Exploring an Unconventional Approach to Denuclearization

Applying Lessons from the Argentine-Brazilian Nuclear Cooperation to Curtail the Nuclear Arms Race in South Asia

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In May 1998, India and Pakistan together detonated eleven nuclear devices and ignited a nuclear arms race.[1] Progress towards nuclear disarmament in the region has been disappointing, and both countries still refuse to sign the Treaty on the Nonproliferation of Nuclear Weapons of 1970 (NPT).[2] In the same decade, Argentina and Brazil acceded to the NPT. More importantly, following the emergence of enabling domestic political conditions, the two countries consented to bilateral confidence-building measures, including the establishment of a bilateral nuclear inspection agency. Together, these bilateral confidence-building measures accomplished extensive nuclear cooperation even before the two countries' accession to the NPT.[3]

Despite the fact that India and Pakistan are armed with nuclear weapons, both countries have shown a willingness to escalate conflict. The Kargil and Twin Peaks crises in 1999 and 2001, respectively, are illustrative of this danger.[4] In addition, South Asia's nuclear proliferation is not only destabilizing for the continent and the nearby regions, but could also impede the international community's efforts to rid the world of nuclear weapons. This study argues that the Argentine-Brazilian nuclear cooperation model represents a new approach to strengthening nuclear nonproliferation that would be invaluable for mitigating, if not resolving, the Indian-Pakistani nuclear arms race.

After providing a brief history of Argentine-Brazilian nuclear rivalry, this essay will explore the subsequent period of nuclear cooperation between the two countries. The essay then discusses the Indian-Pakistani nuclear arms race and elaborates on how the lessons learned from nuclear cooperation in Latin America could be applied in South Asia to develop a condition conducive to nuclear reconciliation and cooperation in that region. Particular attention is given to the use of a bilateral inspection mechanism as an alternative to the NPT. This essay acknowledges that Indian-Pakistani cooperation is unlikely to reach the level of cooperation achieved by their South American counterparts. It does argue, however, that applying the South American nonproliferation approach would facilitate amelioration of nuclear conflict between India and Pakistan and could pave the way towards conflict resolution in the long run.

[1] "Country Profiles – Pakistan – Nuclear," *Nuclear Threat Initiative*, accessed May 15, 2016, http://www.nti.org/learn/countries/pakistan/nuclear/.
[2] The Treaty on the Nonproliferation of Nuclear Weapons (NPT) entered into force in 1970 and prohibits the nuclear weapons states (NWS) from transferring nuclear weapons to non-nuclear weapons states (NNWS) or assisting NNWS in acquiring nuclear weapons. Under the treaty, NNWS are not permitted to build such weapons. It encourages peaceful uses of nuclear energy and nuclear research and states that NWS have the legal obligation to assist NNWS in developing nuclear technology and facilities, provided that they are for peaceful ends. Article VI of the treaty envisions total elimination of nuclear weapons from the world and stipulates that the NWS, in cooperation with the NNWS, must work towards achieving this goal.
[3] For the purpose of this essay, "nuclear cooperation" refers to a bilateral or multilateral measure that is supportive of nonproliferation objective. This includes an agreement between two or more countries to eliminate mutual suspicion and mistrust over each other's nuclear programs, increase transparency and cooperate through, *inter alia*, confidence-building programs and verification processes to prevent weaponization of nuclear materials. Where nuclear weapons are involved, the agreement would limit and reduce the number of weapons or disarm them, in addition to carrying out verification work. Thus "nuclear cooperation" here is used in a nonproliferation sense, as opposed to international nuclear trade cooperation or a country's agreement to furnish nuclear technology or reactors to another country.
[4] The former involved a small war in the province of Jammu and Kashmir (a disputed region between India and Pakistan). In the latter conflict, India mobilized its forces near its border with Pakistan and threatened to use force.

ARGENTINA AND BRAZIL: A CASE STUDY IN BILATERAL NUCLEAR COOPERATION

Beginning in the early 1950s, Argentina and Brazil began to develop nuclear programs in order to become energy self-sufficient, a matter both countries viewed as vital to national security.[5] Driven by a fear of losing the nuclear competition with the other, both countries' autocratic and nationalist regimes and armed forces continued to develop their nuclear programs and fought against anti-nuclearization measures for the next three decades.[6] By the 1980s, each country's nuclear program reached an advanced phase. In the same decade Argentina and Brazil's uranium enrichment and reprocessing facilities, previously a secret, became known worldwide.[7] In 1990, Fernando Collor de Mello, Brazil's president, uncovered the extent of the Brazilian military's nuclear ambition under its clandestine "Autonomous Program of Nuclear Technology" (PATN), which included a plan to test a nuclear device in Cachimbo in the state of Pará, Brazil.[8]

Argentina and Brazil's respective nuclear capabilities alarmed each other and the international community. Although both countries' respective nuclear power programs were established for the purposes of economic development, the international community feared that the programs might develop a military dimension. In the absence of a credible safeguards and verification system, Brazilian and Argentine leadership likewise feared that the other would weaponize its respective nuclear programs. Each country refused to join the NPT and each had military-controlled nuclear programs, causing additional anxiety. Finally, Brazil's plans to deploy a peaceful nuclear explosion (PNE) to clear land for urban development blurred the line between civilian and military use of nuclear technology.[9] It is clear that the bilateral development of nuclear capabilities was caused by each country's desire to avoid becoming inferior to its neighbor.

