

SPECIAL SUBJECT ESSAY
SUBMISSION COVER SHEET

Student PIC:	08-7759
Essay Title:	The Brazilian Nuclear Paradox
Syndicate:	C2
DSD Special Subject Tutor:	Dr. Mark Hillborne
Word Count:	5,964

THE BRAZILIAN NUCLEAR PARADOX

The largest country in South America in most of economical, social and geographic parameters, Brazil, during the military regime initiated in 1964, started different programs envisioning the domination of the nuclear technology, long range missiles and space rockets. A series of setbacks took place during the process, including on major change of government, transferring the subordination of the military to civilian control, in 1985. Almost 25 years later the Defence Ministry sent to the Presidential appreciation the proposal for the new Brazilian National Defence Strategy (BNDS), reaffirming the paramount of development of two areas, the nuclear and the spacial. The civilian leadership was agreeing, after 45 years, with the leaderships of the military government. However Brazil passed through a deep political and social transformation, changing completely the scenario were the decisions are now taken. But what are the odds and evens of pursuing these objectives facing the complex international relations of the Globalized world?

Brazil was known as a *Sleeping Giant*,¹ due to its potential to grow and the prostration on stagnation and, once, was called not a serious country by General Charles De Gaulle. But the peace conviction of Brazilian people, expressed by their Constitution, besides the principles of pacific resolution of conflicts and non intervention are the basis for the Brazilian way of life, perhaps misunderstood by other leaderships.

The country, since 1985, passed to the civilian government and nowadays the military are controlled by civilian power. The process of civilianization of the government opened space to one approach more aligned to the desires of the nuclear powers, facilitating the nuclear cooperation process between Brazil and Argentina and the ascendance of Brazil to the MTCR, hauling down old barriers for both projects and allowing the contact with new technologies.

The country is reaching levels of economic wealth compared to the rich countries, side by side with an inclusion politics, solidifying its position of emerging power. However the huge dimensions of its two Amazons and the resources located there make defence a very relevant concern. The BNDS enlightened the restructuration of the armed forces, giving great importance to the nuclear and space sectors. Therefore, the SSN and the SLV are again under governmental auspices. The outcomes of these two important projects are relevant not only for defence but are directed related to the country's technological and industrial development. Moreover, the BNDS sustains the cooperative approach between South American nations, as a key point to regional development.

¹ Peter Kingstone, "Brazil: The Sleeping Giant Awakens?" *Council on Foreign Relations*, http://www.cfr.org/publication/18346/brazil.html?breadcrumb=%2Fregion%2F243%2Fsouth_america (accessed March 13, 2009).

The relevant agreements and treaties do not apply constraints to both projects and Brazil's main concern will be the establishment of reliable sources of control, protecting from economic individual interests. The non-proliferation issue is directed linked to stability and regarding this aspect Brazil has a fundamental role in South America. The reconnaissance of Brazilian stability was made on the end of last year, when Brazil and France signed an agreement to build SSK and to supply the non-nuclear parts of the first SSN.

THE BRAZILIAN NUCLEAR PARADOX

INTRODUCTION

Countries pursue military projects aiming at achieving superior positions as compared to others. Nevertheless, outcomes are not only connected to superiority. On the chess board of the world's dynamics, any move may significantly affect an unexpected player.

The Hiroshima and Nagasaki events showed evidence to the world of the power of the atom and marked the factual onset of an arms race that went on for more than fifty years. During the Cold War, fear of a nuclear holocaust caused nations to build a complex mesh of treaties and agreements to curb and regulate the spread of nuclear weapons. Later on, the term Weapons of Mass Destruction (WMD) was carved, to indicate weapons of tremendous capacity to kill. Agreements and nuclear countries' rational positions are constantly subject to criticism on the part of non-nuclear nations. Some consider that disarmament 'in numbers' is a way of avoiding treaty provisions while maintaining huge deterrence capabilities. Others focus the concern about the stability environment that surrounds the nuclear threat.

Brazil is the largest country in South America, according to most economic, social, geographic, population and political parameters. As of 1964, beginning of the military regime, different programs were started with the purpose of mastering nuclear, long range missile and space rocket technologies. Several setbacks did happen during the process, though, including a major government policy change, shifting military subordination to civilian control in 1985. Practically 25 years later, the Defense Ministry submitted a new draft Brazilian National Defense Strategy (BNDS) to the President, which reaffirms nuclear and space areas as being of paramount importance. After 45 years, civilian leaders agree with old military administration chiefs. Brazil, however, has gone through deep political and social transformation, which completely changed its decision-making scenario. But what would advantages and disadvantages be of pursuing these objectives, vis-à-vis complex international relations existing in the globalize world?

This paper will try to inform readers about the Brazilian strategic reality, bringing Conventional Attack Submarines (SSK) and Nuclear Attack Submarines (SSN) into context, by means of military analysis, and regarding them as our Nation's fundamental assets for naval deterrence. The strategic context will also justify the need for a Satellite Launching Vehicle (SLV). SSN and SLV project development will be described, including political influences governing events on the international relations stage. Moreover, related agreements and treaties will be explained, along with the BNDS and the peaceful characteristic of the largest population of South America. Finally, the paper will offer an analysis of the pro's and con's involved in each project,

from the view point of Brazil, including a paradoxical approach to nuclear technology and WMD: while the country pursues nuclear and missile technologies, it does not want to have WMD.

Finally, the study will describe the one-of-a-kind nature of the region, as it adopts a somewhat constructivist approach to regional problems, especially with regards to arms control. It will conclude that Brazilian leadership is justified when pursuing these technologies, with full support of international law, and that projects foster the development of the country and of the region, due to their deep relationships with technology. It will also present the outcomes regarding the International System and the emergence of Brazil as a world power and its aspirations for a seat in the UN Security Council.

