

2018

Explaining Nuclear Rollback: Examining the Cessation of Nuclear Weaponization in Argentina and Brazil from 1964 - 1994

Billy Michael Douglas
Wright State University

Follow this and additional works at: https://corescholar.libraries.wright.edu/etd_all



Part of the [International Relations Commons](#)

Repository Citation

Douglas, Billy Michael, "Explaining Nuclear Rollback: Examining the Cessation of Nuclear Weaponization in Argentina and Brazil from 1964 - 1994" (2018). *Browse all Theses and Dissertations*. 1949.
https://corescholar.libraries.wright.edu/etd_all/1949

This Thesis is brought to you for free and open access by the Theses and Dissertations at CORE Scholar. It has been accepted for inclusion in Browse all Theses and Dissertations by an authorized administrator of CORE Scholar. For more information, please contact corescholar@www.libraries.wright.edu, library-corescholar@wright.edu.

**EXPLAINING NUCLEAR ROLLBACK: EXAMINING THE CESSATION
OF NUCLEAR WEAPONIZATION IN ARGENTINA AND BRAZIL FROM
1964 – 1994**

A thesis submitted in partial
fulfillment of the
requirements for the degree
of Master of Arts

By

BILLY MICHAEL DOUGLAS
B.A. Political Science,
Lee University, 2005

2018
Wright State University

WRIGHT STATE UNIVERSITY

GRADUATE SCHOOL

April 26, 2018

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY BILLY MICHAEL DOUGLAS ENTITLED EXPLAINING NUCLEAR ROLLBACK: EXAMINING THE CESSATION OF NUCLEAR WEAPONIZATION IN ARGENTINA AND BRAZIL FROM 1964 – 1994 BE ACCEPTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF Master of Arts.

Liam Anderson, Ph.D.
Thesis Director

Laura M. Luehrmann, Ph.D.
Director, Master of Arts
Program in International and
Comparative Politics

Committee on Final Examination:

Liam Anderson, Ph.D.
School of Public and International Affairs

Carlos Costa, Ph.D.
School of Public and International Affairs

Vaughn Shannon, Ph.D.
School of Public and International Affairs

Barry Milligan, Ph.D.
Interim Dean of the Graduate School

ABSTRACT

Douglas Billy Michael. M.A., Department of Political Science, Wright State University, 2018. "Explaining Nuclear Rollback: Examining the Cessation of Nuclear Weaponization in Argentina and Brazil from 1964 – 1994."

Seventy years after the first use of nuclear weapons in World War II, the proliferation of these apocalyptic munitions remains a key policy issue on the international stage. The available literature on nuclear proliferation suggests a strong correlation between the threat of rival a state seeking nuclear weapons and a state's own decision to pursue its own nuclear weapons. Regional rivals Argentina and Brazil both initiated nuclear weapons programs and were also developing nuclear delivery systems; however, these countries were able to step out of this dyadic proliferation spiral and renounced their nuclear weapons programs. Often assumed a success of the burgeoning nonproliferation regime embodied by the Nuclear Non-Proliferation Treaty, some scholars view Argentina and Brazil as boldly resistant to the aggressive posture of the extra-regional regime.

Which International Relations (IR) theory is best suited to explain the proliferation outcomes of Argentina and Brazil? More specifically, were Argentina and Brazil's nuclear proliferation decisions driven more by security, norms, or domestic politics? A case study of this dyad will be done using process tracing to determine which theory best supports the nuclear re-posturing of each country.

TABLE OF CONTENTS

LIST OF TABLES.....	v
LIST OF ACRONYMS	vi
ACKNOWLEDGMENTS	vii
I. INTRODUCTION.....	1
Statement of the Problem	1
Trends in Nuclear Proliferation	2
The Research Question	4
Sub-questions.....	5
Methodology.....	6
II. LITERATURE REVIEW	12
Security	12
Norms	16
Domestic Politics.....	18
III. ARGENTINA AND BRAZIL.....	23
Security, Prestige, and Politics	23
Argentina: Nuclear Origins	23
Brazil: Nuclear Origins.....	28
Nuclear Weaponization Efforts	31
Regional Rivalry and Prestige	34
Treaties, Norms, and Lies.....	36
Treaty of Tlatelolco	36
Treaty on the Non-Proliferation of Nuclear Weapons (NPT), or “Disarmament of the Disarmed”	38
Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC).....	42
Democratic Transitions.....	43
IV. ANALYSIS OF THE EVIDENCE	52
Security	52
Norms	55
Domestic Politics.....	59
V. CONCLUSION.....	63
Trust, but Verify	65
Outlook	66
BIBLIOGRAPHY	67

LIST OF TABLES

Table	Page
Table 1: Research Design	9
Table 2: Research Design	52
Table 3: Summary Findings.....	62

LIST OF ACRONYMS

ABACC	Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials
CNEA	The National Commission for Atomic Energy
CNEN	National Nuclear Energy Commission
CNP	Conselho Nacional de Pesquisas
CTBT	Comprehensive Nuclear-Test-Ban Treaty
IAEA	International Atomic Energy Agency
NIC	national identity conceptions
NNPT	Nuclear Non-proliferation Treaty
NNWS	non-nuclear weapons states
NPT	Non-Proliferation Treaty
NSG	Nuclear Suppliers Group
NWFZ	Nuclear Weapon Free Zone
NWS	nuclear weapons states
PNE	peaceful nuclear explosions
SCCC	Common System of Accounting and Control
SCOT	social construction of technology
UNGA	United Nations General Assembly

ACKNOWLEDGMENTS

This thesis has been the most challenging and rewarding endeavor of my academic career. First, I would like to send a sincere thanks to my thesis committee members, particularly my thesis director, Dr. Liam Anderson, for the initial inspiration, years of enduring patience, and the encouragement required to complete this project. I would also like to recognize Dr. Laura Luehrmann, the director of the International and Comparative Politics program for her dedication and enthusiastic support for the ICP graduate students during the process. In addition, I would like to thank my wife, Amanda for being the inspiration to complete this task, as well as the supportive vehicle by which was able to accomplish this effort. Finally, I would like to thank my extended family, friends, and colleagues for all their support and encouragement throughout this long process.

I.

INTRODUCTION

Statement of the Problem

Since the advent of Nuclear Weapons technology during WWII, some states have chosen to acquire nuclear weapons, a subset of these states have eventually abandoned the pursuit, while other states have never chosen to initiate the quest.¹ The overriding motivations for states to acquire nuclear weapons include national security, a ticket to major power status, domestic pride, and genuine technological curiosity, and while nuclear weapons have perhaps not spread as quickly as some early predictions warned, current efforts to provide absolute proliferation control are proving unsuccessful (North Korea, India, Pakistan², and perhaps Iran). The non-development of nuclear weapons since their inception cannot be explained only by material rationalism. Moreover, Realist scholars have repeatedly argued that when one state in an adversarial or competitive dyad initiates the pursuit of nuclear weapons, the other dyadic state is compelled to do the same or risk loss of power relative to the initiating state. How then, can rival states overcome this threat and step out of this cycle once the process has begun?

¹ William C. Potter and Gaukhar Mukhatshanova, "Divining Nuclear Intentions: A Review Essay" *International Security*, Vol. 33, No. 1 (Summer 2008), pp. 139-169

²After withdrawing from the Non-Proliferation Treaty (NPT), North Korea publicly announced its intention, and subsequently tested a nuclear device in 2006. India and Pakistan have both developed nuclear weapons and have remained outside of the NPT.

Trends in Nuclear Proliferation

Nine states are commonly held to have nuclear weapons; however, more could acquire them with relative ease. Five of these states are officially recognized as possessing nuclear weapons by the 1968 nuclear Non-Proliferation Treaty (NPT): The United States, Russia, The United Kingdom, France and China;³ four additional states are known, or generally considered to possess nuclear weapons: Israel, India, Pakistan, and North Korea. For states believed to be in pursuit of nuclear weapons, their citizens often bear the burden on those efforts in taxes, sanctions, and sacrificed opportunities for economic and educational development. However, the leaders of those pursuant states might approach the nuclear calculus from a different perspective. Nuclear weapons are said to provide their possessor with a deterrent capability, which Schelling has defined as “persuading an enemy that, when he takes our response into account, he should prefer to behave in ways we prefer him to behave.”⁴ Many Realists have based proliferation examinations on the premise that the possession of nuclear weapons is the natural evolution of a state’s desire for security and balance in an anarchic system.⁵ Waltz has argued that nuclear weapons offer security through

³ The Treaty on the Non-Proliferation of Nuclear Weapons (NPT), signed in 1968, is the most widely adhered-to international security agreement. The “three pillars” of the NPT are nuclear disarmament, nonproliferation, and peaceful uses of nuclear energy. Article VI of the NPT commits states possessing nuclear weapons to negotiate in good faith toward halting the arms race and the complete elimination of nuclear weapons. The Treaty stipulates that non-nuclear-weapon states will not seek to acquire nuclear weapons and will accept International Atomic Energy Agency safeguards on their nuclear activities, while nuclear weapon states commit not to transfer nuclear weapons to other states. All states have a right to the peaceful use of nuclear energy and should assist one another in its development. The NPT provides for conferences of member states to review treaty implementation at five-year intervals. Initially of a 25-year duration, the NPT was extended indefinitely in 1995.

⁴ Thomas C. Schelling, “The Future of Arms Control” *Operations Research*, Vol. 9, No. 5 (September-October, 1961), p. 726

⁵ John J. Mearsheimer, “Back to the Future: Instability in Europe after the Cold War” *International Security*, Vol. 15, No. 1 (Summer, 1990), pp. 5-56;

deterrence at a significantly reduced cost over the continual modernization of a conventional military force. He claims that this cost reduction allows resources, which would have otherwise been directed to security concerns, to be redirected toward other state interests, such as strengthening the economy.⁶ The stabilizing power of nuclear weapons has lead realists to project a world full of nuclear weapons that, at least in some regard, has yet come to pass. Nevertheless, the sheer destructive power of nuclear weapons has created global concern over both horizontal proliferations, the number of countries (or actors) that have nuclear weapons, and vertical proliferation, the number of nuclear warheads each state possesses.⁷ The result has been states that possess nuclear weapons do not want non-nuclear states to pursue the capability, nor do non-nuclear states want nuclear states to grow their arsenals. This research focuses on the issue of horizontal proliferation.

Realism and neo-realism have made great strides in explaining the role of external security threats as a primary driver of proliferation,⁸ but a great deal of this analysis has focused only on states that have developed nuclear capabilities. The discipline has failed to give proper attention to states that have either abandoned, or never initiated the development of nuclear weapons. Cases with variance to the

⁶ Kenneth N. Waltz, "The Emerging Structure of International Politics" *International Security*, Vol. 18, No. 2 (Autumn 1993), pp. 44-79; Scott D. Sagan and Kenneth N. Waltz's *The Spread of Nuclear Weapons: A Debate* (New York: W.W. Norton, 1995)

⁷Richard K. Betts, "Paranoids, Pygmies, Pariahs and Nonproliferation" *Foreign Policy*, Vol. 26, No. 4 (Spring 1977) pp. 157-183.

⁸ Kenneth N. Waltz, "The Emerging Structure of International Politics" *International Security*, Vol. 18, No. 2 (Autumn 1993), pp. 44-79; Scott D. Sagan and Kenneth N. Waltz's *The Spread of Nuclear Weapons : A Debate* (New York: W.W. Norton, 1995); John J. Mearsheimer, "Back to the Future: Instability in Europe after the Cold War" *International Security*, Vol. 15, No. 1 (Summer, 1990), pp. 5-56; Daniel Deudney, "Dividing Realism: Structural Realism and Security Materialism on Nuclear Security and Proliferation." *Security Studies* Volume 2 (Summer 1993), 7-36.

dependent variable will identify the antecedent conditions required for the successful operation of prevailing proliferation theories.

Why has the nonproliferation regime failed to thwart nuclear weapons proliferation in some states? Are the claimed nonproliferation successes of the regime valid? Realists have provided a plausible game-theoretic framework through which we may evaluate dyadic proliferation episodes yet the anomalous cases of abandoned proliferation are often under analyzed. Waltz⁹ has demonstrated a strong correlation between interstate rivalry and the fulfillment of a nuclear arms race, however, not all states that have breached the economic and technological thresholds have chosen to produce nuclear weapons. Moreover, some rival states have mastered nuclear technology and been to the brink of weaponization, only to step back down.

The Research Question

Why have rival states with an adequate economic and technological nuclear threshold as well as a demonstrated desire to attain nuclear weapons mutually abandoned their nuclear pursuits? *Which International Relations (IR) theory is best suited to explain the proliferation outcomes of Argentina and Brazil? More specifically, were Argentina and Brazil's nuclear proliferation decisions driven more by security, norms, or domestic politics??*

⁹ Kenneth N. Waltz, "The Spread of Nuclear Weapons: More May Be Better" *Adelphi Papers* No 171 (1981) and Kenneth N. Waltz, "Nuclear Myths and Political Realities," *American Political Science Review* Vol 84, No. 3 (Fall 1990) pp. 731-745.

Sub-questions

1. Can proliferation be avoided once a state has decided to initiate a nuclear weapons development program?
2. How can the nonproliferation regime effectively deter states who have initiated nuclear weapons programs?
3. Is nuclear non-proliferation a successful stabilizing agent for regional adversaries?

The above research questions will be examined in one case of dyadic proliferation: Argentina and Brazil. This study chose Argentina and Brazil to determine which international relations theory best supports the eventual nuclear re-posturing of each country. While most of the literature on case selection has emphasized the demand for unbiased, random selection, a clear exception has been required for research aimed at identifying the conditions required for theories to operate successfully. Steven van Evera has suggested that using Mill's method of difference¹⁰, selecting new cases similar to previously tested cases in every way except the value on the dependent variable, is an appropriate methodology for inferring antecedent conditions.¹¹ Geddes echoes this claim in that when required, case selection based on the dependent variables can "bring to light anomalies that current theories cannot accommodate."¹² Brazil and Argentina meet the criteria for case selection in that during the time the nuclear policies were being established, the states were rivals

¹⁰ John Stuart Mill, *A System of Logic*, (Honolulu: University Press of the Pacific, 2002)

¹¹ Steven van Evera *Guide to Methods for Student of Political Science* (Ithaca: Cornell University Press, 1997) p. 71

¹² Barbara Geddes, "How the Cases You Choose Affect the Answers You Get: Selection Bias in Comparative Politics." *Political Analysis* 2 (1990), pp.131-150

in terms of regional influence and military power, which was further complicated by Argentina's disputes with Great Britain over control of the Falkland Islands. The regional rivalry between Argentina and Brazil also follows Waltz's prediction that "new nuclear states may come in hostile pairs and share a common boarder,"¹³ as was the case with India and Pakistan.

Methodology

For the purpose of this study, I assume that Argentine and Brazilian nuclear policies were shaped primarily by either security concerns, adherence to international norms, or domestic political pressure. For the years covered in this study (1964 – 1994) regional rivalry drove security concerns, the international community gave birth to the non-proliferation regime, and democratic transitions in both states began to consolidate.

For the purpose of this study, I define nuclear proliferation as the possession of a weaponized nuclear agent as demonstrated through the testing of such a device, and/or as recognized by international consensus.¹⁴ The case study method is appropriate for this research because it permits an in-depth study of Argentine and Brazilian nuclear proliferation decisions which allows for utilization of process-tracing to explore possible intervening variables which may affect any correlation between independent and dependent variables. Case studies, such as those in this study, are

¹³ Kenneth N. Waltz (and Scott D. Sagan) *The Spread of Nuclear Weapons: A Debate* (New York: W. W. Norton, 1995) p. 11

¹⁴ Israel, while never having officially declared itself as such, is an example of the latter.

appropriate venues for process tracing interacting variables which are not independent of each other.¹⁵ The independent variable will be the extent to which leading proliferation theories impact proliferation decisions. The dependent variables in this case will be the resulting non-proliferation of Argentina and Brazil. This study will cover the time period from 1964 to 1994. 1964 was chosen because it is the first indication that the Brazilian Military was interested in pursuing a weapons grade nuclear capability.¹⁶ The study ends in 1994 upon both parties signing the Treaty of Tlatelolco, which created a nuclear-weapon-free zone in Latin America and the Caribbean.¹⁷

I hypothesize that one of these three lenses, security, norms, or domestic politics best explains the resulting non-proliferation of this rivalrous dyad. Content analysis of the evidence will allow for process tracing, providing insight into how restrictive variables, or combinations thereof, evolved over the course of the states' proliferation episode, or more appropriately, non-proliferation episode.