TOWARDS THE ARGENTINE – BRAZILIAN NUCLEAR COOPERATION

The tension perpetuated by the bilateral competition gradually gave way over the course of the 1980s to cooperation and increased transparency. The Argentine and Brazilian presidential elections of 1983 and 1985 respectively brought to power democratic and civilian governments: President Raul Alfonsin in Argentina and President Tancredo Neves in Brazil (though President Jose Sarney succeeded President Neves upon his death in April 1985).[10] Despite the individual militaries' tight grip on the nuclear power industries, Alfonsin and Sarney introduced measures to reduce nuclear tensions between the two states, initiated economic liberalization programs, and curbed the power of the militaries over their respective nuclear establishments.[11] In the Foz do Iguacu Declaration of 1985,

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[5] Etel Solingen, "Hindsight and Foresight in South American Nonproliferation Trends in Argentina, Brazil, and Venezuela" in *Over the Horizon Proliferation Threats,* ed. James J. Wirtz and Peter R. Lavoy (Stanford, CA: Stanford University Press, 2012), 139-140.

[6] Ibid, 139-141.

[7] John R. Redick, Julio C. Carasales and Paulo S. Wrobel, "Nuclear Rapprochement: Argentina, Brazil, and the Nonproliferation Regime." *Washington Quarterly* 18, no. 1 (1995): 108, doi: 10.1080/01636609509550135.

[8] Paul Beaumont and Thomas Rubinsky, *Latin America & Nuclear Weapons: An Introduction to the Issue of Nuclear Weapons in Latin America* (Oslo, Norway: International Law and Policy Institute, 2012), 12-13, http://nwp.ilpi.org/wp-content/uploads/2015/11/BP02-12_LatinAmerica.pdf.

[9] The Brazilian military never carried out PNE, though it had a plan to carry out such a test in Cachimbo. In 1990, President Color de Mello ordered this nuclear testing site to be closed down, demonstrating his commitment to nonproliferation.
Arturo C. Sotomayor, "Brazil and Mexico in the Nonproliferation Regime: Common Structures and Divergent Trajectories in Latin America," in *State Behavior and the Nuclear Nonproliferation Regime*, ed. Jeffrey R. Fields (Athens, GA: University of Georgia Press, 2014), 222.

[10] John R. Redick, Julio C. Carasales and Paulo S. Wrobel, "Nuclear Rapprochement: Argentina, Brazil, and the Nonproliferation Regime." *Washington Quarterly* 18, no. 1 (1995): 112, doi: 10.1080/01636609509550135.

[11] Julio C. Carasales, "The Argentine-Brazilian Nuclear Rapprochement." *The Nonproliferation Review* (Spring-Summer 1995): 41-42. https://www.nonproliferation.org/wp-content/uploads/npr/carasa23.pdf.
Paul Beaumont and Thomas Rubinsky, *Latin America & Nuclear Weapons: An Introduction to the Issue of Nuclear Weapons in Latin America* (Oslo, Norway: International Law and Policy Institute, 2012), 13, http://nwp.ilpi.org/wp-content/uploads/2015/11/BP02-12_LatinAmerica.pdf.

both presidents committed to confine nuclear projects to civilian use.[12] Between 1986 and 1988, the Argentine and Brazilian presidents participated in multiple exchange visits to nuclear facilities to demonstrate their commitment to improving transparency.[13] Alfonsin and Sarney believed in the importance of the inclusion of nuclear cooperation with free-trade and signed the 1986 Argentine-Brazilian Integration and Economic Cooperation Program (PICE),[14] which led to the creation of MERCOSUR (South America's regional common market and free-trade area) in 1991.[15] In addition, both presidents increased state power over military-controlled nuclear industries. In Argentina, Alfonsin appointed a civilian to head the Argentine National Atomic Energy Commission (CNEA) in 1983 and decreased the budget for the nuclear program.[16] In September 1987, enriched uranium production was discovered in Brazil (to the surprise of the Brazilian public), prompting the government to investigate the military's nuclear program and demand for more openness and an inspection regime.[17]

President Carlos Menem (elected in Argentina in 1989) and President Fernando Collor de Mello (elected in Brazil in 1990) took a deep interest in further institutionalization of nuclear cooperation. In November 1990, both governments reached a joint agreement, which prohibited the construction of nuclear weapons and established the Joint Common System for Accounting and Control of Nuclear Materials (SCCC) and the Argentine-Brazilian Agency for Accounting and Control of Nuclear Materials (ABACC) in July 1991.[18] Under the SCCC, states were required to put on the SCCC record nuclear inventories and the location of nuclear-related facilities.[19] The ABACC, a bilateral verification agency with thirty inspectors from Brazil and thirty from Argentina, would implement the SCCC and carry out inspections.[20] To win the world's trust in the bilateral safeguards regime, the two Latin American governments and the ABACC brought the International Atomic Energy Agency (IAEA) into the safeguards process with the Quadripartite Agreement in December 1991.[21] This agreement permitted the IAEA to inspect the work of the ABACC, conduct independent verification, and apply the safeguards under Article 3 of the IAEA Statute.[22] This series of diplomatic events spanning over a decade represents the success of the Argentine-Brazilian initiatives. In 1994, both countries consented to be additionally bound by the Tlatelolco Treaty (South American Nuclear

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[12] Julio Carasales cited in Sharon Tanzer, "Rapporteur's Summary," in *Averting a Latin American Nuclear Arms Race: New Prospects and Challenges for Argentine-Brazil Nuclear Co-Operation*, ed. Paul L. Leventhal and Sharon Tanzer (New York: St. Martin's Press and Nuclear Control Institute, 1992), 10-11.