THE BRAZILIAN STRATEGIC CONTEXT

Brazil was recently said to be the world's sixth largest economy.¹ By the end of 2007, its GDP reached US\$ 1.3 trillion and its economy bloomed, at a growth rate of 5.4% per year.² Part of the BRIC³ group of countries, it is one of the strongest democracies in its region⁴, while implementing social inclusion policies, addressing 'centuries of pernicious social inequality [that] has global resonance.'⁵ This gives it a solid basis for ascending to the level of a global player. Moreover, Brazil's Constitution includes non-intervention-based provisions as a foundation for its foreign policy, respecting other countries' internal affairs.⁶

The country has been urging the United Nations (UN) for a Security Council (UNSC) reform, by creating new permanent seats to allow better representation from all regions. Brazilian external policy representatives firmly believe that, due to the country's social and economic position, its democratic stability and its tradition in South American foreign affairs, Brazil is the natural leader of the region, therefore deserving of one of these seats. The position is supported by France, Russia and United Kingdom.⁷ The United States (US), although not singling out a

¹ Foreign Affairs, "A Giant Awakens Brazil", Jan/Feb 2009, Vol. 88 Issue 1, Sponsored Section, http://www.foreignaffairs.org/sponsored_sections/country_focus/brazil/brazil.pdf (accessed February 5, 2009).

² US Department of State, "Brazil", US State Department, <http://www.state.gov/r/pa/ei/bgn/35640.htm> (accessed March 9, 2009).

³ Dominic Wilson and Roopa Purushothaman, "Dreaming with BRICs: The Path to 2050", Global Economics Paper n° 99, Goldman Sachs, <http://www2.goldmansachs.com/ideas/brics/book/99-dreaming.pdf> (accessed February 5, 2009).

⁴ Miguel Diaz and Paulo R. Almeida. "Brazil's Candidacy for Major Power Status", The Stanley Foundation, <http://www.stanleyfoundation.org/powersandprinciples/BrazilCandidacyMPStatus.PDF> (accessed February 5, 2009), 5.

⁵ Condoleezza Rice, "Rethinking the National Interest: American Realism for a New World". *Foreign Affairs* 87, No 4: 2-26. <http://search.ebscohost.com/login.aspx?direct=true&db=mth&AN=32554472&site=ehost-live> (accessed February 6, 2009), 3.

⁶ Constitution of the Federative Republic of Brazil. <http://www.senado.gov.br/sf/legislacao/const> (accessed February 5, 2009).

⁷ United Nations Foundation, "UN Security Council", United Nations, <http://www.unfoundation.org/global-issues/united-nations/the-un-security-council.html> (accessed March 9, 2009).

candidate, considers Brazil as a strong possibility, due to its solid democracy and its non-nuclear constitutional-based status.⁸ Moreover, China, Brazil's third largest trade partner (following the US and Argentina), also supports the Brazilian candidacy.⁹ The issue is one of the most important temporary objectives of the country's Foreign Affairs agenda. Brazil leads the United Nations Stabilization Mission in Haiti (MINUSTAH), a political decision made by the government aimed at giving better visibility of the country's participation on the solution of international matters, and thus contributing to the effort towards the above-mentioned permanent seat.

Brazil has a maritime space of approximately 3.5 million square kilometers; with the acceptance by the UN Commission of Limits of Continental Shelf (CLCS)¹⁰ of the request to expand its continental shelf, the area may increase to around 4.5 million km². The huge dimension of this maritime environment caused the Brazilian Navy to create the concept of the *Blue Amazon*, an area containing immeasurable resources and larger than the other green Amazon.¹¹ 95 per cent of the country's trade (US\$ 195.9 million)¹² and 88 percent of its oil exploration happen in the sea. Here, we do not include recent discoveries of amazing new oil reserves in the pre-salt layer or bio-energy resources which have also been proven to exist along the continental shelf.¹³

Submarines are weapons of the weaker, combining characteristics of discretion, mobility and fire power. They use occultation either to attack opponents or to force them to spend considerably more resources to protect their force, due to the possibility of submarine threat. Conventional submarines, due to their average low speed and to the need of exposure when charging batteries in prolonged periods of transit, are better suited for small areas, where they act according to a *point strategy*, within a limited *patrol zone* to effect a single attack against the opponent's naval force before beginning their evasion procedures. Brazil needs a nuclear submarine (SSN) due to its huge oceanic dimensions and the consequent requirement of operating according to a *maneuver strategy*. SSN's stalk opponent forces for long periods, representing constant threat, as did HMS 'Conqueror' during the 'Belgrano' episode in the Falklands War.¹⁴ Key

⁸ Elise Labott, "Powell calls Brazil 'Serious Candidate' for UN Security Council", *CNN*, <http://www.cnn.com/2004/WORLD/americas/10/05/powell.brazil/index.html> (accessed March 9, 2009).

⁹ China, "China's Position in Reforming the UN Security Council", *China Orbit*, <http://www.chinaorbit.com/china-culture/china-politics/un-security-council-china.html> (accessed March 9, 2009).

¹⁰ CLCS. "Outer Limits of the Continental Shelf Beyond 200 Nautical Miles From the Baselines: Submissions to the Commission: Submission by Brazil", United Nations, http://www.un.org/Depts/los/clcs_new/submissions_files/submission_bra.htm (accessed March 9, 2009).

¹¹ Brazilian Navy Social Communication Centre, "Amazônia Azul", Brazilian Navy, https://www.mar.mil.br/menu_v/amazonia_azul/amazonia_azul.htm (accessed March 9, 2009).

¹² Brazilian Institute of Geography and Statistics, "Brazil", IBGE, <http://www.ibge.gov.br/paisesat/main.php> (accessed March 9, 2009).

¹³ Brazilian Navy Social Communication Centre, "Amazônia Azul", Brazilian Navy, https://www.mar.mil.br/menu_v/amazonia_azul/nossa_ultima_frenteira.htm (accessed March 9, 2009).

¹⁴ Thadeu M. Coelho Lobo, "O Submarino Convencional: Evolução e Operação no Século XXI", *Revista Marítima Brasileira*, Serviço de Documentação da Marinha. Vol 127, no. 07/09 (July-September, 2007), 155-156.

factors are speed and discretion. SSN's achieve great speeds relative to surface forces and have the inherent capacity of remaining unexposed for extended periods.¹⁵ Brazil wishes to achieve deterrence¹⁶ by means of a permanent submarine threat, not by nuclear weapons.

