative, one which was designed to insulate Latin America from external dangers. After the near conflagration of the October 1962 Cuban Missile Crisis, Latin American leaders decided that it was in their countries' best interests to establish a nuclear free zone, guarding against the possibility of an East-West confrontation being waged in or over the Latin American states.⁹⁹

The Treaty of Tlatelolco obligates the contracting parties to prohibit and prevent in their respective territories the "testing, use, manufacture, production or acquisition of nuclear weapons" by the parties themselves or on behalf of anyone else and the "receipt, storage, installation, deployment and any form of possession of nuclear weapons." It is an extremely comprehensive instrument, in many ways going beyond the NPT. The Treaty calls for IAEA safeguards, semi-annual reports to both the IAEA and to OPANAL (the Agency for the Prohibition of Nuclear Weapons in Latin

97. The 1982 *World Bank Report* (Washington, D.C.: The International Bank for Reconstruction and Development, 1982), pp. 110, 134.

98. A copy of the Treaty of Tlatelolco can be found in John H. Barton and Lawrence D. Wesler, eds., *International Arms Control: Issues and Agreements* (Stanford: Stanford University Press, 1976). For an insightful analysis of the Treaty see Alphonso García Robles, "The Latin American Nuclear Free Zone," The Stanley Foundation, Occasional Paper, no. 19, May 1979.

99. The Latin American Nuclear Free Zone is the only such zone to be established in a densely inhabited region. Other nuclear free zones have been established in Antarctica in 1965 and in outer space in 1967.

America), submission upon request of "special reports" to OPANAL's Secretary General and the conducting of "special inspections" by the IAEA if OPANAL deems such inspections necessary.¹⁰⁰

As of 1982, the Treaty of Tlatelolco had become effective and binding upon twenty of the twenty-four eligible Latin American and Caribbean nations.¹⁰¹ Both Brazil and Chile have signed and ratified the Treaty, but under Article 28, Paragraph 2, their ratification remains provisional until all nations complete the process.¹⁰² Argentina has signed but has failed to ratify the Treaty, while Cuba has neither signed nor ratified it. As for Additional Protocol I, which extends the application of the Treaty to all territories within Latin America and calls for the adherence of the four nations with territories within the area, Britain and the Netherlands have both signed and ratified, while France and the United States have signed but have failed to ratify the Treaty. Additional Protocol II, which requires that nuclear weapons states respect the denuclearized status of the zone, has been signed and ratified by all five nuclear weapons states.

It is of the utmost importance that the United States now ratify Protocol I. OPANAL Secretary General Gros Espiell contends that the "lack of ratification appears to demonstrate little interest in the military denuclearization of Latin America. . . . All the credibility of the U.S. policies on matters relating to nuclear proliferation in Latin America will be compromised" if the United States does not quickly proceed with ratification.¹⁰³ In the recent hearings before the Senate Foreign Relations Committee, unanimous support for ratification was voiced by representatives of the Arms Control and Disarmament Agency (ACDA), the State Department, the Defense Department and the Joint Chiefs of Staff. It was asserted that ratification would in no way weaken the United States' military position, but rather would enhance its national security.¹⁰⁴ When

100. Robles provides a comprehensive treatment of all the Treaty's provisions.

101. The nations which are full parties to the Treaty of Tlatelolco are Barbados, Bolivia, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay and Venezuela.

102. Article 28 was a compromise measure struck between Mexico and Brazil. Mexico, the Latin American nation most eager to establish a nuclear free zone, wanted the Treaty to enter into force for each nation as soon as it became a contracting party. Brazil, on the other hand, maintained that the treaty should only be in effect when every eligible nation had become a party. Article 28 offered nations the opportunity to have the Treaty enter into force for them if they were willing to waive the provisional status it provided, while also offering nations the opportunity to maintain the provisional status of their adherence.

103. Redick, "The Tlatelolco Regime," p. 109.

104. U.S., Congress, Senate Committee on Foreign Relations, *Prohibition of Nuclear Weapons in Latin America, Hearings before the Senate Committee on Foreign Relations*. 97th Cong., 1st sess., 1981. The United States initially had been concerned that the accession of Protocol I might restrict the U.S. right of transit and innocent passage of vessels and aircraft carrying nuclear weapons in waters and airspace within the zone. In response, the United States proposed "statements

finally put into effect, the Treaty would directly benefit the United States by furthering nonproliferation objectives and by deterring other nuclear weapons states from installing weapons to the south.

