From breadcrumbs to threads of wool: Building a neoclassical realist approach for the study of regional powers nuclear choices.

By
Mariana Carpes

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Submitted to the University of Hamburg and GIGA German Institute of Global and Area Studies
in partial fulfillment of the requirements for the degree of
Dr. Phil.

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Date Defense: 22 January 2015

Abstract

The aim of this PhD dissertation is to further the debate within realism with regards to the behavior of regional powers in specific issue areas. Particularly, this research focuses on nuclear dynamics. It starts by presenting a historical assessment of the nuclear choices of Brazil, India, and South Africa from the early-1970s to the mid-to-late-1990s and seek to identify the causes of variation in their nuclear behavior. During the period under scrutiny, critical junctures are identified and assessed using process tracing. Based on the empirical analysis, the realist research agenda is refined. From a theoretical stand point, this dissertation starts from the two general assumptions coined by the defensive neorealism of Kenneth Waltz: (a) the international distribution of power shapes states' behavior and (b) states possess different capabilities whereas being functionally alike. Conceptually, Brazil, India, and South Africa are classified as regional powers, and as such the Waltzian theory would simply expect them to present similar international behavior. But with regards to their nuclear choices one can verify significant variations among the cases and within each case that ultimately challenge the theory's predictions. Because the Waltzian assumptions are far too elusive to help understanding the real world, they will be treated in this dissertation as the starting point of a research program from where a realist mid-range theory of foreign policy can be developed. In order to overcome the gap left by Waltz's approach, this dissertation uses a neoclassical realist framework. Neoclassical realism advances Waltz's thesis in order to explain variation in state's behavior. But with regards to the behavior of regional powers, there is still space to refine the current neoclassical realist approaches available. This is precisely the task embraced by this dissertation. Methodologically, Brazil, India, and South Africa are treated as deviant cases from which analysis one can refine a theory (George and Bennett 2005: 111). The cases are used to illustrate the limits of a strict top-down analysis and in this sense can help furthering the realist research agenda on regional powers.

Zusammenfassung

Diese Dissertation führt die Tradition der realistischen Denkschule der Internationalen Beziehungen weiter und schlägt eine neue Forschungsagenda zur Atompolitik der Regionalmächte vor. Diese basiert auf einer historischen Analyse der Atompolitik dreier Regionalmächte, nämlich Brasilien, Indien und Südafrika, die im Zeitverlauf zwischen den frühen 1970er Jahren und den späten 1990er Jahren unterschiedliche Strategien verfolgten. Die Studie beruht auf zwei theoretischen Annahmen von Kenneth Waltz: (a) die internationale Machtverteilung prägt das Verhalten von Staaten und (b) Staaten sind im funktionellen Sinne gleich, besitzen aber unterschiedliche Fähigkeiten. Anhand empirischer Daten analysiert diese Dissertation die Gründe für das unterschiedliche Verhalten von Brasilien, Indien und Südafrika, die sich laut Waltz' theoretischer Annahmen aufgrund ihres Regionalmachtstatus ähnlich hätten verhalten müssten. Anders ausgedrückt: Warum weicht das tatsächliche Verhalten dieser Regionalmächte von dem von der Theorie prognostizierten Verhalten ab? Da der Realismus nach Waltz zu undefiniert ist, um die Veränderung im Verhalten der Staaten zu erklären, greift diese Dissertation auf den neoklassischen Realismus zurück. Allerdings müssen auch die aktuellen theoretischen Zugänge des neoklassischen Realismus verbessert werden – insbesondere in Bezug auf das Verhalten von Regionalmächten. Die vorliegende Dissertation widmet sich genau dieser Aufgabe mit dem Ziel, eine Theorie mittlerer Reichweite zu entwickeln, welche die Variationen in der Atompolitik von Regionalmächten berücksichtigen kann.

Acknowledgment

I would like to thank the GIGA German Institute of Global and Area Studies, and the University of Hamburg for the scholarships that made this PhD possible.

I am also thankful to my first and second supervisors, Detlef Nolte and Michael Brzoska, for your time and insights.

From the GIGA I am thankful to all my PhD colleagues for the inspiring and provocative talks, as well as to the outstanding group of young and senior researchers for making the GIGA such a challenging and friendly environment to work. I am particularly grateful to Maren Wagner and Daniel Flemes for your friendship and loyalty.

I want to give a special thanks to Daniela Garcia and Josiane Salame for assisting me through the very final steps of my PhD.

I am grateful to the Non Proliferation International History Project (NPIHP), the Carnegie Corporation of New York, and the Woodrow Wilson International Center for Scholars for the fellowship on Brazil's Nuclear History that made possible two incredible month of research in Washington DC, at the Woodrow Wilson Center, the National Security Archive and the Library of the Congress.

I am also grateful to the NPIHP for the opportunity to participate in the Nuclear Boot Camp 2012. This experience brought a whole new perspective to my research and my way of addressing theories and primary sources. From the NPIHP I would like thank all the colleagues that make this network so amazing. I want to give a special thanks to Christian Ostermann, Leopoldo Nuti, Joseph Pilat, Anna-Mart van Wyk, Marilena Gala, Francis Gavin, David Holloway, for all their knowledge on nuclear history and their willingness to assist young nuclear researchers.

I am eternally thankful to my family and friends that gave me support during these years of PhD. Without your love and trust I would have never had the courage to leave Brazil and pursue a PhD abroad. I am also thankful to all the new friends I made in Hamburg and for so many unforgettable moments.

Finally, I thank Cem Alpay for his unconditional love, friendship and admiration since the very first beginning of my journey in Hamburg. I am also eternally thankful to his family for having me all this years.

The third image describes the framework of world politics, but without the first and the second images there can be no knowledge of the forces that determine policy; the first and second images describe the forces in world politics, but without the third image it is impossible to assess their importance or predict their results. (Waltz 1959: 238)

(…) neither an agent-based nor a structure-based explanation is complete without the other, and both should be integrated into our explanations, whether they be theoretical models or historical narratives. We can ignore neither the preferences of actors not the structural or informational environments in which they act.
(Levy 2001: 72)

Content

Part III Sewing a Thread of Wool -Theory Building

Introduction

Once upon a time two very curious children decided to enter a forest to explore the unknown world. To keep track of the way and be able to get back home after the adventure, they spread breadcrumbs on the road. They did not expect, however, that the animals in the forest would eat the crumbs and erase their path. The more they got into the woods, the more they lost track of the way back home.

In another story, a man volunteers to enter a labyrinth and kill a Minotaur to avoid that more young men and women were sacrificed in honor to the beast. No other man before him had ever found the way out of the labyrinth, which had been designed as the prisonlike temple of the Minotaur. But the man in our story carried attached to his body a thread of wool connecting him to the world outside the labyrinth. After killing the Minotaur all he had to do was to follow backwards the pace signaled by the thread to return home. And so he did.

The two stories above share one massage: keeping track of the path followed is the only way to assure the return from a journey!

In the study of international relations it is not different. Assuming the interconnection between domestic and international systems, it is sometimes necessary to enter the state to get the answers one search for. But this journey, to be safe, asks for a clear awareness of the path followed. The journey narrated in this dissertation starts with a question: **why regional powers have not always considered nuclear weapons as a source of power?** What inspired this question is the variation in the nuclear choices of Brazil, India, and South Africa. The three of them shared similar interests in nuclear researches until the 1970s. But afterwards, they have followed different paths: in the mid-1980s Brazil abandoned its researches on nuclear explosives, after developing a technology to enrich uranium. In the

mid-to-late-1980s South Africa that went further enough to develop a small nuclear arsenal, decided to stop the nuclear program to further on reverse its proliferation path and unilaterally denuclearize the country. Contrarily, India waited until the mid-to-end of the 1980s to definitely weaponize its nuclear program and to officially become a nuclear-weapons-state in the late-1990s.

According to defensive realism, these countries should have behaved differently from what they did. The system suggests that actors with similar power capabilities are likely to adopt similar behaviors (Waltz 2002). But in the case of Brazil, India, and South Africa, the nuclear paths were similar only until the 1970s. Afterwards, their choices diverged radically leading them to adopt different nuclear paths from the 1980s onwards. What triggered these variations if the independent variable – international distribution of power – did not vary in this period? By following the theory, one could conclude that Brazil, India, and South Africa are anomalous cases; that these countries dared to adopt "non-optimal" behaviors and therefore would be "punished" by the system (Waltz 2002). But history shows that they have been rewarded instead[1]!

The structural neorealism developed by Kenneth Waltz (2002) prioritizes the interactions among states in a system that offers a limited number of incentives as well as information to states. In this sense, two behaviors are predicted to states – defined as security maximizers: bandwagoning or balancing[2]. To forge such theory, Waltz disregards the extent to which the domestic level can influence states' behavior. Yet, Waltz does not deny the relevance of domestic and foreign policy for understanding states behavior (Waltz 1959: 238). He simply attributes causal power to one single independent variable, the international distribution of

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[1] By punishment I consider the loss in relative power or annihilation, while by reward I consider the maintenance of relative power position or survival.

[2] In the literature, bandwagoning often appears as inaction, appeasement or buck-passing. See Schweller 2004; Christensen and Snyder 1990.

power, so that he could build a parsimonious theory of international politics, not one of foreign policy (Waltz 1996: 54).

For his choice, Waltz was heavily criticized along time (See Moravcsik and Legro 1999; Keohane 1986). Especially after the end of the Cold War, neorealism as a whole was considered an outdated theory. "It was seen as intellectually flawed, no longer adequate to deal with complex phenomena in international politics, and even morally bankrupt" (Reichwein 2013: 30). Since then, many authors have tried to show that realism is still a paradigm able to explain many facets of international relation, including variations in states' behavior[3]. While they continued claiming that the system matters and it is the key to understand many of states' choices (Rose 1998), they pondered that domestic variables often play a crucial role on these choices. The problem, they continued, is that realism (and not only the Waltzian version of it) lacks a clear account of the interaction between international and domestic levels in shaping states' choices (see Mastanduno et al 1989; Snyder 1991; Zakaria 1992).

In 1998, some realists started to be labeled neoclassical realists (Rose 1998)[4]. Overall, their aim was to replace a trail of *breadcrumbs* for a *thread of wool* that would guide the analysis in and out the labyrinth called the state. They continued claiming that the system matters and it is indeed a key to understand states' behavior in the long term. Their contribution was to argue that this claim is, however, not enough to understand the interconnection of states and system, and how do they influence each other. In other words, these authors started to focus

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[3] According to John Vasquez (2003) "realism is defined as a set of theories associated with a group of thinkers who emerged just before World War II and who distinguished themselves from idealists (i.e., Wilsonians) on the basis of their belief in the centrality of power for shaping politics, the prevalence of the practices of power politics, and the danger of basing foreign policy on morality or reason rather than interest and power. The realist paradigm refers to the shared fundamental assumptions various realist theorists make about the world (…) these include: (1) nation-states are the most important actors in international politics; (2) there is a sharp distinction between domestic and international politics; (3) international relations is a struggle for power and peace. Understanding how and why that struggle occurs is the major purpose of the discipline".
[4] See also Schweller 1992, Lobel et al 2009, Toje and Kunz 2013, and Reichwein 2013.

their analysis on the linkages connecting independent and dependent variables, the so-called intervening variables. Overall, the question they sought to answer was why states not always behave according to what predicts the international system?

The answer offered by neoclassical realists unfolds as follows. States, they claim, do not act as a unitary body. Rather people act on behalf of states. Additionally, statesmen' decisions are constantly influenced by their perceptions about the world, about relative power-capabilities, and about how much of state power is accessible. By doing so, neoclassical realists brought agency back into structural realism arguing that the Foreign Policy Executive (FPE) and states are intervening variables placed between the foreign policy and the international system. While the FPE reads the information emanating from the system, they do not react to it automatically. Rather they filter the information, and size it in relation to what they define as the best options to fulfill the national interest, however they defined it. Afterwards, they need to overcome the power game within the technical bodies within the state to finally forge and further a specific foreign policy (Taliaferro 2012: 78). This means that the decision-making process is influenced by the way statesmen perceive the world of material conditions, while foreign policy results from the power games taking place at the domestic level, which in turn have been informed by international pressures and constraints. Analytically, neoclassical realists focus on perception and/or state power as key intervening variables. The first is the key to access decisionmakers, the second is the real amount of power a state can access if needed.

In the case of regional powers, I assume that (a) not only pressures and constraints emanating from the international system are perceived by domestic leaders, but also and foremost those emanating from the regional system, and that (b) the study of regional powers' behavior need to take the regional dynamics into account instead of applying to the regional level the same

hierarchy of power and dynamics found at the international level. Hence, I hypothesize that *whenever there is a change in leaders' perception of pressures and constraints emanating from the regional system, it is likely that a change will occur in state's behavior*. How and the extent to which this variation occurs is what the empirical analysis of Brazil, India, and South Africa will reveal.

Structure of the Dissertation

As explained above, the primary aim of this dissertation is to advance the debate within realism with regards to the behavior of regional powers.

While realist scholars have been progressively paying more attention to regional powers and regional orders, the topic still deserves scrutiny, most of all with regards to specific issue areas. In this sense, this dissertation focuses exclusively on nuclear (non)proliferation and assess three crucial cases of regional powers that have (almost) proliferated. They are Brazil, India, and South Africa. One of the specific aims of this dissertation is to analyze the extent to which the region has had any relevance for these states' decisions to proliferate or not. In the literature about regional powers, it is commonly accepted that the region matters for the strategic calculation of regional powers. Rather then questioning this assumption, which this author accepts as true, the task embraced in this dissertation is to identify how and when it matters.

The conceptual debate on regionalism, regions, and regional powers have increasingly grown in relevance since the end of the Cold War inclusively under the realist paradigm, but the same cannot be said about the literature produced during the Cold War (see literature analyzed in chapter 1). A short explanation for the lack of realist studies on regional dynamics and the role of regional powers before the end of the Cold War could be that this

school mostly focused on the results of interactions among states that could directly affect the system. Consequently, most part of the realist literature before the end of the Cold War contemplated the two superpowers at the time – the US and USSR – and the interactions between them. Still, whenever realists analyze regional powers they do so by applying the same logic used to assess the behavior of great powers, as if every universe of countries would simply mimic in different scales the behavior of great powers.

Conceptually, as this dissertation deals with historical cases, I consider regional powers during the years of Cold War countries that by that time had already attempted to maximize power, and/or influenced the international system, while holding the status of the most, or one of the most, important state in a region – from the perspective of other states in the region, as well as from the perspective of great powers.

In general, the systemic bipolarity under the Cold War diminished the weight of regional arrangements and the voices coming from the regions; above all because the ideological boarders of the Cold War redefined, and sometimes diluted, the geographic definition of regions. Nevertheless, the international distribution of power under the Cold War left few spaces for contestation. For instance, already in the 1960s, the international bipolarity had to adapt to the decolonization movements that increased the number of state-actors seeking for voice in international politics. Following this path, the oil crises in the 1970s shrank the developed economies, which in turn reflected on their political capabilities to project power. During this decade, energy supply became a major topic worldwide fuelling domestic debates on alternative sources of energy. Particularly, developing countries – among which the three regional powers analyzed in this dissertation – adopted more pro-active domestic and international strategies to overcome a potential deficit in energy supply that could jeopardize their economic development. Hence, while the bipolarity remained unaltered, there was

somehow more space for agency during the 1970s; a situation that would progressively reverse during the 1980s.