Satellite features are fundamental in the modern world, providing secure, fast and reliable communications, surveillance and research capabilities. The 8.5 million km² Brazilian territory, combined to the existence of the impenetrable forest hiding significant amounts of the country's resources, make satellite research and surveillance a fundamental tool for the sustainable development of the rain forest. It allows for deforestation and fire surveillance, allowing river level observation and consequent flood alerts, among other significant contributions, without even mentioning the imperative of reliable and swift communications necessary for transnational crime or conflict prevention and for development. Furthermore, Brazilian territory physical characteristics, including areas close to the Equator, grant Brazil with the possibility of launching rockets using 30 percent less fuel, considerably reducing costs.¹⁷

TWO STRATEGIC PROJECTS OF INTEREST

Of the five Cirincione drivers to acquire 'nuclear weapons..., security, prestige, domestic politics, technology and economics',¹⁸ according to Krasno the main reason for Brazil and Argentina, traditional South American rivals of the past, to pursue nuclear programs in the past century was mainly the achievement of prestige with regards to 'each other and [to] the "northern" nuclear club than...any real fear of aggression'.¹⁹ This prestige was motivated by the permanent desire of both nations to reach the status of South American regional leader when disrupting the balance of power. The armed forces of the two then more developed countries in the region initiated their projects by mid-20th Century, when both countries were under military government. The efforts could not be regarded as arms races, however, because they failed to fulfill Hammond's eight criteria. The relationship between Brazil and Argentina was not bilateral, military and diplomatic planning were not directed by Argentina's moves, expenditures were under the 8 percent threshold and the countries were not seeking dominance by intimidation in the South American scenario.²⁰

¹⁵ Mario C. Flores, "Submarino de Propulsão Nuclear", *O Periscópio XXVII*, no. 43 (1989), 7-8.

¹⁶ Scott Sagan and Kenneth Waltz, *The Spread of Nuclear Weapons* (New York: W.W. Norton & Company, 1995), 3.

¹⁷ Current and Future Space Security, "Brazil: Launch Capabilities", James Martin Centre for Non-proliferation Studies, <http://cns.miis.edu/research/space/brazil/launch.htm> (accessed March 10, 2009).

¹⁸ Joseph Cirincione, *Bomb Scare* (New York: Columbia University Press, 2007), 47.

¹⁹ Jean Krasno, "Brazil's Secret Nuclear Program", *Orbis*, Vol. 38, no 3 (Summer 1994): 426.

²⁰ Barry Buzan and Eric Herring. *The Arms Dynamics in World Politics* (Boulder: Lynne Rienner Publishers, 1998), 78.

In 1964 Brazil initiated three nuclear projects with the object of enriching uranium enrichment and conducted by the three services. Known today as the *parallel program*,²¹ they differed only in the technology used. Due to its relevance for the argument, this essay will concentrate on the Navy project, to produce fuel for a forthcoming nuclear submarine.

The Navy chose the centrifuge method as the enrichment process.²² The project comprised two phases: the enrichment cycle, which is complete, and the construction of a nuclear plant for electric energy generation, which is not ready yet.²³ The political decision is to limit the enrichment to 20 percent.²⁴ Although somewhat beyond the necessary level for fuel, it is far from the demands of a nuclear fission weapon.²⁵ The program is generating expressive technological developments of broad usage and self-sufficiency to refuel nuclear power plants operating in the country.

Two events influenced the project during the capacity development phase: first, the return of Brazil to civilian administration, and second, the beginning of cooperation between Brazil and Argentina. In 1988, Brazil's new Constitution dictated the use of nuclear energy for peaceful purposes only.²⁶ The SSN project remained dormant for some years, mainly because the Navy claimed it to be a state project, not a sole responsibility of the Navy. Externally, after the end of Cold War Brazil and Argentina 'were interested in avoiding being perceived as potential regional menaces and destabilizing factors, [and were suffering] external pressures from nuclear suppliers',²⁷ nuclear states, which led them to sign the Non-Proliferation Treaty (NPT) in 1992.²⁸

The Brazilian-Argentine nuclear cooperation is a unique confidence-building initiative. Begun under military government, it has the distinctive characteristic of starting by cooperation and ending by verification, as compared to processes adopted by northern countries, which progress from verification to cooperation.²⁹ This shows its constructivist³⁰ characteristic in such a sensitive issue. The process intensified after the creation of MERCOSUL, integrating the economies of the Southern nations.³¹ Suspicions faded, as economical dependence grew.³² The cooperation process was also influenced by the *US Factor*, described by Ferreira as the necessity of showing to the

²¹ Ibid., 429.

²² Frank Barnaby, *How to Build a Nuclear Bomb* (London: Granta Publications, 2003), 74.

²³ "Brazilian Navy Nuclear Program", Brazilian Navy, <https://www.mar.mil.br/pnm/pnm.htm> (accessed March 10, 2009).

²⁴ Krasno, "Brazil's Secret Nuclear Program", 432.

²⁵ Barnaby, *How to Build a Nuclear Bomb*, 73.

²⁶ Constitution of the Federative Republic of Brazil. <http://www.senado.gov.br/sf/legislacao/const> (accessed February 5, 2009).

²⁷ Georges Lamazière and Roberto Jaguaribe, "Beyond Confidence Building", *Disarmament*, Vol. XV, no 3 (1992): 112-113.

²⁸ Jozef Goldblat, *Arms Control* (Oslo: International Peace Research Institute, 1994), 79.

²⁹ Georges Lamazière and Roberto Jaguaribe, "Beyond Confidence Building", 104.

³⁰ Ken Booth and Nicolas Wheeler, *The Security Dilemma* (New York: Palgrave Macmillan, 2008), 130.

³¹ Georges Lamazière and Roberto Jaguaribe, "Beyond Confidence Building", 104-116.