To move beyond the realists' emphasis on external security threats, I will examine the proliferation decisions of Argentina and Brazil to uncover the conditions required for each state to abandon their nuclear pursuits and overcome the external security threat and abandon the potential regional arms race. Realists' game theoretic

¹⁵ George, Alexander and Bennett, Andrew. *Case Studies and Theory Development in the Social Sciences*. (Cambridge: MIT Press, 2005) p 212.

¹⁶ "Airgram from the Embassy of the US in Rio De Janeiro to the Department of State, 'Non-Peaceful Uses of Atomic Energy by Brazil,'" March 28, 1964, *History and Public Policy Program Digital Archive*, RG 59, Subject-Numeric Files, 1964-1966. Box 948, FSE 13 Brazil
<http://digitalarchive.wilsoncenter.org/document/145010>

¹⁷ On January 18, 1994, Argentina and Chile, and on May 30, 1994, Brazil, brought into force the 1967 Treaty for the Prohibition of Nuclear Weapons in Latin America (Tlatelolco Treaty) for their national territories. <https://www.iaea.org/publications/documents/treaties/treaty-prohibition-nuclear-weapons-latin-america-tlatelolco-treaty>

treatment would suggest that once initiated, Brazil and Argentina would not have been able to pull themselves out of the dyadic proliferation spiral. While realists pose that “Man’s capability for self-destruction cannot be eradicated,” this study will provide a better understanding of what Thomas Schelling further claimed were the necessary “incentives that minimize recourse to violence.”¹⁸ I assess an overemphasis on realists’ security drivers has caused the debate on nuclear proliferation to remain underdeveloped despite exhaustive efforts at its resolution. By analyzing the paradigm that framed the proliferation decisions of states that abandoned nuclear weapons pursuits, the literature can move beyond failed predictions of the past.

Non-proliferation for realists is generally assumed the result of extended deterrence, where the weaker non-proliferating state would seek to align itself with a nuclear ally. If *security* drivers shaped proliferation decisions, the evidence would be ripe with references to the international security environment, threats from nuclear weapons states, threats from the opposite dyadic player, a change in the external threat environment, or efforts to secure defense agreements that could provide a nuclear umbrella from an ally.¹⁹ If the existing or emerging *norms* shaped these decisions, the evidence should indicate sensitivity to the Nuclear Non-Proliferation Treaty and resulting international nonproliferation regime, behavioral norms against the use and subsequent development of nuclear weapons, and an overriding respect for

¹⁸ Thomas C. Schelling, “The Future of Arms Control” *Operations Research*, Vol. 9, No. 5 (September-October, 1961), p. 731

¹⁹ Kenneth N. Waltz, “The Spread of Nuclear Weapons: More May Be Better” *Adelphi Papers* No 171 (1981) and Kenneth N. Waltz, “Nuclear Myths and Political Realities,” *American Political Science Review* Vol 84, No. 3 (Fall 1990) pp. 731-745; Steven Van Evera, “Primed for Peace: Europe After the Cold War” *International Security*, Vol. 15, No. 3 (1990/1991) pp. 7-57; and John J. Mearsheimer, “Here We Go Again.” *The New York Times*, May 17, 1998

international partners and international law.²⁰ If domestic politics was the primary driver, the evidence should indicate a sensitivity to the political and economic costs of a weapons program, democratic consolidation, or perhaps a change in threat perception at the individual level of the state’s leadership.²¹

Theoretical Explanations of Argentine and Brazilian Nuclear Rapprochement				
		<i>Security</i>	<i>Norms</i>	<i>Domestic Politics</i>
<i>Presence of/Concern for</i>	International security environment	Adherence/acceptance of NNPT	Economic cost/benefit	
	Under nuclear threat	Behavioral norms	Political cost/benefit	
	Under rival threat	Nuclear non-use	Democratic consolidation	
	Threat Environment shift	Respect for international partners/law	Domestic organizations (Nuclear Energy, Military, Trade)	
	Nuclear Umbrella	Fear of opposition/loss of prestige	Domestic players (Politicians, Public)	

Table 1. Research Design

I will test each case for the way manner in which each of the aforementioned theoretical independent variables were perceived by the policy makers through an archival review of literature related to the proliferation policies of each state. The available literature consists of treaties, agreements, speeches, statements, and other

²⁰ Robert O. Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy*, (Princeton: Princeton University Press, 1984); Nina Tannenwald, “Stigmatizing the Bomb: Origins of the Nuclear Taboo” *International Security* Vol. 29, No. 3 (2005) pp. 5-49; Peter van Ham *Nuclear Managing Non-Proliferation Regimes in the 1990s: Power, Politics, and Policies* (New York: Royal Institute of International Affairs, 1994) p. 73; and Jacques E. C. Hymans, 2006. *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy*. (Cambridge: Cambridge University Press, 2006)

²¹ Scott D. Sagan, “Why Do States Build Nuclear Weapons: Three Models in Search of a Bomb” *International Security*, Vol. 21, No. 3 (1996/1997) pp. 54-86; and Etel Solingen, “The Political Economy of Nuclear Restraint.” *International Security*, Vol. 19, No. 2 (1994) pp. 126-169.

available documents of both public and private origins. As Van Evera has also identified the need for data richness with regard to case selection,²² Argentina and Brazil are valuable candidates. The availability of evidence is likely to be greater for Argentina and Brazil given that documents, both public and private, are more readily accessible in democracies than in authoritative regimes.²³ Examples of relevant documentation include the Treaty of Tlatelolco, whereby on 14 February 1967, Mexico opened a treaty that would be signed by twenty six Latin American states, as well as the Agreement between the Republic of Argentina and the Federative Republic of Brazil for the Exclusively Peaceful Use of Nuclear Energy.

No matter what ontological or epistemological grounds with which we approach the study proliferation, Thomas Schelling reminds us that “just as the absence of war today does not make war impossible tomorrow, total disarmament would not make rearmament impossible the next day.”²⁴ While this study will help to identify possible antecedent conditions of perception that led to nonproliferation in the cases of Argentina and Brazil, further testing of these conditions would be required to establish their generalizability. Hymans argues “the way forward for the proliferation literature is to further develop theory and to rigorously test any new theoretical developments through in-depth process-tracing analysis of an ever more complete

²² Steven van Evera *Guide to Methods for Student of Political Science* (Ithaca: Cornell University Press, 1997) p. 79; Barbara Geddes, “How the Cases You Choose Affect the Answers You Get: Selection Bias in Comparative Politics.” *Political Analysis* 2 (1990), pp.131

²³ The availability of information in democracies has been emphasized in the following: Liz Harrop, “Propaganda’s War on Human Rights” *Peace Review*, Vol. 16, Issue 3 (Fall 2004), pp. 311-316; Mira T. Sundara Rajan, “The Past and Future of Privacy in Russia” *Review of Central and East European Law*, Vol. 27 Issue 4 (2002) pp.625-638

²⁴ Thomas C. Schelling, “The Future of Arms Control” *Operations Research*, Vol. 9, No. 5 (September-October, 1961), p. 722

historical record.”²⁵ This study is however a necessary step in attempting to overcome the gap left in the discipline by the predominant theories of proliferation behavior.

²⁵ Jacques E.C. Hymans, “Nuclear Proliferation and Non-Proliferation” *The International Studies Encyclopedia*. (London: Blackwell, 2010), p 5463.

II.

LITERATURE REVIEW

Since the first use of nuclear weapons in 1945, scholars and statesmen alike have revered nuclear weapons as the ultimate deterrence to acts of war or aggression against the possessing state. Because some states pursued the bomb, some states have not, and all desire policies to influence others' proliferation decisions, much of the nuclear proliferation literature has focused on predicting likely proliferators. However, once a proliferation episode has been initiated, what options are available to deter those states' desires and end the chase? Views on who chooses to develop these weapons as well as their motivations, incentives and inducements are generally divided into those that focus on security drivers, international norms, or domestic politics.

Security

The uncertainty of nuclear weapons development is cloaked in the uncertainty of dual-use: the star-like power created in nuclear science can be used just as easily used to provide peaceful civilian energy as it can to provide the most destructive force known to mankind. When a state begins pursuit of a nuclear capability, the ground is ripe for miscalculation and often, proliferation begets proliferation. To predict proliferation outcomes, a nuanced game theoretic treatment of the problem of nuclear proliferation provides a structure to examine the policies and institutions that may also be shaping proliferation decisions. Most proliferation episodes are theorized to emerge

from the basic structure of the Prisoners' Dilemma (PD): how can self-interested competitive actors cooperate when faced with the stakes of a nuclear magnitude? In a dyadic proliferation episode, each actor, or state has two choices, develop a nuclear weapon, or nonproliferation. Taken together, the dyad can produce four possible outcomes which are preferred in the following order: first, the state develops the bomb while the other adheres to nonproliferation (PN); second, both state choose nonproliferation (NN); third, both develop nuclear weapons (PP); finally, the least favorable outcome would be for the state adhere to nonproliferation while the other acquire the bomb (NP), as the cost of nuclear retribution would be too high to absorb.²⁶

In an anarchic world, Waltz establishes the theory of *rational deterrence* with regard to nuclear proliferation decisions, whereby states seek to secure their survival in a zero-sum game by increasing their power through the acquisition of nuclear weapons, or by forging an alliance with those already in possession.²⁷ As nuclear proliferation cycle begins to unfold, states respond to the changing international security environment and perceived threats from adversarial states, who are either developing or in possession of their own nuclear weapons, by pursuing the bomb themselves. The Soviet Union acquired nukes to balance against the U.S.; Britain and France acquired them to deter the Soviet Union; China developed to deter the U.S. and the Soviets; India followed China; Pakistan followed India. For Waltz, the threat of

²⁶ Robert Jervis, "Realism, Game Theory, and Cooperation" *World Politics*, Vol. 40, No. 3 (April 1988) pp.317-349.

²⁷ Kenneth N. Waltz, "The Spread of Nuclear Weapons: More May Be Better" *Adelphi Papers* No 171 (1981) and Kenneth N. Waltz, "Nuclear Myths and Political Realities," *American Political Science Review* Vol 84, No. 3 (Fall 1990) pp. 731-745.

development from the opposite -dyadic player should be enough to spur nuclear weapons development. Non-proliferation for realists is generally assumed the result of extended deterrence, where the weaker non-proliferating state would seek to align itself with a nuclear ally; those incapable of accomplishing the technical feat pursue an alliance with a nuclear state that could extend its “nuclear umbrella.” Furthermore, for the realist, the spread of nuclear weapons is not necessarily to be avoided as nuclear weapons provide a powerful deterrent effect and serve as a stabilizing agent on the international stage.²⁸ Mearsheimer argues that despite attempts to curtail and rollback proliferation, more states will inevitably develop the bomb.²⁹

T.V. Paul divides proliferation efforts into two camps: great-powers, and non-great-powers, where the proliferation policies of the latter are “determined largely by the level and type of security threats that it faces and the nature of interactions or conflict with its key adversaries and allies in its immediate geo-strategic environment. However, the nuclear choices of great powers (Britain, China, France, Russia, and the United States) are determined chiefly by larger powers’ relations in the international system.”³⁰ In failing to clearly define how he judges the status of great powers, Paul demonstrates the bias of his “Prudential Realism” and one that appears frequently throughout the realists’ attempts to explain nonproliferation. Paul implies by the examples given that he considers the possession of nuclear weapons to be a precursor to “great power” status. Waltz applies this restriction in his refusal to acknowledge

²⁸ Steven Van Evera, “Primed for Peace: Europe After the Cold War” *International Security*, Vol. 15, No. 3 (1990/1991) pp. 7-57

²⁹ John J. Mearsheimer, “Here We Go Again.” *The New York Times*, May 17, 1998

³⁰ T.V. Paul *Power versus Prudence: Why Nations Forgo Nuclear Weapons* (Montreal: McGill-Queens University Press, 2000) p. 4-5

Germany or Japan as great powers in international politics.³¹ The division of great power relations and non-great-power relations based on military strength ignores that when ranked on an economic basis there are still members of both great powers and non-great-powers that are not following uniform proliferation policy predictions. Britain, China, France, Russia, and the United States have chosen to develop nuclear weapons; however, Germany and Japan have each chosen against proliferation, yet each remains a great economic power. Furthermore, Great Britain relies on the United States for its nuclear arsenal and the same can be said of the patterns, or lack thereof, with respect to non-great-powers. While I do agree with the importance of understanding the context and situations in which proliferation decisions are made, I do not agree with the dichotomy as established by Paul. The literature unanimously points to nuclear weapons possession as an immediate vehicle to great power status. However, costly nuclear arms races are often the byproduct for those that embrace the bomb and anyone standing as a rival. Proliferation decisions, by all powers great or small, will best be understood when considering how a state *perceives* its interactions with its key adversaries and allies in its immediate geo-strategic environment as well as its relations in the international system. Again, I believe this is where the weaponization norm has skewed the methodology.

Many scholars argue that realism too often overemphasizes the external security drivers and ignores the domestic and international policies that shape states' proliferation policies. Realism predicts a world full of nuclear weapons possessors; however, most states have yet to develop a nuclear weapons program and many

³¹ Kenneth N. Waltz, "The Emerging Structure of International Politics" *International Security*, Vol. 18, No. 2 (Autumn 1993), p. 54

remain unaligned with those that do wield the capability.

Norms

With the emergence of the Nuclear Non-Proliferation Treaty in 1968, an international norm against the development of nuclear weapons began to emerge. International dialogue began to shift from the stabilizing effects of nuclear weapons to a focus on the human cost of nuclear miscalculation. Initially proposed by Ireland and Finland, the treaty focuses on non-proliferation, disarmament, and the right to peaceful use of nuclear technology.

Doyle argues the built-in institutional checks and balances, adherence to the rule of law, and an inherent drive to the peaceful resolution of disputes creates a “democratic peace” by which democratic dyads are less likely to engage in conflict. When extended to nuclear weapons decisions, the same variables should be present.³²

Keohane argues that actors can also set aside their perceived immediate good, to achieve a higher corporate good; individual state actors may value certain international institutions enough to cooperate with their nonbinding mandates, even if they may prefer not to. A concern of retribution, retaliation, or expulsion from the whole is the driving force behind most international institution, in general, and the Non-Proliferation Treaty (NPT) and resulting international nonproliferation regime more specifically.³³ Sagan argues that the NPT not only provides a sense of inclusion,

³² Michael W. Doyle, “Kant, Liberal Legacies, and Foreign Affairs,” Parts I and II, *Philosophy and Public Affairs*, Vol. 12, Nos. 3-4 (Summer, Fall 1983); and Doyle “Liberalism and World Politics,” *American Political Science Review*, Vol. 80, No. 4 (December 1986), pp.1151-1170.

³³ Robert O. Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy*, (Princeton: Princeton University Press, 1984)

but it is also serves to increase states' confidence about the limits of their potential adversaries' nuclear programs and can empower domestic actors who are opposed to nuclear weapons development.³⁴

Tannenwald challenges the actual value of even developing nuclear weapons by examining the Nuclear Taboo and the normative basis of non-use that has emerged over the past 6 decades of this class of weapon. Tannenwald argues that in the decades following the only use of nuclear weapons in World War II, a behavioral norm has emerged against these apocalyptic tools, which serves to delegitimize them as viable option of war.³⁵ While Tannenwald's argument is centered on the use of nuclear weapons, those adhering to these norms would most likely eschew even crossing the threshold of development out of respect for international partners, law, fear of opposition, or loss of prestige.

Moving beyond classical constructivism, Hymans approaches the question of nuclear proliferation from a political psychology perspective, arguing that the national identity conceptions (NICs) of individual leaders at critical times in the evolution of nuclear thought has driven the proliferation decisions of most states. Hymans offers four lenses through which to examine the states executive decision-maker's identity: oppositional, or "us versus them"; sportsmanlike, "if both we and they are perceived to be nested within wider, single 'transcendent' identity groupings" (p. 22); nationalist, a feeling of equality or superiority; and subaltern, or subordinate. Hymans argues that proliferation will occur when the deciding leader is both oppositional and nationalist,

³⁴ Scott D. Sagan, "Why Do States Build Nuclear Weapons: Three Models in Search of a Bomb" *International Security*, Vol. 21, No. 3 (1996/1997) pp. 54-86.

³⁵ Nina Tannenwald, "Stigmatizing the Bomb: Origins of the Nuclear Taboo" *International Security* Vol. 29, No. 3 (2005) pp. 5-49.

moreover when a leader perceives external hostility coupled with a strong sense of equality or superiority.³⁶ However, little attention is given to a stabilizing control to account for the constant turnover in leadership within democratic states; as new NICs take command, states nuclear policies would seemingly swing wildly and would likely eventually trend toward proliferation.