Under the Cold War, the sense of imminent threat was part of any country's mind-set in different degrees depending on the country's international and regional power position. In this context, nuclear energy acquired a dual meaning, especially for regional powers. Considering the schizophrenic position of regional powers (see debate in the next chapter): great in the region but intermediate internationally, the development of nuclear energy in all its uses created conditions for regional powers self-protection in case of a short in international aid. At the same time, in order to minimize their limited international relative power, regional powers tended to invest in areas that could illustrate their greatness: nuclear energy meets this purpose.

This is part of the debate the reader will find in chapter 1, dedicate to concepts, theory (including literature review) and method.

With regards to theory building, chapter 1 presents the neoclassical realist approach of foreign policy analysis that is the theoretical framework of this dissertation. Roughly speaking, neoclassical realism studies mediation. One of the driving questions of its proponents is *how international incentives and constraints are mediated at the domestic level, as to forge specific foreign policies*? In this vein, the most significant difference between neoclassical realism and the other realist approaches to foreign policy is that the former treats domestic variables as a necessary part of the theoretical building, while the latter at best includes domestic variables in *ad hoc* hypotheses. In this vein, chapter 1 argues that neoclassical realism is the most suitable and complete realist approach to study foreign policy, especially for the study of security issues. In what concerns security, states need to deal with aspects related to their survivor, wealth, and defense against external treats, which

immediately places the independent variable outside the state. However, in order to analyze this phenomenon, scholars need to start by looking at the state and its domestic level where strategic calculations are made[5].

Because the neoclassical realist school advances Waltz's neorealism, a brief introduction of the latter will be made so the reader can identify the extent to which neoclassical realism can be considered an emerging realist school of foreign policy. After introducing the main arguments of Waltz' theory, an overview of the realist literature on foreign policy is offered. In this case, the aim is to outline previous efforts within realism to account for variation in states' choices, and to place the neoclassical school within this debate. To conclude the theoretical debate, I outline the gaps left by neoclassical realism in what concerns the analysis of regional powers' behavior. The reader will find in Part III of this dissertation my proposal to overcome this gap.

Furthermore, in Part I I have summarized some realist attempts to include regional dynamics into the broader realist research program. While the instances presented in Part I already contemplate the region as a level of analysis with particular traits – that therefore should not be treated merely as a mirror or function of the international level – the literature still treats regional powers as black boxed states. One important aspect to bear in mind is that each of the authors discussed in Part I assess regional order and regional powers by assuming the presence of an external power in the region. Based on this assumption, they consider that (a) the regional and international systems are different from each other, and (b) most likely that the presence of an external power in the region sets the parameters for the decision-making process of states inside the region. While these propositions are truly observable in empirical

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[5] It is not an aim here, however, to refute the explanatory power of other realist proponents of foreign policy analysis, but to demonstrate the validity of neoclassical realism, for it includes domestic variables in the study of states security behavior while keeping the international distribution of power as the independent variable.

analysis, they shadow the relevance of regional powers leaders' perception for the decision-making process. Thus, the current efforts from inside realism to analyze regional orders and consequently regional powers still face problems of attributing agency to regional powers' leaders. In this sense, the perceptions of statesman of regional powers remained excluded from the analysis. This silence brings an additional risk; to assume that independent from the international and regional power-positions, statesmen think alike.

In the case of leaders of regional powers, one must assume that their perceptions are framed by a double standard, for these countries are the most powerful states in a region but just intermediate powers internationally. On the one hand, within the region their ambitions bear resemblance with that of great powers' leaders. On the other hand, their strategic calculation has to balance ambitions and the limits of their relative power. One cannot ignore this condition in order to assess the reasons and conditions under which regional powers act the way they do. Thus, I content that to understand how leaders from regional powers mediate external constraints and incentives as to formulate foreign policy, one must first "isolate" the region and analyze it without the influence of external powers in the region.

To sum up, the realist literature on regional powers and regional dynamics still need to be refined as to overcome pure deductive logics that largely consider regional powers foreign strategies as mimicking the foreign strategies of great and middle powers. In fact, the structural branches of realism lack the tools to include agency in the analysis, for these are not theories of foreign policy, rather theories about the international constraints on foreign policy. But neoclassical realism, as the refined version of structural realism, does have the tools to include agency in the analysis of the strategic calculation of any type of state. This task has, however, not yet been exhausted. There is still a whole neoclassical research agenda on regional power and regional orders to be written!

Methodologically, this dissertation proceeds as a process tracing. The method allows for the identification of causal mechanisms triggering the variation in states' behavior. As some comparison will be needed in order to answer the question of how and when the region matters as well as to refine the theory in Part III, the process tracing of the empirical cases need to be structured. In this sense, the process tracing is completed with insights from the method of structured focused comparison elaborated by George and McKeown (1985). This means developing a focused and structured set of questions that will be equally asked to the three cases and should help guiding the process tracing, reducing the changes of an idiosyncratic analysis, and facilitating the comparison among them.

The questions to be asked to the cases are the following: (1) What are the domestic characteristics of this regional power? Regime type; (2) What is the nature of the relations between the regional power and its neighbors on the one hand and with international main actors on the other? Is there animosity, competition or distrust within the region? Does any great power have any interest in this region?; (3) What kind of region is this?; (4) What was the rationale framing their nuclear enterprises at first?; (5) Did this rational change over time? And if so, what triggered the changes?; (6) Was there any significant variation in the regional distribution of power during the period under analysis? And if so, did the variation at the regional level follow a variation in the international distribution of power?; (7) Chronologically, did decisions on nuclear strategies follow which event: the changes in the regional distribution of power or the changes in the international distribution of power?;(8) What kind of "causal chain" can be established between regional, international and domestic changes?

Part II of this dissertation is a historical assessment of the nuclear choices of Brazil, India, and South Africa from the early-1970s to the mid-to-late-1990. The chapters have been

structured around the aforementioned set of questions and are descriptive/analytical narratives. In this regard, it is worth to notice that it is not an aim of this dissertation to present brand new versions for these regional powers' nuclear stories. This task, of paramount relevance, is being fostered by nuclear historians who have been dedicating hours of work to make sense of the huge amount of recently declassified documents and, most of the time, rewrite history[6]. Rather, the aim of this dissertation is to use crucial historical cases to further a theoretical dialog within realism. This does not mean to instrumentalize history or cherry-pick historical episodes that could support my arguments. It is just the recognition that this is a political science dissertation that draws on trustworthy historical narratives to identify the limits of the current realist approaches for the study of regional powers' nuclear behavior, and refine what the theory has to offer. Still on the empirical analysis, the chapters have been built on more recent secondary literature and cross-checked against primary sources – either interview, whenever necessary, or recently declassified documents.

Finally, Part III of this dissertation is dedicated to theory-building. In this part, I draw on the empirical debates of Part II and on the conceptual and theoretical debates presented in Part I. This chapter concludes that the regional distribution of power appears primarily as a causal mechanism triggering the change in perception, but often it also appears as an intervening variable in the form of leaders' perceptions about the region. Part III offers a tentative framework for the analysis of regional powers' nuclear choices and a guideline to conduct the research. This is an important aspect of the theory-building process, for neoclassical realism lacks a clear methodological approach to conduct empirical analysis.

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[6] See the work done by the Nuclear Proliferation International History Project (NPIHP) at http://www.wilsoncenter.org/program/nuclear-proliferation-international-history-project.

Part I. Preparing for the Journey: Puzzle, Concepts, Theory, Method, and Cases

> `Would you tell me, please, which way I ought to go from here? ' said Alice
> `That depends a good deal on where you want to get to,' said the Cat.
> `I don't much care where,' said Alice.
> `Then it doesn't matter which way you go,' said the Cat.
> `so long as I get somewhere,' Alice added as an explanation.
> `Oh, you're sure to do that,' said the Cat, `if you only walk long enough.'
> (Alice in Wonderland)

Chapter 1

1.1. Introduction

This chapter introduces the concepts, the theoretical framework, and the research method that are the basis for constructing my neoclassical realist framework to analyze the nuclear behavior of regional powers. The aim of this chapter is to draw a guideline that will assist me in the rest of dissertation. The main findings of this chapter are twofold. The first relates to concepts and theory. The second refers to methods.

Regarding concepts and theories one can note that even though a vast literature on regional powers has been openly or covertly inspired by realist premises, the theory itself failed to give enough attention to this universe of cases. The divorce between the realist tradition and the conceptual debate on regional powers relates to some traditional – not to say old fashion – premises according to which one must focus the analysis on states that really can determine international politics. Moreover, realism is largely an American tradition – if considering the contemporary realism from Waltz onwards – and for these reason its focus remains much more on the transatlantic relations than on the role of the Global South in international politics. As regional powers are basically located in the geopolitical South, it is not surprising that realists tend to pay less attention to these actors and to invest less energy to build

innovative theoretical frameworks that would treat regional powers as pro-active and creative states, rather than mere imitators of great powers' logic of strategic calculations

The second important finding of this chapter relates to methods. Neoclassical realism significantly lacks a coherent method. These realist tradition was born challenging well stablished realist premises and proposing a more robust and complex theoretical building that ultimately would cope with variation in states' behavior. Neoclassical realists invite researches to bring the domestic level back into the parsimonious neorealist theoretical building in the form of intervening variables. Ironically no proponent of neoclassical realism explains how one could do that. The result is that numerous realist foreign policy analysis are credited to be neoclassical realists just because they look at intervening variables of the domestic level – usually perceptions and state's power – even though they do not share a consistent method of analysis[7].

By surveying this tradition one can note two underlying interconnected methodological traits. Neoclassical realists – like classical realists – pay a special attention to history; not as an instrument to confirm theoretical propositions, but as a rich universe of intriguing case-studies that challenge the conventional neorealist wisdom. Also, by analyzing historical cases, neoclassical realists opt for an investigative research approach that bear resemble with a Sherlock Holmes kind of *modus operandi*. In the literature on methods, this investigative way of conducting research is comparable to process-tracing and historical narrative. As the latter is much more inductive and descriptive than what neoclassical realists do, one can say that process-tracing is the logic methodological match to neoclassical realism.

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[7] On this regard, see Rose (1998) for the first tentative definition of neoclassical realism and the reasons why they can be called a new realist tradition. A more contemporary argumentation of this kind is furthered by Reichwein (2013). For a critical position on the lack of consistency among neoclassical realists see Wivel (2005) and Kitchen (2010).

Based on these findings, this dissertation seeks to reunite these three divorced debates: concept, theory, and method, and place them together under a same theoretical body. By promoting a debate from within realism, I intent to refine neoclassical realism as to include the analysis of regional powers, and use process-tracing to accomplish this aim. This dissertation is therefore about theory-building drown from historical cases.

For theory-building one could argue that a single case-study would have sufficed, so long as the case scrutinized was a crucial case or a very representative case of a broader type or universe of cases. South Africa would have been the perfect match for such an enterprise, as it remains the only country to proliferate and then reverse this path. But a comparative analysis allows for richer inferences about why states' behavior varies and about the conditions under which this variation is likely to occur. This is why Brazil and India are also analyzed. They occupy to extreme positions of non-proliferation and proliferation respectively, while South Africa appears in the middle as a pendulum that oscillated from proliferation to forbearance.

1.1.1 Structure of the chapter

This chapter is composed by 6 sections including this introduction. Section 1.2 offers a literature review on realism. It summarizes some of the key concepts present in Waltz's theory and further introduces other realist schools that proposed approaches to foreign policy. Sections 1.3 and 1.4 bring the conceptual debate on regional powers. Section 1.3 introduces the well-accepted conceptual definition that is also compatible with a realist view. In general, the definition of regional powers outlines the complexity of their power position: great in the region and intermediate at the international level, which reflects in their behavior. Section 1.4 reviews the realist literature that takes regional powers into account. As the reader will see, overall the realist debates about regional powers promote an exogenous analysis of these

countries' behaviors: they still black box these states and consider regional powers and regional dynamics in their relation to the presence of great powers in the region. Section 1.5 is dedicated to the research design. It brings a debate about History and International Relations outlining the aspects in which these disciplines overlap and those in which the deeply diverge. This is an important section because this dissertation is built upon a significant historical contribution. Section 1.5 also presents process-tracing – the method used for the case studies – and structured focused comparisons – method used to compare the cases. In this section, a set of questions that guide both the empirical and the comparative chapters is presented. From the information gathered with these questions, a neoclassical realist framework is developed in Part III of this dissertation. Finally, section 1.6 introduces the empirical cases. In this initial narrative of the cases, the reader will already be able to capture the variation across the cases and also within the cases from one to another historical moment.

1.2. Literature review: Realism

1.2.1. Structure, System, and States

To analyze international politics, says Waltz (2002), it is necessary to first and foremost define and understand its three components: structure, system, and units. Structures are abstract ordering principles that exist prior to units and systems (Waltz 2002: 114). Within a structure, a system develops and units interact. To define structure, however, it is necessary to ignore the interaction among units *that may vary according to their behavior*. The focus must be on their position that can only be apprehended from a top-down analysis because it is related to attributes of the system (Waltz 1986a). As a principle, a structure is either hierarchical or anarchical and these properties define and separate domestic and international systems, respectively, as opposing ones (Waltz 1986a: 81). The structure of the international

system is anarchical and composed by states as their main units. Anarchy affects states similarly, posing an equal task to all of them, namely survival (that means the maintenance of international positions). The system, says Waltz, "encourages" states to engage in defense behavior in order to survive because "the state among states (…) conducts its affairs in a brooding shadow of violence. [As] some states may at any time use force, all states must be prepared to do so – or live at the mercy of their military more vigorous neighbors" (Waltz 1986b: 99). Based on this proposition, Waltz' realism is described as a defensive one.

In the scenario Waltz describes, states are units oriented by the principle of self-help. They cannot – and will not – expect that any other power above them will rise to guarantee their preservation. Waltz recognizes that this is a "radical simplification [and that] beyond the survival motive [states might pursue other goals] (Waltz 1986a: 85)". Nevertheless, as the structure has its own rationale it "selects" and "rewards" states that behave according to what is expected from them by the international system. Under this logic, states could, but should not, vary their aims as this choice is likely to imperil their existence. Yet, the theory does predict deviation. But deviations are considered as exceptional or anomalous because the system "won't work if all states lose interest in preserving themselves. It will, however, continue to work if some states do, while others do not, choose to lose their political identities, say, through amalgamation" (Waltz 1986b: 117-118). What the theory does not offer is a detailed explanation about why states change their interests, inasmuch as this explanation would demand an analysis of the interaction among units as well as the analysis of variables from the unit level. The figure bellow summarizes Waltz's focus of analysis and evidences its limits to explain variation:
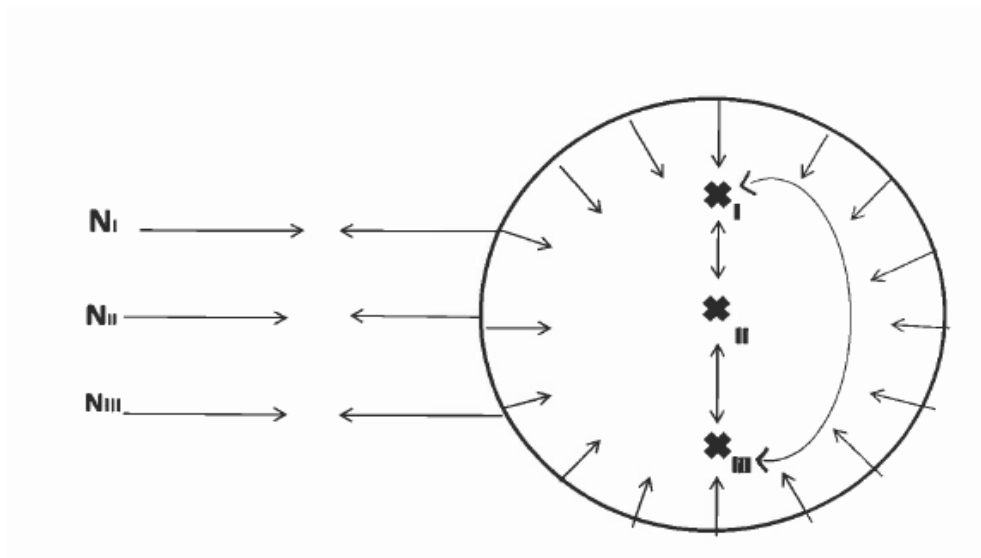
Figure 1

Source: Waltz 2002: 141

The circle represents the international political system and XI, XII, XIII the states. The signs pointing at the states represent international pressures they have to cope with while interacting (represented by the signs between the states). This scenario is what Waltz aims to explain with his theory; that is international politics. Outside the circle, Waltz represents another situation that, according to him, does not belong to a structural theory. NI, NII, NIII are states. The signs pointing at the circle and at the states represent the interactions between states and system. The signs pointing at the circle also indicate states' behaviors that take domestic attributes into account. This scenario says Waltz, does not consider the "circle": structural constraints that overall determines states' behavior. It pictures foreign policy and not international politics.