³² Oliveiros Ferreira, "Goals of Argentine-Brazilian Nuclear Cooperation," in *Averting a Latin American Nuclear Arms Race*, eds. P.L. Leventhal and S. Tanzer (London: Macmillan, 1992), 68.

hegemonic power that cooperation between the two states existed, maintaining the balance of power in South America.³³

In the 1980s, compelled by a similar Argentine project, Brazil began the other project of interest, the SLV. This one comprises three parts: the satellite, from design to construction; the rocket; and the control system. The significant dependence on foreign technology led Brazil to sign the Missile Technology Control Regime (MTCR), agreeing to restrict the transfer of sensitive material used on WMD vectors of transportation.³⁴ The strong basis for MTCR acceptance was not only the embargo on the part of highly technologically developed countries, but also the 'desire of Brazil to be seen as a responsible international actor,'³⁵ aspiring to a permanent seat at the UNSC. Membership also allows the economic exploration of the satellite launching base.³⁶ Not only China and Ukraine, the old partners, but Italy is also investing expressive sums in this partnership.³⁷

THE AGREEMENTS

A Nuclear-Weapon-Free Zone (NWFZ) is the expression of the desire of a group of states to ban nuclear weapons from the region of interest, setting up a system of verification. It 'is characterized by "four Noes": no possession, testing, deployment or use of nuclear weapons.' Moreover, it differs from the NPT because it prohibits the stationing of nuclear weapons controlled by other nations.³⁸

The first nuclear non-proliferation instrument of interest is the 1967 Treaty of Tlatelolco, which created a NWFZ in Latin America. Having the weakness of allowing peaceful nuclear explosions, it was not ratified by Brazil and Argentina. Nevertheless, 'it served as basis for the....Agreement for Exclusively Peaceful uses of Nuclear Energy, the..."Bilateral Agreement";³⁹ the creation of the Agency for Accounting and Control of Nuclear Materials (ABACC); and the Quadripartite Agreement, between Brazil, Argentina, the International Atomic Energy Agency (IAEA) and ABACC (both verification agencies).

The most important treaty to be considered is the NPT, signed in 1968 by the majority of states. Argentina and Brazil initially refused to sign it because they considered it 'discriminatory,

³³ Ibid., 64.

³⁴ Rodney Jones and Mark McDonough, "Brazil", Carnegie Endowment, http://www.carnegieendowment.org/files/tracking_brazil.pdf (accessed March 10, 2009).

³⁵ Wyn Bowen, "Brazil's Accession to the MCTR", *The Nonproliferation Review*, (Spring-Summer 1996), 86-88.

³⁶ Ibid., 89.

³⁷ Frank Brown, "Brazil in Space: a Ukrainian Connection", Space Daily, <http://www.spacedaily.com/news/launchers-04zh.html> (accessed March 10, 2009).

³⁸ Ramesh Thakur, "Stepping Stones to a Nuclear-Weapon-Free World," in *Nuclear Weapons-Free-Zones*, ed. Ramesh Thakur (London: Macmillan, 1998), 7.

³⁹ Jose Goldemberg and Harold Feiveson, "Denuclearization in Argentina and Brazil", *Arms Control Today* 24, no. 2 (1994): 10.

“freezing” the world into two categories: nuclear-weapon and non-nuclear-weapon states.⁴⁰ They also felt the treaty eroded technological independence and prevented development for peaceful purposes. An additional concern was that the IAEA inspections would interfere with the need to protect industrial secrets and the non-proliferation policies were covers for commercial interests.⁴¹ In fact, the NPT ‘prohibits possession of the most destructive weapons yet invented, by an overwhelming majority of states, while tolerating..., by an undefined period, by a handful of states,⁴² showing the ‘asymmetry of...rights and obligations of the nuclear and non-nuclear states.’⁴³

After the end of their military regimes, both countries decided to firmly tackle the nuclear issue, with the objective of ending the embargo, contributing to technological development. In 1990, the nations signed in Foz do Iguazu the Declaration of the Common Nuclear Policy of Brazil and Argentina”. After this declaration the following step was the signature of the Quadripartite Agreement, in 1991, and the NPT in 1994, leading to the present situation.

The SSN fuel is not considered a weapon by the NPT and the IAEA exempts it from safeguards. There is a ‘widespread consensus among naval strategists that command of the seas in the future lies with the nuclear submarine.’⁴⁴ However, the exemption of verifications violates the spirit of the agreements because there is no guarantee of the real uses of nuclear material. The solution is the establishment of bilateral agreements, as a result of a confluence of commercial, political and strategic interests, which is exactly the case of the Bilateral Agreement and of the birth of ABACC in 1991.⁴⁵

The United Nations Convention on the Law of the Sea (UNCLOS)⁴⁶ grants coastal states exclusivity to explore living resources existing over the sea surface on the Continental Shelf, living resources in the water above it and the living and non-living resources beneath it. Brazil is a signatory of the convention from the beginning and was one of the first nations to submit to UN appreciation data regarding its Continental Shelf and the consequent proposal to expand it.

In 1986, another step further was the creation of the Zone of Peace and Cooperation of the South Atlantic (ZPCSA), bringing together desires of Latin American and African South Atlantic coastal states (now another NWFZ – Treaty of Pelindaba)⁴⁷, to transform the South Atlantic into a

⁴⁰ Ibid., 12.

⁴¹ Ibid., 12.

⁴² Jozef Goldblat, *Arms Control*, 77.

⁴³ Ibid., 82.

⁴⁴ Sharon Tanzer, “Rapporteur’s Summary,” in *Averting a Latin American Nuclear Arms Race*, eds. Paul Leventhal and Sharon Tanzer (London: Macmillan, 1992), 29-30.

⁴⁵ Marvin Miller, “Nuclear Submarines and their Implications for Weapons Proliferation,” in *Averting a Latin American Nuclear Arms Race*, eds. Paul Leventhal and Sharon Tanzer (London: Macmillan, 1992), 160-161.

⁴⁶ “United Nations Convention on the Law of the Sea”, United Nations, <http://www.unclos.com/> (accessed March 12, 2009).