Moreover, ratification is an essential step to strengthening America's ability to convince other nations to comply with the Treaty. According to former ACDA director Eugene Rostow, Argentina maintains that it will ratify the Treaty only after the United States has done so.¹⁰⁵ Argentina's ratification, in turn, could foster a willingness in both Brazil and Chile to waive Article 28, thus allowing the Treaty to enter fully into force for these three critical nations. Cuba would no longer have an excuse to remain a non-party, particularly since the Soviet Union recently ratified Protocol II.

Brazil has steadfastly opposed both the NPT and bilateral nonproliferation efforts. The Treaty of Tlatelolco offers a viable alternative. In its 1977 *White Paper*, Brazil reaffirmed its strong commitment to maintaining the denuclearized status of Latin America, pledging that it "will take no action contrary to the objectives of the Treaty."¹⁰⁶ The United States must take advantage of Brazil's purported willingness, but it must do so in a way which compromises neither Brazil's position nor the specifically Latin American (as opposed to Inter-American) nature of the Treaty. The United States should immediately ratify Protocol I and then pressure Brazil and Argentina to take appropriate action without letting it appear that the United States masterminded this effort. Brazil and Argentina moved close together following their May 1980 accord and the Falklands War brought them closer still. It is vital that they both become full contracting parties to the Treaty of Tlatelolco in order to further their respective security.

Inter-Latin American cooperation on nuclear matters would enhance hemispheric nonproliferation. Civilian-ruled nations like Colombia, Venezuela and especially Mexico, whose statesman Alphonso Garcia Robles was called the "father" of the Treaty of Tlatelolco, all have signed the NPT and are vociferous opponents of nuclear proliferation. The United States should encourage OPANAL to evolve from its current negative posture of verification and control of nuclear proliferation to one in which it would play an active role in promoting cooperative ventures in the peaceful uses of nuclear energy.

Regional nuclear energy centers have long been a centerpiece of the

of understanding" to accompany Protocol I. According to Sheila Buckley, Director for Multilateral Negotiations, Department of Defense, adherence to Protocol I with these "understandings" does not affect the United States right of transit and in no way harms American security. *Ibid.*

105. *Ibid.*, testimony of Eugene Rostow.

106. Redick, "The Tlatelolco Regime," p. 128.

United States' nonproliferation policy.¹⁰⁷ The United States should help construct a regional center under joint IAEA/OPANAL supervision. Such an indigenous center would supply Latin America with its required fuel needs while greatly reducing the risk of diversion. In this manner, the United States would further its nonproliferation policy by obviating the need for dangerous national fuel centers and would be doing so within the framework of a regional mechanism.

While working through these regional mechanisms, the United States must also take a more direct approach to the Brazilian situation. The working group on nuclear matters established during Reagan's November 1982 visit to Brazil, provides an ideal forum for high-level discussion between U.S. and Brazilian officials. Through this forum, the United States could work for a compromise with Brazil without appearing to dictate Brazil's actions.

Appearances are vital. The only way America can effectively implement its policies is by allowing Brazil to save face. If Brazil appears to be buckling under to American pressure, the legitimacy of its leadership will be undermined and its position as a leader among the developing nations will be compromised. Direct "orders," such as those made by Presidents Ford and Carter, were seen as affronts to Brazil's sovereignty and were met with firm resistance. It is in the United States' interest to be sensitive to Brazil's independent position and to work toward a solution in a more discreet manner.

American officials should begin the discussions with their Brazilian counterparts by stating the obvious: building the sensitive facilities is unnecessary from both an energy and an economic standpoint. Far from enhancing Brazil's national security, their construction could only harm Brazil's military position since Brazil is so far superior to its neighbors in conventional military areas. It would be in Brazil's own best interest to help maintain Latin America's nuclear-weapons-free status. Furthermore, with the entire nuclear industry in decline, cancelling its order would be perceived not as a Brazilian failure, but rather as merely symptomatic of and responsive to a global failure.