According to Waltz (1996), theories have to deal with "autonomous realms" but foreign policy constitutes an intersection between two "autonomous" realms; domestic and international. Hence, scholars should not attempt to formulate theoretical explanations about foreign policy, rather focus on case-driven accounts, he says. Moreover, Waltz's theory of

international politics attributes a functional causality to the structure that "teaches" states to behave in a certain manner and punish deviating actors. This causality leads Waltz to predict two types of possible behavior for states, namely balancing of power (the most likely to occur) and bandwagoning. Together these two behaviors are on the basis for his security model. Beneath these behaviors lies an important axiom: the nature of the system is anarchic, which poses a constant potential threat to states' survival.

As it will be shown in the following pages, the debate on states' behavior among realists is far from echoing one single voice. To Waltz's defensive neorealism can be credited one of the strongest arguments about states' behaviors derived from the structure. Its functional approach contends that states are likely to seek alliances to balance the increased power of another state. The success of balancing works as a positive stimulus for states to continue emulating this behavior. But Waltz also considers that sometimes states might adopt a bandwagoning behavior, joining the strongest power.

Other adherents of realism will go beyond the balancing-bandwagoning dyad, either offering better explanations of under what circumstances states would balance or bandwagon or moving beyond this dichotomy. In either case, it is worth to stress that the various arguments on states' behavior include attributes of the units in order to explain why states behaved in one or other way.

1.2.2. Balancing of power and bandwagoning: behaviors predicted by the structure[8].

According to Waltz, the anarchic nature of the international system establishes a functional sameness among states. They are "like-units" relating to each other in terms of coordination rather than in terms of super- or subordination (Waltz 1986). Simply saying, states are

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[8] For a brief account of the origins and meanings of the concept of *balance of power* outside IR see Schweller 2004.

sovereign agents seeking for survival in a world with no hierarchy ruling their relations or assuring their security. This sameness is only overcome if one looks at states' relative power-capabilities in performing the tasks imposed by life within anarchy. As Waltz observes, though absolute power is still an attribute of the units, its relative distribution can only be estimated structurally. This makes power – defined as distribution of capabilities – one of the variables analyzed by Waltz without harming the core of his theory, and this is also why the difference in relative power defines which behavior – balancing or bandwagoning – a state is likely to adopt. Nevertheless, both behaviors are likely to be a response to an external threat under a neorealist approach. States can balance (in opposition to the principal source of danger) or can bandwagon (with the state that poses the major threat) (Walt 1985: 209).

It must be noted that there is no rationality involved in this proposition (Waltz 1986b: 117). States do not balance because they want to, but because they are constraints by the structure to do so. Also, states emulate a balancing behavior from other states as they see other states being "rewarded" with survival and the maintenance of their international position. According to Stephen Walt (1985: 210), under anarchy, balancing can be the only way to avoid dominance; this means forming alliances with those who are neither strong enough to overcome an external danger alone nor to dominate its allies counterparts.

> (…) joining the more vulnerable side increases the new member's influence, because the weaker side has greater need for assistance. Joining the stronger member side, by contrast, reduces the new member's influence (because it adds relatively less to the coalition) and leaves it vulnerable to the whims of its new partners. Alignment with the weaker side is thus the preferred choice" (Walt 1985: 211).

Conversely, depending on the system's structure, or on the position occupied by certain states in the system's structure, a bandwagoning behavior can also occur. Also in this case, no rationality is conceived. As "states are attracted to strength" they sometimes search for alliances with the strongest power in the system (Walt 1985: 212). The logic behind this

alliance, Walt argues, is twofold: "the bandwagoner may hope to avoid an attack on himself by diverting it elsewhere" or may expect to "share the spoils of victory" (Walt 1985: 212-213). While bandwagoning may occur, Walt claims balancing as the most likely behavior of states by counting its recurrence in history (Walt 1985: 220-221)[9].

In Waltz, what drives the decision towards balancing or bandwagoning is the distribution of relative power among states. From the analysis of the system and the interaction among units, Waltz (1986a: 92) hypothesizes that

> the structure of a system changes due changes in the distribution of capabilities among the system's units (meaning unipolarity, bipolarity, or multipolarity). Conversely, changes in structure change expectations about how the units of the system will behave and about the outcomes their interaction will produce.

These hypotheses can be simplified as follows: (1) Whenever the structure of the system changes, it is likely that a change in states' behavior will occur, and (2) a change in countries' relative capabilities likely pushes them toward different behavior. Following the neorealist theory so far presented, Brazil, India, and South Africa could be considered as like-units insomuch as they share similar capabilities as regional powers, and as such similar behaviors would be expected from them. In a certain point in their history, however, they have adopted drastically different behaviors as chapters 2, 3, and 4 show; this means different behaviors from each other and from what the theory would have expected from all of them.

A Waltzian approach to the cases could simply classify them as anomalies. However, as history suggests, the system has not punished them in any manner. In this sense, what neorealism would call anomaly, in reality appears to be in accordance with the international system, if variables from the unit level are taken into account. The point is that Waltz's neorealism cannot exactly point at the drivers of variation because this would challenge the

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[9] For a critical position see Schroeder (1994 and 2003). He confronts Waltz ahistorical arguments to historical analysis to show that balancing is an exception rather than a rule among states. On the same line of argumentation see Wohlforth et al (2007).

core of the theory. According to Waltz, variation is an attribute of the units and, therefore, does not help in understanding either the structure or the international system that is the overall aim of his theory. It should not matter, he says, for a theory of international politics inasmuch as it misguides the analysis by avoiding the isolation of variables from the distinct levels (Waltz 1986a: 71). The problem is that in the real world these variables are not isolated; rather they are in constant interaction. Thus, Waltz's theory purposely paints only half of the picture.

The variation among the nuclear behaviors of Brazil, India, and South Africa suggests a limitation in the parsimonious theory proposed by Waltz. As the explanation for variation lies predominately in the analysis of the unit level, not in the system, new variables – from the unit level – must be included in a neorealist account of variation in states action. While Waltz theory cannot explain the cases, it is a crucial starting point from where neoclassical realism will develop its analytical framework.

This is because the predictions made by Waltz regarding ways states are likely to respond to international stimuli touches upon attributes of the state, even though the author does not develop them. There is, in this sense, a theory of foreign policy nested in Waltz' theory of international politics. Beyond survival, the various goals a state might seek can only be identified through the analysis of the domestic level. This nested theory will be identified and developed by the neoclassical school. Thus, neoclassical realism begins from where Waltz stopped, and seeks to complete Waltz half painted picture: neoclassical realists propose to advance a neorealist approach for the study of foreign policy. In order to do so, they seek to improve the aspects left aside by Waltz; a more detailed theory of the state and of the interconnections between states and system. Consequently, neoclassical realism can broaden the breadth of possible behaviors a state can adopt beyond bandwagoning or balancing.

Perhaps the most prominent neoclassical realist argument in this regards has been put forward by Schweller.

While states are not unitary actors, argues Schweller, they are more likely to present optimal behavior; there is to meet the theory's predictions, when "the policymaking process and [the] actual state-society relations approximate a unitary actor" (Schweller 2004: 161). The problem is that states rarely manage to behave anyway closer to how a unitary actor would do. Consequently, the assumption that states likely balance does not hold its theoretical explanatory power when confronted with empirical cases. Drawing on these lines, Schweller calls attention for the number of historical instances of underbalancing – defined as occasions in which "threatened countries have failed to recognize a clear and present danger, or, more typically, have simply not reacted to it or, more typically still, have responded in paltry and imprudent ways" (Schweller 2004: 159). Schweller considers that balancing behavior, as well as underbalancing, are rather the result of power-games among elites at the domestic level seeking to influence the decision-making process (Schweller 2004: 163).

> (…) political elites carefully weigh the likely domestic costs of balancing behavior against the alternative means available to them (e.g., inaction, appeasement, buck-passing, bandwagoning, etc.) and expected external benefits of a restored balance of power. Structural imperatives rarely, if ever, compel leaders to adopt one policy over another; decisionmakers are not sleepwalkers buffeted about by inexorable forces beyond their control (Schweller 2004: 164).

Notwithstanding Waltz limitations, insomuch as Waltz general description about structure, the distribution of capabilities, and the general interplay between units and structure are not questioned by neoclassical realists, Waltz neorealism can be considered as a research program from where the neoclassical approaches are developed[10].

At this point it is worth to introduce the debate within realism and the many instances in which foreign policy has been included in the analysis prior to the birth of the neoclassical

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[10] Elman (1996a: 18) defines neorealism as a "metascientific construct (…) a paradigm or research program, rather than as a single theory)"

realist school. This short review is important to situate the contributions of neoclassical realism within the realist tradition and to identify the aspects they have advanced in relation to other realist propositions.

1.2.3. (Neo)realist theories of foreign policy – a brief overview

Many schools of International Relations have given special attention to foreign policy analysis directly or indirectly touching upon a study about states' behavior[11]. This actor, either studied as a black-box unit or taking into account the domestic level, perpetuated its centrality in the mainstream field of Foreign Policy Analysis (FPA), even if now sharing progressively more political relevance with other emerging non-state actors. In general, the main differences among mainstream scholars dedicated to foreign policy analysis are related to (a) the level of analysis, and (b) where independent and dependent variables are placed. Thus, the definition of the best analytical road to study foreign policy depends ontologically on the questions a researcher wants to answer or the phenomena he or she seeks to explain.

While the debate about FPA is broader than, and prior to, the neoclassical approach, a comprehensive survey of this debate would extrapolate the scope of this dissertation. Thus, the overview here presented deals exclusively with the realist approaches to foreign policy and will be used to introduce and place the neoclassical perspective within the wider field of FPA.

<p style="text-align:center">* * *</p>

As the dissertation has been so far drawing on the neorealism proposed by Waltz, the first question to be answered is what this specific account of realism can add to foreign policy

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[11] It is still an open debate whether is possible or not to advance a theory of foreign policy. For an overview of this discussion see: Bueno de Mesquita (2002); Gerner (1995); Hill (2003); Hudson (2005); Rosenau (1996), Snyder and Bruck (1961); Smith (1986).

analysis? More specifically, how (and, if so, to what extent) the Waltzian version of realism can help explaining the outcome of the dependent variable; namely states' behavior?

Perhaps the most important debate on this regard has been forwarded by Colin Elman and Waltz[12]. The easiest way of responding this questions would be to accept Waltz's quite straight forward words: "Despite the disclaimers, structural theory is sometimes judged as a theory of foreign policy (…) It is not, however, a theory of foreign policy at all, as anyone who looks at the cover or title page of my Theory of International Politics surely can see" (Waltz 1994 *apud* Elman 1996: 09). In spite of Waltz's claim, Elman has engaged with the task of assessing the possible uses of neorealism to predict states' behavior. Defining neorealism as a research program instead of a single theory, he concludes that "[there are no] convincing epistemological or methodological reasons why neorealist theories should not be used to predict an individual state's behavior" (Elman 1996: 12). Although the balance of power theory and its competing hypothesis of bandwagoning aim at predicting states' behavior under anarchy, Waltz argue that they cannot be seen as foreign policy predictions because

> (…) a theory of foreign policy would explain why states similarly placed in a system behave in different ways. Differences in behavior arise from differences of internal composition. Foreign policies are governmental products. A theory has to take the performance of governments as its object of explanation in order to be called a theory of foreign policy (Waltz 1996:55).

Elman ironically counter ague Waltz by saying that if neorealism cannot be at all used to explain foreign policy, then neorealists like Waltz should keep their position and stop producing accounts of foreign policy (Elman 1996b). Beyond the debate between Elman and Waltz, four realist schools have engaged in building general theories of foreign policy, named

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[12] See the debate Elman, (1996a, b) and Waltz (1996).

offensive, defensive, neoclassical, and postclassical realism[13]. It is not a consensus among realists whether offensive and defensive schools are competing theories of foreign policy or cross-cut theories within both neorealism and neoclassical realism.

According to Jeffery Taliaferro (2000) realists can be placed into two different groups distinguished by their ultimate goal: neorealism seeking to explain international outcomes and neoclassical realism willing to explain the international behavior of single states. Mainly, "they differ based on the phenomena each seeks to explain, or the dependent variable", which makes them complementary theories (Taliaferro 2000: 132). Within these groups, the author identifies two other categories divided by their understanding of what anarchy means or implies to international interaction, and states' behavior; named offensive and defensive realism. The divergences between them transcend that between neorealism and neoclassical realism. Instead of complementary theories, defensive and offensive realism are competitors that "generate different predictions and policy prescriptions" (Taliaferro 2000: 134).

Gideon Rose (1998), however, organizes this intra-disciplinary debate differently. To him, there are five schools under the realist umbrella: classical realism, neorealism, offensive realism, defensive realism and neoclassical realism. Each of them having a specific aim and a particular understanding of anarchy, states ultimate goals, and the weight (when there is any) of domestic variables to explain states' behavior. Rose (1998) also presents a different theoretical cut between neorealism, which seeks to explain the outcomes of states' interaction, and offensive, defensive, and neoclassical realism as competing theories of foreign policy. In spite of the divergences, these are all considered realist theories because

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[13] The definition of postclassical realism appears in Brooks (1997). He explores the divergences among realist schools, and proposes a wide division between neorealism and postclassical realism. Although it is not possible to classify postclassical realism as a clearly defined school of foreign policy analysis, the contributions brought by this author deserve special attention.

they share the same core assumption: the international distribution of power is the independent variable to explain international politics and/or foreign policy.

Offensive and defensive realism have the same primary assumption "that the international system is composed of unitary, rational states motivated by a desire for security" (Rose 1998: 149). They differ, however, about the types of incentives the international system provides, as well as about the role played by anarchy and its nature, and the weight of domestic variables to explain states' behavior. Consequently their main divergence lies on what strategies states are likely to adopt (Elman 1996: 27). Offensive realism, for instance, defines anarchy as a Hobbesian environment in which only the strongest state can survive (Taliaferro 2000: 128). Thus, states pursue security by constantly trying to maximize their material resources. Overall, their aim is to "maximize relative power gains" (Elman 1996: 27). The desire for safety within anarchy often leads countries through offensive strategies. "States under anarchy face the ever-present threat that other states will use force to harm or conquer them. This compels states to improve their relative power positions through arms buildups, unilateral diplomacy (…) and opportunistic expansion" (Taliaferro 2000:128-129). The weight of anarchy leaves little space for domestic variables to impact on states' behavior. Hence, to understand why a state behaves in one way or another, the theory says, "one should examine its relative capabilities and its external environment because [these] factors will be translated relatively smoothly into foreign policy and shape how the state chooses to advance its interests" (Rose 1998: 149).