[13] John R. Redick, Julio C. Carasales and Paulo S. Wrobel, "Nuclear Rapprochement: Argentina, Brazil, and the Nonproliferation Regime." *Washington Quarterly* 18, no. 1 (1995): 112, doi: 10.1080/01636609509550135.

[14] Julio C. Carasales, "The Argentine-Brazilian Nuclear Rapprochement." *The Nonproliferation Review* (Spring-Summer 1995): 41, https://www.nonproliferation.org/wp-content/uploads/npr/carasa23.pdf. "Integration, Cooperation and Development Treaty Between Brazil and Argentina," *Argentine-Brazilian Agency for Accounting and Control of Nuclear Materials,* accessed October 25, 2016, http://www.abacc.org.br/?p=3419&lang=en.

[15] Established in 1991 by the Treaty of Asuncion of 1991, MERCOSUR is a regional common market and free-trade area in South America.

[16] Emmanuel Adler, "State Institutions, Ideology, and Autonomous Technological Development: Computers and Nuclear Energy in Argentina and Brazil," in *Essay on Mexico, Central and South America – Latin America's International Relations and Their Domestic Consequences*, ed. Jorge I. Dominguez (London: Garland Publishing Inc, 1994), 284.

[17] Paul Beaumont and Thomas Rubinsky, *Latin America & Nuclear Weapons: An Introduction to the Issue of Nuclear Weapons in Latin America* (Oslo, Norway: International Law and Policy Institute, 2012), 13, http://nwp.ilpi.org/wp-content/uploads/2015/11/BP02-12_LatinAmerica.pdf.

[18] Julio C. Carasales, "The Argentine-Brazilian Nuclear Rapprochement." *The Nonproliferation Review* (Spring-Summer 1995): 42, https://www.nonproliferation.org/wp-content/uploads/npr/carasa23.pdf.

[19] Arian L. Pregenzer, Michael Vannoni and Kent L. Biringer. "Cooperative Monitoring of Regional Security Agreements" (Nonproliferation and Arms Control Analysis Department, 1996), 15-16. http://www.sandia.gov/cooperative-monitoring-center/_assets/documents/sand96-1121.pdf.

[20] John R. Redick, Julio C. Carasales and Paulo S. Wrobel, "Nuclear Rapprochement: Argentina, Brazil, and the Nonproliferation Regime." *Washington Quarterly* 18, no. 1 (1995): 114, doi: 10.1080/01636609509550135.

[21] The IAEA is an international institution, headquartered in Vienna, responsible for carrying out inspections to ensure state compliance with obligations under the NPT and safeguards agreements, promoting peaceful uses of nuclear energy and research, and administering safeguards to prevent diversion of nuclear materials from civilian to military uses. In addition, the Agency is required to inform the UN Security Council of any violation of the NPT and safeguards agreements, so that the Council can consider taking necessary enforcement actions. At the time of this writing, the IAEA Director-General is Yukiya Amano from Japan.
John R. Redick, Julio C. Carasales and Paulo S. Wrobel, "Nuclear Rapprochement: Argentina, Brazil, and the Nonproliferation Regime." *Washington Quarterly* 18, no. 1 (1995): 114, doi: 10.1080/01636609509550135.

[22] Ibid.

Weapons-Free-Zone treaty).[23] Finally, in 1995 and 1998, respectively, President Menem of Argentina and Brazil's President Fernando Cardoso acceded to the NPT.[24]

FACTORS DRIVING ARGENTINA AND BRAZIL TOWARDS NUCLEAR COOPERATION

In large part, the move towards nuclear cooperation can be attributed to domestic political development— namely the advent of democratic governments, the control these governments asserted over nuclear policy, and the resulting cost-benefit calculations in favor of cooperative nuclear policy.[25] Etel Solingen argues that the "inward-looking regimes" of the pre-democratic era in Argentina and Brazil saw nuclear energy as an instrument to bolster nationalist image and power within their respective countries.[26] This type of regime resisted any economic-liberalization or external influence that could pose a threat to their power.[27] Despite the cost, developing a nuclear program served the militaristic agenda of such regimes.[28] However, the utility of a nuclear program changed with the elections of Presidents Alfonsin and Menem of Argentina and Presidents Sarney and Collor de Mello of Brazil. Each president's dependence on popular support and economic prosperity for political survival led him to liberalize economic and trade policies.[29] Solingen asserts that with the new "internationalizing coalitions" in office, expensive nuclear programs and competition were costly, and nonproliferation compliance was necessary in order to attract foreign investment, trade, and economic assistance from international institutions.[30] The intra-regional trade benefit derived from MERCOSUR, to which both states were committed, was another incentive for participating in bilateral nuclear control regime. In fact, the level of trade between the members of MERCOSUR tripled between 1991 and 1996.[31] This remarkable economic performance would have been difficult to achieve had Argentina and Brazil continued unabated in their nuclear competition.