Domestic Politics

The domestic politics model opens up the automated state decision-making responses of realism by emphasizing domestic players with an interest in the outcomes of those decisions. A state's nuclear energy sector, the military, politicians, and the public are likely to have interests and opinions on the proliferation policies of the state. Nuclear weapons are political tools with economic costs and risks often used to advance domestic and bureaucratic interests.

Organization theory suggests certain bureaucracies may generate environments that favor pro-proliferation preferences by exaggerating perceptions of national threats, supporting sympathetic politicians, and lobbying for increased defense spending. The result would be increased financing and prestige for scientists and state laboratories. Solingen further builds upon these institutional determinates by arguing that the economic factors often trump any other variables in the proliferation decisions of democratic actors. Democratic states interested in proliferation but pursuing liberal economic policies may determine that the potential damage done to international

³⁶ Jacques E. C. Hymans, 2006. *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy*. (Cambridge: Cambridge University Press, 2006)

economic alliances could outweigh the benefits realized from pursuing weaponization.³⁷

Peter van Ham dichotomizes causal proliferation variables into two broad categories: those of demand and those of supply. “On the demand side... (1) acute threat perceptions; (2) general national security concerns; and (3) political prestige. On the supply side, the issue of the availability of sensitive materials, technology, equipment, and know-how is of crucial importance.”³⁸ Brazil and Argentina again prove compliant with these variables, but as a nuclear pursuing dyad offer needed variance to the resulting nuclear *non*proliferation.

In 2004, Singh and Way published a quantitative test of the determinants of nuclear proliferation, and found that while the realists’ security argument proved to have a great deal of theoretical validity, there was also emphasis given to the restrictive powers of economic interdependence and liberalization variables as well.³⁹ Singh and Way acknowledge that while their qualitative test has given weight to the persistence of certain variables in relation to proliferation, there is still a need to examine the effects caused by interaction between the causal variables. These conditional effects are what I seek to identify in the cases of Brazil and Argentina.

With regards to Brazil and Argentina, Singh and Way held that both countries had achieved the first two “degrees of nuclearness” by demonstrating an interest in nuclear weapons and undertaking substantial efforts to develop nuclear weapons. The

³⁷ Etel Solingen, “The Political Economy of Nuclear Restraint.” *International Security*, Vol. 19, No. 2 (1994) pp. 126-169.

³⁸ Peter van Ham *Nuclear Managing Non-Proliferation Regimes in the 1990s: Power, Politics, and Policies* (New York: Royal Institute of International Affairs, 1994) p. 73

³⁹ Sonali Singh and Christopher R. Way, “The Correlates of Nuclear Proliferation” *Journal of Conflict Resolution*, Vol. 48, No. 6 (December 2004), pp. 859-885

authors' model accurately suggested that both states were likely candidates for proliferation; however, both eventually abandoned their pursuits before acquiring a working device. Traditional proliferation theory, heavily entrenched in game theory, suggests that because each state had undertaken a significant commitment towards developing a nuclear weapon, each would react by committing even more solemnly to attaining a nuclear weapon. The failures to reach the final "degree of nuclearness" make this dyad an outlier.

The proliferation debate has been driven by the concern over who ultimately possess nuclear weapons and has largely ignored states that do not. Brazil and Argentina remind us that the possession of dual use nuclear technology does not equate the intent to weaponize the material. The rising demand for nuclear energy requires the acceptance of such technologies.⁴⁰ Once again, Germany, Japan, Brazil, Argentina, and Australia are examples of these self-restricted regimes. I will test the Brazilian and Argentinean cases to identify how the presence of determinants that initiated these states nuclear pursuits' and indicated eventual acquisition of a nuclear weapon was likely, failed to produce nuclear weapons. It is precisely the presence of the compounding security threat for Brazil and Argentina as previously tested by Singh and Way that makes these two states ideal candidates for this study. For the purpose of this study, I will define nuclear proliferation as the possession of a weaponized nuclear agent as demonstrated through the testing of such a device, and/or as recognized by international consensus.⁴¹

⁴⁰ W. Conard Holton, "Power Surge: Renewed Interest in Nuclear Energy" *Environmental Health Perspectives* (November 2005) Vol. 113 Issue 11, p. 742

⁴¹ Israel, while never having officially declared itself as such, is an example of the latter.

Tanya Ogilvie-White argues that the epistemological debate over proliferation study has led to more skepticism and underdeveloped results than to reliable policy prescriptions. In reviewing the approaches that have been used to address the issue of proliferation, Ogilvie-White finds that there are contributions and limitations from each. While *classical realism* has been able to explain the importance of security considerations, it has ignored domestic determinants and has made inaccurate predictions about proliferation behavior. *Neo-realism* has also produced elegant, logically deduced explanations of nuclear proliferation, but has side-stepped the empirical difficulties. By ignoring the outliers, it has failed to explain unit level outcomes because it has focused on systemic outcomes, therefore its predictions and explanations are misleading and inaccurate. *Neo-liberal institutionalism* has explained certain domestic economic and political determinants but left the decision-making process out of the analysis. In terms of the structure side of the agent versus structure debate, *organizational theory* has defended the role of organizations in irrational behavior and also has focused analysis on the implementation of decisions. However, it has also underestimated the impact that individual beliefs can have in changing the structure. This has led the agent side of the debate to employ *belief systems theory* to focus on the role of individuals and groups to explain seemingly “irrational,” rational decisions. However, Ogilvie-White reminds us that it is difficult to quantify these values and has still failed to explain causal mechanisms of beliefs. Analysis of *learning models* have alleviated some of this burden and have helped to explain of new information can impact individuals and lead to structural change. Unfortunately, it too has lost its predictive power by lacking the ability to explain what lessons are

likely to be learned under what circumstances. And finally, the *social construction of technology (SCOT) theory* has tried to explain the role of technology by placing nuclear proliferation in historical and social contexts, but in doing so has become so descriptive that the variables required to test such a theory have become unmanageable.⁴² If nothing else, Ogilvie-White at least identifies the complexity with which one is confronted when approaching the issue of proliferation and in doing so has created a compelling case for pluralism. While a complete evaluation of proliferation through each of the aforementioned ontological foundations would be well beyond the scope of this project, I will test the Brazilian and Argentinean cases to identify which of the leading IR theories is best suited to explain the proliferation outcomes of Argentina and Brazil.

⁴² Tanya Ogilvie-White, "Is There a Theory of Nuclear Proliferation? An Analysis of the Contemporary Debate" *the Nonproliferation Review*, Vol. 4, No. 1 (Fall 1996), pp. 43-60

III.

ARGENTINA AND BRAZIL

Security, Prestige, and Politics

Argentina and Brazil are the most nuclear advanced countries in all of Latin America, with nuclear programs dating as far back as the 1950s. This chapter presents a correlation between the shift to nuclear weaponization between the two states, measured by the degree to which each states' policies were being driven by the fear of uncertainty over the opposing state's policies, a desire to adhere to emerging international norms, or simply a factor of domestic politics. An archival review of each states nuclear development effort follows.

Argentina: Nuclear Origins

By the late 1940s, Argentina was the most economically and politically powerful country in South America⁴³ and the pursuit of nuclear energy fit well with Argentine President Juan D. Peron's (1946–1955) desire for regional leadership and prestige.⁴⁴ Austrian physicist Ronald Richter fed Peron's interest by convincing him that Argentina could achieve that state of the art in nuclear advances for less than the

⁴³ Gamba-Stonehouse, Virginia. 1991. Argentina and Brazil. In Regina Cowen Karp, ed., *Security with Nuclear Weapons? Different Perspectives on National Security*: 229-257. New York: SIPRI and Oxford University Press.

⁴⁴ Spector, Leonard S. and Jacqueline R. Smith. 1990. *Nuclear Ambitions: The Spread of Nuclear Weapons 1989-1990*. Boulder, Colorado: Westview Press.

investments made by the U.S. and the USSR⁴⁵. Peron subsequently appointed Richter as the director of a research facility on Huemul Island and in 1951, Peron announced that Richter had produced a controlled thermonuclear fusion reaction. However, several leading nuclear physicists disputed the claim, eventually exposing Richter's fraud claim and the Huemul nuclear research facility was dismantled.⁴⁶

Despite the setback and international embarrassment, Argentina's nuclear program was to be undeterred.⁴⁷ The National Commission for Atomic Energy (CNEA), established on 31 May 1950 by President Peron to plan and organize national policies and guidelines for scientific and technological development, specifically nuclear advancements.⁴⁸ CNEA initial undertaking was to build technical and managerial teams separate from the Argentine government, a nonpartisan organization with stability and autonomy.⁴⁹ CNEA centralized Argentina's nuclear development efforts and between 1950 and 1983, the leadership of CNEA was held by the military. However, the military's grip and influence over Argentine nuclear policies began to loosen with the return of democratic rule to Argentina in 1983 and the transition to civilian control of CNEA.⁵⁰

Argentina and Brazil launched their nuclear programs in the mid-1950s, soon

⁴⁵ Poneman, Daniel. 1987. *Argentina: Democracy on Trial*. New York: Paragon House Publishers. 263

⁴⁶ Spector, Leonard S. 1987. *Going Nuclear*. Cambridge, Massachusetts: Ballinger Publishers.

⁴⁷ Spector, Leonard S. 1987. *Going Nuclear*. Cambridge, Massachusetts: Ballinger Publishers.

⁴⁸ Fabbri, Claudia M. 2005. *Social Constructivism and the Role of Ideas: The Construction of Argentine-Brazilian Nuclear Cooperation, 1979-1991*. Ph.D. Thesis, University of Warwick.

⁴⁹ Adler, Emanuel. 1987. *The Power of Ideology: The Quest for Technological Autonomy in Argentina and Brazil*. Berkeley: University of California Press.

⁵⁰ Adler, Emanuel. 1987. *The Power of Ideology: The Quest for Technological Autonomy in Argentina and Brazil*. Berkeley: University of California Press.

after U.S. President Dwight D. Eisenhower's "Atoms for Peace" effort. The U.S. effort attempted to limit the spread of nuclear weapons by providing civil nuclear energy know-how to be used for peaceful purposes only. Initially, the U.S. provided technical information, training, and subsidies to promote nuclear development in Argentina and Brazil.⁵¹ Through this program, Argentina was able to train 200 scientists and had built by 1958.⁵² Brazil too, was able to purchase several research reactors – its first one obtained in 1971.⁵³

Waisman argues the declining standard of living, human rights violations of the military, and the defeat of the Argentine military in the Malvinas-Falklands War led to an outcry for the end of the military regime in Argentina.⁵⁴ The violence and poorly executed foreign campaigning of the preceding military regime caused it to have decreased currency as a political ally.⁵⁵ For Argentina, this helped to limit post-transitional power of the military. Dahl has argued that military and police organizations being subject to civilian control are a necessary condition of democracy.⁵⁶ Linz, Stepan, and Aguero argue that because an attempted coup in 1990, unsupported by senior level commissioned officers, was thwarted by the president, the

⁵¹ Barletta, Michael. 2000. *Ambiguity, Autonomy, and the Atom: Emergence of the Argentine-Brazilian Nuclear Regime*. Ph.D. Thesis, University of Wisconsin-Madison.

⁵² Adler, Emanuel. 1987. *The Power of Ideology: The Quest for Technological Autonomy in Argentina and Brazil*. Berkeley: University of California Press; and, Sven Hirdman, Frank Barnaby, and Jozef Goldblat. 1972. *The Near-Nuclear Countries and the NPT*. Stockholm: SIPRI, Almqvist and Wiksell.

⁵³ Squassoni, Sharon and David Fite. 2005. —Brazil's Nuclear History. *Arms Control Today*, Vol. 35, No. 8: 16–17.

⁵⁴ Carlos H. Waisman, "The Argentine Paradox" *Journal of Democracy*. 1989

⁵⁵ Juan J. Linz and Alfred Stepan. *Problems of Democratic Transition and Consolidation: Southern Europe, South America, and Post-Communist Europe*. Baltimore, MD: Johns Hopkins University Press, 1996.

⁵⁶ Robert A. Dahl, *Democracy and Its Critics*. New Haven, CT: Yale University Press, 1989, p. 245.

democratic regime further legitimized civilian control and helped to galvanize many in favor of democracy.⁵⁷ Levitsky and Murillo have argued that the Argentine financial crisis of 2001-2002 was significant test for the military. Even in an atmosphere of chaos, the military accepted its exclusion from regime change.⁵⁸ Aguero examines the role of civilian and military relations which resulted from the amnesty provisions for human rights violations performed by the military regime. He finds that tensions were eventually calmed when the amnesty provisions were vetoed and the officers were tried.⁵⁹ Waisman also suggests that the economic stagnation of the 1980's in Argentina also led to the "formation of a democratic political culture, the commitment to democracy of economic and political elites, and strong political leadership."⁶⁰

Three key factors have motivated Argentina's nuclear development efforts over time, despite the countries revolving leadership: national pride and prestige, self-sufficiency, and national security. When the Argentine nuclear program began to achieve success, it was embraced as a source of pride;⁶¹ the nuclear program held broad societal support with little opposition.⁶² Concern over foreign-supplied energy

⁵⁷ Juan J. Linz and Alfred Stepan. *Problems of Democratic Transition and Consolidation: Southern Europe, South America, and Post-Communist Europe*. Baltimore, MD: Johns Hopkins University Press, 1996; and Felipe Aguero, "Toward Civilian Supremacy in South America" *Consolidating the Third Wave Democracies*. Ed. Larry Diamond, Marc F. Plattner, Yun-han Chu, and Hung-mao Tien. Baltimore, MD: Johns Hopkins University Press, 1997, pp. 177-206.

⁵⁸ Steven Levitsky and Maria Victoria Murillo, "Argentina Weathers the Storm" *Journal of Democracy*, 14:4 (October 2003) pp. 152-166.

⁵⁹ Felipe Aguero, "Toward Civilian Supremacy in South America" *Consolidating the Third Wave Democracies*. Ed. Larry Diamond, Marc F. Plattner, Yun-han Chu, and Hung-mao Tien. Baltimore, MD: Johns Hopkins University Press, 1997, pp. 177-206.

⁶⁰ Carlos H. Waisman, "The Argentine Paradox" *Journal of Democracy*. 1989.

⁶¹ Adler, Emanuel. 1987. *The Power of Ideology: The Quest for Technological Autonomy in Argentina and Brazil*. Berkeley: University of California Press.

⁶² Wrobel, Paulo S. and John R. Redick. 1998. —Nuclear Cooperation in South America: The Role of Scientists in the Argentine-Brazilian Rapprochement. *Annals of the New York Academy of Sciences*, Vol. 866, No. 1: 165–181.

dependencies also fostered a significant nuclear component in Argentina's economic development strategy.⁶³ Furthermore, Argentina had abundant uranium reserves so nuclear development was seen as a way to utilize the country's natural resources to develop.⁶⁴ The highly technical skills required to undergird the nuclear infrastructure was also viewed as an advantageous boon to all other sectors of the country's economy.⁶⁵

On the national security front, Argentina had limited disputes with its neighbors and was not formally engaged in international military disputes, apart from the dispute with the UK over the Falklands Islands and a territorial disagreement with Chile over Patagonia.⁶⁶ The invasion of the Falkland Islands by Argentina, on April 2nd, 1982 was viewed as a direct assault on British serenity, a nuclear-weapon state. Argentina had claimed sovereignty over the Falkland Islands, approximately 300 miles east since the early 19th century; however, Britain had held the islands since 1833 and rejected Argentina's claims. The UK initially committed a task force of 28,000 troops and over 100 ships, while Argentina had approximately 12,000 conscripted soldiers on the Falklands with about 40 ships. The first major conflict occurred on May 2nd, 1982 with the sinking of the Argentine cruiser, General Belgrano. Subsequently, the British destroyer, HMS Sheffield, was hit and sunk by an Exocet missile. The 74-day war,

⁶³ Poneman, Daniel. 1984. Nuclear Proliferation Prospects for Argentina. *Orbis*, Vol. 27, No. 4: 853–880.

⁶⁴ Adler, Emanuel. 1987. *The Power of Ideology: The Quest for Technological Autonomy in Argentina and Brazil*. Berkeley: University of California Press.

⁶⁵ Poneman, Daniel. 1984. Nuclear Proliferation Prospects for Argentina. *Orbis*, Vol. 27, No. 4: 853–880.