John Mearsheimer (2001), perhaps the most prominent representative of offensive realism, argues that great powers maximize relative power in their search for security under anarchy. To him, the quest for power maximization does not have a limit. Thus, states would be "condemned" to increase their power as the proper nature of the system would impel them to

do so. As Jack Snyder (2002: 21) summarizes "offensive realists (…) believe that status quo power are rarely found in world politics, because the international system creates powerful incentives for states to look for opportunities to gain power at the expense of rivals, and to take advantage of those situations when the benefits outweigh the costs".

Differently, scholars from defensive realism consider that security is not scarce because anarchy is mainly benign. Thus, given that the external environment is rather safe than hostile, states "can afford to be relaxed" (Rose 1998:149) mobilizing their military apparatus only to respond to threats, when and if they occur. As Elman (1996: 27) defines, "defensive realism argues that states should minimize relative power losses", however says Taliaferro (2000: 129), "the means a state uses to increase its security decrease the security of other states". This security dilemma often leads to a spiral of uncertainty and mutual distrust. The adherents of defensive realism consider both systemic and domestic independent variables to explain states' behavior. According to Rose (1998), domestic variables appear in auxiliary hypotheses. In a reference to defensive realism, Fareed Zakaria (1992: 178) outlined an "erroneous – though increasingly common – interpretation of realism that minimizes the powerful effects of the international system on state behavior". He called for the construction of "domestic explanations that take full account of systemic pressures" (Zakaria 1992: 178) that is, a realist account of foreign policy able to establish layers of relevance among domestic, international and other aspects that influence policy-making. He claims that theories often fail to identify what aspects of an outcome have been influenced by which level of analysis.

Defining defensive realism, Taliaferro (2000) identifies four auxiliary assumptions, instead of hypotheses, the theory builds upon. Two of them related to incentives to cooperate or conflict, and two establishing links between external and domestic variables to explain states'

behavior. The first is the security dilemma created by a country's fears and its subsequent effort to improve its own security. The second assumption concerns structural modifiers that can diminish or increase the probability that a security dilemma turns into an arms race or war (Taliaferro 2000:137). The third assumption already placed among the neoclassical tradition is the influence of material capabilities on foreign policy.

Like Rose, Taliaferro also agrees that most of what neoclassical realists seek to explain can only be done if perception is included in the research. The international distribution of power is not directly translated into foreign policy behavior rather absorbed, mixed and interpreted by decision-makers who will then formulate strategies. For this reason, says Taliaferro, "such foreign policy theories posit an explicit role for leaders' preexisting belief systems, images of adversaries, and cognitive biases in the process of intelligence gathering, net assessment, military planning, and foreign policy decisionmaking" (Taliaferro 2000: 141).

The fourth and last assumption presented by Taliaferro refers to the relationship between domestic politics and systemic imperatives. According to him, the defensive variant of neoclassic scholars recognizes the value of domestic variables to explain international politics under certain conditions;

> (…) during periods of imminent external threat, the calculation of central decisionmakers are paramount. Over the long term or in the absence of an immediate external threat, national leaders will have more difficulty in mobilizing domestic resources for foreign policy (Taliaferro 2000: 142).

Lastly, Stephen Brooks (1997) presents a distinguished cut within the realist tradition: between neorealism and postclassical realism. According to him, the Waltzian understanding of international politics is based on a worst-case/possibilistic assumption that contrasts to a probabilistic assumption of postclassical scholars regarding the odds of conflict. The latter is described as a competing realist school that "does not share four important characteristics that

are held in common by classical realism and Waltz's neorealist theory (Brooks 1997: 455). They do not have a "highly static conception of international relations", do not "rely on particular aspects of human nature (…) to generate hypotheses", do not "assume that states tend to rely primarily on the use of threat of military force to secure their objectives", and, last but not least, do not "concentrate on the balance of military capabilities, with neorealists excluding and classical realists generally downplaying other international-level influences on state behavior" (Brooks 1997: 455).

The cut proposed by Brooks follows, in certain degree, the one between offensive and defensive realism as they represent the possibilistic and the probabilistic assumptions held by neorealist and the postclassical realist schools, respectively. The latter, with regards the aforementioned four characteristics, also converge with neoclassical realism. However, they diverge from each other on the matter of what should be considered in the analysis of variation. Postclassical realists' main question is what can cause a variation in the probability of conflict besides the distribution of military capabilities. Their answer focuses on material factors, such as technology, geography, and international economic pressures, rather than in the distribution of power-capabilities alone.

Neoclassical realists also include in their analysis other material factors rather than solely the international distribution of power. Their focus, however, is on how these material factors and relative distribution of power affect the behavior of states. In order to answer this question, they focus on decision-makers' perceptions as the linkage connecting systemic constraints and states' behavior. As Natasha Bajema (2010: 67) outlines "in a neoclassical model, the perceptions and calculations of decision-makers form the critical link between the system and the unit level of analysis". In this sense, they add an interpretative tool to the

realist framework and switch analytically their focus to the domestic level to consider statesmen perceptions.

1.2.4. Neoclassical realism and the new realist approach to foreign policy analysis

As one can notice, some central variables and assumptions introduced by neoclassical proponents have already been used by offensive, defensive and postclassical realists. The differences between the last three schools and the neoclassical one concern mainly the method of analysis, the weight attributed to the international system, and the value added to domestic variables in explaining foreign policy. As Taliaferro (2012:79) argues, "neoclassical realism comparative advantage lies in its willingness to integrate unit-level and systemic-level, as well as ideational and material, variables into a coherent explanatory framework".

As Mark Brawley (2009: 97) observes, the international system only gives clear information about the threats and constraints states have to face, but do not say much about the set of possible responses they could choose. For this reason, a strictly top-down approach is unable to dictate the precise foreign policy of states and/or explain variances that might occur. This applies for cases when units with similar attributes choose different paths, or when units with different attributes follow the same path.

The lack of precise information from the system forces a methodological change in the locus of the analysis; from the international to the domestic level. Randall Schweller (2004: 164) averred that "domestic processes act as transmission belts that channel, mediate, and (re)direct policy outputs in response to external forces". Within this rationale, the state itself becomes an intervening variable affected by constraints and incentives coming from both domestic and international levels. Nevertheless, while the domestic level plays an important role in neoclassical explanations of states' behavior, these scholars are still realists because

they understand that if there is any single factor that ultimately defines states' behavior, it is their relative international power position (Rose 1998: 150).

In this vein, it should be emphasized that, domestic variables are "relegated to a second place analytically because over the long run a state's foreign policy cannot transcend the limits and opportunities thrown up by the international environment" (Rose 1998: 151). As Colin Dueck (2009) argues, the domestic level is actually the second and third steps of a policy initiated with international constraints on states that are perceived by national leaders and converted into actions. Thus, "domestic politics 'matter', not as a primary cause of intervention, but rather as a powerful influence on its exact form" (Dueck 2009: 139). By focusing the analysis on the domestic level without reversing the realist understanding of the relation between dependent and independent variables, neoclassical proponents offer a complex realist framework. This framework is particularly interesting because, by bringing agency back in, it can explain variances in states' foreign policy[14] .

Neoclassical realism offers a richer account of states that include a clearer definition of power as well as a role for ideas. It is worth noticing that neoclassical realism does not offer a single theory of state, but rather more or less systematized, and sometimes competing, accounts of state's behavior. As one can expect, the inclusion of the domestic level in the analysis raises the problem of potentially too many variables that can be considered in order to explain specific behaviors of states (Kitchen 2010). But not all neoclassical realists take into account all kinds of intervening variables. There is a clear cut between those focusing on state power (that means the capabilities to mobilize and extract resources at the domestic level) and those

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[14] Alexadr Reichwein (2013: 34) defines neoclassical realism as a "realist type of multi-level game focusing on the interplay of systemic and unit-level variables in shaping a state's foreign policy".

dealing with ideas, belief system, as well as political culture that influence perception and ultimately frame foreign policy[15].

In order to proceed with a neoclassical account of foreign policy, one must seek to define the core concepts involved in a neoclassical approach to foreign policy, namely state, power, and perception.

1.2.4.1. Power

The first aspect to highlight is that neoclassical realism draws not only on neorealism but also on classical realism. In this sense, the core argument of both traditions about power must be mention as they are the ground for the neoclassical definition of power. According to the classical realism of Hans Morgenthau (2003), power is defined in terms of interests and constitutes the ultimate goal of any state. In this sense, power/interest, albeit not defined, is characterized as an end in itself. As Morgenthau observed, men's search for power will only end when the last man on Earth dominates himself (Morgenthau 1946: 193). Human nature is the ontological fundament for Morgenthau's definition of power.

Differently, Waltz's (2002) neorealism presents power as security. Because states fear extinction, they seek power as a mean to ensure their survival. Power here is defined in terms of capabilities or military resources for self-preservation. Waltz also brings a definition of power based on association; thus power means capabilities, and has its ontological basis on the nature of the system.

Neoclassical realists bring from Waltz the ontological correlation between the nature of the system and power; however, as they understand the system as permissive not hostile, they

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[15] See Schweller (1992, 1994, 2004, 2009), Taliaferro (2006), Zakaria (1992), Wohlforth (1993), Christensen (1996), Lobell, Taliaferro, and Ripsman (2009), Snyder (1991).

associate power with influence, that is, not necessarily security. Neoclassical realists understand anarchy as a permissive structure. Thus, while states' ultimate goal remains to survive, these scholars agree that states will not always seek to maximize power – defined as security or defense. In other words, states do not need to fear for their existence all the time. Because anarchy is rather permissive, neoclassical realists associate power with the capabilities or resources to influence the international system. Statesmen seek to influence as much as possible the external environment in order to minimize the uncertainties produced by the anarchical-permissive international system. Because states are unable to predict the actions of the others, they will seek to influence the international system as much as possible willing to control or at least anticipate other states strategic calculations.

1.2.4.2. State

As mentioned elsewhere, states are the key actors in any realist analysis that addresses the interplay between international and domestic politics. States are neither defined as rational actors, nor as coherent actors (Schweller 2004: 161). For this reason, in order to assess the state one needs to assess statesmen' perceptions, bearing in mind that these perceptions are influenced by international and domestic politics. Statesmen are, in this sense, another intervening variable between state and society whose actions are defined on the basis of their perceptions about both realms (domestic and international) and confronted with their own interests as leaders. Consequently, foreign policy results from complex decision-making processes, and not always meets the predictions of a structural theory. As Taliaferro (2012: 78) outlines:

> The process of threat assessment is inherently difficult. Even in the very rare situations where an international or regional subsystem provides unambiguous information about the threat and "optimal" policy responses, a foreign policy executive still faces the daunting task of making subjective probability assessments, prioritizing among various threats and opportunities and discerning future intentions and shifts in the distribution of power.

In order to make sense of the centrality and complexity of the state for realism, Mastanduno, Lake, and Ikenberry proposed already in 1989 a two-fold model to analyze the interplay between domestic and international politics in states' search for their interests. Although these authors are not neoclassical realist, their realist theory of states gathers the arguments and concepts one find spread among the neoclassical realist literature. Their realist theory of states is based on the assumption that the ultimate goal of any state is to survive and that states use the domestic and the international realms to accomplish this goal. In order to build up this model, they draw on classical and structural realism, which places them very close to what neoclassical realism would develop few years later.

Classical realism defines state as a body distinct from society. Statesmen act on behalf of states, fostering and furthering foreign policies. To accomplish this task, they must also relate to the society from which they extract state power: this means mobilizing and extracting resources and seeking for political support (Mastanduno, Lake, and Ikenberry 1989: 460).

> It should be emphasized that while the classical Realists rely heavily on notions of the state and its relations to society, these notions remain implicit. There is no attempt to analyze systematically or theorize about the state's ability to marshall domestic resources or opinion. Moreover, the analysis itself is only partial. Classical Realists acknowledge that the nature of domestic politics is vital in sustaining or limiting the state's international goal. Yet, they leave aside how international policies might be used in the service of the state's domestic goals (Mastanduno, Lake, and Ikenberry 1989: 460).

In neoclassical realism, this distinction is accepted and statesmen are named the Foreign Policy Executive (FPE) who represents the state and its interests. Also, given its strategic position as bridging actor, the FPE has access to privileged information not available to the society. This information allows them to produce more accurate analysis of international as well as domestic politics that will be transformed into foreign policy.

To complete their definition of state, neoclassical realists rely on structural realism, which starts from where classical realism stops. The theory, mainly its defensive version,

emphasizes the interaction among states within an anarchic world and under constraints and incentives posited by the system. In this context, changes are a function of international attributes such as relative-power distribution. Based on this axiom, it is possible for structural realism to black box the state, holding the domestic variables constant and analyzing only the international constraints on states' actions (Mastanduno, Lake, and Ikenberry 1989: 458).

Subsuming all realist approaches, a common understanding of what ultimately distinguishes states is (a) the international distribution of power-capabilities and (b) the hierarchy of power it produces among states. From this hard core, auxiliary assumptions are derived: (a) states compete with each other for sources of power (power being a mean for something) or (b) states compete with each other for power (power being an end in itself). Thus, in a competitive environment, even if anarchy is not taken as constantly threatening, states have to find ways of surviving either by improving (Mearsheimer 2001) or by keeping (Waltz 2002) their relative power-position.

In general, realism does not go much farther than this in explaining the state. States are understudied because in general realists either treat them as black boxed units or attribute to their leaders a rationality that makes easy to predict optimal behaviors without having to really assess the domestic level. Seeking to overcome this gap and to offer a toolbox for realist analysis of variation, Mastanduno, Lake, and Ikenberry (1989) argue about three strategies adopted by states that largely contemplate the interaction between domestic and international levels: mobilization, extraction and validation[16]. Subsuming this proposition is the assumption that all states seek wealth and power.

> Power and wealth are valued because they provide the means to insure both the state's
> survival and to pursue other goals within an anarchic and competitive international

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[16] Taliaferro, Lobell and Ripsman (2009) also consider mobilization and extraction as the key intervening variables through which neoclassical realists can access the ways states perceive international threats and formulated strategies.

system. Power (…) is a currency with which to purchase security and other valued political goods. Wealth (…) is a necessary means to power, and the two are in long run harmony (Mastanduno, Lake, and Ikenberry 1989: 462).

From this assumption they derive that states – or their leaders – will use both the domestic and the international arenas to accomplish this minimal goal. They consider that "(…) international and domestic politics are interactive. Policy made in one arena spills over into the other. Governments act at home to meet international challenges and abroad to solve domestic problems, often simultaneously (Mastanduno, Lake and Ikenberry 1989: 458)". On the one hand, to accomplish international goals through domestic strategies, state leaders will mobilize resources at the domestic level to stimulate economic growth, generating national wealth. At some point, when necessary, this wealth will have to be converted into international power via extraction of "resources from the society for military expenditures, foreign aid, and contributions to international organizations, propaganda, and other exercises of international power" (Mastanduno, Lake and Ikenberry 1989: 463).

On the other hand, the FPE will seek to extract at the international level any assets that could help achieving domestic goals "by increasing the resources available for coercion or compensation" (Mastanduno, Lake and Ikenberry 1989: 464). This strategy necessarily involves material supplies. In parallel, external validation meets non-material strategies and goals and "refers to attempts by state officials to utilize their status as authoritative international representatives of the nation-state to enhance their domestic political positions" (Mastanduno, Lake and Ikenberry 1989: 464).