⁴⁷ “African Nuclear-Weapons-Free-Zone Treaty”, Arms Control Association, <http://www.armscontrol.org/documents/pelindaba> (accessed March 27, 2009)

NWFZ. Moreover, it also implies cooperation between the nations, a milestone in denuclearization and arms control by employing economic and cultural bonds as tied to a complex security system. On the other hand, it supports the pacific use of nuclear energy as an unalienable right while prohibiting the nuclear weapons.⁴⁸

The last non-proliferation mechanism of interest is the MTCR, which poses 'restraints on supplies of dual capabilities weapon systems, that is, systems capable of delivering both conventional and nuclear weapons.'⁴⁹ The regime imposed severe constraints to the Brazilian SLV program, because of the embargo by technological powers due to concerns about technology transfer possibilities from Brazil to other nations, and to the lack of civilian control over military SLV projects until the 1990s. The creation of the Brazilian Space Agency (BSA) in 1994 was a milestone for the unanimous approval of Brazil by the MTCR.⁵⁰ This showed a weakness in Speier's argument that attributes the key point on the process to Brazilian lobby over US authorities.⁵¹

Relevant not for projects but for outcomes were the Organization of American States (OAS),⁵² MERCOSUL and the South American Nations Union (UNASUL).⁵³ These organizations apply constraints and oblige Brazil to act in dissociation with a realistic perception. Brazilian decisions will also be shaped by the interests of other South American countries, relative to the level of social and economic integration achieved by these integration mechanisms.

Conclusions reached by the study of these agreements show the absence of legal constraints against the development of fuel for Brazilian SSNs. Furthermore, the civilian control established over the military was regarded by nuclear states as a liability credential. Moreover, South Atlantic nations, due to the constructivist approach shown and due to the creation of complementary NWFZ, are one step ahead regarding arms control vis-à-vis North Atlantic powers. Finally, the signature of MTCR brought Brazil to a level of cooperation never achieved before, allowing for the exchange of sensitive technology.

⁴⁸ Isabela de Souza, "O Estigma da Energia Nuclear na Defesa Nacional", Laboratório do Tempo Presente, http://www.tempopresente.org/index.php?option=com_content&task=view&id=3176&Itemid=147 (accessed March 11, 2009).

⁴⁹ Jozef Goldblat, *Arms Control*, 89.

⁵⁰ Wyn Bowen, "Brazil's Accession to the MCTR", 86-88.

⁵¹ Richard Speier, "A Nuclear Nonproliferation Treaty for Missiles?" Federation of American Scientists, <http://www.fas.org/irp/threat/fp/b19ch3.htm> (accessed March 11, 2009), 6-7.

⁵² Organization of American States. <http://www.oas.org/> (accessed March 12, 2009).

⁵³ Marcia Carmo, "Entenda o que é a UNASUL", *Folha OnLine*, <http://www1.folha.uol.com.br/folha/bbc/ult272u404782.shtml> (accessed March 13, 2009).

THE BRAZILIAN NATIONAL DEFENCE STRATEGY CONTEXT

The final draft of the new BNDS was submitted to Presidential approval on the 17th of December, 2008. The starting point is the position achieved by Brazil on the international system, thanks to the country's political and economical stability. It calls for a new Defense posture and urges the involvement of the Brazilian people. It is focused on medium and long term strategies to restructure the armed forces and the defense industry. The long term strategy is based on three decisive sectors: cybernetic, spatial and nuclear.⁵⁴

The strategy reaffirms Brazilian traditions and convictions on peace, expressed by the Constitutional principles of non-interventionism, defense of peace and of the pacific solution of conflicts. It also envisions a greater military participation in peace operations under the rule of the United Nations. Furthermore, it agrees that Brazil will have to be ready to defend itself not only from aggressions but also from threats, in a world where intimidation overcomes goodwill.⁵⁵ The armed forces will have to be organized by the aegis of surveillance and control, mobility and presence⁵⁶ due to the huge dimensions of the two 'Amazons', the green – land-based, and the blue – maritime.

The defense sector will envision partnerships with other friendly countries, aiming at the development of technological capacity, gradually freeing the country from foreign defense acquisitions. Nevertheless, it supports the argument of South American integration, along with the South American Defense Council, though discussions among local leaders, fostering regional military cooperation and the integration of industrial defense basis.⁵⁷

The Navy will have priority in sea denial, providing defense in depth and securing sea resources, while counting on sea monitoring from the space. The submarine force will have a fundamental role to play and will be supplied with SSKs and SSNs. The imperative of space will be directly linked to indigenous surveillance and communication satellites. They will be launched and controlled by means of indigenous space capacity allowing for usage by the three armed forces.

Furthermore, the strategy addresses obedience to non-proliferation treaties, a sign of the Brazilian bias towards non-nuclear weapons, while stating that it 'will not agree to additions to the NPT calling for additional restrictions without nuclear powers going further on the central premise of the treaty: their own nuclear disarmament.'⁵⁸

⁵⁴ Nelson Jobim and Roberto M. Unger, "National Defence Strategy" (BNDS), https://www.defesa.gov.br/eventos_temporarios/2008/estrategia_defesa_nacional.pdf (accessed February 7, 2009), i.

⁵⁵ Ibid., 1.

⁵⁶ Ibid., 4.

⁵⁷ Ibid., 9-10.

⁵⁸ Ibid., 25.

The BNDS shows some key aspects to the world. The first one is the consolidated process of armed forces transfer to civilian control, provided by its restructuring from the perspective of a single joint defense objective. The second is the nation's solid democratic basis and its conviction about non-proliferation, with regards to its decision to pursue nuclear and space programs while abiding by limits imposed by the treaties of which Brazil is a party. Finally, the desire of integration with local nations, in the effort to create a path towards South American solid stability by means of defense cooperation. These three aspects undoubtedly make the Brazilian candidacy to the Security Council more robust, while reaffirming the country's natural disposition to lead South America to a more peaceful world.

THE PROJECTS AND THE OUTCOMES

The two projects studied are of great dimension and may provoke reactions both regionally and worldwide. But what is important for the analysis are costs and benefits of the decisions expressed by the BNDS with respect to the desire of Brazil to emerge as a world power.

The SSN project will significantly improve the defense of the Economic Exclusive Zone, granting to Brazil the right to explore its resources on the Continental Shelf. Deterrence generated by the presence of a SSN will cause any aggressor to think twice before deciding to violate the UNCLOS. This is particularly important in times when the world is reaching a peak in oil resource usage, while Brazil is enhancing its deep water prospection capacity to begin tapping on recently-discovered oil and gas reserves.⁵⁹ Moreover, in the future bio-energy resources may prove to be a source of alternative energy to the world. With regards to the external environment, the drive to increase Brazilian participation in world matters points to the availability of a reliable deployable oceanic fleet as being of paramount importance. The threat is difficult to identify, but armed forces are not only built because of existing threats. Locally it increases the capacity to act on behalf of American Nations, in response to the Organization of American States (OAS).⁶⁰

Economically, the SSN project is tied to the enrichment process, fundamental for nuclear energy supply, which is being fueled by the Growth Acceleration Program (GAP),⁶¹ and to the creation of Brazilian credentials as a nuclear fuel exporter. The nuclear project will represent tremendous benefits in terms of technology, in niches of extreme interest for other branches of industry, therefore contributing to national development.