Both governments owe their accomplishments to the bilateral confidence-building measures and the ABACC, but not the NPT. Because the two states viewed the instrument as discriminatory against non-nuclear weapons states and an obstacle to the development of peaceful nuclear energy, international efforts to pressure Brazil and Argentina to adhere to the NPT were bound to fail.[32] The

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[23] Paul Beaumont and Thomas Rubinsky, *Latin America & Nuclear Weapons: An Introduction to the Issue of Nuclear Weapons in Latin America* (Oslo, Norway: International Law and Policy Institute, 2012), 15, http://nwp.ilpi.org/wp-content/uploads/2015/11/BP02-12_LatinAmerica.pdf.

[24] Etel Solingen, "Hindsight and Foresight in South American Nonproliferation Trends in Argentina, Brazil, and Venezuela" in *Over the Horizon Proliferation Threats,* ed. James J. Wirtz and Peter R. Lavoy (Stanford, CA: Stanford University Press, 2012), 143.

[25] John Redick et al and Etel Solingen concur that changes in domestic politics in the 1980s and 1990s, and the new bilateral nuclear relationship that those changes helped bringing about, best account for the Argentine-Brazilian decision to accede to bilateral, regional and global nuclear nonproliferation regimes and an end to their costly nuclear competition. They argue that although the favorable geopolitical environment emerged near and after the end of the Cold War was certainly supportive of denuclearization, it is beyond doubt that the main driver for this positive change in Argentina's and Brazil's nuclear policies was domestic political development.
See John R. Redick, Julio C. Carasales and Paulo S. Wrobel, "Nuclear Rapprochement: Argentina, Brazil, and the Nonproliferation Regime." *Washington Quarterly* 18, no. 1 (1995): 118, doi: 10.1080/01636609509550135;
Etel Solingen, "Hindsight and Foresight in South American Nonproliferation Trends in Argentina, Brazil, and Venezuela" in *Over the Horizon Proliferation Threats*, ed. James J. Wirtz and Peter R. Lavoy (Stanford, CA: Stanford University Press, 2012), 144.

[26] Etel Solingen, "Hindsight and Foresight in South American Nonproliferation Trends in Argentina, Brazil, and Venezuela" in *Over the Horizon Proliferation Threats,* ed. James J. Wirtz and Peter R. Lavoy (Stanford, CA: Stanford University Press, 2012), 137-141.

[27] Etel Solingen, *Nuclear Logics: Contrasting Paths In East Asia and the Middle East* (Princeton, NJ: Princeton University Press, 2007), 42.

[28] Etel Solingen, "Hindsight and Foresight in South American Nonproliferation Trends in Argentina, Brazil, and Venezuela" in *Over the Horizon Proliferation Threats,* ed. James J. Wirtz and Peter R. Lavoy (Stanford, CA: Stanford University Press, 2012), 137-138.

[29] Ibid, 137, 142-144.

[30] Ibid.

[31] Carlos Feu Alvim, "The Conference on Nuclear Confidence Building in the Korean Peninsular: Potential Application of the ABACC to Other Regions," *Institute for Science and International Security*, accessed November 16, 2013, http://isis-online.org/uploads/conferences/documents/feu.pdf.

[32] Sharon Tanzer, "Rapporteur's Summary," in *Averting a Latin American Nuclear Arms Race: New Prospects and Challenges for Argentine-Brazil Nuclear Co-Operation*, ed. Paul L. Leventhal and Sharon Tanzer (New York: St. Martin's Press and Nuclear Control Institute, 1992), 44. See "Panel Six – Would A Bilateral Arrangement Between Argentina and Brazil Serve as a Useful Model For Other Regions? What Would Be the Implications for IAEA Safeguards and the Tlatelolco and NPT Treaties?"

series of bilateral measures gained momentum during the 1980s and culminated in the creation of the ABACC. This agreement proved to be a better alternative because each country wanted to assure the world of the peaceful nature of its nuclear program. Another remarkable feature of the ABACC system was the inclusion of nuclear inspectors from both Argentina and Brazil. Because nuclear arms control and verification are of serious concern to national security, countries undergoing inspections typically demand a certain degree of involvement in the process.[33] This was an inherent advantage of the bilateral nonproliferation regime because it was tailored to Argentina's and Brazil's preference for joint inspection, an advantage that international nonproliferation regimes (such as the NPT) had not previously been able to offer.