To sum up, the state is an instrument for leaders to accomplish national goals, while the FPE mediate the process through which foreign policy is forged. Foreign policy is, therefore, the outcome of a mediation process that occurs at the domestic level and not an automatic answer to international pressures. This is why it is necessary to look inside the state. Moreover,

neoclassical realists do not assume that relative capabilities equal national power because at the end of the day statesmen might not have access to the sum of all the capabilities a state has in relation to other states. In this sense, they ponder the extent to which statesmen can mobilize and extract the relative capabilities available in order to define national power.

According to Bajema (2010: 66) "while a country's relative power establishes the parameters for state behavior, state power shapes how leaders respond to changes in relative power at the systemic level". This means that relative power equals potential power, while state power means the real national power that results from domestic struggles between statesmen and societal groups (Bajema 2010: 65). Once again we return to the neoclassical realist maxima that the international system – in the form of the distribution of relative power – only sets the parameters to understand state's action. The real form of a foreign policy can only be accessed if the state is scrutinized, for this is the only way to understand the exact amount of power available to realize a chosen foreign policy.

It is at this point perception must be defined. If the state is not a rational entity but the result of domestic relation between the FPE and society regarding power, foreign policy results from a domestic process of interpreting the international system on the basis of domestic interests and available conditions for action, that is power. The way leaders interpret this environment and deal with domestic and international constraints is mediated by their perceptions.

1.2.4.3. Perception

As it has been mentioned elsewhere, the primary concern of neoclassical scholars is to study attributes of individuals. Among these attributes is perception because "the state is conceptualized as the second intervening variable (…) between state leaders' perception of

systemic pressures and the actual foreign policy behavior" (Reichwein 2013:44). Directly or indirectly, neoclassical realists consider the way leaders perceive the world, as well as the symbolic and objective tools leaders use to interpret reality and formulate foreign policy: belief systems, political culture, history, ideology. Although neoclassical realists recognize the existence of an objective reality of relative power that ultimately determines the outcome of states' strategies, they argue that leaders will always interpret the international environment through their own lenses. Thus, their perception about the world and their perception about their own situation in the world have a central role in their analytical set.

> [Neoclassical realists] deny both the assumption of rationality embraced wholehearted by Mearsheimer and partly by Waltz, and the assumption that power can be measured exactly. Hence, the cognitive factor of perception is the first aspect by which it can be argued that neoclassical realism is a further development of neorealists theories of foreign policy (Reichwein 2013:42).

The questions that follow from the neoclassical contribution are what perception actually is and how it can be empirically accessed. These questions, however central, remain sparsely addressed in the literature. In general, neoclassical studies do not engage with a conceptual debate, rather they treat perception as a given part of their approaches and look at how and the extent to which perceptions are affected by externalities. As an effort to set some parameters for the concept, I further the following definition of perception[17].

Intuitively, perception can be differentiated from facts or empirical evidence. In a word, perception can be defined as the way our brain relates to the world around us. It includes psychological and cognitive dimensions as it deals with individuals' impressions and understandings about the world. It affects reasons and emotions and imposes a limit for an

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[17] This author understands that the conceptual debate on perception is underdeveloped among neoclassical realists. This silence bares resemblance with the debate on power fostered by realists in general. Instead of defining the concept, power (such as perception) is defined through association. Power is sometimes a synonym for influence, security, interests but does not carry a definition in itself. For a critical debate on the lack of consistency on the concept of power among realists see Wohlforth (2002), and Schmidt (2005) for a comprehensive account of the concept in the different realist school. As for perception, see Jervis (1976) and Wohlforth (1993).

objective look over reality, which does not mitigate the existence as an objective reality beyond perceptions, only poses a challenge to accessing reality in any pure form. Perception is influenced by past and present experiences, and biased by junctures and by the positions occupied by each person in society.

> Perception is our sensory experience of the world around us and involves both the recognition of environmental stimuli and actions in response to these stimuli. Through the perceptual process, we gain information about properties and elements of the environment that are critical to our survival. Perception not only creates our experience of the world around us; it allows us to act within our environment (Cherry n/d: 01)[18]

Based on this definition, one can say that human brain does not know any other world but that mediated by perception. Hence, perception is singular and individualized. For this reason, methodologically, the analysis of perception is not feasible for social sciences to the extent that a researcher cannot in fact access the brain of a decision-maker. What remains for researchers is the analysis of what might have influenced decision-makers' perceptions to the point that they frame foreign policy in one or another way. While neoclassical realists often call perception an intervening variable, it is actually the locus within which tangible and intangible variables are apprehended in order to form decision-makers' position[19]. It is in this sense that neoclassical studies take into account so many aspects when talking about perception: belief systems, political culture, personality, history, and ideology among others. I call these aspects a second class of intervening variables that affect perception and are observable. As perception in itself is elusive and difficult to grasp, researchers focus on what frame perceptions instead of searching for ways to access perceptions. As Bajema (2010: 67) observes:

> The need to consider the role of perception in a neoclassical realist model is a logical consequence of the assumed distinction between state and society. Because it is the leaders of a state who assess their state's position within the international system and calculate the costs

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[18] Available at http://psychology.about.com/od/sensationandperception/ss/perceptproc.htm

[19] For tangible variables, I consider state power, and relative international power, while intangible variables are defined as history, political culture, ideas.

and benefits of different courses of action, 'material capabilities can influence state's external behavior only through the medium of central decision-makers' perceptions, calculations, and estimates' (Bajema 2010: 67)

Aside from perception, statesmen are also exposed to misperceptions and time lacks between real changes and their (mis)perception of these changes (Jervis 1976). Consequently, neoclassical realists can assume that states' responses to threat are not necessarily proportional to the changes in the relative distribution of power that first triggered the threat. This explains the timing of decision-making that often appears to be neglecting reality or overestimating it. This argument in its numerous nuances will become clear in the empirical narratives of chapter 2, 3, and 4. Also, the debate on perceptions will be brought back in chapter 6.

1.3. Regional Powers: defining the concept

To further the debate on Brazil, India, and South Africa as regional powers that have presented different nuclear behaviors, it is paramount to first establish what defines a regional power as such[20]. After approximately forty years since Robert Keohane (1969) and Carsten Holbraad (1971) published their articles proposing new criteria to define middle and small powers[21], some anomalies compromise the applicability of these concepts to regional powers. The differences lie not only on the label, but also on the content of what regional and middle powers are. Middle Powers are in general developed economies with common characteristics of political behavior: niche diplomacy (Cooper 1997), mediation or bridges between poor and rich countries (Holbraad 1971) and not necessarily have political ambitions to increase their relative power. They are countries that occupy an intermediate position in the international

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[20]This dissertation neither engages with the conceptual debates on regions and regional power nor aim at fostering new concepts. Rather, it draws on well accepted concepts that overall meet a realist research program.
[21] Keohane (1969) includes a psychological variable and Holbraad (1971) a mixed approach including material and immaterial elements.

hierarchy of relative power in relation to the positions of great powers (Nolte 2010: 886). Middle power can play an important role in alliance formation as their material capability is significantly strong to affect the international military balance of power.

> A middle power is a power with such military strength, resources and strategic position that in a peacetime the great powers bid for its support, and in wartime, while it has no hope of winning a war against a great power, it can hope to inflict costs on a great power out of proportion to what the great power can hope to gain by attacking it (Wight 1946 *apud* Nolte 2010: 886 footnote 27).

Regional powers, however, could be intuitively defined as the major or one of the major powers within a region that also occupy an intermediate power-position at the international level (see Neuman 1992). In this sense, the concept refers primarily to the regional distribution of power not to the international one. In economic terms, these are developing states with a large young population, a big scale for production and a large market. Beyond the growth of their economic relevance, regional powers can also be recognized by their political activism (and in this sense they might be often considered also middle powers). Their role in some issue areas such as climate, health aid and non-proliferation, and most of all their influential weight within a region are among the roles of regional powers. These roles are recognized by the international community and often expected from regional powers.

In the literature, the concept of regional power is often associated with the security agenda of the region and with decision-making processes that directly or indirectly affect the region. In this sense, regional powers can be regional stabilizers or the main source of instability within a region. Robert Stewart-Ingersoll and Derrick Frazier (2012: xiii) define regional powers as "states that perform a function within their neighborhoods. They identify and frame security problems and emphasize those that present shared threat. (…) Finally they are the point of access through which great powers deal with regional systems". Due to their favored regional

position and limited international power, they tend to project power first and foremost within the region because the "ability to project power declines with distance" (Walt 1985: 215; see also Stewart-Ingersoll and Frazier 2012: 04). In security issues, Stewart-Ingersoll and Frazier (2012: 07) contend that regional powers are primarily influential in the region "and are treated in a different manner from other states within their RSC [Regional Security Complex], while they may not be quite influential beyond".

Politically, they are likely to have more voice in deeply institutionalized international fora (Sennes 2001) and to affect the international system through coalitions (Keohane 1969) exactly because of their limited international power-capabilities. This means that regional powers are stronger in the region than they are internationally. This dual trait of regional powers' power-position pushes them towards a twofold-game: it demands from their FPE a constant analysis of relative-power changes at the international and regional distributions of power in order to foster foreign policy. The double trait of regional powers also suggests how conflicting the relative distribution of power can be for them. As a result, it is presumable that they do not understand and/or pursue power maximization in the ways great powers would do.

Taking into account their limited relative power at a global level and superiority at the regional level, Detlef Nolte (2010: 15) points out that regional powers are likely to pursue an agenda of influence maximization, which could be translated into a simultaneous quest for leadership at the regional level and legitimization of this position at the international level. In this sense, their strategies affect the region, even when they are pursuing their national interest at the international level. This also means that their foreign policy is affected by the regional context no matter their aim, because it is primarily the regional constellation that can increase or constrain regional powers' power. Thus, in pursuing their national interest, regional powers can trigger a regional security dilemma and/or feel threatened by the

behavior of its neighbors. Finally, it is important to note that even with a limited international influence, a potential regional instability triggered by regional power's quest for power or influence maximization could spillover internationally and calls the attention of external powers to the regional level. This is specially the case for nuclear dynamics and invites researches on the nuclear choices of regional powers as well as on nuclear dynamics and regional orders.

Differently than the international order, regional orders are under constant potential presence of an external power (whether they have been invited or not) and their interference in regional affairs. This particular trait of regional orders make difficult a simple application of a systemic theory – such as structural realism – to the study of regional dynamics.

Iver Neumann (1992: xi) points out that regions are contiguous clusters of nation-states. As such, they are at the same time subsystems of the international system, and specific analytical units because of their lesser scale, and defining geopolitical and cultural traits. Also, "the region occupies the middle ground between bilateral relations (…) and system-wide relations". As it will be discussed in the next sub-chapter, the regional sub-system is not always entirely anarchic as it is the international one, but rather a mixture of anarchic and hierarchic political architectures. Thus, specific traits of regional orders as well as whatever variations that happen at the regional level need to consider the region as a central part of the theoretical building and not take it for granted as an empirical byproduct of the international system.

1.4. Regions, Regional Powers, and Realism

As a category of countries, regional powers have been left outside the explanations of nuclear (non)proliferation. Simultaneously, realism that holds some of the most prominent analysis of

why states proliferate also do not dedicate special attention to regional powers, at least not as a group with particular traits that in turn would be likely to adopt a specific set of behaviors. But, in order to study variation in the behavior of regional powers one must first define a region.

According to T. V. Paul (2012: 03), in spite of efforts from inside IR to understand regional orders and identify the drivers of changes in regional orders and on the behavior of regional powers, the topics still remains understudied. Paul (2012: 04) defines regions as "cluster of states that are proximate to each other and are interconnected in spatial, cultural, and ideational terms in a significant and distinguishable manner". According to him, this definition keeps the material dimension, while allowing for the inclusion of perceptions in the analysis to the extent that "people and states in a region ought to perceive themselves as belonging to this entity, although they need some level of physical and cultural proximity to do so".

Prior to Paul, Barry Buzan (1983) coined the term security complex to define a specific kind of regional cluster that is driven by shared security concerns and does not necessarily include territoriality. He stated that "the security implications of the anarchic structure do not spread uniformly throughout the system", thus a security complex is a "group of states whose primarily security concerns link them together sufficiently closely that their national securities cannot realistically be considered apart from one another" (1983: 105-106).

A general realist definition of regions would consider them as mirrors or functions of the international system because like the latter, the former should also follow a pattern of "regularized interactions" (Paul 2012: 05). As it has been presented in this chapter, Waltz defines the international system as composed by like-units that interact in the absence of supranational authorities. The same should be expected from the regional level. However,

while in general regional orders can be credited as anarchic orders, they are not "purely" anarchic. Rather, they sometimes resemble the hierarchical trait of domestic systems – as the extreme case of the European Union illustrate, but that can be found in different degrees in other regions where external great powers play a decisive role. In this vein, Dale Copeland (2012: 51) calls attention to the fact that

> The most difficult theoretical task in applying realism at the regional level is figuring out, through a stand-alone deductive logic, what impact the external great powers should likely have on the interactions of the important states within the subsystem. Any realist theory designed to work at the systemic level cannot be applied lock, stock, and barrel at the regional level. This is for one simple reason: realist theories have been formulated for situations of pure anarchy where no larger actors exist to enforce agreements and protect them from attack. In regional subsystems, however, there are indeed "higher" actors with significant power – namely, the great powers external to the subsystem.

Realist proponents of the balance of power theory suggest that the stability or instability within the region derives from the distribution of power among its members: bipolar regional orders would likely prompt stability, whereas multipolar regional orders would likely be more unstable. Lastly, unipolarity would increase the likelihood of conflicts as the smaller states of the region would seek coalitions to overcome the regional great power. The latter would be ready to go for war to keep its primacy. Still under the realist umbrella, those who advocate for hegemonic stability (see Gilpin 1981, 2001) would read unipolarity with opposed lenses, arguing that the presence of a hegemon likely assures stability for a region.

By confronting these two typologies with empirical analysis, the limits of a strict top-down approach become evident. As Paul (2012: 11) outlines, "emphasis on structural/system forces can impart some value to an analysis on regional order, but often scholars of this vein neglect the sub-systemic and internal sources of order". In other words, while systemic analysis provide rich insights to generally define a given regional order, the theory cannot account for variations that might occur in a regional order: realism often neglect the various other forces that impact on regional dynamics but are not present in the same way as in the international

level: the economic, political or security presence of external powers in the region, as well as the overlapping regional arrangements that create various forms of interdependence, and/or historical ties illustrate this argument.

Paul (2000) offers perhaps the best realist analysis on non-great powers and nuclear choices. He argues that while the international balance of power informs great powers' nuclear choices, the same does not apply to regional, middle, and small powers. For the latter states, "its interaction with regional actors and with the most heavily involved major powers in the region are crucial security determinants" (Paul 2000: 15). Paul points out security environment and conflict level within the region as an important precondition for non-great powers proliferation. As an assumption he builds that "states' regional consideration differ with their security environment" (Paul 2000: 15).

However, he frames his arguments in a binary logic stating that realism and liberalism hold each the best explanation for each side of the spectrum of (non)proliferation. Hard realism holds the best explanation for nuclear proliferation while liberalism holds the best explanation for nuclear forbearance. My claim is that both explanations are offered by realism, without contradicting the core assumptions of this tradition.

The three empirical cases analyzed in this dissertation illustrate the limits of a strict top-down realist analysis. In 1970s in South America, the regional order would at best bear resemblance with a bipolar order led by Brazil and Argentina. However, this order was far from stable, even though it could not be called a security dilemma either. From the outside, the U.S and often England would play a decisive role in the regional countries decision-making process. The hybrid trait of this region contrasts with the instability of Southern Africa. While South Africa could be claimed as the sole regional power during the Cold War it did not bring stability to the region. This analysis would be challenging for the proponents of hegemonic

stability. Contrarily, Southern Africa could also be read as a bipolar order of external powers since the US and the USSR progressively projected power in the region. In this case, the challenge would rely on the balance of power proponents that would not be able to sustain that a distribution of power between two strong state-actors lead to stability. The same applies to South Asia. Proponents of hegemonic stability could attribute explanatory power for the instability in the region to the absence of a hegemon. Balance of power theorists could claim that it was rather the superior power capability of India that made the region instable.