⁵⁹ Agencia Estado, "Lula e Petrobrás Inauguram Exploração do Pré-Sal Nesta Terça-Feira", O Estado de São Paulo, http://www.estadao.com.br/economia/not_econo234746.0.htm (accessed March 12, 2009).

⁶⁰ Organization of American States. <http://www.oas.org/> (accessed March 12, 2009).

⁶¹ Programa de Aceleração do Crescimento, http://www.brasil.gov.br/pac/arquivos/relestadual_rj2.pdf (accessed March 12, 2009).

The SLV provides Brazil with fast, reliable and secure communications, which are fundamental for modern warfare. It is also an important step towards the country's advance to a higher technological level. The technology involved in satellites, launching and control systems will also foster the development of a range of capabilities. From communication to research, it may be applied in a whole variety of civilian areas, thus contributing to national development. The privileged position of Brazil, a country crossed by the Equator, discloses a series of partnership possibilities involving launching and control installation use, not only leading to financial revenues, but putting the country in contact with state-of-the-art technological developments.

On the other hand 'SSNs [can be considered] surrogates for nuclear weapons that could provide a credible element of "dissuasion" against excursions of the navies of larger powers.'⁶² The counter-argument is that the SSN does not need to carry nuclear weapons, and that sometimes the objective may be achieved by a conventional submarine (SSK).⁶³ As a matter of fact, the offensive weapon is the submarine itself, based on its characteristics of discretion and fire power, not its propulsion mode, which only enhances its mobility.

The international fear about the Brazilian SLV project has always been founded on the possibility of technological or material transfers to unstable and even rogue states. Ascension to the MTCR, while on one hand brought down barriers, also constrained movements regarding exports, a price Brazil is fully aware of and willing to pay. The core problem will lie on control measures the country will need to enforce, to protect against individual economic interests.

None of the projects violate existing signed treaties, nor do they pose threats to the position of Northern Hemisphere countries. This is true especially in the case of the nuclear project, as expressed by the fact that 'Brazil and France ha[ve] signed [last year] an agreement that involves the construction of [four]...SSK, plus assistance in developing and fielding the non-nuclear parts of [one]...SSN.'⁶⁴ The SLV project received positive attention from China, Ukraine and Italy, all of them involved in partnerships for the joint use of Brazilian launch and control facilities close to the Equator.

Sometime in the future, these technologies are certainly going to turn Brazil into a *virtual nuclear state*,⁶⁵ capable of producing nuclear missiles or, considering both projects' products, a ballistic nuclear submarine (SSBN). Nevertheless, the analysis must be based on the *Brazilian Nuclear Paradox*, the capacity to be quite close to producing effective nuclear weapons without wanting to be a nuclear state. The basis for this statement is the security culture⁶⁶ of the nation,

⁶² Marvin Miller, "Nuclear Submarines and their Implications for Weapons Proliferation," in *Averting a Latin American Nuclear Arms Race*, eds. Paul Leventhal and Sharon Tanzer (London: Macmillan, 1992), 162.

⁶³ Ibid., 162.

⁶⁴ Defence Industry Daily Editorial, "Brazil & France in Deal for SSK, SSN", *Defence Industry Daily*, <http://www.defenseindustrydaily.com/Brazil-France-in-Deal-for-SSKs-SSN-05217/> (accessed March 12, 2009).

⁶⁵ Frank Barnaby, *How to Build a Nuclear Bomb*, 68.

⁶⁶ Keith Krause, *Culture and Security* (London: Frank Cass, 1999), 15.

clearly expressed in the Constitution, corroborating Cirincione's idea that 'politics trumps technology.'⁶⁷ Although laws may be changed, the solid democracy of the country, its multilateralism, its economic bonds and the stability in the region – boosted by MERCOSUL – would make these legislative changes highly improbable. A second aspect is the immature Brazilian strategic culture, 'focused mainly on internal social and economic matters,'⁶⁸ and expressing the pacific nature of Brazilian people. Among all the reasons for not having nuclear weapons, the latter is the strongest.

'The impact of the proliferation of WMDs depends to a large extent on the nature of the regime ruling the country which acquires the weapons.'⁶⁹ Barnaby even considers dictatorial regimes as sources of stability, highlighting stability as the key aspect. His argument strengthens Brazil's position. First of all, neither the SSN nor the SLV are WMDs; and such transformation would require bigger investment. Although not as significant as the initial investment, it will have to break the Constitutional paradigm of a non-WMD state. Brazil is not a dictatorial regime; on the contrary, it has a centre-left labor party government that has expressed to the world its concerns for inequality and poverty. Furthermore, the atmosphere in South America, in spite of old territorial disputes, can be considered as stable, mainly due to the globalized economy and the trade bonds with the Northern Hemisphere. MERCOSUL solidifies this position, imprinting to Brazil, Argentina, Uruguay and Paraguay (in a near future also Venezuela) a stability basis, supported by the exchange of wealth and culture. With a growing 82 percent of South American GDP and with 81 percent of South American population,⁷⁰ the stability in the region is directly linked to Brazilian stability and the responsibility is directly proportional to these numbers. Finally, the position adopted by Brazil and Argentina, accepting verifications by international organizations gave credibility to the good outcomes of the projects.

However, the irony of the paradox is that in the future Brazil may want nuclear weapons, considering new threats that may arise. The same society that today rejects nuclear arms may wish to express nuclear deterrence to improve its own security in the future. It will depend initially on the development of events in South America, the immediate Brazilian environment. But it will need to be supported economically and politically by the other nations. An example in today's world is India's access to the nuclear club, supported by its strong economy and by the US, considering the real threat of a nuclear Pakistan. Major powers are aware of this fact, but what gives credibility to Brazil is the perennial democratic process conducted by society, directly impacting the country's stability.