THE INDIA-PAKISTANI NUCLEAR CONFLICT: HISTORY, NUCLEAR DOCTRINE AND NONPROLIFERATION POLICY

Unlike South America, where the nuclear rivalry between Argentina and Brazil did not cross into a weapons threshold, the bilateral nuclear competition in South Asia is more severe because it involves two nuclear-armed states, India and Pakistan. The persistence of armed conflict in, and the territorial dispute over, the region of Jammu and Kashmir makes nuclear proliferation in South Asia a serious cause for concern for the international community, and provides a *raison d'être* for India's and Pakistan's nuclear weapons. India and Pakistan are able to operate a full nuclear fuel cycle.[34] It is estimated that the number of warheads in India's possession ranges from 90 to 110, while the quantity of Pakistan's warheads is between 100 and 120.[35]

THE DEVELOPMENT OF THE INDIAN-PAKISTANI NUCLEAR ARMS RACE

Soon after gaining independence from Britain, India started developing a peaceful nuclear energy program. However, conflicts between India and Pakistan-backed guerilla forces to gain sovereignty over Kashmir in 1947, several border clashes with China in the 1960s, and domestic political support for nuclear deterrence stimulated India's interest in conducting a nuclear explosion. In an effort to demonstrate its nuclear capability, India exploded an atomic device under the guise of a peaceful nuclear explosion in May 1974.[36] Fearing India's conventional forces' superiority and nuclear advancement, Pakistan reciprocated by accelerating its own nuclear weapons program, to the point of enduring economic hardship.[37] With China's assistance and cooperation from Abdul Qadeer Khan, Pakistan managed to acquire the means to produce highly enriched uranium in order to weaponize its nuclear program.[38]

1998 marked a milestone in South Asia's proliferation history. In May, India tested five nuclear weapons and, to demonstrate its deterrence capability, Pakistan responded by detonating six nuclear bombs.[39] Since then, both governments have adopted "credible minimum deterrence" and have

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[33] Arian L. Pregenzer, Michael Vannoni and Kent L. Biringer. "Cooperative Monitoring of Regional Security Agreements" (Nonproliferation and Arms Control Analysis Department, 1996), 21 http://www.sandia.gov/cooperative-monitoring-center/_assets/documents/sand96-1121.pdf.

[34] "Country Profiles – India – Nuclear," *Nuclear Threat Initiative*, accessed May 15, 2016, http://www.nti.org/learn/countries/india/nuclear/. "Country Profiles – Pakistan – Nuclear," *Nuclear Threat Initiative*, accessed May 15, 2016, http://www.nti.org/learn/countries/pakistan/nuclear/.

[35] *SIPRI Yearbook 2015: Armaments, Disarmament and International Security – Summary* (Solna, Sweden: Stockholm International Peace Research Institute, 2015), 18, accessed October 17, 2016, https://www.sipri.org/sites/default/files/2016-03/YB-15-Summary-EN.pdf.

[36] "Country Profiles – India – Nuclear," *Nuclear Threat Initiative*, accessed May 15, 2016, http://www.nti.org/learn/countries/india/nuclear/.

[37] In 1965, Pakistani President Zulfika Ali Bhutto stated: "if India builds the bomb, we will eat grass or leaves, even go hungry, but we will get one of our own."
"Country Profiles – Pakistan – Nuclear," *Nuclear Threat Initiative*, accessed May 15, 2016, http://www.nti.org/learn/countries/pakistan/nuclear/.

[38] Abdul Qadeer Khan's network specialized in illicit nuclear trade and helped countries evade Western restrictions on the export of nuclear technology.
"Country Profiles – Pakistan – Nuclear," *Nuclear Threat Initiative*, accessed May 15, 2016, http://www.nti.org/learn/countries/pakistan/nuclear/.

[39] Ibid.

declared that their nuclear doctrines are defensive in nature.[40] India adopted a "no-first-use" policy in 1999.[41] Pakistan has maintained that nuclear weapons will only be used in the event of an invasion of Pakistani territory or a nuclear attack by another state.[42]

On nonproliferation policy, India and Pakistan have chosen to remain outside the NPT and have refused to sign the Comprehensive Test Ban Treaty (CTBT).[43] Both states oppose international pressure to join the NPT, arguing that it is discriminatory. While the treaty permits the five recognized nuclear weapons states (United States, United Kingdom, France, China and Russia) to possess nuclear arsenals, it deprives other states of the same privilege.[44] India holds the position that global nuclear disarmament is a precondition for signing the NPT. India's rival, Pakistan argues that nuclear disarmament will only be realized if India agrees to eliminate its nuclear weapons.

THE APPLICATION OF THE ARGENTINE-BRAZILIAN NUCLEAR COOPERATION MODEL TO THE NUCLEAR ARMS RACE IN SOUTH ASIA

Political dynamics and circumstances in South America are vastly different than those on the Indian subcontinent. Given the vastly different circumstances in South Asia, nuclear cooperation of the same scale of that achieved between Argentina and Brazil is unlikely in the region. Any effort to apply the lessons of bilateral nuclear cooperation in Latin America must acknowledge these differences. However, a similar bilateral cooperation framework may serve to alleviate tensions between India and Pakistan.

Volatile geopolitical environment in South Asia – South Asia is situated between a volatile Middle East and China. The United States and China are also competing for political influence in the region. The United States, in an attempt to mitigate China's power in the region, agreed to aid India's civil nuclear program in 2005.[45] The decision caused uneasiness among Pakistani officials, who, in turn, sought nuclear assistance from China. In addition, an increasingly assertive Chinese foreign policy reinforces India and Pakistan's arguments for strengthening nuclear deterrence.

Unlike India and Pakistan, Argentina and Brazil have not been in conflict for almost two centuries. India and Pakistan still have outstanding tensions, particularly with regards to the territorial dispute over Jammu and Kashmir. This region is divided into two parts by the Line of Control— one half managed by India and the other by Pakistan. Ethno-religious differences are also absent in Argentina and Brazil but present in India and Pakistan. It is precisely these ethno-religious differences that continue to cause turmoil in the Indian-Pakistani relationship over the political status of Kashmir, to the detriment of political and nuclear reconciliation.