⁶⁶ Gamba-Stonehouse, Virginia. 1991. —Argentina and Brazil. In Regina Cowen Karp, ed., *Security with Nuclear Weapons? Different Perspectives on National Security: 229-257*. New York: SIPRI and Oxford University Press.

while muted by some standards, still cost a total of 655 Argentine and 255 British lives.⁶⁷

Brazil's population size, rapid modernization, U.S. alliance, and nuclear program evoked concern in Argentine political and military circles. Despite any ongoing debates regarding the economic benefits to the development of nuclear power, the emergence of the Brazilian nuclear program provided enough instability and rationale for Argentina to pursue its own nuclear program, despite the fact that the last armed conflict between the two countries had occurred over 100 years prior.⁶⁸ Heeding a core tenant of realism, the emergence of the Brazilian nuclear program coupled with the regional Argentina-Brazil rivalry provided the spark for the Argentines to want to pursue a nuclear program.

Brazil: Nuclear Origins

Brazilian scientists had begun studying and experimenting with nuclear fission by the 1930s; however, it wasn't until Peron's Huemul Island claims surfaced in 1951 that Brazil's nuclear overtures began to coalesce. In response to Argentina's establishment of CENA, Brazil established the Conselho Nacional de Pesquisas (CNP), as a natural research council, and created a nuclear research program under the CNP. Shortly thereafter, Brazil's President Juscelino Kubitschek established The

⁶⁷ D. George Boyce. *The Falklands War*. Houndmills, Basingstoke, Hampshire, England: Palgrave Macmillan, 2005.

⁶⁸ Schneider, Ronald M. 1991. *Order and Progress: A Political History of Brazil*. Boulder, Colorado: Westview Press; Reiss, Mitchell. 1995. *Bridled Ambition: Why Countries Constrain their Nuclear Capabilities*. Washington D.C.: Woodrow Wilson Center Press and John Hopkins University Sagan, Scott D. 1996/1997. —Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb. *International Security*, Vol. 21, No. 3: 54–86.

National Nuclear Energy Commission (CNEN) in 1956. Brazil possessed an abundance of uranium deposits and the most advanced industrial infrastructure in the region at that time, making them a prime candidate for nuclear development. By 1959, plans were in place to develop a nuclear reactor for electricity. However, despite the initial rush to keep par with Argentina, Brazil's nuclear efforts remained underdeveloped until the early 1970s. The Brazilian government purchased a nuclear reactor and its associated technology from the U.S. Company Westinghouse in 1972. Construction of the 626-megawatt Angra I began soon after at Angra dos Reis. In addition to the nuclear reactors, Brazil sought a complete nuclear fuel cycle that included uranium enrichment and plutonium recovery technology; however, Brazil was not a signatory to the NPT, therefore the U.S. government prohibited any U.S. firm from selling nuclear technology to Brazil.⁶⁹ When the Westinghouse deal fell through, Brazil solicited the West German company Kraftwerk Union/Siemens for the same capability.⁷⁰ Brazil's 1975 US\$10 billion agreement with West Germany represented the first sale of a full nuclear fuel cycle and one of the largest transfers of nuclear technology to a previously non-nuclear nation.⁷¹ The deal provided the infrastructure Brazil required to succeed with their nuclear aspirations, providing four nuclear 1350 megawatt pressurized water reactors, uranium processing, conversion, enrichment, and reprocessing facilities, a uranium prospecting venture; a fuel elements production plant, a nuclear fuel reprocessing plant, an engineering firm to handle key

⁶⁹ Myers, Daniel J. 1984. Brazil: Reluctant Pursuit of the Nuclear Option. *Orbis*, Vol. 27, No. 4: 881–911.

⁷⁰ Krasno, Jean. 1994. —Brazil's Secret Nuclear Program. *Orbis*, Vol. 38, No. 3: 425–437.

⁷¹ Redick, John R. 1995. *Nuclear Illusions: Argentina and Brazil*. Occasional Paper 25. Washington, D.C., Henry L. Stimson Center.

construction elements, and a plant to manufacture primary components.⁷²

Analogous to Argentina, the three primary drivers of Brazil's nuclear ambitions were attaining technological self-sufficiency and energy independence, prestige, and the progress of Argentina's nuclear program. The instability in the energy market driven by the oil crisis of 1973 fostered the desire for energy independence, as by 1974 80 per cent of Brazilian energy consumption relied on expensive foreign oil.⁷³ Brazil invested heavily in hydroelectric power, but soon discovered that the energy production capacity would not meet the demand required.⁷⁴ The Brazilian government believed that acquiring a nuclear program would grant the country international prestige and would boost the country's standing within the international community, having achieved a crowning technological feat. A Brazilian diplomat noted that Brazil "gained new technological and political status on the world scene with the nuclear agreement."⁷⁵ Furthermore, the Brazilian government was concerned with lagging Argentina's nuclear progress. The West German deal signified an ambition and intent to surpass Argentina's nuclear efforts. Additionally, the Brazilian government believed that Argentina intended to develop nuclear weapons and were convinced that Brazil should follow suit. The Brazilian perception was that Argentina felt threatened by Brazil's size, wealth, and modernization, and would use nuclear

⁷² Adler, Emanuel. 1987. *The Power of Ideology: The Quest for Technological Autonomy in Argentina and Brazil*. Berkeley: University of California Press.

⁷³ Redick, John R. 1975. Regional Nuclear Arms Control in Latin America. *International Organization*, Vol. 29, No. 2: 415–445.

⁷⁴ Rosenbaum, H. Jon. 1975. Brazil's Nuclear Aspirations. In Onkar Marwah and Ann Schulz, eds. *Nuclear Proliferation and the Near-Nuclear Countries: 255–277*. Cambridge, Massachusetts: Ballinger Publishing Company. Schneider, Ronald M. 1976. *Brazil: Foreign Policy of a Future World Power*. Boulder: Westview Press.

⁷⁵ Howe, Marvine. 1975. Brazil, Racing for Growth, Tries to Rely on U.S. *The New York Times*, July 2: 1:2.

weapons to imbalance the power relationship between the two countries.⁷⁶ These factors, coupled with overwhelming regional influence of these two nations, explains why their nuclear ambitions and eventual non-weaponization policies matter to the international community. Their nuclear rivalry was not an isolated episode, but rather the natural evolution of their historical competition for almost two centuries. An examination of how Argentina and Brazils nuclear weaponization policies follows.

Nuclear Weaponization Efforts

The international community widely held that Argentina and Brazil were pursuing nuclear weapons programs, which further fostered the paranoia of both countries leadership. The countries were regional rivals under predominantly military rule and had consistently competed for regional supremacy, despite the fact that the last time they had engaged in a bilateral armed conflict was 1825–28.⁷⁷ Prior to the rapid nuclear advancements in the 1970s, both nations had initiated domestic nuclear efforts that were not subject to international safeguards. Furthermore, both nations rejected the NPT, full-scope IAEA safeguards, the Nuclear Suppliers Group (NSG), and the Tlatelolco Treaty, refusing to buy in to the evolving international nuclear non-proliferation regime. Argentina and Brazil constantly maintained a right to conduct

⁷⁶ Rosenbaum, H. Jon. 1975. Brazil's Nuclear Aspirations. In Onkar Marwah and Ann Schulz, eds. *Nuclear Proliferation and the Near-Nuclear Countries*: 255–277. Cambridge, Massachusetts: Ballinger Publishing Company.

⁷⁷ Schneider, Ronald M. 1991. *Order and Progress: A Political History of Brazil*. Boulder, Colorado: Westview Press; Reiss, Mitchell. 1995. *Bridled Ambition: Why Countries Constrain their Nuclear Capabilities*. Washington D.C.: Woodrow Wilson Center Press and John Hopkins University; Sagan, Scott D. 1996/1997. Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb. *International Security*, Vol. 21, No. 3: 54–86.

peaceful nuclear explosions, refused to submit their sensitive facilities to IAEA safeguards, and continually opposed the Treaty of Tlatelolco and the NPT, believing such agreements violated their national rights and national. All of these factors taken together reinforced the notion that each country was intent on acquiring a nuclear weapon.⁷⁸

Despite the general consensus that Argentina and Brazil were pursuing nuclear weapons, both the Argentine and Brazilian governments publicly denied any intention to develop a nuclear weapons program. In 1975, General Juan E. Guglielmelli, former director of the Argentine Institute of Strategic Studies and International Relations, wrote, “Recently both a former foreign minister and the President of the CNEA have declared that our country has no intention of building nuclear explosives.”⁷⁹ Five years later, Vice-Admiral Carlos Castro Madero, former President of CNEA, said, “Argentina is not even thinking of developing a nuclear explosive...nor does it have any intention of developing its nuclear technology for military purposes”.⁸⁰ After announcing that Argentina was capable of producing enriched uranium in 1983, the Vice-Admiral also claimed that Argentina would use capability only for “peaceful ends.”⁸¹ Former Argentine Ambassador to Brazil, Oscar Camilion, stated he never

⁷⁸ (*Gamba-Stonehouse 1991, Stanley 1992, Redick, Carasales and Wrobel 1995, Barletta 2000, Paul 2000*)

⁷⁹ Guglielmelli, Juan E. 1976. The Brazilian-German Nuclear Deal: A View from Argentina. *Survival*, Vol. 18, No. 4: 162–165.

⁸⁰ Schumacher, Edward. 1981. Argentina says its Nuclear Plants will not comply with Safeguards. *The New York Times*, 25 July: 1:3; Pilat, Joseph F. and Warren H. Donnelly. 1982. An Analysis of Official Argentine Statements on the Purpose and Direction of Argentina’s Nuclear Program. *Congressional Research Service*, The Library of Congress, April 22.

⁸¹ Schumacher, Edward. 1983. Argentina Claims Nuclear Capacity. *The New York Times*, 19 November: 1:1.

heard any meaningful Argentine official say that the country needed nuclear weapons and told the Brazilian press that he had “no doubt of the peaceful intentions of the Brazilian program.”⁸²

Conversely, ministers from the Brazilian military expressed their intent to develop nuclear weapons primarily as a symbol for attaining a great-power status. In September 1986, former navy minister Admiral Maximiano Fonseca stated “If it was up to me to decide, I would make an atomic bomb and detonate it in front of international observers to demonstrate the extent of national technical know-how.”⁸³ Brazil’s Secretary of State for Science and Technology Jose Goldemberg publicly stated that he was “convinced that the army would build nuclear explosives and would intend them to be nuclear weapons.”⁸⁴ Indeed, Brazil’s military did have a covert parallel nuclear program running alongside the official program.⁸⁵ However, the true nature of this covert effort remains unclear. Some scholars argue that the program was an attempt to develop nuclear weapons,⁸⁶ while others insist the motives were less

⁸² Hymans, Jacques E. C. 2006. *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy*. Cambridge: Cambridge University Press.

⁸³ Spector, Leonard S. 1987. *Going Nuclear*. Cambridge, Massachusetts: Ballinger Publishers.

⁸⁴ Albright, David. 1989. Bomb Potential for South America. *Bulletin of the Atomic Scientists*, Vol. 45, No. 4: 16–20.

⁸⁵ Wrobel, Paulo S. 1996. Brazil and the NPT: Resistance to Change? *Security Dialogue*, Vol. 27, No. 3: 337–347.

⁸⁶ Spector, Leonard S. and Jacqueline R. Smith. 1990. *Nuclear Ambitions: The Spread of Nuclear Weapons 1989-1990*. Boulder, Colorado: Westview Press; Krasno, Jean. 1992. Brazil, Argentina Make It Official. *Bulletin of the Atomic Scientists*, Vol. 48, No. 3: 10–11; Reiss, Mitchell. 1995. *Bridled Ambition: Why Countries Constrain their Nuclear Capabilities*. Washington D.C.: Woodrow Wilson Center Press and John Hopkins University; Doyle, James E. 1997. *Nuclear Rollback: A New Direction for U.S. Nonproliferation Policy?* Ph.D. Thesis, University of Virginia; Doyle, James E. 2008. Argentina and Brazil. In James E. Doyle, ed. *Nuclear Safeguards, Security, and Nonproliferation: Achieving Security with Technology and Policy*: 307-329. Butterworth-Heinemann: Elsevier; Barletta, Michael. 1997. *The Military Nuclear Program in Brazil*. Working Paper, Stanford, CA: Center for

nefarious.⁸⁷ Brazilian diplomat Paulo S. Wrobel started,

It was argued that if the armed forces were so deeply involved in nuclear research and development that certainly meant they were not interested solely in peaceful purposes. Despite its apparent logic, this argument is seriously flawed because it fails to consider the role played by the three branches of the armed forces in the development of science and technology in Brazil, at both research and production level. For historical reasons, the Brazilian military had long been deeply involved in the development of many areas of modern science and technology, including branches of engineering, telecommunications, nuclear, computing and aeronautics. Attributing a weaponry intention to the parallel nuclear program simply because it was directed by navy officers revealed a lack of understanding of the historical role of the military in Brazil's technical and scientific development.⁸⁸

Regional Rivalry and Prestige

As the preeminent industrial, economic, and military powers in Latin America, Argentina and Brazil have long held a rivalrous relationship. Argentina and Brazil's competition on the nuclear front can be viewed as a modern manifestation of that contest. Historically, the rivalry appeared along political and economic fault lines.⁸⁹

International Security and Arms Control. Accessed 24 January 2009, available from <http://iis-db.stanford.edu/pubs/10340/barletta.pdf>. 247

⁸⁷ Wrobel, Paulo S. 1996. Brazil and the NPT: Resistance to Change? *Security Dialogue*, Vol. 27, No. 3: 337–347; Lamazière, Georges and Roberto Jaguaribe. 1992. Beyond Confidence-Building: Brazilian-Argentine Nuclear Cooperation. *Disarmament*, Vol. 15, No. 3: 102–117.

⁸⁸ Wrobel, Paulo S. 1996. Brazil and the NPT: Resistance to Change? *Security Dialogue*, Vol. 27, No. 3: 337–347.

⁸⁹ Courtney, William H. 1980. Nuclear Choices for Friendly Rivals. In Joseph A. Yager, ed. *Nonproliferation and U.S. Foreign Policy*: 241–279. Washington, D.C.: The Brookings Institution.

Politically, tensions between both countries were cloaked in Peron's vision of unity among Latin America's Spanish-speaking populations and in Argentina's pursuit of regional leadership,⁹⁰ or a continuation of Spanish-Portuguese competition for the domination of Latin America during the colonial period.⁹¹ Economically, Argentina and Brazil competed for regional raw materials, energy, and markets.⁹² While not overtly military, the potential of military miscalculations grew in the 1960s and 1970s as both countries embraced zero-sum realist doctrines.⁹³ Some scholars caution that because the relationship was more of a rivalry than acrimonious, neither side ever intended an actual nuclear conflict.⁹⁴ However, many scholars have also argued could argue that nuclear doctrine between any nations would deem nuclear conflict undesirable, independent of any preexisting relationships. Whoever mastered the nuclear fuel cycle first would win; nevertheless, uncertainty remained as to the ultimate intentions for the new technology.

Early in their development, the nuclear programs in both Argentina and Brazil

⁹⁰ Courtney, William H. 1980. Nuclear Choices for Friendly Rivals. In Joseph A. Yager, ed. *Nonproliferation and U.S. Foreign Policy*: 241–279. Washington, D.C.: The Brookings Institution.

⁹¹ Stanley, Ruth. 1992. Cooperation and Control: The New Approach to Nuclear Nonproliferation in Argentina and Brazil. *Contemporary Security Policy*. Vol. 13, No. 2: 191–213. 268

⁹² Resende-Santos, João. 2002. The Origins of Security Cooperation in the Southern Cone. *Latin American Politics and Society*, Vol. 44, No. 4: 89–126. 265

⁹³ Knopf, Jeffrey W. 2003. The Importance of International Learning. *Review of International Studies*, Vol. 29, No. 2: 185–207; Selcher, Wayne A. 1985. —Brazilian-Argentine Relations in the 1980s: From Wary Rivalry to Friendly Competition. *Journal of Interamerican Studies and World Affairs*, Vol. 27, No. 2: 25–53; Carasales, Julio C. 1992a. —Goals of Argentine-Brazilian Cooperation. In Paul L. Levanthal and Sharon Tanzer, eds. *Averting a Latin-American Nuclear Arms Race: New Prospects and Challenges for Argentine-Brazilian Nuclear Cooperation*: 44-75. New York, St. Martin's Press; Hurrell, Andrew. 1998. An Emerging Security Community in South America? In Emanuel Adler and Michael Barnett, eds. *Security Communities*: 228-264. Cambridge: Cambridge University Press.