⁶⁷ Joseph Cirincione, *Bomb Scare*, 74.

⁶⁸ Thadeu M. Coelho Lobo, "The Social and Political Imperatives Determining Change in the Armed Forces" (Component Studies Essay, JSCSC, 2009), 6.

⁶⁹ Frank Barnaby, *How to Build a Nuclear Bomb*, 103.

⁷⁰ Brazilian Institute of Geography and Statistics, "Brazil", IBGE, <http://www.ibge.gov.br/paisesat/main.php> (accessed March 9, 2009).

CONCLUSION

Brazil was known as a *Sleeping Giant*,⁷¹ due to its unrecognized potential for growth. The French statesman General Charles De Gaulle once described it as not being a serious country. But the conviction of peace of the Brazilian people, expressed by their Constitution, as well as the principles of peaceful resolution of conflicts and non intervention are the basis for the Brazilian way of life. These are perhaps misunderstood by other leaders.

The country was transferred to civilian administration and the military went under civilian control. The process of government civilianization gave way to an approach which is more aligned to the desires of the nuclear powers, thus facilitating the nuclear cooperation process between Brazil and Argentina and the ascent of Brazil to the MTCR, hauling down old barriers for both projects and allowing contact with new technologies.

The nation is reaching levels of economic wealth that rivals rich countries. Along with an inclusion policy, this solidifies its position as an emerging power. However, the huge dimensions of its two Amazons and the resources located therein make defense a very relevant concern. The BNDS underscored the restructuring of the armed forces, giving great importance to the nuclear and space sectors. Therefore, the SSN and the SLV are once more under governmental auspices. The outcomes of these two important projects are relevant not only for defense, but are directly related to the country's technological and industrial development. Moreover, the BNDS sustains the cooperative approach among South American nations, a key point to regional development.

Relevant agreements and treaties do not impose constraints for both projects and Brazil's main concern will be the establishment of reliable sources of control, protecting from individual economic interests. Brazil's perennial democratic regime and a developing economy based on the bedrock of social development bring strong political stability to the country. The non-proliferation issue is directly linked to stability and regarding this aspect Brazil plays a fundamental role in South America. An important symbolic act of Brazilian stability recognition was expressed late last year, when Brazil and France signed an agreement to build an SSK and to supply the non-nuclear parts of the first SSN.

Brazil supports the reform of the UNSC. It believes it is the natural leader of South America; and its stability and reputation of concern about world problems justify a new permanent seat being granted to the country. Both projects will contribute to this process. The Brazilian Nuclear Paradox shows to the world a country that will be able to build a bomb in a near future, but who does not want to. This will be a real demonstration of power and may also contribute to the aspired

⁷¹ Peter Kingstone, "Brazil: The Sleeping Giant Awakens?" *Council on Foreign Relations*, http://www.cfr.org/publication/18346/brazil.html?breadcrumb=%2Fregion%2F243%2Fsouth_america (accessed March 13, 2009).

permanent seat. However, paradoxically the Brazilian Nuclear program has its own irony, the possibility of changes in the environment, leading to an evolution in the strategic culture and to the possible desire of possessing nuclear weapons in the future. It would be cynical not to consider this possibility, in spite of it being highly improbable. The constructivist approach can then be shifted to a realistic one, and treaties and agreements, even establishing constraints, would be prone to revision. But one would be pernicious not to take Brazil's stability for the recent 25 years into account, along with the nation's natural tendency to lead South America.

BIBLIOGRAPHY

“African Nuclear-Weapons-Free-Zone Treaty- Treaty of Pelindaba”, Arms Control Association, <http://www.armscontrol.org/documents/pelindaba> (accessed March 27, 2009).

Agencia Estado Editorial. “Lula e Petrobrás Inauguram Exploração do Pré-Sal Nesta Terça-Feira”. O Estado de São Paulo. http://www.estadao.com.br/economia/not_econo234746,0.htm (accessed March 12, 2009).

Barnaby, F. *How to Build a Nuclear Bomb*. London: Granta Publications, 2003.

Booth, K. and Wheeler, N. *The Security Dilemma: Fear, Cooperation and Trust in World Politics*. New York: Palgrave Macmillan, 2008.

Bowen, W. “Brazil’s Accenssion to the MCTR”, *The Nonproliferation Review*, (Spring-Summer 1996).

Brazil. Brazilian Navy Command, *Brazilian Navy Nuclear Program*, Brazilian Navy, <https://www.mar.mil.br/pnm/pnm.htm> (accessed March 10, 2009).

Brazil. Brazilian Navy Social Communication Centre, *Amazônia Azul*, https://www.mar.mil.br/menu_v/amazonia_azul/amazonia_azul.htm (accessed March 9, 2009).

Brazil. Federal Senate. *Constitution of the Federative Republic of Brazil*. <http://www.senado.gov.br/sf/legislacao/const> (accessed February 5, 2009).

Brasil. Brazilian Government. *Programa de Aceleração do Crescimento*. http://www.brasil.gov.br/pac/arquivos/relestadual_rj2.pdf (accessed March 12, 2009).

Brazilian Institute of Geography and Statistics, “Brazil”, *IBGE*, <http://www.ibge.gov.br/paisesat/main.php> (accessed March 9, 2009).

Brown, F. “Brazil in Space: a Ukrainian Connection”, *Space Daily*, <http://www.spacedaily.com/news/launchers-04zh.html> (accessed March 10, 2009).

Buzan, B. and Herring, E. *The Arms Dynamics in World Politics*. Boulder: Lynne Rienner Publishers, 1998.

Carmo, M. “Entenda o que é a UNASUL”. *Folha OnLine*. <http://www1.folha.uol.com.br/folha/bbc/ult272u404782.shtml> (accessed March 13, 2009).

China, “China’s Position in Reforming the UN Security Council”, *China Orbit*, <http://www.chinaorbit.com/china-culture/china-politics/un-security-council-china.html> (accessed March 9, 2009).

Cirincione, J. *Bomb Scare: the History and Future of Nuclear Weapons*. New York: Columbia University Press, 2007.