Domestic ruling coalitions favoring nuclear weapons – While the advent of democratic regimes (taking advantage of a robust international economy) had a positive impact on nuclear nonproliferation in Argentina and Brazil, the current liberal-democratic regime in India continues to benefit from nuclear weapons development, specifically because of domestic support for nuclear deterrence. This support was demonstrated by the May 1998 nuclear detonations, which, Kanti Bajpai

[40] "Country Profiles – India – Nuclear," *Nuclear Threat Initiative*, accessed May 15, 2016, http://www.nti.org/learn/countries/india/nuclear/. Michael Krepon, "Pakistan's Nuclear Strategy and Deterrence Stability," in *Deterrence Stability and Escalation Control in South Asia,* ed. Michael Krepon and Julia Thompson (Washington, DC: Henry L. Stimson Center, 2013), 44, http://www.stimson.org/sites/default/files/file-attachments/Deterrence_Stability_Dec_2013_web_1.pdf.

[41] "Country Profiles – India – Nuclear," *Nuclear Threat Initiative*, accessed May 15, 2016, http://www.nti.org/learn/countries/india/nuclear/.

[42] "Country Profiles – Pakistan – Nuclear," *Nuclear Threat Initiative*, accessed May 15, 2016, http://www.nti.org/learn/countries/pakistan/nuclear/.

[43] The Comprehensive Test Ban Treaty (CTBT) prohibits states from testing every form of nuclear explosion. Despite having been opened for signature since September 1996 the treaty has not entered into force, as ratifications by all of the states (including India and Pakistan) noted in Annex 2 of the treaty are required.

[44] The United States, the United Kingdom, France, China and Russia (five permanent members of the UN Security Council) are parties to the NPT and are recognized, under that Treaty, as nuclear weapons states. See Article IX(iii) of the NPT.

[45] "Country Profiles – Pakistan – Nuclear," *Nuclear Threat Initiative*, accessed May 15, 2016, http://www.nti.org/learn/countries/pakistan/nuclear/.

asserts, succeeded in pulling the government of Prime Minister Atal Vajpayee out of political crisis.[46] In Pakistan, the civil-military balance weighs in favor of the army when it comes to control over nuclear weapons.[47] In Pakistan, nuclear weapons are central to the country's defense strategy. The Pakistani army has also placed an unusual amount of importance on its nuclear arsenal, according to Scott D. Sagan, "[s]enior officials sometimes treat nuclear weapons… as valued objects to be protected themselves rather than the deterrent that protects the Pakistani people."[48]

Although this study acknowledges the difficulty of achieving the same level of nuclear cooperation in India and Pakistan as has already been accomplished in South America, many useful lessons can be drawn from South America's success and applied to the conflict in South Asia in order to relieve nuclear tensions. The following are the factors that contributed to nuclear cooperation in Latin America and the potential ways international policymakers can adapt these factors to build similar conditions in a nuclear South Asia:

1) Bilateral arms control and verification regime as an alternative to the NPT option – The success of the ABACC has drawn attention to the advantages of bilateral confidence-building measures for nonproliferation efforts. The most important measure of the potential success of a bilateral nuclear cooperation mechanism is the ability to accommodate both parties' preferences and generate mutual trust. Argentina and Brazil in the 1980s and the early 1990s shared India and Pakistan's current concerns regarding the NPT, particularly the concerns over discrimination and inadequacy. Such a concern drove the two Latin American countries to look elsewhere for a solution. Both Argentina and Brazil intended, from the start, that confidence-building should be the primary goal of bilateral nuclear cooperation, in contrast to the supposed discrimination that some non-nuclear weapons states see inherent to the NPT.[49] In fact, the ABACC was intentionally created to assure one another (and the world more broadly) that their respective nuclear energy programs were intended for peaceful purposes. India and Pakistan could benefit from pursuing the same path.

An exchange visit by two heads of state to nuclear facilities, like that of similar exchange visits carried out by Argentina and Brazil in the 1980s, could alleviate mistrust and demonstrate a bilateral commitment to transparency. Regular exchange visits by the Indian and Pakistani leadership to civil and military nuclear installations could prove to be a positive step towards nuclear arms control in the region. India and Pakistan have entered into a few nuclear-related confidence-building measures. One such agreement prevents India and Pakistan from attacking each other's nuclear sites; another agreement makes information regarding nuclear installations available to both parties.[50] While these represent progress, more could be done. No high-level exchange visits have ever taken place, for example. Ultimately, though, the long-term goal should be the creation of a bilateral inspection agency.