⁹⁴ Reiss, Mitchell. 1995. *Bridled Ambition: Why Countries Constrain their Nuclear Capabilities*. Washington D.C.: Woodrow Wilson Center Press and John Hopkins University.

encountered many technical and financial obstacles. The Nuclear Suppliers Group (NSG), established after India's nuclear test in 1974, sought to ensure that nuclear transfers for peaceful purposes would not be diverted to nuclear weapons efforts. Argentina and Brazil viewed the NSG as an effort to establish the nuclear-weapon haves, and the nuclear-weapon have-nots, creating a nuclear monopoly and constraining technological development.⁹⁵

Treaties, Norms, and Lies

Since the advent and first use of nuclear weapons technology during WWII, global norm regarding the need for nuclear arms control, reduction, and disarmament, has emerged. The following examines some of the core pillars of this global non-proliferation regime, and its role in shaping the proliferation options and decisions of Argentina and Brazil.

Treaty of Tlatelolco

What would eventually become the Treaty of Tlatelolco, originally proposed to the United Nations General Assembly (UNGA) by Brazil in the early 1960s, sought to create a Nuclear Weapon Free Zone (NWFZ) throughout Latin America. However, the Treaty was fraught with complications from its start. The initial Brazilian proposal

⁹⁵ Goldemberg, Jose and Harold A. Feiverson. 1994. Denuclearization in Argentina and Brazil. *Arms Control Today*, Vol. 24, No. 2: 10–14; Wrobel, Paulo S. 1996. Brazil and the NPT: Resistance to Change? *Security Dialogue*, Vol. 27, No. 3: 337–347; Carasales, Julio C. 1999. The So-Called Proliferator That Wasn't: The Story of Argentina's Nuclear Policy. *The Nonproliferation Review*, Vol. 6, No. 3: 51–64.

was delivered a month before the Cuba crisis. In 1963, the UNGA voted overwhelmingly in support of the Latin America NWFZ resolution; however, Argentina and Cuba remained skeptical. Furthermore, following the Brazilian military coup in April 1964, even Brazilian support of their own effort fell away and both Brazil and Argentina began to intentionally delay negotiations. Nevertheless, a Preparatory Commission was established by the UNGA which drafted the Treaty of Tlatelolco; the treaty opened for signature by early 1967. The Treaty of Tlatelolco was the first legally normative base non-proliferation in Latin America and was the first NWFZ treaty in the world. The initial effort was difficult because there was no template from which to base the work. The treaty formally prohibits production, testing, and possession of nuclear weapons within the Latin American and Caribbean zone and contained detailed stipulations against possession of nuclear weapons, unlike the NPT, which seeks merely to limit the spread of nuclear weapons.

Argentina and Brazil both took exception to the treaty's prohibition on peaceful nuclear explosions (PNEs). PNEs were widely held to be an indicator intent to build nuclear weapons.⁹⁶ Some scholars have argued the only difference between a PNE and a nuclear weapon is their employment.⁹⁷ Most parties interpreted the treaty to prohibit PNEs, but as the only real nuclear powers in the region, Argentina and Brazil insisted on preserving their right to produce nuclear explosive devices for

⁹⁶ Hymans, Jacques E. C. 2006. *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy*. Cambridge: Cambridge University Press. P. 161.

⁹⁷ Costanzo, Charles E. 1998. *Returning from the Brink: Is There a Theory-Based Explanation for the Attenuation of Horizontal Nuclear Proliferation?* Ph.D. Thesis, University of Alabama; p. 111.

peaceful technological purposes.⁹⁸ Some leaders in Argentina and Brazil did not want to preempt their legal ability to produce nuclear explosive devices defensive purposes, should a national security need arise.⁹⁹ Nevertheless, Argentina and Brazil eventually capitulated to the demand in the early 1990s and jointly endorsed a ban on all nuclear testing.¹⁰⁰

Treaty on the Non-Proliferation of Nuclear Weapons (NPT), or “Disarmament of the Disarmed”

“The Nuclear Non-proliferation Treaty is one of the most important multilateral accords in history. Though not perfect, it is the cornerstone of the world's nuclear non-proliferation regime.”¹⁰¹ *BAN Ki-moon, Secretary-General of the United Nations*

The NPT seeks to prevent the spread of nuclear weapons and weapons technology, to promote cooperation in the peaceful uses of nuclear energy, and to further the goal of achieving nuclear disarmament and general and complete disarmament. The Treaty entered into force in 1970 for an initial duration of 25 years and is reviewed every five years; however, at the NPT Review and Extension Conference in 1995, parties adopted the indefinite extension of the Treaty. The NPT

⁹⁸ *Aja Espil, Jorge A. 1985. —Argentina. In Jozef Goldblat, ed. Non-proliferation: The Why and the Wherefore: 73–79. London: Taylor and Francis; p. 76.*

⁹⁹ Redick, John R. 1981. —The Tlatelolco Regime and Nonproliferation in Latin America. *International Organization*, Vol. 35, No. 1: 103–134, and Redick, John R. 1995. *Nuclear Illusions: Argentina and Brazil*. Occasional Paper 25. Washington, D.C., Henry L. Stimson Center.

¹⁰⁰ Redick, John R. 1995. *Nuclear Illusions: Argentina and Brazil*. Occasional Paper 25. Washington, D.C., Henry L. Stimson Center.

¹⁰¹ *BAN Ki-moon, Address to the 2010 NPT Review Conference, 3 May 2010*

stipulates nuclear-weapon countries are not to transfer nuclear weapons or nuclear explosive device to any non-nuclear weapon countries. Furthermore, nuclear countries are not to assist non-nuclear countries in the manufacture or acquisition of such weapons or devices. Non-nuclear weapon signatories to the NPT agree not to receive the transfer of a nuclear weapon or nuclear explosive device, not to manufacture or acquire such weapons or devices, and not to seek or receive assistance developing any such weapons or devices. Non-nuclear weapon countries agree to IAEA safeguards on all fissionable material.

As emerging nuclear powers in the 1970s, Argentine and Brazilian leadership developed opposition stances to what they viewed as unjust infringements upon their sovereign rights. In a speech to the UN General Assembly in 1978, Argentine Foreign Minister Rear Admiral Oscar Montes stated:

From the beginning, we rejected the NPT because of its discriminatory character, since, for the first time in history, it legitimized a division of the world into two categories: countries which can do anything as regards nuclear affairs and countries which have their rights curtailed.¹⁰²

The NPT divided the world into two classes: the five recognized nuclear weapons states (NWS) and the non-nuclear weapons states (NNWS). NWS had the right to possess and produce nuclear weapons without over guidance and to do so in large enough quantities to destroy the Earth. NNWS were prevented from obtaining nuclear weapons and any domestic peaceful nuclear activities were subject to

¹⁰²Carasales, Julio C. 1995. The Argentine-Brazilian Nuclear Rapprochement. *The Nonproliferation Review*, Vol. 2, No. 3: 39–48; *UN General Assembly, X Special Session, 5th plenary meeting, 26 May 1978*.

international scrutiny. Many government officials in both Argentina and Brazil believed NWS, or developed states were intentionally attempting to control and deny less developed countries the means for economic improvement.¹⁰³

Whereas non-proliferation of nuclear weapons is a matter of universal concern, measures of disarmament must be consistent with the inalienable rights of all states to develop, acquire and use nuclear technology according to their priorities, interests and needs, including explosions for peaceful purposes.¹⁰⁴

In 1968, Argentine ambassador to the United Nations, Jose Maria Ruda remarked

We realize that it is not easy to find final formulas in the treaty for problems that have been under discussion for three years; at the same time, however, the major nuclear powers should understand that the sacrifice to be made by the non-nuclear weapon countries under the system of the treaty is extremely high, without their receiving sufficient assurances that would hold out the prospects of a more promising future for the maintenance of international peace and security. Despite this advance in the field of horizontal non-proliferation, there is no indication at this time that would allow us to assume there will be a reduction in the arms race among those who possess the most weapons. Paradoxically, **this treaty is for the disarmament of the *disarmed***.¹⁰⁵

Brazil developed a similarly irritated position towards the NPT. Brazilian

¹⁰³ Wrobel, Paulo S. and John R. Redick. 1998. —Nuclear Cooperation in South America: The Role of Scientists in the Argentine-Brazilian Rapprochement. *Annals of the New York Academy of Sciences*, Vol. 866, No. 1: 165–181.

¹⁰⁴ Aja Espil, Jorge A. 1985. —Argentina. In Jozef Goldblat, ed. *Non-proliferation: The Why and the Wherefore: 73–79*. London: Taylor and Francis; p. 76.

¹⁰⁵ Aja Espil, Jorge A. 1985. —Argentina. In Jozef Goldblat, ed. *Non-proliferation: The Why and the Wherefore: 73–79*. London: Taylor and Francis; UN document A/C.I/PV./1572

diplomat J.A. de Araujo Castro, in a speech at the Brazilian National War College:

Brazil has sought to characterize what is now clearly looming as a firm and undisguised trend towards the freezing of world power...the main instrument of this policy of freezing of World Power...The Treaty (NPT) established distinctive categories of nations: one comprising weak and therefore non-adult and non-responsible countries. Contrary to all historical evidence, the Treaty starts from the premise that prudence and moderation are built-in features of power. It institutionalizes inequality between nations and apparently accepts the premises that the strong countries will become even stronger and the weak will grow even weaker.¹⁰⁶

In a 1977, Brazilian President General Ernesto Geisel stated,

The NPT seeks to legitimize a distribution of power which is unacceptable, because it results from the stage at which States found themselves at the date of its signature, as regards the application of nuclear weapons technology. As a result of this stratification, the Treaty requires strict control by the IAEA over the dissemination of the peaceful uses of the atom while, in relation to the nuclear weapon countries, no barrier is erected to the vertical proliferation of nuclear armaments, as evidenced by the growth and sophistication of their nuclear weaponry. Additionally, as far as security is concerned, the NPT does not provide for any efficient system of protection for non-nuclear weapon countries...The true sense of non-proliferation is to ban the diffusion of nuclear weapons, not the dissemination of nuclear technology for the benefit of Man. Given adequate controls, the access

¹⁰⁶ Rosenbaum, H. Jon. 1975. Brazil's Nuclear Aspirations. In Onkar Marwah and Ann Schulz, eds. *Nuclear Proliferation and the Near-Nuclear Countries*: 255–277. Cambridge, Massachusetts: Ballinger Publishing Company.

to the technology for the peaceful uses of nuclear energy should not be subjected to discriminatory restrictions, whether between nuclear weapon and non-nuclear weapon countries or among non-nuclear weapon countries themselves.¹⁰⁷

Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC)

As the polity of each country began to shift toward democratically elected civilian leadership throughout the 1980s, many officials in both countries believed bilateral relations and the confidence building measures would be the key to overcoming the fear inherent in the game theoretic world of nuclearization. Mutual inspections could lay framework for establishing respect and dialogue and would eventually brake down suspicions regarding the intentions of secretive nuclear programs. As a result, leaders from both states drafted and implemented The Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) to establish an understanding on the peaceful use of nuclear energy. The Agreement was signed at Guadalajara, Mexico on July of 1991. The ABACC is responsible for the administration and application of the Common System of Accounting and Control (SCCC), which is a full-scope safeguards system applied to all nuclear activities covering all nuclear materials in both countries. Brazil and Argentina established SCCC to verify that nuclear materials in both countries were not used for purposes prohibited by the agreement. The role of ABACC to carry out

¹⁰⁷ Goldemberg, Jose. 1985. Brazil. In Joseph Goldblat, ed. *Non-Proliferation: The Why and the Wherefore*: 81-87. London: Taylor and Francis; *O Programa Nuclear Brasileiro*, 1977.

inspections, designate inspectors, evaluate inspections,

Democratic Transitions

One of the most significant shifts within the domestic landscapes of both Brazil and Argentina during the critical period of nuclearization between the 1970s-1980s was the democratic transitions of Argentina and Brazil. The transitions of these countries have influenced the stability of several Latin American democracies and will likely continue to affect the future expansion of democracy and the stability and security of the entire region. Therefore, the state, and stability of these polities deserves attention, especially as democratic interest groups emerge during the period of consolidation with varying views on nuclearization. If democracy is understood as a system of government under which the people hold the power, there must be “necessary and sufficient conditions in the real world for the existence of such a condition.”¹⁰⁸

Robert Dahl offers a thorough definition by outlining eight guarantees required for the successful operation of democracy: 1) every member has the right to vote; 2) each individual vote carries equal weight; 3) whoever receives the greatest number of votes wins; 4) members may vote for whomever they desire; 5) members have adequate and equal information pertaining to those who are running; 6) leaders or policies with the greatest number of votes displace those with fewer votes; 7) the orders of the elected officials are executed; and finally 8) decisions made during the

¹⁰⁸ Robert Dahl, *A Preface to Democratic Theory*. Chicago, IL: University of Chicago Press, 1956. (Reproduced in *The Democracy Sourcebook*, Cambridge, MA: MIT Press, 2003, p.51)

inter-election period are either made from the direct expression of the election, or made under the preceding seven conditions.¹⁰⁹ While both Brazil and Argentina meet this criteria, many scholars have argued that each state still falls short of a consolidated democracy. A more qualitative definition would require that democracy not only meet the minimalist standards of free and fair elections,¹¹⁰ but also sustain competition¹¹¹ and concessions,¹¹² ensure that the will of the majority is tempered by the rights of the minority,¹¹³ and hold horizontal and vertical accountability be constitutionally institutionalized.¹¹⁴ It is with this qualitative definition that this literature review will examine the degree to which the Installation of these two polities reflects the values of democracy, and the concerns associated with the Consolidation of each regime.

Democracy, in any state, begins with the installation of a democratically elected government. Daniel Philpott traces the roots of Brazil and Argentina's democratic transitions to the Catholic Church's evolutionary doctrinal embrace of social justice for the poor.¹¹⁵ While the Catholic Church undoubtedly played a role in the evolution of democratic values in Latin America, successful initiation of

¹⁰⁹ Robert Dahl, *A Preface to Democratic Theory*. Chicago, IL: University of Chicago Press, 1956.

¹¹⁰ Adam Przeworski, "Minimalist Conception of Democracy: A Defense" *Democracy's Value*. Cambridge, MA: Harvard University Press, 1999.

¹¹¹ Joseph Schumpeter, *Capitalism, Socialism, and Democracy*. New York, NY: Allen and Unwin, 1976.

¹¹² Amy Gutmann and Dennis Thompson, *Democracy and Disagreement: Why Moral Conflict Cannot Be Avoided in Politics, and What Should Be Done about It*. Cambridge, MA: Harvard University Press, 1996.

¹¹³ Jean-Jacques Rousseau, *The Social Contract*. London: Penguin Books, 1968.

¹¹⁴ Alfred Stepan, "Religion, Democracy, and the 'Twin Tolerations'" *Journal of Democracy* 11:4 (October 2000) pp. 37-53; and Guillermo O'Donnell, "Delegative Democracy" *Working Paper 173*, Kellogg Institute, Notre Dame University, March 1992.

¹¹⁵ Daniel Philpott, "The Catholic Wave" *Journal of Democracy*, 15:2 (April 2004) pp. 32-46.

democratic transition in Brazil and Argentina was primarily limited by the influence of the military. Similarly, the military advocated the development of a nuclear weapon, while the Church advocated a sanctity of life that would forbid the use of weapons of mass destruction.

Waisman argues the declining standard of living, human rights violations of the military, and the defeat of the Argentine military in the Malvinas-Falklands War led to an outcry for the end of the military regime in Argentina.¹¹⁶ The violence and poorly executed foreign campaigning of the preceding military regime caused it to have decreased currency as a political ally, thereby eroding support for military pet projects like nuclear weaponization¹¹⁷ For Argentina, this helped to limit post-transitional power of the military and dampen the drive for the bomb. Dahl has argued that military and police organizations being subject to civilian control are a necessary condition of democracy.¹¹⁸

In 1983, the new democratically elected president placed Argentina's nuclear program under civilian control and initiated several confidence building measures and nuclear cooperation efforts with Brazil, signing five nuclear cooperation agreements. In July 1987, President Alfonsín invited President Sarney to tour Argentina's unsafeguarded Pilcaniyeu pilot uranium enrichment facility. In response, Sarney invited Alfonsín to tour the Brazilian Navy's Aramar uranium enrichment facility near

¹¹⁶ Carlos H. Waisman, "The Argentine Paradox" *Journal of Democracy*. 1:1, (Winter 1990) pp. 91-101.

¹¹⁷ Juan J. Linz and Alfred Stepan. *Problems of Democratic Transition and Consolidation: Southern Europe, South America, and Post-Communist Europe*. Baltimore, MD: Johns Hopkins University Press, 1996.