Coelho Lobo, T.M. “O Submarino Convencional: Evolução e Operação no Século XXI”, *Revista Marítima Brasileira*, Vol 127, no 07/09 (July-September, 2007), 147-164.

Coelho Lobo, T.M. “The Social and Political Imperatives Determining Change in the Armed Forces: The New Brazilian National Defence Strategy as a Case Study.” *Component Studies Essay*, JSCSC, 2009.

Commission on the Limits of the Continental Shelf (CLCS). “Outer Limits of the Continental Shelf Beyond 200 Nautical Miles From the Baselines: Submissions to the Commission:

Submission by Brazil”, United Nations,
http://www.un.org/Depts/los/clcs_new/submissions_files/submission_bra.htm (accessed March 9, 2009).

Current and Future Space Security, “Brazil: Launch Capabilities”, James Martin Centre for Non-proliferation Studies, <http://cns.miis.edu/research/space/brazil/launch.htm> (accessed March 10, 2009).

Defence Industry Daily Editorial, “Brazil & France in Deal for SSK, SSN”. *Defence Industry Daily*, <http://www.defenseindustrydaily.com/Brazil-France-in-Deal-for-SSKs-SSN-05217/> (accessed March 12, 2009).

de Souza, I. “O Estigma da Energia Nuclear na Defesa Nacional: a ZPCAS e Declaração de Luanda de 2007”, Laboratório do Tempo Presente (TEMPO),
http://www.tempopresente.org/index.php?option=com_content&task=view&id=3176&Itemid=147 (accessed March 11, 2009).

Diaz, M. and Almeida, P. R. “Brazil’s Candidacy for Major Power Status”, The Stanley Foundation,
<http://www.stanleyfoundation.org/powersandprinciples/BrazilCandidacyMPStatus.PDF> (accessed February 5, 2009).

Ferreira, O. “Goals of Argentine-Brazilian Nuclear Cooperation.” In *Averting a Latin American Nuclear Arms Race*, edited by Paul L. Leventhal and Sharon Tanzer, 47-75. London: Macmillan Academic and Professional, 1992.

Flores, M. “Submarino de Propulsão Nuclear”, *O Periscópio XXVII*, no. 43 (1989).

Foreign Affairs, “A Giant Awakens Brazil”, Jan/Feb 2009, Vol. 88 Issue 1, Sponsored Section.
http://www.foreignaffairs.org/sponsored_sections/country_focus/brazil/brazil.pdf (accessed February 5, 2009).

Goldblat, J. *Arms Control*. Oslo: International Peace Research Institute, 1994.

Goldemberg, J. and Feiveson, H. “Denuclearization in Argentina and Brazil”, *Arms Control Today* 24, no. 2 (1994): 10-14.

Jobim, N. and Unger, R. “National Defence Strategy: Peace and Security to Brazil” (BNDS),
https://www.defesa.gov.br/eventos_temporarios/2008/estrategia_defesa_nacional.pdf (accessed February 7, 2009).

Jones, R. and McDonough, M. with Dalton, T. and Koblenz, G. “Brazil”, *Tracking Nuclear Proliferation 1998*, Carnegie Endowment for International Peace.
http://www.carnegieendowment.org/files/tracking_brazil.pdf (accessed March 10, 2009).

Kingstone, P. “Brazil: The Sleeping Giant Awakens?” *Council on Foreign Relations*.
http://www.cfr.org/publication/18346/brazil.html?breadcrumb=%2Fregion%2F243%2Fsouth_america (accessed March 13, 2009).

Krasno, J. “Brazil’s Secret Nuclear Program”, *Orbis*, Vol. 38, no 3 (Summer 1994).

Krause, K. *Culture and Security: Multilateralism, Arms Control and Security Building*. London: Frank Cass Publishers, 1999.

Labott, E. “Powell Calls Brazil ‘Serious Candidate’ for UN Security Council”, *CNN*,
<http://www.cnn.com/2004/WORLD/americas/10/05/powell.brazil/index.html> (accessed March 9, 2009).

Lamazière, G. and Jaguaribe, R. "Beyond Confidence Building: Brazilian-Argentine Nuclear Cooperation", *Disarmament*, Vol. XV, no 3 (1992).

Miller, M. "Nuclear Submarines and their Implications for Weapons Proliferation." In *Averting a Latin American Nuclear Arms Race*, edited by Paul L. Leventhal and Sharon Tanzer, 153-170. London: Macmillan Academic and Professional, 1992.

Organization of American States. <http://www.oas.org/> (accessed March 12, 2009).

Rice, C. "Rethinking the National Interest: American Realism for a New World". *Foreign Affairs* 87, No 4: 2-26. <http://search.ebscohost.com/login.aspx?direct=true&db=mth&AN=32554472&site=ehost-live> (accessed February 6, 2009).

Sagan, S. and Waltz, K. *The Spread of Nuclear Weapons*. New York: W.W. Norton & Company, 1995.

Richard Speier, "A Nuclear Nonproliferation Treaty for Missiles?" Federation of American Scientists, <http://www.fas.org/irp/threat/fp/b19ch3.htm> (accessed March 11, 2009).

Tanzer, S. "Rapporteur's Summary." In *Averting a Latin American Nuclear Arms Race*, edited by Paul L. Leventhal and Sharon Tanzer, 9-46. London: Macmillan Academic and Professional, 1992.

Thakur, R. "Stepping Stones to a Nuclear-Weapon-Free World." In *Nuclear Weapons-Free-Zones*, edited by Ramesh Thakur, 3-32. London: Macmillan Press Ltd., 1998.

United Nations. "United Nations Convention on the Law of the Sea." United Nations. <http://www.unclos.com/> (accessed March 12, 2009).

United Nations Foundation, "UN Security Council", United Nations, <http://www.unfoundation.org/global-issues/united-nations/the-un-security-council.html> (accessed March 9, 2009).

United States. US Department of State, "Brazil", US State Department, <http://www.state.gov/r/pa/ei/bgn/35640.htm> (accessed March 9, 2009).

Wilson, D. and Purushothaman, R. "Dreaming with BRICs: The Path to 2050", Global Economics Paper n° 99, Goldman Sachs, <http://www2.goldmansachs.com/ideas/brics/book/99-dreaming.pdf> (accessed February 5, 2009)