Underlying all this hypotheses is the fact that the end of the Cold War did not decisively affect any of these regions. The changes (whenever there was any) that happened in each of these sub-systems where already in course before the demise of the Cold War: the instability in South Asia remained. The end of competitions in South America did not suffer any external influence. Lastly, the end of the Cold War indeed helped improving the situation in Southern Africa but cannot be credited as the solely force triggering stability.

Paul (2012: 05) calls attention to the fact that what is lacking in the realist theory building is the analysis of what are the patterns from within the region that can help explaining the absence or recurrence of instability or war. For example, Copeland (2012: 51) attributes the stability or instability in a region to the fact that many regions cannot count on an external power interested in "managing" the likelihood of regional war or peace, and also because often wars occur in regions in spite of the wishes of the external power otherwise. As Copeland outlines, there are few exceptions within realism that have actually explored the reasons for stability or conflict from inside the region, though in general realists are more likely to "simply [examine] how external great powers might exploit regional politics for their own purposes" (Copeland 2012: 49).

In this vein, Arthur Stein and Steven Lobell (1997: 106) identify two competing theories on Cold War and post-Cold War: conflict-suppression school and conflict-exacerbation school that nevertheless share a common claim. The competitive bipolar system of the Cold War integrated all regions as one single globalized system in which "there are no peripheries, since either power's gain will upset the delicate global balance of power. Accordingly, all local and even domestic conflicts are absorbed into the bipolar contest" (Stein and Lobell 1997: 105).

This observation again focuses on the external forces acting in the region. While from a great power's perspective the whole world had become progressively smaller under the bipolarity to the extent that it would resemble a world without regions, from a regional perspective and most important from the perspective of the regional powers, regional boarders and the boarders inside each region remained unaltered. Regional powers during the Cold War had to cope not only with regional instabilities (that often resulted from former interferences of great powers in the regional order) but with the politics (often purely ideological) of the systemic bipolarity transferred to the region. Simultaneously, and considering the debate presented on the former sub-chapter, regional powers also have their own agenda of power maximization (either considered in terms of influence or security) that is pursued in and outside the region. As they affect and are affected primarily by the regional constellation, their foreign policy can be the main source of stability or instability in the region. Also the regional constellation plays a role in regional powers decision-making process prior to any influences coming from the international level[22]. History, political culture, as well as shared

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[22] In the article *The state of Argentine-Brazilian Nuclear Relations* Juan Toklatian (2013) developed a similar argument: "the foreign policy in a southern state is conditioned, positively or negatively, by the simultaneous interaction of the domestic, the regional, and the global. Thus, options at the disposal of a traditionally peripheral country, especially middle powers, are more varied, intricate, and unexpected than thought by staunch realists in the Northern Hemisphere".

ideas could be considered explanatory variables to access variation in the regional order if realism moved beyond systemic analysis.

According to Gil Merom (2003: 109) while realism has fruitfully contributed to most of the debates on international politics and especially international security, it has left aside some crucial themes such as regional orders. As an attempt to further a theoretical debate on regional orders and its relation to systemic orders from a realist perspective, Merom (2003) assumes that the international distribution of power affects the region when two conditions can be identified: "the power of systemic actors [is] superior to that of regional ones and the former [has] an interest in the latter" (Merom 2003: 112). Overall, he states, any consideration on regional orders from a realist perspective must be derived from a systemic analysis.

Furthermore, he systematizes the following general realist hypothesis: "the more the region is perceived as adding to the security or relative power of a systemic actor, the more it is valued and the greater the probability that the latter will try to establish control over the whole region or some of its actors" (Merom 2003: 112). If one single systemic actor controls the region, Merom claims, the region will be captive. But when two or more systemic actors are disputing a region, it will be a contested region.

These hypotheses are in accordance with the overall realist paradigm but again do not say much about what happens within the region and how regional powers react to the presence of external actors. From a neorealist perspective, the region, the politics within the regions, and the politics of regional powers are simply functions of the international distribution of power and of the power-game of systemic actors. In this sense, the politics and power-games emanating from the region would be at best defined as reactive. This is a mistaken assumption. As Taliaferro (2012: 89) outlines:

> Neoclassical realism and various structural realist theories would agree that pivotal states and all other states within a geographic region encounter two types of structural constraints: those originating from the global international system, on the one hand, and those originating within the regional subsystem, on the other.

Following Merom's proposition, under the bipolarity umbrella, South America could be classified as a captive region, while Southern Africa and South Asia could be best defined as contested regions. In other words, the Cold War was much more present in Southern Africa and South Asia, and consequently in the strategic calculations of South Africa and India, than it was in South America and in Brazil. This is an important aspect to be considered but not enough to explain the nuclear choices of these countries.

Copeland (2012: 49) also offers some alternatives to overcome the theoretical debility of realism. He proposes the use of his *dynamic differentials theory (DDT)* to also explain the likelihood of conflicts at the regional level. The basis for his argument lies on the assumption that "crises and wars are most likely when the most dominant military states in a system begin to anticipate steep and largely inevitable decline and thus starts to fear the future intentions of rising actors" (Copeland 2012: 49-50). Copeland (201: 52) then proposes a two step approach that starts with the assumption that "external great powers have no interest in regional affairs". While calling this assumption an "abstract ideal", Copeland claims it as an important step to control variables during the theory-building process.

By isolating the influence of external great powers in the region, the model can "deductively establish a regional situation that is close to the pure anarchical starting point of most IR theories" (Copeland 2012: 52). The second step of the model is two fold: first "[it] must assume that regional actors look only to the impact of extra-systemic great powers on their local power levels and trends, and not to commitments by such powers to insert their own forces into the region from outside." (Copeland 2012: 52). Second it asks "how extended deterrence commitments by external actors moderate (or perhaps accentuate) the incentives

for war by dominant regional states, given what we know about the power dynamic of the subsystem" (Copeland 2012: 53). Overall, the second step of the model seeks to "modify the pure logic of any particular realist theory to show how great power interventionism and regional power dynamics interact to shape the likely policies of dominant regional states and thus the overall stability of the subsystem" (Copeland 2012: 52).

The model offered by Copeland, as he outlines, does not considers the interaction between unit- and system-level variable to asses and predict variances in regional orders. The gap left by this model does not suggest that unit-level variables are not relevant for the analysis. On the contrary, the author outlines the necessity to further the research program as to "carefully specify the interactive effects of system and unit-level variables while providing more substantive empirical studies of the key cases of regional peace and war" (Copeland 2012: 73).

While Copeland's model can be considered a big step further within the realist literature, it is still framed in terms of general hypotheses drawn from deductive logics. The main aspect that would break up this vicious circle would be the inclusion of variables from the domestic level. Ultimately, it is the analysis of this level in its interaction with the regional and the international ones that can provide explanations on variations among regions. The generalized and macro explanation offered by realism can neither deal with the differences in the patterns followed by each region and its respective regional powers along time nor with the differences in the ordering patterns among them in a specific period in time. While Paul (2012: 12) argues that bridging explanation between realism and liberalism – allegedly the theory focused on domestic variables – could fill the lacunae left by exclusively systemic explanations, he also considers alternative solutions from within realism. He states:

> (…) a key problem for Realism is its overemphasis on structure and the distribution of power while giving less importance to agency, although the newer version of Realism, neoclassical realism, attempts to rectify that problem. I believe neoclassical realists are yet to develop a coherent theoretical approach to regional order (Paul 2012: 10-11).

Seeking to partially fill in this gap, Jeffry Taliaferro (2012: 76) proposes a neoclassical realist approach to the analysis of regional orders transition. Drawing on Meron's (2003) assumptions he also states that "a causal explanation of regional order must first proceed from an analysis of the global distribution of power" and that for the latter to affect the region, two condition must be observed: "the capabilities of systemic actors (namely great powers) must be superior to that of regional ones, and the former must have a strategic interest in the latter" (Taliaferro 2012: 77). Finally he avert that state power is the key unit level variable that allows regional and extra-regional powers to define and coordinate their foreign and security policies to meet possible threats. In turn, regional and international threat, and relative power as well, create incentives for regional and extra-regional powers to act (Taliaferro 2012: 76).

While Taliaferro (2012) outlines the hybrid trait of regional systems that have to deal with opportunities and constraints originating from inside and from outside the region, he argues that the main threats within a regional system are either originating at the domestic level or at the regional level, not at the international one. In this sense, the potential instability posed by an external regional actors play a secondary role in the regional order. Nevertheless, as mentioned elsewhere, it is part of the strategic calculation of regional power to consider variation on both the regional and the international distribution of powers to promote a specific foreign policy.

Although neoclassical realism offers an innovative approach for foreign policy analysis, it still reproduces the traditional gap from the theory; that is the lack of systematized studies about regional powers' foreign policy. Nevertheless this school offers the tools necessary to

further the debates on regional powers' behavior and to permit the inclusion of new hypotheses that would take into account the particular traits of regional powers.

In general, the authors presented here share some common assumptions. First, they all agree that the regional sub-system must be integrated with the international one. Second, they consider that the presence of external actors in the region affects the regional distribution of power as well as the decision-making process of regional powers. Third, they claim, the presence of the Cold War in different regions had different levels - high or low - depending on how crucial that region was perceived by the US and the USSR. What remain silent are the voices from the regional powers. How and why did they act the way they did in given situations in which external powers were or not present?

It is in this theoretical gap that this dissertation places itself. Any attempt to exhaust the topic in one single work would be by far too bold. Nevertheless this dissertation does dare to position itself at the starting point of a new research agenda on regional powers' nuclear behaviors from within realism. While I do not devaluate the possible explanations offered by other theories, I believe each IR tradition needs to seek first within its boarders variables to explain undervalued phenomena (see Wohlforth 2007). As neoclassical realism evidences, and Colin Elman (1996) long ago has claimed, there are no epistemological or ontological impediments to use realism – even contemplating its strong systemic claims – to further studies that ultimately deal with variation; that is, studies that necessarily have to shed light on domestic and regional variables.

1.5. Research design

Part II of this dissertation, concerning the historical assessments of the nuclear behavior of Brazil, India, and South Africa will be operationalized through process-tracing. Process-

tracing meets the methodological aim of the neoclassical approach that is to identify the causal chains among independent, intervening and dependent variables (Rose 1998: 167; Schweller 1998) in order to explain states' behaviors. Particularly important to this work is also to identify the causal mechanisms triggering the interaction among the variables.

Neoclassical realism already stresses what are the independent, intervening, and dependent variables to be assessed: international system, leaders' perceptions, and states' behaviors respectively. This way they hypothesize that whenever there is a change in leaders' perceptions it is likely that states' behavior will also change. What remains open for investigation is what triggers the change in perception; that is, the causal mechanisms. Furthermore, for the aims of this dissertation, it is also important to situate the regional level and the perceptions about the regional level within the neoclassical realist approach. Only then neoclassical realism will be suitable for the analysis of regional powers' behaviors. Process-tracing and structured focused comparison are suitable methods to accomplish these aims. Process-tracing helps identifying the causal chains connecting the variables within case. Consequently, it helps to unfold the causal mechanisms triggering the processes. Structured focused comparison helps avoiding spurious conclusions – a risk inherent to theory-building based on case-studies – by checking the dynamics found among variables within case across cases.

But before introducing the methods, it is important to say a few words about the relationship between History and International Relations. The two disciplines have been for long time divorced, largely because of the ultimate aim of each discipline. While History is about specific, non-generalizable narratives, International Relations – especially realism – is about searching for regularities that can be generalized to other case of the same universe. In spite

of these particular traits of each discipline, History and International Relation do have overlapping points and thus can contribute to enrich the study of the social world.

1.5.1. History and International Relations

Multidisciplinary works add value to the overall understanding of nuclear dynamics. While Sagan (2014) identifies two emerging waves of renewed interest in the study of nuclear dynamics: one in political science, the other in history, he outlines, these are still separated fields that at best forward their works in parallel. The divorce identified by Sagan is not exclusive to the study of nuclear dynamics, rather a still strong characteristic of the relationship between History and International Relations.

On the one hand, it is comprehensible that the two disciplines forge their fields in a way that facilitated the distinction between "self" and "other". This is a matter of searching for and establishing identity for the field. On the other hand, History and International Relations could and should profit from their differences in order to create profitable intersections. Historians have knowledge-logic that privilege in depth, detailed analysis of (mostly) single cases. This specialized knowledge of historians is commonly left aside by realist scholars – mainly in the structural realist variant. For the latter, parsimony is preferred to the extent that it allows for the development of theories; that is knowledge-generalizable across space and time.

As Edward Carr (1990: 87) observes "(…) history is a study of causes. The historian (…) continuously asks the question 'why'". International Relations theorists also constantly ask the question why in search for causes. The main difference between the two disciplines is the system behind the investigation. Historians let the evidences guide them towards the answer for their questions and recognize that their guiding questions might change along the

investigation. International Relations theorists often ask questions, formulate one or various tentative answers, and search for confirmations. Both historians and international relations theorists should profit from each other's system instead of fueling the already existing deep gap between the disciplines.

The presence of historical accounts among classical International Relations works is undeniable[23]. However, the primacy of structural realist approaches as the theory to explain international politics has contributed to deepening a gap between History and International Relations along the years. This reality started to change with end of the Cold War that had particularly affected the academic field of International Relations. It evidenced the limits of an exclusively structural theory that does not take processes into account. Put it in a different way, the inability of structural realism to predict the collapse of the Soviet Union and the end of the Cold War triggered criticism on the lack of historicism in many mainstream International Relations explanations of world politics.

As Elman and Elman (2001: 34) define "historicizing means viewing the past as constructed, recognizing that international relations' categories and identities are not given and fixed, but made and remade". So, ideas are always embedded in historical times. Ideas can travel throughout historical times as narratives and often become part of country's political cultures. Yet, in each historical period, these ideas are contextualized as they suffer influence from the moment. In this sense, they are merged with new demands, fresh interpretations of reality, and specific perceptions of statesman. Ultimately, ideas can be the same, but their meanings differ depending on the historical time. In this vein, theories – that are ultimately made out of ideas – must pay attention to history and contextualization as to avoid anachronism and ahistorical artificial claims.

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[23] see for example Carr's "Twenty Years of Crises", Adam Watson's "The Evolution of International Society", Henry Kissinger's "Diplomacy" and Paul Kennedy's "The Rise and Fall of the Great Powers", among others

Finally, the years post-Cold War witnessed a (re)turn of History to IR works, mainly those of constructivists and neoclassical realists[24]. Since then, a new wave, so to speak, of IR works has once again opened space for dialogues between History and IR, including discussions about the uses of historical methods and techniques in IR research, more philosophical debates on the meaning of History to IR studies, as well as on the aspects of differentiation and convergence between the two disciplines[25].