¹¹⁸ Robert A. Dahl, *Democracy and Its Critics*. New Haven, CT: Yale University Press, 1989, p. 245.

Sao Paulo. The significance of the visits was that each facility had served as a secret nuclear installation.

Linz, Stepan, and Aguero argue that because an attempted coup in 1990, unsupported by senior level commissioned officers, was thwarted by the president, the democratic regime further legitimized civilian control and helped to galvanize many in favor of democracy.¹¹⁹ Such a coup, if successful, would have likely threatened the fragile binational non-proliferation agreements. Levitsky and Murillo have argued that the Argentine financial crisis of 2001-2002 was significant test for the military. Even in an atmosphere of chaos, the military accepted its exclusion from regime change.¹²⁰ Aguero examines the role of civilian and military relations which resulted from the amnesty provisions for human rights violations performed by the military regime. He finds that tensions were eventually calmed when the amnesty provisions were vetoed and the officers were tried.¹²¹ Waisman also suggests that the economic stagnation of the 1980's in Argentina also led to the "formation of a democratic political culture, the commitment to democracy of economic and political elites, and strong political leadership."¹²²

Brazil's transition away from authoritarian military rule was somewhat softer

¹¹⁹ Juan J. Linz and Alfred Stepan. *Problems of Democratic Transition and Consolidation: Southern Europe, South America, and Post-Communist Europe*. Baltimore, MD: Johns Hopkins University Press, 1996; and Felipe Aguero, "Toward Civilian Supremacy in South America" *Consolidating the Third Wave Democracies*. Ed. Larry Diamond, Marc F. Plattner, Yun-han Chu, and Hung-mao Tien. Baltimore, MD: Johns Hopkins University Press, 1997, pp. 177-206.

¹²⁰ Steven Levitsky and Maria Victoria Murillo, "Argentina Weathers the Storm" *Journal of Democracy*, 14:4 (October 2003) pp. 152-166.

¹²¹ Felipe Aguero, "Toward Civilian Supremacy in South America" *Consolidating the Third Wave Democracies*. Ed. Larry Diamond, Marc F. Plattner, Yun-han Chu, and Hung-mao Tien. Baltimore, MD: Johns Hopkins University Press, 1997, pp. 177-206.

¹²² Carlos H. Waisman, "The Argentine Paradox" *Journal of Democracy*. NEED ADDITIONAL PUB DATA. 1989?

than Argentina's. Stepan explores the defense of authoritarian military power employed by many Third World armies: arms importation networks must be maintained and only the military would have an interest in protecting this interest; therefore, the military must maintain the preeminent power. He argues that Brazil's developed arms infrastructure would actually increase the odds of democratic success in that as the military is more self-sufficient, the military's capacity to advance a bid for power based on this reasoning is diminished.⁽⁸⁴⁾¹²³ Peeler argues that the Brazilian Military gradually embraced the democratic transition as democratic discourse began to evolve.¹²⁴ As there was not as much ill-will between the military and civilian spheres as had been present in Argentina, Aguero argues Brazil has in turn had a harder time limiting the post-transitional influence of the military.¹²⁵ As both Brazil and Argentina transitioned to democracy from military authoritarianism, fully establishing this civilian control has been a major obstacle to consolidation.

A complete democratic revolution consists of not only the installation of a democratically elected government, but also the consolidation of the democratic regime. O'Donnell argues that Brazil and Argentina should be classified as "delegative democracies" which are "neither consolidated nor institutionalized."¹²⁶

The following section will review the literature surrounding these consolidation

¹²³ Alfred Stepan, *rethinking Military Politics: Brazil and the Southern Cone*. Princeton, NJ: Princeton University Press, 1988.

¹²⁴ John Peeler, *Building Democracy in Latin America* Boulder, CO: Lynne Rienner, 2009, pp. 49-100.

¹²⁵ Felipe Aguero, "Toward Civilian Supremacy in South America" *Consolidating the Third Wave Democracies*. Ed. Larry Diamond, Marc F. Plattner, Yun-han Chu, and Hung-mao Tien. Baltimore, MD: Johns Hopkins University Press, 1997, pp. 177-206.

¹²⁶ Guillermo O'Donnell, "Delegative Democracy" *Working Paper 173*, Kellogg Institute, Notre Dame University, March 1992.

challenges.

Diamond suggests that in order to consolidate the democratic regime: the military or other significant actors must be adequately insulated from the political process, officeholders must be held horizontally accountable, and that individual and group liberties be protected, whether in the majority or the minority.¹²⁷ Linz and Stepan argue that legitimacy is the primary obstacle to Brazil's democratic consolidation because of constraints on Brazil's first democratically elected government imposed by the military hierarchy and extremely high rates of socioeconomic inequity.¹²⁸ Hakim, however, credits Brazil's leftist leader Lula on his ability to enact social reform while empowering democratic institutions.¹²⁹ Levitsky has also applauded the Argentine leadership on the significant advances toward alleviating social inequities as well.¹³⁰ However, Hakim does caution that Argentina's democracy still faces significant challenges to consolidation. After averting a bid for President Menem to seek an unconstitutional third term, President De la Rúa was forced to resign amidst entrenched corruption, politicized courts, and a severe economic crisis.¹³¹ Even given the current explosion of economic growth in Brazil, the benefit to democratic consolidation has yet to be proven. The manner in which this

¹²⁷ Larry Diamond, "Defining and Developing Democracy" *Developing Democracy: Toward Consolidation*. Baltimore, MD: Johns Hopkins University Press, 1999, pp. 11-12.

¹²⁸ Juan J. Linz and Alfred Stepan. *Problems of Democratic Transition and Consolidation: Southern Europe, South America, and Post-Communist Europe*. Baltimore, MD: Johns Hopkins University Press, 1996.

¹²⁹ Peter Hakim, "Latin America's Lost Illusions: Dispirited Politics" *Journal of Democracy*, 14:2 (April 2003) pp. 108-122.

¹³⁰ Steven Levitsky, "The 'Normalization' of Argentine Politics" *Journal of Democracy* 11:2 (April 2000) pp. 56-69.

¹³¹ Peter Hakim, "Latin America's Lost Illusions: Dispirited Politics" *Journal of Democracy*, 14:2 (April 2003) pp. 108-122.

newfound wealth is distributed will have a profound effect on the socio-economic stratifications that currently exist within Brazilian culture.¹³²

Of Diamond's conditions,¹³³ O'Donnell finds the lack of constitutionally guaranteed horizontal accountability as the primary reason Brazil and Argentina have failed to consolidate.¹³⁴ Both states, throughout varying and competing democratic leadership, have remained in recurring states of economic crisis. Even in during the early stages of the Brazilian democratic transition, Lamounier argued the success or failure of the transition would depend on the democratic leadership's ability to relieve the severe wealth disparities.¹³⁵ As such, fiscal reformation has become a central tenant of executive policy in both Brazil and Argentina.¹³⁶ Brazil's 1988 constitution was structured to provide fiscal decentralization, in order to increase the autonomy of the states, and a strong president, who was granted the right to issue executive decrees with the force of law.¹³⁷ Sousa warned that the use, or abuse, of executive power in this manner would be detrimental to democratic consolidation in that such

¹³² Lourdes Sola, "Politics, Markets, and Society in Lula's Brazil" *Journal of Democracy*, 19:2 (April 2008) pp. 32-45.

¹³³ Larry Diamond, "Defining and Developing Democracy" *Developing Democracy: Toward Consolidation*. Baltimore, MD: Johns Hopkins University Press, 1999, pp. 11-12.

¹³⁴ Guillermo O'Donnell, "Delegative Democracy" *Working Paper 173*, Kellogg Institute, Notre Dame University, March 1992.

¹³⁵ Bolivar Lamounier. "Brazil's New Beginning" *Journal of Democracy*. 1:2 (Spring 1990) pp. 88-98.

¹³⁶ These tendency to reformation has been argued by Steven Levitsky, "The 'Normalization' of Argentine Politics" *Journal of Democracy* 11:2 (April 2000) pp. 56-69; Peter Hakim, "Latin America's Lost Illusions: Dispirited Politics" *Journal of Democracy*, 14:2 (April 2003) pp. 108-122; Larry Diamond, "Defining and Developing Democracy" *Developing Democracy: Toward Consolidation*. Baltimore, MD: Johns Hopkins University Press, 1999, pp. 11-12; Guillermo O'Donnell, "Delegative Democracy" *Working Paper 173*, Kellogg Institute, Notre Dame University, March 1992; Amaury de Souza, "Cardosa and the Struggle for Reform in Brazil" *Journal of Democracy*, 10:3 (1999) pp. 49-63.

¹³⁷ Amaury de Souza, "Cardosa and the Struggle for Reform in Brazil" *Journal of Democracy*, 10:3 (1999) pp. 49-63.

actions override the legislature and bring chaos to the judiciary; each of which undermines the separation of powers.¹³⁸ While President Cardoso's goals were "aimed at consolidating the mechanisms of representation, strengthening political parties, and eliminating distortions,"¹³⁹ he was in reality weakening horizontal accountability through legislating by decree.¹⁴⁰ Additionally, the Brazilian government made it clear in the 1988 constitution that Brazil would not pursue nuclear weapons, adding a constitutional requirement for nuclear development to be "exclusively for peaceful purposes"¹⁴¹ and that "all nuclear activity in Brazil would only be allowed for peaceful purposes and upon Congressional approval."¹⁴²

Levitsky suggests that while actors are also playing by the democratic rules,¹⁴³ the lack of horizontal accountability causes both systems to be highly volatile.¹⁴⁴ O'Donnell argues that these delegative democracies will remain in a constant state of economic crisis until the political leadership takes the responsibility to overcome the institutionalization hurdle and promote the establishment of horizontal accountability.

145

¹³⁸ Amaury de Souza, "Cardosa and the Struggle for Reform in Brazil" *Journal of Democracy*, 10:3 (1999) pp. 54-57.

¹³⁹ Fernando Henrique Cardoso, "Democracy as a Starting Point" *Journal of Democracy*, 12:1 (2001) pp. 5-14.

¹⁴⁰ Amaury de Souza, "Cardosa and the Struggle for Reform in Brazil" *Journal of Democracy*, 10:3 (1999) pp. 50-51

¹⁴¹ Lamazière, Georges and Roberto Jaguaribe. 1992. beyond Confidence-Building: Brazilian-Argentine Nuclear Cooperation. *Disarmament*, Vol. 15, No. 3: 102-117.

¹⁴² Albright, David. 1989. Bomb Potential for South America. *Bulletin of the Atomic Scientists*, Vol. 45, No. 4: 16-20.

¹⁴³ Steven Levitsky, "The 'Normalization' of Argentine Politics" *Journal of Democracy* 11:2 (April 2000) pp. 56-69.

¹⁴⁴ Guillermo O'Donnell, "Delegative Democracy" *Working Paper 173*, Kellogg Institute, Notre Dame University, March 1992.

¹⁴⁵ Guillermo O'Donnell, "Delegative Democracy" *Working Paper 173*, Kellogg Institute, Notre Dame University, March 1992.

Levitsky argues that despite its delegative tendencies, the Argentine democracy saw significant advances toward consolidation including the unquestioned fairness of elections, broad and consistent protection of political and civil rights, and a free media climate.¹⁴⁶ Schamis has also suggested that Argentina's many crises have allowed congressional bargaining and accommodation, central tenants of democratic consolidation.¹⁴⁷ However, Hakim assesses Argentine democracy still faces significant challenges to consolidation.¹⁴⁸ After averting a bid for President Menem to seek an unconstitutional third term, President De la Rúa was forced to resign amidst entrenched corruption, politicized courts, and a severe economic crisis. While an oppositional force may be capable of winning the presidency of Argentina, (22)¹⁴⁹ the lack of a significant opposition party to the Peronist in the legislature could cause the governance offered by these oppositional leaders to fail,¹⁵⁰ further maintaining the delegative cycle.¹⁵¹

¹⁴⁶ Steven Levitsky, "The 'Normalization' of Argentine Politics" *Journal of Democracy* 11:2 (April 2000) pp. 56-69.

¹⁴⁷ Hector E. Schamis, "Argentina: Crisis and Democratic Consolidation" *Journal of Democracy* 13:2 (April 2002) pp. 82-94.

¹⁴⁸ Peter Hakim, "Latin America's Lost Illusions: Dispirited Politics" *Journal of Democracy*, 14:2 (April 2003) pp. 108-122.

¹⁴⁹ Steven Levitsky and Maria Victoria Murillo, "Argentina Weathers the Storm" *Journal of Democracy*, 14:4 (October 2003) pp. 152-166.

¹⁵⁰ Ernesto Calvo and Maria Victoria Murillo, "Who Delivers? Partisan Clients in the Argentine Electoral Market" *American journal of Political Science* 48 (October 2004) pp. 742-757.

¹⁵¹ Guillermo O'Donnell, "Delegative Democracy" *Working Paper 173*, Kellogg Institute, Notre Dame University, March 1992.

IV.

ANALYSIS OF THE EVIDENCE

The goal of this research is to determine the influential significance of each of the leading theoretical explanations of nuclear proliferation in shaping the resulting non-proliferation of Brazil and Argentina. The following section provides analysis of the evidence presented in the preceding chapter, through the lenses of security, norms, and domestic politics to provide insight into how each evolved over the course of the states' proliferation episode. Each piece of evidence is evaluated for its presence or absence in the dyad of Argentina and Brazil.

Theoretical Explanations of Argentine and Brazilian Nuclear Rapprochement			
	<i>Security</i>	<i>Norms</i>	<i>Domestic Politics</i>
<i>Presence of Concern for</i>	International security environment	Adherence/acceptance of NNPT	Economic cost/benefit
	Under nuclear threat	Behavioral norms	Political cost/benefit
	Under rival threat	Nuclear non-use	Democratic consolidation
	Threat Environment shift	Respect for international partners/law	Domestic organizations (Nuclear Energy, Military, Trade)
	Nuclear Umbrella	Fear of opposition/loss of prestige	Domestic players (Politicians, Public)

Table 2. Research Design

Security

The security approach is a valid and often occurring approach to the nonproliferation puzzle, however it is not active in the Argentina and Brazil proliferation dyad because the level of animosity between the two rivals doesn't not

meet the threshold at which either felt truly threatened by the other. Nevertheless, the tension that remains between Great Britain and Argentina over the disputed territory of the Falkland Islands could still be a fault line of future proliferation.

International security environment – No

The outbreak of the Falklands War is an intriguing piece of evidence on multiple levels, the first of which is its impact on the nuclear decision calculus of Argentina. In the Falklands War, Argentina found itself in a complex international security environment, in direct armed conflict with a nuclear armed rival, without the security of a nuclear armed ally. The Falklands War was the only real shift in the international security environment that either country faced during this time period, but the conflict was short lived and didn't spur the proliferation spiral feared by some scholars.

Under nuclear threat – No

Argentina was no doubt aware and concerned about the international security environment as evidenced by it voluntarily initiating the war in the first place. The threat of Great Britain's nuclear weapons should have been enough to deter Argentina from ever attempting such an invasion, or at the least should have pushed Argentina toward a nuclear weapon of its own to counter the British threat, however, neither outcome prevailed. While it is likely that some in the military would have considered developing a nuclear weapon to counter the British during this time, the limited scope of the war would not have allowed a necessary timeline for weapons development.

Under rival threat – No

The ambiguous and rivalrous threat of either Argentina or Brazil developing nuclear weapons also did not have the predictive power to result in a proliferation outcome either. The view held by some scholars that relations between Argentina and Brazil were conflict riddled and overly competitive is not necessarily historically accurate. Competition was, has been, and remains present in the southern cone; however, a pattern of cooperation between the two states far predates the nuclear issues of the 70s and 80s. Attempts at cooperation were evident as early as 1908 when Brazilian Foreign Minister Jose da Silva Paranhos negotiated territorial disputes peacefully and formally with Argentina's leadership. By 1914, the ABC Pact (Argentina, Brazil and Chile) began to emerge and was formalized on May 15, 1915. The ABC Pact (formally the Consultation, Non-Aggression and Arbitration Pact.) was designed to develop cooperation, nonaggression, provide for the arbitration of disputes, and also gave the three major South American countries a unified means of resisting the United States' influence in the region. By 1941, bilateral negotiations between Argentina and Brazil had yielded the Agreement for Progressive Free Trade, which committed each not to apply trade barriers to activities not yet established in either country. During these negotiations Argentina's Economic Minister Federico Pinedo observed:

I have always understood that it would be ideal to progress towards a customs union - open, of course, to other neighboring countries...Let's suppose that a policy in this direction would have been initiated many years ago. Instead of having Brazil and Argentina run parallel industries producing at high costs in different and all but closed markets, we could have arrived at a profitable division of industrial

work between the two nations...I am prepared to make great efforts in order to reach as extensive as possible an understanding with Brazil.¹⁵²

Threat Environment shift – No

With only minor territorial disputes with Great Britain and regional relationships characterized by cooperation more often than combative, Brazil and Argentina saw no real significant shifts in the threat environments during the period. There were no other military conflicts that either country was engaged, or likely to engage in during the period. The threat environment for both remained mostly static.