Brazilian officials are well aware of all of this. The United States must offer to address Brazil's most pressing economic problems in exchange for Brazil's cancelling of what is no longer such an attractive contract. The United States could offer direct financial assistance to Brazil during its

107. In the July 1976 issue of *Foreign Affairs*, Senator Abraham Ribicoff advocated a "market-sharing approach" to alleviate the danger of bilateral nuclear sales. He argued that the United States would have to accept a smaller market share in order to further our nonproliferation aims. See "A Market-Sharing Approach to the World Nuclear Sales Problem," *Foreign Affairs* 54 (July 1976): 763-87.

severe liquidity crunch, or it could offer to assist Brazil indirectly through its dominant role in the multilateral lending organizations, particularly the International Monetary Fund. In addition, the United States could accord Brazil preferential trade treatment by guaranteeing it low tariffs and perhaps a sugar quota. Finally, the United States could work to ensure that Brazil is given a greater voice in both hemispheric and international fora. Near-nuclear status must not be perceived as the only route to international power status.

Of course, Brazilian officials could counter this approach by contending that the only reason the United States would make these concessions is precisely because of Brazil's "near-nuclear" status. Once Brazil acceded to the United States' wishes, would not the United States turn around and ignore its promises? This certainly is a valid question, one which the United States must address. Perhaps instead of according Brazil preferential treatment for a few years, the United States could sign long-term agreements with Brazil. While such agreements undoubtedly would be expensive both in financial terms and in terms of alienating other nations which would stand to lose their national quotas, the price is well worth paying.

Yet even if Brazil were willing to exchange sensitive nuclear facilities for economic incentives, what would the West German government have to say about the United States, a third party, seeking the cancellation of their lucrative contract with Brazil? The West German government has an enormous financial stake in the Brazilian nuclear deal. Fortunately, with Chancellor Helmut Kohl, financial matters are all that are riding on the deal. For former Chancellor Schmidt, as one of the deal's architects, personal pride would have greatly complicated the bargaining process. The United States may have to offer to assume at least some of West Germany's financial loss for the cancelled contract. The U.S. has always been willing to pay for its national security — most often through its policy of supplying billions of dollars worth of "arms for peace" — and that is precisely what it will be doing in this case. It will be buying security by helping to pay for the cancellation of Brazil's enriching and reprocessing plants. This entire trilateral transaction must be handled with the utmost discretion so as not to compromise Brazil's independent status or West Germany's position as a reliable commercial partner and ally. Such a transaction is feasible, but only if the United States judiciously combines sensitivity and strength at the bargaining table.

Suppose these various nonconfrontational approaches fail to produce the desired result and Brazil continues to proclaim its intention to go ahead with the sensitive facilities. Is the United States in a position to compel Brazil to comply with its wishes? And if so, should the United States take such a dramatic step? At this time, the answer to both questions

should be a resounding "yes." Following much the same course as advocated above, i.e., utilizing the nuclear working group as a forum and maintaining a discreet demeanor, the Reagan Administration is in a position to pressure Brazil successfully to cancel the proliferation-sensitive aspect of its contract with West Germany.

America's trump card is Brazil's debilitating debt. Its highly polarized population, which is stratified between a small wealthy sector and a vast poverty-stricken majority, will not tolerate economic stagnation. For Brazil's repressive military government to survive, it must offer at least the promise of national economic growth and individual prosperity. Its policy of political liberalization has raised popular expectations but could quickly backfire if the economy is unable to deliver. Default, a very real possibility for at least as long as the global recession continues, might well bring down Brazil's government.

The United States can help prevent a Brazilian default, but Brazil will have to meet the United States half-way by agreeing to cancel the construction of the sensitive nuclear facilities. This is not too much to ask of Brazil. Given the global nuclear climate, Brazil has a graceful way out; the government simply can claim that it has decided that nuclear facilities are no longer economically feasible. It is in Brazil's best interest to cancel these facilities, but if it refuses to do so, the United States has the power to influence the government by withholding further aid.

As a last resort, the United States must exercise this power. Nuclear proliferation poses the single, gravest threat to global peace and security. Minimizing this threat must be accorded the highest priority. While American officials should profit from the error of Carter's policy of publicly condemning potential proliferators, they nonetheless should use every means at their disposal to prevent additional members from joining the "nuclear club."

In the fall of 1982, Alphonso Garcia Robles was awarded the Nobel Peace Prize in recognition for his great service to mankind. His dream for a nuclear-weapons-free Latin America has thus far been a reality. The United States must work to ensure that his dream remains a reality.