1.5.2. Framing a method: Process tracing

The study of variation in outcomes sheds light on a common problem in social sciences, namely equifinality or multifinality. The former can be defined as "many alternative causal paths for the same outcome" whereas the latter is better defined as "many outcomes consistent with a particular value of one variable" (George and Bennett 2005: 10). From a theory's perspective, equifinality and multifinality challenge the assumption found in Waltz's work that countries with similar relative capabilities most likely present similar behavior, which in his case suggests that one single independent variable causes a very restricted set of outcomes (George and Bennett 2005: 161)

This is particularly true for the study of nuclear (non)proliferation, which seems to fall into the trap of searching for single causal explanations. While any historical analysis directly or indirectly evidences a multitude of causal interconnected factors leading to proliferation, the realist literature (though this is not a particularity of realism) tends to search for single causal explanation that are ultimately connected to power balancing (Waltz 1979) or threat

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[24] See Wohlforth (1993); Snyder (1991); Christensen (1996); Schweller (1998); Lobell, Ripsman and Taliaferro (2009)

[25] According to Hobson and Lawson there is no single history in IR but at least four general ideal-types diverging from each other on methods and ontology, allowing a specific kind of research design. They are called *history without historicism* or *constructionism*, *traditional history* or *particularism*, *radical historicism* or *deconstructionism,* and, overlapping all the three types, *historicist historical sociology* (Hobson, Lawson 2008: 420). The main difference among them rests on their perception and uses of historical time and space. See Millennium 2008 Special Issue on History and International Relations. See also Elman and Elman (2001) Bridges and Boundaries.

perceptions (Walt 1995). Actually, many of the competing explanations for nuclear (non)proliferation (inside and outside realism) could be considered as complementary. Especially if the analysis focuses on intervening variables – more specifically on perceptions – it is clear that more than one single aspect affects the way statesmen forge nuclear strategies. Interestingly, neoclassical realism assumes the possibility that a country's foreign policy results from more than one intervening cause. Actually within International Relations, neoclassical realism is the only theoretical branch that can connect domestic and international level variables in a coherent analytical framework. In order to identify these multiple causality, proponents of neoclassical realism turn to historical analysis and, even though not explicitly stressing it, they tend to use process tracing to reconstruct causal chains[26].

According to David Collier (2001: 823) process tracing can be defined as "the systematic examination of diagnostic evidence and hypotheses posed by the investigator". He continues by stating that

> As a tool of causal inference, process tracing focuses on the unfolding of event or situations over time. Yet, grasping the unfolding is impossible if one cannot adequately describe an event or situation at one point in time. Hence, the descriptive component of process tracing begins not with observing change or sequence, but rather with taking good snapshots at a series of specific moments. To characterize a process, we must be able to characterize key steps in the process (Collier 2011: 825).

Derek Beach and Brun Rasmus (2013: 07) define process tracing as a method to "trace causal mechanisms" in within-case studies. They divide the method according to three different types of inferences the researcher might seek to make: Theory testing, theory building, and explaining outcomes. Each of them suggests a specific procedure and enables the researcher to shed light onto different phenomena. Common to all three types is that process tracing seeks to unfold causal mechanism in within-cases studies. This feature, they argue, is

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[26] For a criticism on what process tracing as method imply and what has been commonly and erroneously done as process tracing, see Beach and Pedersen 2013.

precisely what differentiates process tracing from almost all other methods in social science analysis that are mainly searching for causal mechanism in cross-case studies.

George and Bennett (2005: 206) outline that "the process-tracing method attempts to identify the intervening causal process – the causal chain and causal mechanism – between an independent variable (or variables) and the outcome of the dependent variable". Contrary to George and Bennett, and to Collier, Beach and Rasmus (2013: 12) claim that process tracing should not be presented in the form of narrative but rather "as a step-wise test of each part of the causal mechanism". The latter they define as "a series of parts of entities engaging in activities" (Beach and Rasmus 2013: 14). Causal mechanism is invariant (Beach and Rasmus 2013: 22) and start from an understanding of causation that "focuses on the process whereby causal forces are transmitted through a series of interlocking parts of a mechanism to produce an outcome' (Beach and Rasmus 2013: 22). In the neoclassical realist literature, the causal mechanisms are not problematized and often appear as synonym of causal variables or intervening variables. The lack of precise definition of causal mechanisms in neoclassical realism often makes difficult to use this approach. To overcome this methodological deficiency of the theory, I will follow Beach and Rasmus in their definition of causal mechanisms. Thus, in the current work, causal mechanisms and intervening variables are treated differently. Respecting the set of intervening variables defined by Lobell, Ripsman, and Taliaferro (2009) – political culture, belief systems, history, state power – as informing and shaping perceptions, I seek with the present analysis to identify the causal mechanisms triggering the changes in perception in regional powers' FPE.

George and Bennett (2005) consider process tracing as the most suitable method to study cases. They claim this is especially true when the researcher seeks to go beyond covering

laws[27] and wants to unfold causal mechanisms that have made a given independent variable to produce a specific outcome. In this sense, the authors argue, process tracing can be an important tool for refining theories. Moreover, they perceive an added value of combining process tracing of within-case studies with methods for cross-case studies in order to strength the explanatory power of causal relations identified in within-case studies. In this regard, George and McKeown (1985) suggest the method of structured focused comparison that roughly predicts the formulation of a structured set of question to be asked to all cases under scrutiny. These questions are then used as the basis to compare the cases in a focused way. In this dissertation the following set of questions will guide the process tracing of the cases.

1)	What are the domestic characteristics of this regional power? Regime type
2)	What is the nature of the relations between regional power and its neighbors on the one hand and with international main actors on the other? Is there animosity, competition or distrust within the region? Does any great power have any interest in this region?
3)	What kind of region is this?
4)	What was the rationale framing their nuclear enterprises at first?
5)	Did this rationale change over time? And if so, what triggered the changes?
6)	Was there any significant variation in the regional distribution of power during the period under analysis? And if so, did the variation at the regional level follow a variation in the international distribution of power?
7)	Chronologically, did the nuclear decisions follow which event: the changes in the regional distribution of power or the changes in the international distribution of power?
8)	What kind of "causal chain" can be established between regional, international and domestic changes?

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[27] Levy (2001: 68) defines covering laws as a "model of explanation in which an explanation of a concrete event requires the subsumption of that event under general laws of behavior". See also Fetzer (2014).

1.5.3. Comparing to avoid spurious conclusions.

Comparing cases in theory-building (or when refining theories) can serve as a strategy to avoid overrating the value of new variables found in within-case studies. George and Bennett (2005) outline that one recurrent trap of within-case studies is the risk of spurious conclusion; that is, attributing causal explanatory power to variables that indeed explained the case scrutinized, but that might not have the same power if other cases from the same type are included in the investigation. In this sense, what once was identified as a causal explanatory variable might either hold this value exclusively for the analysis of one single case, or prove to be at best consistent with the outcome of the dependent variable without ultimately carrying a causal explanatory value for a universe of similar cases.

It could be just the case of co-variation, or it could be rather an intervening variable that, although part of the causal explanation of one case, cannot alone explain the outcome. To solve this problem and mitigate the doubts, other cases from the same type should be analyzed; either cases in which the outcome of the dependent variable is the same, though pointing at different explanatory causes, or cases in which the outcomes of the dependent variable are different though pointing at the same explanatory causes. In either circumstance, process-tracing can be a crucial tool to recreate causal chains – thus allowing for the identification of explanatory cause-candidates – that will be crossed check with other cases comparatively.

> (…) process-tracing forces the investigator to take equifinality into account, that is, to consider the alternative paths through which the outcome could have occurred, and it offers the possibility of mapping out one or more potential causal paths that are consistent with the outcome process-tracing evidence in a single case. With more cases, the investigator can begin to chart the repertoire of causal paths that lead to a given outcome and the conditions under which they occur (…) (George and Bennett 2005: 207).

The usefulness of process tracing to refine theories and the possibility to combine it with methods designed for cross-case analysis are an important aspect for the present dissertation.

As it has been presented in this chapter, Waltz structural realism follows the logic of covering laws and attributes to the international distribution of power an exclusive causality on state's behavior. Consequently, he holds all domestic variables still and claims that states are likely to balance because this is the optimal choice in a bipolar order. Seeking to answer how this causality occurs without denying it, neoclassical realists open up the then black boxed state, searching for the intervening causal mechanisms that allow the international distribution of power to frame, but not determine, state's behavior. Neoclassical realism, therefore, goes beyond covering laws to meet what Bennett and George (2001) call typological theory:

> typological theories involve contingent generalizations that explicitly outline the differing background conditions under which the same value of an independent variable can have different effects (multifinality) or different mixes of variables can have the same effect (equifinality) (Bennett and George 2001: 138).

For the current dissertation, I intuitively claim a correlation between regional distribution of power and the nuclear behavior of regional powers. The empirical analysis furthered on Part II seeks to identify how these two variables are correlated, and how and under which conditions the regional distribution of power actually causes proliferation. The first task, regarding how the regional distribution of power causes proliferation, focuses on intervening mechanisms and calls for a within-case study. The second task, related to the conditions under which the regional distribution of power causes proliferation invites a cross-case analysis.

Brazil and India represent the two extremes of a continuum that ranges from nonproliferation to proliferation. In the middle point between these two extremes is South Africa as the single case of proliferation and forbearance. These three cases represent the universe of regional powers that I hypothesize as having the decision making process influenced and changed by the regional context. How and under which conditions this phenomenon happens are answers that only the empirical analysis can offer. In the cases here analyzed, **I hypothesize that the**

nuclear choices of Brazil, India, and South Africa varied because of changes in statesmen' perception about the regional distribution of power, and that in turn the changes in the regional distribution of power itself triggered the change in perceptions. Thus perception of regional changes has to be added to the set of intervening variable and the regional distribution of power itself becomes causal mechanism triggering the changes in the behavior of regional powers.

But how to make sure that the causalities identified in each case are not instances of variables that are consistent with the explanations but do not hold explanatory power (George and Bennett 2005: 185) for the universe of cases? The comparative analysis of Brazil, India, and South Africa will be a first attempt to check whether the regional distribution of power and the perception of changes in the regional distribution of power are indeed new intervening variable and causal mechanisms respectively. That is, if they hold a causal explanatory power that could help understanding other cases of the same universe. It must be noted that the comparison of Brazil, India, and South Africa will be based on the same group of questions that have been listed as the framework for the analysis of each individual case. Furthermore, the comparative analysis of the cases also seeks to size how influential a context is for a decision making process.

> (…) in a situation in which one begins with some relatively simple and apparently sound theory claiming that X causes Y, if one also suspects that contextual factors shape the outcome, in addition to those enumerated in the theory, one must confront the possibility that in a slightly different context Y might have occurred in the absence of X, or X might have occurred without leading to Y. If either results occur, the existing theory is obviously incomplete, because it does not take into account the effect of these contextual changes (George and Mckeow 1985: 33)

The argument fostered by George and Mckeow (1985) illustrates the case of structural theories that do not take "contextual changes" as historical processes into account. This is because the analysis of more variables make more difficult to elaborate covering law-like theories, which are genuinely build upon parsimony. This is the case of Waltz's theory,

which makes it virtually not suitable for the analysis of empirical cases. It does make it suitable as a research program[28] from which new hypothesis can be developed to analyze the real world. The idea of treating Waltz's theory as a research program is inspired on Imre Lakatos's methodology of scientific research program that is

> a series of theories linked by a set of constitutive and guiding assumptions (…) hard core assumptions comprise the fundamental premises of a scientific research program (…) [they are] protected by a negative heuristic, which is the rule that forbids scholars within this scientific research program from contradicting its fundamental premises or hard core (…) A scientific research program also has a protective belt of auxiliary hypotheses. These are propositions that are tested, adjusted and readjusted and replaced as new evidence comes to bear (Elman and Elman 2003: 19).

To compare regions I adopt TV Paul's nomenclature of regions as zones of high, moderate and low conflict (2000: 19). South Asia would be characterized by high conflict while Southern Africa by moderate conflict. Paul classifies South America as a region of moderate levels of conflict. I disagree with the definition, especially if Southern Africa is also considered a region of moderate level of conflict. According to Paul, a region with low level of conflict would be characterized by strong economic interdependence. This was not the case of South America before the 1990s. However, the region – especially the relation between Brazil and Argentina – can be at worst characterized as a historically-driven rivalry that nevertheless has been managed in both countries through diplomatic and political channels. In this sense, I am characterizing South America as a region of low conflict in spite of the lack of economic interference in that historical moment.

Continuing with Paul's arguments, the types and condition of regions create strings of weak incentives for states to proliferate. But alone incentives are not enough. Paul argues that technological capable states forgo nuclear weapons because sometimes the cost-benefit calculation makes nuclear weapons a liability as they increase vulnerability instead of increasing security. Vulnerability would come from a regional imbalance created by one

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[28] For a debate on scientific research program see Elman and Elman (2003) chapters 1 and 2.

country's efforts to acquire nuclear weapons and a latent arms race that could emerge or from international pressures, sanctions against the proliferator, and last scenario, could precipitate a military intervention.

After analyzing the cases and comparing them, the findings will be the bases to refine the realist agenda on regional powers behavior. The findings of Part II guide the theoretical debate fostered in Part III and help considering the extent to which the neoclassical realist approach can be broaden as to include specific independent and dependent variables for the study of regional powers.

1.6. Introducing the cases

In 1940, Mark Twain wrote: "history does not repeat itself, but it does rhyme". Considering this axiom and thinking about the role of theories, it is possible to say that the latter is valid to the extent that its explanatory power is not limited to specific cases or historical periods. This is especially true for the case of theories of international relations, which length is expected to trespass time. This truth is even stronger when the theme under analysis is nuclear (non)proliferation. In general, theories of nuclear (non)proliferation scrutinize past and current events offering direct or indirect insights on ways to prevent future proliferation. In this vein, they must hold at the same time an explanatory and predictive role. As Bajema (2010: 54) observes, "to be useful, a theory must go beyond explaining past decisions to acquire or renounce nuclear weapons. (…) to manage the threat of proliferation, policy makers need to be able to determine the propensity of countries to develop nuclear weapons in the future (…)".

In this sense, one could ask to what extent a historical account of three non-great powers nuclear behavior could add to the overall debate on nuclear (non)proliferation. In fact, the

nuclear history of Brazil, India, and South Africa – even considering that the latter has indeed developed a small nuclear arsenal – do not figure among the most studied cases of (non)proliferation in part because of their modest role in the *dynamics of nuclear proliferation* (Bajema 2010: 54). But they do account for cases of non-great powers that have managed to develop indigenous know-how in the field of nuclear technology even having modest budget if compared to great powers. Also, and perhaps the most important, Brazil and South Africa figure today among the most prominent voices on non-proliferation, while India, even being a nuclear weapons states outside the NPT, is considered a country committed with nonproliferation. An account of how and why non-great powers have pursued a proliferation paths against the odds – in the case of India –, reversed a de facto proliferation path – in the case of South Africa – or opted for proliferation latency – in the case of Brazil – can contribute to the overall debate on why states (sometimes) go nuclear.

Also, Brazil, India, and South Africa represent a very specific universe of countries – regional powers – that have been historically increasing their relevance in the making of regional and international orders. As regional powers, they most likely did not have their nuclear choices driven by the same motivation of great powers. Moreover, from a theoretical perspective, in spite of falling into the category of regional powers they did not adopt the same nuclear path of each other. Lastly, the choices for studying regional powers and nuclear (non)proliferation relates to today's world. In the current world, the only countries with some probability and/or capabilities to proliferate are regional powers or aspirants to the position[29].

A final word on why analyzing Brazil, India, and South Africa instead of other cases. Aside from a language barrier that would arise in the analysis of cases such as Iran, Israel, Pakistan, South Korea or Taiwan, my choice relates to the complexity that the Brazilian, Indian, and

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[29] For instance, Australia, Taiwan, South Korea, Iran figure among regional powers that could go nuclear.