Nuclear Umbrella – No

During the period of analysis, and still today, both Argentina and Brazil remain outside the covering of any nuclear security agreements and are not under any nuclear umbrella agreement. The United States and some other nuclear powers provide military support agreements to partner nations, ensuring strategic stability through nuclear backing. There is no nuclear umbrella present in all of South America.

Norms

The evidence in the preceding chapter clearly demonstrates that the norms approach was active in Argentina and Brazil's proliferation episode through their eventual acceptance and adherence to the core ideals and tenants of non-proliferation,

¹⁵² Gabriel Porcile. "The Challenge of Cooperation: Argentina and Brazil, 1939-1955" *Journal of Latin American Studies*, 27:1 (Feb., 1995), pp. 129-159.

but in a few rather unique ways.

Adherence/acceptance of NNPT – Yes, in principle

First, Argentina and Brazil have both shown a willingness to adhere to the core ideal of the NPT as evidenced by their lack of nuclear weapons, however, each were reluctant participants in the formal international regimes that had been established by the US, British, and other western powers. It wasn't until regional agreements between Argentina and Brazil had been negotiated and came into force that each country was willing to formally accept the larger non-proliferation regime. Nevertheless, both adhered to the behavioral norms of non-development set out by the regime.

Behavioral norms – Yes

From the 1960s to the early 1990s, Argentina and Brazil both pursued ambitious nuclear energy developments, but did so on occasion under a veil of secrecy by refusing to join the NPT and the Treaty of Tlatelolco. This secrecy led to paranoia, miscalculation, and the assumption that both were set on beating the other to the bomb; however, this misconception was driven primarily by US projection and other western observers but was not necessarily the perception within the dyad itself.

Nuclear non-use – Yes

Argentina has pursued a nuclear-powered submarine effort with varying degrees of zeal over the past few decades but has not shown a desire to actually outfit the nuclear-powered vessels with nuclear laden missiles. Due to its natural resources

and technical expertise, Brazil has at its disposal the complete nuclear fuel cycle, from mineral prospecting to uranium enrichment and fuel fabrication; however, Brazil has never developed the bomb, and has shown no intention to enrich uranium to a weapons grade level, beyond 20%.

Further revisiting the Falklands War in light of the nuclear taboo again proves revealing. Argentina's military by 1982 was willing to carry out an invasion of territory occupied by a nuclear capable Great Britain. Although Argentina did not directly attack Great Britain proper, the British nuclear capability was a factor that the Argentina's military leadership weighted before launching their invasion. Similarly, the British were willing to bring nuclear weapons into the theater, albeit never actually willing to employ its capability. Argentina's military leadership believed that the British would not respond militarily, with either conventional or nuclear weapons. When the British did actually begin conventional attacks, Argentina's military leadership remained convinced that the Great Britain's nuclear capability would not be employed. I asses that this lesson from the British in the non-use of nuclear weapons likely served to reinforce the notion that nuclear weapons were not worth the military investment for Argentina, as they are rendered useless by the emergence of the nuclear taboo.

Respect for international partners/law – Yes

Both Argentina and Brazil have demonstrated a respect for international partners and law but are primarily focused on their immediate regional partnerships and have shown to be particularly sensitive to what they interpret as punitive power

plays from external international regimes. While shunning the NPT and other international non-proliferation efforts in what Argentine ambassador to the United Nations, Jose Maria Ruda referred to as the Treaty for the Disarmament of the disarmed, Argentina and Brazil sought to establish a Latin American Nuclear Free Zone on their own terms, while maintaining their own rights to nuclear energy capabilities. The establishment of the bilateral inspection agency ABACC laid the groundwork for confidence building between the two rivals, and it also gave both a stake in the leadership and success of the overall effort.

Following the success of the ABACC, both Argentina and Brazil have eventually signed and ratified the Treaty of Tlatelolco, Comprehensive Nuclear Test Ban Treaty (CTBT), and become members of the Nuclear Suppliers Group (NSG); however, in its 2008 National Defense Strategy (NDS), Brazil will not sign any additions to the NPT, including the Additional Protocol (IAEA), until the nuclear weapon states have made progress towards nuclear disarmament.

Fear of opposition/loss of prestige – Yes

Argentina and Brazil demonstrated that they were sensitive to opposition on the weaponization front and desired to maintain their prestige as the leading countries of Latin America, however, their desire for prestige seems to have surpassed just merely the acquisition of nuclear weapons, taking a more strategic leadership and ownership of their collective region. Argentine and Brazilian leaders rejected the notion of external powers setting the rules of the game for South American, instead seeking a level of prestige that would allow them to carve out one of the few nuclear

weapons free continents in the world. By fully embracing the norm of nuclear abstinence, Brazil and Argentina were able to avoid the nuclear arms race that bankrupted the Soviet Union and the elusive notion of disarmament with which nuclear weapons states continue to struggle.

Domestic Politics

The evidence in the preceding chapter also supports at least a corollary tie to the domestic politics model in shaping the non-proliferation of Argentina and Brazil. Both countries weighted and considered nuclear weapons programs for decades, but it wasn't until their respective democracies emerged and began to consolidate that any visible commitments to non-proliferation began to emerge. The push for liberalized regional trade, which had been present since the early twentieth century, was a greater motivator for the players and organizations in both countries. Additionally, the perceived power plays of the nuclear haves versus the South American nuclear have nots shaped the collective mindsets of players and organizations in both countries. A unity between Argentina and Brazil's leadership, a unity present since the ABC Pact, was solidified in both countries resistance to the perception of being bullied.

Economic cost/benefit – Yes

Nuclear economics played a rather complex role in shaping this specific proliferation outcomes. While the direct economic impacts related explicitly to any weapons programs seemed to have been of minimal concern to leaders in both Argentina and Brazil, the desire to develop and possess nuclear power capability,

independent of extra-regional oversight, was driven overwhelmingly by economic concerns. Nevertheless, the multiple economic crises in both countries likely served to limit the resources available for the military to fully support a costly nuclear weapons development effort.

Political cost/benefit – No

Regional view on the political costs and benefits of nuclear weapons development seemed to evolve somewhat homogeneously over time. Leaders early in the nuclear age shared initial technological curiosities and sought nuclear power and weapons capabilities. Nuclear capability obviously appealed to leaders in both Argentina and Brazil due to their symbol of great power status and a point of national pride. Leaders early in the period were sure to display and tout the nuclear advancements that were made by each country. However, there was little evidence that leaders were concerned, campaigning, and felt pressure to cave to the nuclear demands and certain constituencies.

Democratic consolidation – Yes

One of the most significant shifts within the domestic landscapes of both Brazil and Argentina during the critical period of nuclearization between the 1970s-1980s was the democratic transitions of Argentina and Brazil. In 1983, the new democratically elected president placed Argentina's nuclear program under civilian control and initiated several confidence building measures and nuclear cooperation efforts with Brazil, signing five nuclear cooperation agreements. While the military's

commitment to weaponization seems to have always been soft, the transitions to civilian leadership in each state paved the way to formalize the end on any nuclear weapons ambitions.

Domestic organizations (Nuclear Energy, Military, Trade) – Yes

Organizationally, by 1983, both the Brazilian Physics Society (SBF) and the Argentine Physics Association (AFA) had issued a joint declaration, encouraging both governments to exchange nuclear information and to establish mutual inspections of nuclear related facilities and agreed to push their respective governments to that end.¹⁵³ For the first time, domestic organizations in both countries had begun to lobby for nuclear openness and cooperation. The following year, the same organizations issued another joint statement declaring opposition toward nuclear weapons development, considering it “morally unacceptable the participation of physicists in the development of nuclear weapons.”¹⁵⁴

Domestic players (Politicians, Public) – Yes

The actions of several key domestic players and organizations also facilitated the resulting non-proliferation. In 1980, the military governments Argentina and Brazil came together for the Cooperative Agreement for the Development and Application of the Peaceful Uses of Nuclear Energy. In 1983, the new democratically

¹⁵³ Wrobel, Paulo S. and John R. Redick. 1998. —Nuclear Cooperation in South America: The Role of Scientists in the Argentine-Brazilian Rapprochement. *Annals of the New York Academy of Sciences*, Vol. 866, No. 1: 165–181.

¹⁵⁴ Fabbri, Claudia M. 2005. Social Constructivism and the Role of Ideas: The Construction of Argentine-Brazilian Nuclear Cooperation, 1979-1991. Ph.D. Thesis, University of Warwick.

elected president placed Argentina’s nuclear program under civilian control and initiated several confidence building measures and nuclear cooperation efforts with Brazil, signing five nuclear cooperation agreements. The Joint Working Group on Nuclear Affairs (JWG) was created in 1985, eventually evolving into the Permanent Committee on Nuclear Affairs (PCNA) by 1988. The 1987 nuclear facility visits by Argentine President Alfonsín and Brazilian President Sarney was also a significant. In addition to the actions of presidential leadership and nuclear physicists, liberalizing domestic regimes began to emerge in both states; banks, export firms, and monetary agencies for political and economic policies more favorable to trade than to inward focused nuclear fiefdoms.

Theoretical Explanations of Argentine and Brazilian Nuclear Rapprochement						
<i>Security</i>		<i>Norms</i>		<i>Domestic Politics</i>		
<i>Presence of/Concern for</i>	International security environment	N	Adherence/acceptance of NNPT	Y	Economic cost/benefit	Y
	Under nuclear threat	N	Behavioral norms	Y	Political cost/benefit	N
	Under rival threat	N	Nuclear non-use	Y	Democratic consolidation	Y
	Threat Environment shift	N	Respect for international partners/law	Y	Domestic organizations (Nuclear Energy, Military, Trade)	Y
	Nuclear Umbrella	N	Fear of opposition/loss of prestige	Y	Domestic players (Politicians, Public)	Y
0/5		5/5		4/5		

Table 3. Summary Findings

V.

CONCLUSION

By the 1970s and early 1980s, Brazil and Argentina had acquired and begun developing nuclear technology; at the time, neither country was a willing participant in the global nuclear non-proliferation regime. Both countries had devoted decades of research and funding into developing their nuclear infrastructures, with a desire to become energy independent. Both had achieved a uranium enrichment capability, but neither had publicly admitted to a nuclear weapons development effort. Nevertheless, the rivalrous relationship and push to advance their influence and power in the region made this dyad ripe for miscalculation and a nuclear arms race. Both countries viewed one another a potential security threat, and their militaries had at least considered developing contingency war plans. However, the above process tracing reveals that despite the realist's perilous prediction that a proliferation episode was bound to occur, the resulting nuclear weapons never came into being. A causal relationship between the security driver and the resulting nuclear weapons alone is insufficient. Until the 1980's, both countries were governed primarily by authoritarian military regimes which kept the true nature of any nuclear activities in a veil of uncertainty. Furthermore, until the 1980s there was little diplomatic interaction between the two sides and little social and economic interdependence. However, the aforementioned process tracing also reveals common ground between the rivals, specifically in their rejection of the emerging Non-proliferation regime. Despite Brazil initiating the effort, both rejected the limitations on PNEs required by the Treaty of

Tlatelolco, both refused to join the NPT due to its discriminatory and imbalanced policies.

On the domestic front, it becomes readily apparent that the same economic decline that ushers in a wave of democratic transition in the region, also served to limit the allocation of resources to nuclear development and weaponization activities. As both countries civilian governments gained support, authority, and stability during the 1980s, the military push for nuclear weapons lost its driving voice, both in the power of the purse and with the general public. The consolidating civilian led democracy was able to approach national security concerns from a perspective less influenced by the doctrines of military conflict. Hymans has also identified that P-residential leadership and identity conceptions during the critical nuclear decision-making periods of the 1980s and early 1990s, led not only to immediate non-weaponization, but also laid the cooperative framework from which future weaponization episodes could have occurred.

There is no single factor, nor actor in this particular dyad that led to the cessation of the weaponization spiral. Rather, this particular proliferation episode seems better characterized by its exceptions and prudential timing of polity shifts. The lack of prolonged armed conflict, or the lack of diametrically opposed world views, which characterizes most historical arms races, provided a softer soil by which cooler heads could blossom. Emerging norms and international regimes served to limit access and availability of critical pieces of nuclear technology, but perhaps more importantly in this episode, the punitive policies of the international regime actually provided common ground by which Argentina and Brazil could open a shared

dialogue; the roots of diplomacy, too, began to take hold. Despite general nuclear competition throughout the 1960s and 1970s, both states developed a common position and hostility towards the international non-proliferation regime. Finally, the significant shift from authoritarian military leadership in both countries to consolidating, civilian led democratic polities provided the appropriate stable architecture by which the states were able retreat from the nuclear brink. It was in this context in which the shared interests between Argentina and Brazil surfaced.

Trust, but Verify

Negotiations leading to the establishment of the ABACC provided perhaps the most significant shift in diplomacy between Argentina and Brazil. The joint disdain of the punitive posture of the international non-proliferation regime prompted the negotiations and also provided a common point of self-sufficient pride that provided the fuel for the 2 countries to overcome their security skepticism and etch out a uniquely Latin approach to the proliferation issue. This common position allowed both countries to eventually sign and enforce the Treaty of Tlatelolco, renounce their rights to conduct PNEs, strengthened their nuclear export controls, created a joint system of inspections of all their nuclear facilities that includes accepting full-scope International Atomic Energy Agency (IAEA) safeguards, scaled back uranium enrichment capabilities, and eventually even adherence as NNWS signatories to the NPT.

Key to the success of nuclear de-escalation between Argentina and Brazil was the high degree of bilateral cooperation between the nuclear policies of the two states.

Rather than being paralyzed by uncertain security concerns, both countries seized an opportunity to improve their security and economy through reducing nuclear competition. The shift toward cooperation between the nuclear enterprises of each country is still present today.

Outlook

Some scholars argue that the best theories are those that explain the largest number of cases and that the majority of countries that have acquired nuclear weapons appear to be best explained by the security model. However, as highlighted in the preceding chapters the security model explanation for nuclear proliferation decisions is an insufficient causal mechanism to explain the non-weaponization of Argentina and Brazil; the problem of nuclear proliferation is driven by more than a single universal driver. History provides examples of both successful acquisition of nuclear weapons proliferation, abandonment of nuclear pursuits, and altogether abstention in the nuclear realm altogether; all decisions being driven by different multifaceted causal models. Cooperation was likely possible because Argentine and Brazilian security concerns about one another were overwhelming, or fundamental to the state's policies. Therefore, future scholarship in the area of nuclear proliferation would likely benefit from a focus on comparative studies seeking to uncover the conditions under which specific causal forces produced similar outcomes.

BIBLIOGRAPHY

- Adler, Emanuel. 1987. *The Power of Ideology: The Quest for Technological Autonomy in Argentina and Brazil*. Berkeley: University of California Press.
- Aguero, Felipe. "Toward Civilian Supremacy in South America" *Consolidating the Third Wave Democracies*. Ed. Larry Diamond, Marc F. Plattner, Yun-han Chu, and Hung-mao Tien. Baltimore, MD: Johns Hopkins University Press, 1997, pp. 177-206.
- Aja Espil, Jorge A. 1985. Argentina. In Jozef Goldblat, ed. *Non-proliferation: The Why and the Wherefore: 73–79*. London: Taylor and Francis; p. 76.
- Albright, David. 1989. Bomb Potential for South America. *Bulletin of the Atomic Scientists*, Vol. 45, No. 4: 16–20.
- BAN Ki-moon, Address to the 2010 NPT Review Conference, 3 May 2010
- Barletta, Michael. 1997. *The Military Nuclear Program in Brazil*. Working Paper, Stanford, CA: Center for International Security and Arms Control. Accessed 24 January 2017, available from <http://iis-db.stanford.edu/pubs/10340/barletta.pdf>. 247
- Barletta, Michael. 2000. *Ambiguity, Autonomy, and the Atom: Emergence of the Argentine-Brazilian Nuclear Regime*. Ph.D. Thesis, University of Wisconsin-Madison.
- Betts, Richard K. "Paranoids, Pygmies, Pariahs and Nonproliferation." *Foreign Policy*, Vol. 26, No. 4 (Spring 1977) pp. 157–183.
- Boyce, D. George. *The Falklands War*. Houndmills, Basingstoke, Hampshire, England: Palgrave Macmillan, 2005.
- Calvo, Ernesto, and Maria Victoria Murillo, "Who Delivers? Partisan Clients in the Argentine Electoral Market" *American Journal of Political Science* 48 (October 2004) pp. 742-757.
- Carasales, Julio C. 1992a. Goals of Argentine-Brazilian Cooperation. In Paul L. Levanthal and Sharon Tanzer, eds. *Averting a Latin-American Nuclear Arms Race*: New

Prospects and Challenges for Argentine-Brazilian Nuclear Cooperation: 44-75. New York, St. Martin's Press;.