When regional circumstances allow for a more concrete nonproliferation program, a bilateral nuclear inspection agency for India and Pakistan should be considered and modeled after the ABACC. There is no guarantee that a bilateral agency will lead to the eventual elimination of nuclear weapons in South Asia. Nonetheless, subject to Indian-Pakistani approval, the agency could *inter alia* limit the number of nuclear warheads, prevent the creation of further fissile materials for weapons production,

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[46] Kanti Bajpai, "The BJP and the Bomb," in *Inside Nuclear South Asia*, ed. Scott D. Sagan (Stanford, CA: Stanford Security Studies, 2009), 57.
[47] Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: An Enduring Debate,* 3rd ed. (New York, NY: W. W. Norton & Company, 2013), 138-140.
[48] Scott D. Sagan, "The Evolution of Pakistani and Indian Nuclear Doctrine," in *Inside Nuclear South Asia*, ed. Scott D. Sagan (Stanford, CA: Stanford Security Studies, 2009), 237.
[49] Sharon Tanzer, "Rapporteur's Summary," in *Averting a Latin American Nuclear Arms Race: New Prospects and Challenges for Argentine-Brazil Nuclear Co-Operation*, ed. Paul L. Leventhal and Sharon Tanzer (New York: St. Martin's Press and Nuclear Control Institute, 1992), 39-46.
This is the view that the Brazilian and Argentine representatives and participants expressed during the Latin American Nuclear Cooperation Conference of October 1989 – See "Panel Six - Would A Bilateral Arrangement Between Argentina and Brazil Serve as a Useful Model For Other Regions? What Would Be the Implications for IAEA Safeguards and the Tlatelolco and NPT Treaties?"
[50] For a comprehensive list of CBMs in South Asia see Umbreen Javaid, "Confidence Building Measures in Nuclear South Asia: Limitations and Prospect," *A Research Journal of South Asian Studies* 25, no. 2 (July-December 2010): 348-350. http://pu.edu.pk/images/journal/csas/PDF/10-Dr.%20Umbreen%20Javaid.pdf.

and monitor compliance, effectively imposing a legal limit on the regional arms race. The agency could also impose safeguards on nuclear facilities and materials. The scope of its work and authority would be determined by the two parties, though it could be strengthened over time. Because the United States and China are heavily involved in the region, their participation is critical in any attempt to establish a nuclear arms control regime. China, for example, should consider including negative security assurance into an agreement establishing a bilateral agency to address India's fear of a Chinese nuclear attack.[51] India and Pakistan could also consider making their bilateral nuclear agreement's entry into force conditioned upon this criterion being met. Again this highlights the flexibility of a bilateral arms control system and the importance of tailoring it to suit the specific circumstances of the region.

Following the ABACC's joint inspection method, inspectors from both India and Pakistan should jointly conduct routine inspections under the auspices of the bilateral agency. Extending the scope of verification and safeguards to India's military nuclear facilities could help to alleviate international concern, as these military facilities are, at present, out of the scope of the IAEA.[52] India might be more receptive to this type of inspection than one carried out by international inspectors. Mutual inspection of India and Pakistan's nuclear programs would also encourage both countries to be more responsible actors, as they would have to adopt and adhere to the internationally-recognized standards.

2) Regional stability is an indispensable part of nuclear rapprochement – Even though the Argentine-Brazilian nonproliferation measures were caused in large part by changes in domestic politics, the increase in international stability associated with the end of the Cold War did provide an atmosphere conducive to nuclear cooperation as well.[53] This point is even more significant in South Asia, as the presence of unresolved militarized conflicts, notably the Kashmiri dispute, "is the main cause for failure of attempts to have normal relations between India and Pakistan."[54] Preventing future conflict over the disputed province and reaching a permanent political settlement would go a long way towards improving prospects for nuclear reconciliation and increasing bilateral dialogue on nuclear conflict resolution. Thus, solving the Kashmiri dispute should not be seen in isolation from an attempt to tackle South Asian nuclear proliferation.

The international community has a part to play in mitigating the volatile political environment in the region. U.S. nuclear assistance to India and the Sino-Pakistani nuclear counter-deal only encouraged the existing nuclear rivalry. This is hardly a recipe for constraining proliferation. U.S. and Chinese cooperation with India and Pakistan, respectively, give both superpowers diplomatic leverage over their allies. This influence should be used to force both South Asian countries to normalize their relations and roll back the present nuclear arms race.

3) The importance of having civilian control over a nuclear weapons establishment – Eliminating mutual distrust would have been difficult to achieve in Argentina and Brazil without each country exerting democratic control over the military-controlled nuclear programs. It was the civilian leaders, not the armed forces, who wanted to elevate their countries to the rank of responsible nuclear energy-producing countries. This lesson is more applicable in Pakistan than India, because in the former, the military exercises the sole authority over the use of nuclear weapons. While the Pakistani military will not likely allow any political reform that would weaken its control over the nuclear forces,

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[51] A "negative security assurance" is a formal agreement made by a nuclear-weapons state to not launch a nuclear attack against a non-nuclear weapons state.

[52] "Country Profiles – India – Overview," *Nuclear Threat Initiative*, accessed May 15, 2016, http://www.nti.org/learn/countries/india/. Under the June 2014 India-IAEA safeguards agreement, the IAEA can only visit and inspect India's civilian nuclear facilities.

[53] John R. Redick, Julio C. Carasales and Paulo S. Wrobel, "Nuclear Rapprochement: Argentina, Brazil, and the Nonproliferation Regime." *Washington Quarterly* 18, no. 1 (1995): 118, doi: 10.1080/01636609509550135.

[54] Umbreen Javaid, "Confidence Building Measures in Nuclear South Asia: Limitations and Prospect," *A Research Journal of South Asian Studies* 25, no. 2 (July-December 2010): 355, http://pu.edu.pk/images/journal/csas/PDF/10-Dr.%20Umbreen%20Javaid.pdf.

Scott D. Sagan suggests that introducing civilian nuclear technicians and personnel into the military establishment may help increase the voice of the civilian government.[55] Sagan also points out that organizing public, inclusive debates on the contribution of nuclear arsenals to Pakistan's national security could be another way for civilian leadership to influence the military's nuclear policy.[56] In short, increasing civilian control will likely encourage Pakistan to be more peaceable in its relations with India.

4) Trade and Economic Incentives – Just as MERCOSUR strengthened Argentine and Brazilian interest in nuclear cooperation by increasing interdependence and the cost of nuclear competition, improving trade between India and Pakistan would likely do the same. A nuclear cooperation project for India and Pakistan ought to integrate trade cooperation so as to raise incentive for participation. The international community should take advantage of the fact that there is enormous room for improvement in Indian-Pakistani bilateral trade. Taneja et al wrote that "[t]he potential bilateral trade between India and Pakistan has been estimated to be around US$20 billion, compared to the current trade volume of USD $2.6 billion."[57] This large gap reveals that there is ample room to remove trade barriers. What's more, the trade along Jammu and Kashmir's Line of Control remains highly restrictive. In recognizing the huge benefit of free trade across the Line of Control, Sajad Padder argues that liberalization would enable the local economy to flourish and could lead to India-Pakistan reconciliation over this disputed territory.[58] A peaceful Kashmir could, in turn, increase India and Pakistan's willingness to resolve their nuclear dispute. If bilateral trade had been operating at full potential, previous nuclear and military escalations would likely have been too costly for both countries.

CONCLUSION

The end of suspicious nuclear rivalry between Argentina and Brazil and their full participation in bilateral, regional and global nonproliferation regimes represents one of the most significant contributions to the international community's nuclear disarmament effort. After two and a half decades of competition to attain nuclear superiority, the two governments, through their unprecedented bilateral initiatives, managed to gradually place their nuclear relationship on a cooperative footing. This cooperation climaxed with the two states' accession to the NPT in the mid- to late 1990s. The bilateral nuclear inspection agency, the advent of civilian government and civilian control over nuclear policy, the desire to secure economic benefits of denuclearization, and the formation of a regional trade bloc were largely responsible for the positive change. The Argentine-Brazilian nuclear cooperation model underlines the fact that alternative paths to the NPT can also lead to an outcome supportive of nonproliferation.

This essay advocates using the lessons learned from Latin America to create policy recommendations for addressing South Asia's nuclear arms race. Because of the differences in historical and political circumstances between the two regions, this research acknowledges that the factors that led to positive engagement in nonproliferation in one region would yield a much less effective result in the other. Nevertheless, the policy-recommendations put forward here could be invaluable for reducing nuclear conflict in South Asia. Of particular interest to policymakers is the role of bilateral confidence-building measures, such as the ABACC, which has taught the world that the

[55] Scott D. Sagan, "The Evolution of Pakistani and Indian Nuclear Doctrine," in *Inside Nuclear South Asia*, ed. Scott D. Sagan (Stanford, CA: Stanford Security Studies, 2009), 254.
[56] Ibid.
[57] Nisha Taneja, Sanjib Pohit and Shravani Prakash, "Chapter 12 – The Way Forward," in *India-Pakistan Trade: Strengthening Economic Relations,* ed. Nisha Taneja and Sanjib Pohit (India: Springer India, 2015), 337.
[58] Sajad Padder, "Cross-LoC Trade: Peace and Process," *Social Sciences Review of Pakistan* 1, no. 2 (Winter 2014): 1 and 13.

present NPT is not a panacea. Establishing a similar bilateral nuclear agreement that addresses the concerns of both India and Pakistan could be an important step towards reducing the regional arms race and improving transparency. Furthermore, it would provide an alternative to the NPT, which both states currently oppose. The fact that the ABACC is the only institution of its kind in the world reveals that the international community has yet to explore this option in other proliferation cases.[59] Other policy-recommendations that flow from South America's accomplishment include: improving regional stability and Indian-Pakistani relations, increasing civilian input in Pakistan's national security policy-making, and bilateral and regional trade liberalization. Establishing these conditions could make India and Pakistan, especially the pro-nuclear factions, more amenable to reconciliatory nuclear policies.

Reducing and ultimately ending the Indian subcontinent's nuclear rivalry is not only in the interest of India and Pakistan, but also of key stakeholders in the region, namely the United States and China. A South Asia free of nuclear arsenals would free up each of these countries' energies and resources to focus on other matters vital to their national security, such as economic growth and combating terrorism on the Indian-subcontinent. Stakes in the Indian-Pakistani nuclear conflict are too high for the world to ignore. This warrants using a non-traditional method for dealing with the crisis. The Argentine-Brazilian nuclear cooperation represents a new approach, which deserves serious consideration. Only through implementation, in good faith, by all involved parties, can the new approach's value be realized.

[59] "The ABACC," *Argentine-Brazilian Agency for Accounting and Control of Nuclear Materials*, accessed March 8, 2016, http://www.abacc.org.br/?page_id=95&lang=en.