Carasales, Julio C. 1995. The Argentine-Brazilian Nuclear Rapprochement. *The Nonproliferation Review*, Vol. 2, No. 3: 39–48; UN General Assembly, X Special Session, 5th plenary meeting, 26 May 1978.

Carasales, Julio C. 1999. The So-Called Proliferator That Wasn't: The Story of Argentina's Nuclear Policy. *The Nonproliferation Review*, Vol. 6, No. 3: 51–64.

Cardosa, Fernando Henrique. "Democracy as a Starting Point" *Journal of Democracy*, 12:1 (2001) pp. 5-14.

Carlos H. Waisman, "The Argentine Paradox" *Journal of Democracy*.1989.

Costanzo, Charles E. 1998. *Returning from the Brink: Is There a Theory-Based Explanation for the Attenuation of Horizontal Nuclear Proliferation?* Ph.D. Thesis, University of Alabama; p. 111.

Courtney, William H. 1980. Nuclear Choices for Friendly Rivals. In Joseph A. Yager, ed. *Nonproliferation and U.S. Foreign Policy: 241–279*. Washington, D.C.: The Brookings Institution.

Deudney, Daniel, "Dividing Realism: Structural Realism and Security Materialism on Nuclear Security and Proliferation." *Security Studies* Vol. 2 (Summer, 1993), 7-36.

Diamond, Larry. "Defining and Developing Democracy" *Developing Democracy: Toward Consolidation*. Baltimore, MD: Johns Hopkins University Press, 1999, pp. 11-12;

Doyle, James E. 1997. *Nuclear Rollback: A New Direction for U.S. Nonproliferation Policy?* Ph.D. Thesis, University of Virginia;

Doyle, James E. 2008. Argentina and Brazil. In James E. Doyle, ed. *Nuclear Safeguards, Security, and Nonproliferation: Achieving Security with Technology and Policy: 307-329*. Butterworth-Heinemann: Elsevier;

Doyle, Michael W. "Kant, Liberal Legacies, and Foreign Affairs," Parts I and II, *Philosophy and Public Affairs*, Vol. 12, Nos. 3-4 (Summer, Fall 1983);

Doyle, Michael W. "Liberalism and World Politics," *American Political Science Review*, Vol. 80, No. 4 (December 1986), pp.1151-1170.

Fabbri, Claudia M. 2005. *Social Constructivism and the Role of Ideas: The Construction of Argentine-Brazilian Nuclear Cooperation, 1979-1991*. Ph.D. Thesis, University of Warwick.

Gamba-Stonehouse, Virginia. 1991. Argentina and Brazil. In Regina Cowen Karp, ed., *Security with Nuclear Weapons? Different Perspectives on National Security: 229-257*. New York: SIPRI and Oxford University Press.

Gamba-Stonehouse, Virginia. 1991. Argentina and Brazil. In Regina Cowen Karp, ed., *Security with Nuclear Weapons? Different Perspectives on National Security: 229-257*. New York: SIPRI and Oxford University Press.

Geddes, Barbara. "How the Cases You Choose Affect the Answers You Get: Selection Bias in Comparative Politics." *Political Analysis 2* (1990), pp.131-150

Goldemberg, Jose and Harold A. Feiverson. 1994. Denuclearization in Argentina and Brazil. *Arms Control Today*, Vol. 24, No. 2: 10–14;

Goldemberg, Jose. 1985. Brazil. In Joseph Goldblat, ed. *Non-Proliferation: The Why and the Wherefore: 81-87*. London: Taylor and Francis; O Programa Nuclear Brasilin, 1977.

Guglialmelli, Juan E. 1976. The Brazilian-German Nuclear Deal: A View from Argentina. *Survival*, Vol. 18, No. 4: 162–165.

Guttman, Amy, and Dennis Thompson, *Democracy and Disagreement: Why Moral Conflict Cannot Be Avoided in Politics, and What Should Be Done about It*. Cambridge, MA: Harvard University Press, 1996.

Hakim, Peter. "Latin America's Lost Illusions: Dispirited Politics" *Journal of Democracy*, 14:2 (April 2003) pp. 108-122.

Ham, Peter van. *Nuclear Managing Non-Proliferation Regimes in the 1990s: Power, Politics, and Policies* (New York: Royal Institute of International Affairs, 1994) p. 73

Harrop, Liz. "Propaganda's War on Human Rights" *Peace Review*, Vol. 16, Issue 3 (Fall 2004), pp. 311-316

- Hirdman, Sven, Frank Barnaby, and Jozef Goldblat. 1972. *The Near-Nuclear Countries and the NPT*. Stockholm: SIPRI, Almqvist and Wiksell.
- Holton, W. Conrad. "Power Surge: Renewed Interest in Nuclear Energy" *Environmental Health Perspectives* (November 2005) Vol. 113 Issue 11, p. 742
- Howe, Marvin. 1975. Brazil, Racing for Growth, Tries to Rely on U.S. *The New York Times*, July 2: 1:2.
- Hurrell, Andrew. 1998. An Emerging Security Community in South America? In Emanuel Adler and Michael Barnett, eds. *Security Communities*: 228-264. Cambridge: Cambridge University Press.
- Hymans, Jacques E. C. *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy*. (Cambridge: Cambridge University Press, 2006)
- Jervis, Robert, "Realism, Game Theory, and Cooperation" *World Politics*, Vol. 40, No. 3 (April 1988) pp.317-349.
- Keohane, Robert O., *After Hegemony: Cooperation and Discord in the World Political Economy*, (Princeton: Princeton University Press, 1984)
- Knopf, Jeffrey W. 2003. The Importance of International Learning. *Review of International Studies*, Vol. 29, No. 2: 185–207;
- Krasno, Jean. 1992. Brazil, Argentina Make it Official. *Bulletin of the Atomic Scientists*, Vol. 48, No. 3: 10–11;
- Krasno, Jean. 1994. Brazil's Secret Nuclear Program. *Orbis*, Vol. 38, No. 3: 425–437.
- Lamazière, Georges and Roberto Jaguaribe. 1992. Beyond Confidence-Building: Brazilian-Argentine Nuclear Cooperation. *Disarmament*, Vol. 15, No. 3: 102–117.
- Lamounier, Bolivar. "Brazil's New Beginning" *Journal of Democracy*.1:2 (Spring 1990) pp. 88-98.
- Levitsky, Steven, and Maria Victoria Murillo, "Argentina Weathers the Storm" *Journal of Democracy*, 14:4 (October 2003) pp. 152-166.

- Levitsky, Steven. "The 'Normalization' of Argentine Politics" *Journal of Democracy* 11:2 (April 2000) pp. 56-69;
- Linz, Juan J., and Alfred Stepan. *Problems of Democratic Transition and Consolidation: Southern Europe, South America, and Post-Communist Europe*. Baltimore, MD: Johns Hopkins University Press, 1996; and Felipe Aguero, "Toward Civilian Supremacy in South America" *Consolidating the Third Wave Democracies*. Ed. Larry Diamond, Marc F. Plattner, Yun-han Chu, and Hung-mao Tien. Baltimore, MD: Johns Hopkins University Press, 1997, pp. 177-206.
- Mearsheimer, John J. "Back to the Future: Instability in Europe after the Cold War" *International Security*, Vol. 15, No. 1 (Summer, 1990), pp. 5-56
- Mearsheimer, John J., "Here We Go Again." *The New York Times*, May 17, 1998
- Mill, John Stuart. *A System of Logic*, (Honolulu: University Press of the Pacific, 2002)
- Myers, Daniel J. 1984. Brazil: Reluctant Pursuit of the Nuclear Option. *Orbis*, Vol. 27, No. 4: 881–911.
- O'Donnell, Guillermo. "Delegative Democracy" Working Paper 173, Kellogg Institute, Notre Dame University, March 1992;
- Ogilvie-White, Tanya. "Is There a Theory of Nuclear Proliferation? An Analysis of the Contemporary Debate" *The Nonproliferation Review*, Vol. 4, No. 1 (Fall 1996), pp. 43-60
- Paul, T.V. *Power versus Prudence: Why Nations Forgo Nuclear Weapons* (Montreal: McGill-Queens University Press, 2000) p. 4-5
- Peeler, John. *Building Democracy in Latin America* Boulder, CO: Lynne Rienner, 2009, pp. 49-100.
- Philpott, Daniel, "The Catholic Wave" *Journal of Democracy*, 15:2 (April 2004) pp. 32-46.
- Poneman, Daniel. 1984. Nuclear Proliferation Prospects for Argentina. *Orbis*, Vol. 27, No. 4: 853–880.

- Poneman, Daniel. 1987. *Argentina: Democracy on Trial*. New York: Paragon House Publishers. 263
- Porcile, Gabriel. "The Challenge of Cooperation: Argentina and Brazil, 1939-1955" *Journal of Latin American Studies*, 27:1 (Feb., 1995), pp. 129-159.
- Potter, William C. and Gaukhar Mukhatshanova. "Diving Nuclear Intentions: A Review Essay" *International Security*, Vol. 33, No. 1 (Summer 2008), pp. 139-169
- Potter, William C. *Nuclear Power and Nonproliferation: An Interdisciplinary Perspective* (Cambridge: Oelgeschlager, Gunn, and Hain, 1982) p. 161
- Przeworski, Adam, "Minimalist Conception of Democracy: A Defense" *Democracy's Value*. Cambridge, MA: Harvard University Press, 1999.
- Redick, John R. 1975. *Regional Nuclear Arms Control in Latin America*. *International Organization*, Vol. 29, No. 2: 415–445.
- Redick, John R. 1981. *The Tlatelolco Regime and Nonproliferation in Latin America*. *International Organization*, Vol. 35, No. 1: 103–134, and Redick, John R. 1995. *Nuclear Illusions: Argentina and Brazil*. Occasional Paper 25. Washington, D.C., Henry L. Stimson Center.
- Redick, John R. 1995. *Nuclear Illusions: Argentina and Brazil*. Occasional Paper 25. Washington, D.C., Henry L. Stimson Center.
- Reiss, Mitchell. 1995. *Bridled Ambition: Why Countries Constrain their Nuclear Capabilities*. Washington D.C.: Woodrow Wilson Center Press and John Hopkins University;
- Resende-Santos, João. 2002. *The Origins of Security Cooperation in the Southern Cone*. *Latin American Politics and Society*, Vol. 44, No. 4: 89–126. 265
- Dahl, Robert A. *Democracy and Its Critics*. New Haven, CT: Yale University Press, 1989, p. 245.
- Dahl, Robert A. *A Preface to Democratic Theory*. Chicago, IL: University of Chicago Press, 1956. (Reproduced in *The Democracy Sourcebook*, Cambridge, MA: MIT Press, 2003, p.51)

- Rosenbaum, H. Jon. 1975. Brazil's Nuclear Aspirations. In Onkar Marwah and Ann Schulz, eds. *Nuclear Proliferation and the Near-Nuclear Countries: 255–277*. Cambridge, Massachusetts: Ballinger Publishing Company.
- Rousseau, Jean-Jacques. *The Social Contract*. London: Penguin Books, 1968.
- Sagan, Scott D. "Why Do States Build Nuclear Weapons: Three Models in Search of a Bomb" *International Security*, Vol. 21, No. 3 (1996/1997) pp. 54-86.
- Sagan, Scott D. and Kenneth N. Waltz. *The Spread of Nuclear Weapons: A Debate* (New York: W.W. Norton, 1995)
- Schamis, Hector E. "Argentina: Crisis and Democratic Consolidation" *Journal of Democracy* 13:2 (April 2002) pp. 82-94.
- Schelling, Thomas C. "The Future of Arms Control" *Operations Research*, Vol. 9, No. 5 (September-October, 1961), pp. 722-731
- Schneider, Ronald M. 1991. *Order and Progress: A Political History of Brazil*. Boulder, Colorado: Westview Press; Reiss, Mitchell. 1995. *Bridled Ambition: Why Countries Constrain their Nuclear Capabilities*. Washington D.C.: Woodrow Wilson Center Press and John Hopkins University Sagan, Scott D. 1996/1997. Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb. *International Security*, Vol. 21, No. 3: 54–86.
- Schumacher, Edward. 1981. Argentina says its Nuclear Plants will not comply with Safeguards. *The New York Times*, 25 July: 1:3;
- Schumacher, Edward. 1983. Argentina Claims Nuclear Capacity. *The New York Times*, 19 November: 1:1.
- Schumpeter, Joseph. *Capitalism, Socialism, and Democracy*. New York, NY: Allen and Unwin, 1976.
- Selcher, Wayne A. 1985. Brazilian-Argentine Relations in the 1980s: From Wary Rivalry to Friendly Competition. *Journal of Interamerican Studies and World Affairs*, Vol. 27, No. 2: 25–5.

- Singh, Sonali and Christopher R. Way, "The Correlates of Nuclear Proliferation" *Journal of Conflict Resolution*, Vol. 48, No. 6 (December 2004), pp. 859-885
- Sola, Lourdes. "Politics, Markets, and Society in Lula's Brazil" *Journal of Democracy*, 19:2 (April 2008) pp. 32-45.
- Solingen, Etel. "The Political Economy of Nuclear Restraint." *International Security*, Vol. 19, No. 2 (1994) pp. 126-169.
- Souza, Amaury de, "Cardosa and the Struggle for Reform in Brazil" *Journal of Democracy*, 10:3 (1999) pp. 54-57.
- Spector, Leonard S. 1987. *Going Nuclear*. Cambridge, Massachusetts: Ballinger Publishers.
- Spector, Leonard S. and Jacqueline R. Smith. 1990. *Nuclear Ambitions: The Spread of Nuclear Weapons 1989-1990*. Boulder, Colorado: Westview Press;
- Squassoni, Sharon and David Fite. 2005. *Brazil's Nuclear History*. *Arms Control Today*, Vol. 35, No. 8: 16-17.
- Stanley, Ruth. 1992. *Cooperation and Control: The New Approach to Nuclear Nonproliferation in Argentina and Brazil*. *Contemporary Security Policy*. Vol. 13, No. 2: 191-213. 268
- Stepan, Alfred, "Religion, Democracy, and the 'Twin Tolerations'" *Journal of Democracy* 11:4 (October 2000) pp. 37-53.
- Stepan, Alfred, *rethinking Military Politics: Brazil and the Southern Cone*. Princeton, NJ: Princeton University Press, 1988.
- Sundara Rajan, Mira T., "The Past and Future of Privacy in Russia" *Review of Central and East European Law*, Vol. 27 Issue 4 (2002) pp.625-638
- Tannenwald, Nina, "Stigmatizing the Bomb: Origins of the Nuclear Taboo" *International Security* Vol. 29, No. 3 (2005) pp. 5-49.
- Van Evera, Steven, "Primed for Peace: Europe after the Cold War" *International Security*, Vol. 15, No. 3 (1990/1991) pp. 7-57

Van Evera, Steven, *Guide to Methods for Student of Political Science* (Ithaca: Cornell University Press, 1997)

Waltz, Kenneth N. "Nuclear Myths and Political Realities," *American Political Science Review*, Vol 84, No. 3 (Fall 1990) pp. 731-745

Waltz, Kenneth N. "The Emerging Structure of International Politics" *International Security*, Vol. 18, No. 2 (Autumn 1993), pp. 44-79

Waltz, Kenneth N. "The Spread of Nuclear Weapons: More May Be Better" *Adelphi Papers*, No. 171 (1981).

Wrobel, Paulo S. 1996. *Brazil and the NPT: Resistance to Change?* *Security Dialogue*, Vol. 27, No. 3: 337–347.

Wrobel, Paulo S. and John R. Redick. 1998. *Nuclear Cooperation in South America: The Role of Scientists in the Argentine-Brazilian Rapprochement.* *Annals of the New York Academy of Sciences*, Vol. 866, No. 1: 165–181.