South African paths represent: together they range from latency in the case of Brazil, to complete weaponization in the case of India, and construction to further complete dismantlement of a nuclear weapons program, in the case of South Africa; the only instance of its kind in the world. Also Brazil, India, and South Africa form a spectrum from a region of no security dilemma (perceived or real) to a region of a real security dilemma. The former characterizes South America, the latter South Asia. Both cases have this traits deeply rooted in history. In the middle of this spectrum is Southern Africa in which there has been a security dilemma that, nevertheless, has been fueled by the even greater perceived threat in South Africa of a total onslaught. For theory-building these variations strengthen the arguments developed in this dissertation.

In the next pages, I invite the reader to leave the theoretical and methodological debates aside for a while, so that we can embark in a journey through the domestic level. Part II is dedicated to the narratives of Brazil's, India's, and South Africa's nuclear history. Metaphorically, the analysis of the cases represents the journey throughout the *forest* or the *labyrinth* mentioned in the introduction. After assessing the cases, a *thread of wool* will be woven in Part III. Finally, in the conclusion of this dissertation, new cases for future analysis are proposed as to test the strength of the framework built in this dissertation.

Part II Cases Exploring the Labyrinth

Improved historical explanations of individual cases are the foundation for drawing wider implications from case studies, as they are a necessary condition for any generalization beyond the case
(George and Bennett 2005: 110)

II. Introduction

II.1. Literature review

Why do countries build nuclear weapons? What prompts them? What are their motivations and/or ambitions? Do they fear another country, or do they seek prestige through nuclear power? Are they only seeking to keep their options open by developing the basic technology to build nuclear weapons? In this case, how much nuclear power would be enough to create the desirable latency? Or countries do actually intent to build and use nuclear weapons? And if they plan to do so, who is the target – a threatening adversary; a country that was the reason behind their decision to go nuclear? In fact, would it be even practically feasible to use a bomb against this enemy? Why do countries build nuclear weapons?

These are among the innumerable questions one can find within the literature on nuclear politics. Historians, political scientists, empiricists, and theorists have been searching for answers still with no final conclusion. 69 years after the only two nuclear weapons were ever used against human beings, these are still intriguing and unanswered questions pushing forward the interest of established and new researchers. In addition to this already complicated maze of questions about why countries go nuclear, empirical evidence shows that on occasion, countries reverse their nuclear ambitions. Some have started though have never really crossed the line separating intentions from actions, others rolled back and

dismantled nuclear weapons programs. Why countries abandon nuclear weapons? Why do they give up on nuclear weapons programs? Why do they accept being civil nuclear countries? In essence, what drive states' nuclear decisions and how one can access states' decisions to go nuclear or forego their ambitions?

In general, the literature points to several factors. Countries respond to threats posed by the presence of another nuclear power, the so-called domino effect[30]. Countries seek prestige. Countries develop nuclear weapons to project power (Waltz 2003), and/or to acquire know-how. Conversely, the literature suggests extended deterrence as a cause of nuclear roll-backs, or attributes causality to the level of democratization or commitment to norms (Solingen 2007). Some authors consider the end of the threats that once motivated a nuclear weapons program as the reason to modify nuclear ambitions (Paul 2009) and others talk about the lack of development of technological know-how (Hymans 2012). At a more subjective level, authors consider perception, specifically perception informed by strategic culture (Snyder 1977), or emotions (Hymans 2006) as the causes for both movements: proliferation and forbearance. Most of these explanations are not necessarily mutually exclusive.

With regards to nuclear weapons, Kenneth Waltz's arguments are not less bold and deterministic than the ones framing his Theory of International Politics. At this point it is important to make a clear distinction between the Waltz theorist, whose assumptions are in this dissertation as the basis for advancing a realist research program on the one hand, and the Waltz who writes about nuclear proliferation on the other. The two main aspects guiding the rejection of the latter as the reference for the arguments developed in this dissertation are grounded in moral and methodological arguments. The moral one is simply that no argument should be raised in favor of weapons of mass destruction. The cost-benefit calculations for

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[30] See, for example: Campbell, Einhorn, and Reiss (2006).

improving security should not be part of the repertoire of any analysts who has an understanding of history. History is the methodological argument for refuting this version of Waltz. His option for parsimony, often criticized but also largely accepted as a legitimate strategy in the making of covering laws, is not a methodological option for analysts dealing with the real world. And nuclear proliferation is indeed a very real aspect of world's politic. Ignoring historical lessons or simply taking historical narratives for granted and cherry picking the past to make an argument is not a methodological option in this dissertation.

Worth to mention is that Waltz holds one of the most important arguments in favor of nuclear weapons. In the successful franchise with Scott Sagan, Waltz makes the claim that nuclear weapons are stabilizing weapons as they make possible to states under threat to balance militarily a potential enemy[31]. Opposing to a pessimistic view of what more nuclear weapon-states could represent to the world, Waltz (2013: 10, 17, 37) states that "possession of nuclear weapons may slow arms races down, rather than speed them up (…)" and so he states that "nuclear weapons do not make nuclear war likely". Finally he concludes that "the gradual spread of nuclear weapons is better than either no spread or rapid spread". Again the argument on the recurrence of balance of power and of balancing as the most likely strategy adopted by states underlies Waltz's arguments. Sagan (2013) refutes Waltz by using an organizational model to access the risks embedded in the spread of nuclear weapons.

Sagan (1996/97) challenges the conventional wisdom on why countries seek nuclear weapons and argues that the historical records shows that empirical cases not always can be explained by one single theory. Putting it slightly different, theories do not hold a universal explanatory power when confronted to all historical cases. To build his argument, Sagan (1996/97: 55) assesses three different theoretical approaches for nuclear proliferation: security model –

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[31] See Gavin (2013) and Waltz and Sagan (2013) for a response.

"according to which states build nuclear weapons to increase national security against foreign threats" –; domestic politics model – "which envisions nuclear weapons as political tools used to advance parochial domestic and bureaucratic interests" –; and norms model – "under which nuclear weapons decisions are made because weapons acquisition, or restraint in weapons development, provides an important normative symbol of a state's modernity and identity". In this vein, he organizes his argument as follows:

> The consensus view, focusing on national security considerations as the cause of proliferation, is dangerously inadequate because nuclear weapons programs also serve other, more parochial and less obvious objectives. Nuclear weapons, like other weapons, are more than tools of national security; they are political objects of considerable importance in domestic debates and internal bureaucratic struggles and can also serve as international normative symbols of modernity and identity (1996/97: 55).

Itty Abraham (n/d) changes the logic of analysis about nuclear proliferation by arguing about the international components of "national" nuclear programs. This international component is clearly observable in the nuclear history of Brazil, India, and South Africa, in spite of these countries claims to have mastered indigenous technology. The author rightfully criticizes the well accepted approach that considers the test of nuclear weapons as the decisive moment to pinpoint proliferation. In this regard, he calls attention to three problems: one is to assume that all states approach nuclear technology seeking proliferation; another is to consider that proliferation only exists when a device is tested. A final problem is that this techno-political approach fails to explain the drivers of a country's nuclear program at first. Furthermore, Abraham observes that "there are remarkable and largely unacknowledged similarities between all the "early" nuclear states". To what he adds that "without a careful appreciation of the political and historical context within which decisions are made to develop nuclear *programs*, it is not possible to get closer to understanding the desire for, likelihood of potential use and possibility of international control of nuclear weapons" (Abraham n/d: 07).

Paul (2009: 02) claims the existence of a tradition of non-use of nuclear weapons that emerged after 1945. "A tradition in this sense is a time-honored practice of non-use that has been followed by nuclear states since 1945 as an 'accustomed obligation'". The tradition, the argument goes, is driven by a tactical/strategic constraints as well as by morality, reputation and by exemplar behaviors adopted by nuclear weapon-states that led them to practice self-deterrence. Yet, the spread of nuclear weapons continued along the Cold War as well as the power demonstration of increased nuclear capability. In this sense, nuclear weapons, even if not meant to be used, continued to be associated with power, although Paul (2000: 16) argues that "nuclear weapons would not confer great-powers status on a small state unless it possessed other attributes necessary for the statues and were recognized as such by other members of the international system".

If the equation nuclear weapons equals power does not apply on the same way to great powers and non-great powers then the meaning of these weapons for non-great powers may also be different from that attributed to nuclear weapons by great powers; that is power, security, and deterrence. In this sense, also the rationale for proliferation or forbearance of non-great powers might include other aspects then sole the dyad power/security maximization and could be largely dependent of historical and geopolitical context. In this vein, different narratives have been constructed as to explain why countries – either great power or non-great powers – consider developing nuclear weapons, but not all of these states have actually gone far enough to build them.

Paul (2000) proposes an explanation based on "situational variables" while carrying on a debate with both realism – that hold good explanations about why states acquire nuclear weapons – and liberalism – which arguments best clarify non-proliferation. Regarding nuclear forbearance, Paul (2000: 15) explains it is "the result of conscious efforts by

technologically capable states not to create an intense negative security externality for other significant actors that will be most affected".

Hymans (2006) argues that proliferation and forbearance result from "individual hearts" and not from international constraints / opportunities over state leaders. Indeed leadership plays a decisive role in the nuclear decision-making process as the historical cases presented in this dissertation illustrate. However, I argue, in order to make sense of why leaders chose to follow one way – proliferation – or the other – forbearance – one have to look at the structure, that is the environment and context in which the decision take place. This is so because the way leaders perceive the world, or what goes in their hearts, to stick to Hymans terms, is largely related to the condition under which they decide. In other words, beyond subjectivity, the decision-making process is also influenced by the material world. The former cannot be scientifically accessed, but the latter can. And through the analysis of the material world in its relation to decision-making processes, it is possible to infer (but not confirm) why leaders chose what they chose when they chose.

Monteiro and Debs (2014) develop a strategic theory of nuclear proliferation that takes into account "the security goals of all key actors: the potential proliferator, its adversaries, and, when present, its allies" (2014: 01). The authors outline willingness and opportunity as pre-condition for proliferation. Willingness relates to security threats while opportunity relates to a favorable relative power vis-à-vis the adversaries. In this sense, the causal mechanism for proliferation would be the security dilemma (threat + insecurity) and material conditions. They assume that "relatively weak states without a powerful ally lack the opportunity to go nuclear, those with a reliable ally that covers all their security goals lack willingness to do so." Thus, they hypothesize that "only powerful states or those protected by an ally that does not reliably cover some of their security goals will acquire the bomb" (2014: 01). The authors

outline five unappreciated patterns of nuclear proliferation, among which two are relevant for the debate proposed in this dissertation: states lacking a security threat do no proliferate and states that have their interests fulfilled by an ally do not proliferate either (Monteiro and Debs 2014: 04).

To a certain extent, and depending on the method that is applied, the various theses to explain nuclear proliferation and nuclear forbearance can be combined in sequential causality that would demonstrate their interdependence. This is one of the general goals of this dissertation: to trace the causal process leading to variations in the nuclear choices of Brazil, India, and South Africa. As it has been mentioned several times, these cases represent a spectrum from nuclear latency to the actual construction and dismantlement of nuclear devices. Latency, nuclear devices and weaponization are distinct phenomena from a technical perspective and politically interpreted in distinct ways. Knowing these differences is crucial to assess empirical cases. As Fritzpatrick defines:

> a country that potentially has a nuclear weapons option by virtue of its civilian nuclear programme can be said to have nuclear latency. If the physical condition of latency is accompanied by a political intention to have such an option, it is know as nuclear hedging. (Fitzpatrick 2014: n/p)

As for the differences between nuclear devices and nuclear weapons, Kampani observes that:

> A device is an apparatus that presents proof of scientific principle that a nuclear explosion will occur. The weapon is a rugged and miniaturized version of the device. It usually incorporates arming and safing mechanisms to prevent unauthorized or inadvertent use. Weaponization is the process of integrating the weapon with delivery systems. (Kampani 2014: 80-81).

> [Thus] having a nuclear device is not the same as having an operational nuclear capability. It can take a long time to weaponize, which is the process of building compact reliable rugged weapons and mating them with delivery vehicles (Kampani 2014:79)

II. 2. Similar historical backgrounds

Since Hiroshima and Nagasaki, nuclear energy worldwide has been strongly associated with their military uses. For this reason, mostly after the Nuclear Nonproliferation Treaty (NPT) was created in 1968, the control over the spread of nuclear technology has been kept a prerogative of the nuclear great powers' international policies. Brazil, India, and South Africa were among the countries that refused to sign the NPT during the Cold War and developed a military nuclear program from the 1970s onwards. Further on, Brazil and South Africa changed their position giving up their aspiration to become military nuclear powers, both of them acceding to the NPT in the 1990s. India, however, has kept a proliferation path even after the NPT has been extended indeterminately in 1995. At a first glance, it would be possible to say that the changes in the nuclear behavior of Brazil and South Africa followed the changes in the international order, thus confirming the realist assumption that the structure shape states' behavior. The Indian case would nevertheless remain inexplicable. A closely look to the cases, however, shows that the processes towards, or reversing, proliferation in all three cases started before the end of the Cold War. Interestingly, their decision for a new nuclear path came in the same period; mid-to-late 1980s, a coincidence that raises the question: what, if not the changes in the international distribution of power, shaped the variation in these states' nuclear decisions?

Generally speaking, the mid 1970s can be considered a turning point for Brazil, India, and South Africa regarding their nuclear behavior. The three countries have been showing scientific interests for the peaceful uses of nuclear energy and carried on researches on the nuclear matter since the beginning of the nuclear era. However, it was during the 1970s that they took crucial decisions about the nature of their nuclear activities, transforming them into military programs. In 1974 India presented the world its first nuclear test. Though officially

classified as a Peaceful Nuclear Explosion (PNE), it was regionally and internationally received with concern and by some states perceived as a threat. The same year would be critical to South Africa with the decolonization of Southern Africa. The increased threat perception drove the country towards proliferation (Albright 2001; van Wyk n/d: 01). In 1975 Brazil signed a major nuclear agreement with West Germany, seeking to acquire the technology to enrich uranium. As it became clear in the following years that Brazil's expectations would not be fulfilled, in 1979 the government initiated its nuclear Parallel Program exclusively under the military responsibility (Oliveira 1999).

During the 1980s, they had domestic, regional, and international arguments to continue the nuclear path initiated in the 1970s decade. Interestingly, India's nuclear program slowed down in the period between 1975 until 1986. At the international level, it could be argued that Brazil and South Africa were emulating the successful behavior of the great powers that were, by this time, all nuclear-weapons states. At the domestic level, in both countries a nuclear military program echoed positively among certain circles, being considered as a synonym of prestige and/or dissuasion. At the regional level, however their power position was different, making their nuclear paths drastically diverge. Brazil and Argentina projected their historical rivalry into their nuclear programs, which nevertheless should not be considered an arms race. South Africa, however, was facing a real instability in Southern Africa and the direct presence of the Cold War around its boarder. This situation became a major argument for South African statesmen to foster a nuclear weapons program (van Wyk 2010a: 567).

From the mid-to-late 1980s onwards, Brazil's and South Africa's paths once again converged. The Brazilian and South African domestic regimes started a democratic transition informed by changes in statesmen perceptions about the regional context and about

themselves. In Brazil, the rapid economic development, one of the most important pillars sustaining the military dictatorship, had been severely compromised by the economic crises of Latin America during the 1980s decade. The crises triggered a smoothly democratic transition that aimed to preserve a good image for the military in the country. The democratic transition was accompanied by a regional change as the tensions with Argentina were progressively replaced by cooperation. Economic crises, democratic transition and changes in the relations with Argentina were relevant factors leading Brazil's statesmen to progressively abandon the interests for nuclear explosives, though keeping a nuclear option[32].

In South Africa, the apartheid regime had started reforms that few years later would lead to its demise. Among the reforms, and directly influenced by a regional scenario also in transformation, was the progressive demilitarization of the nuclear program. The drastic changes in the regional distribution of power "brought a rapid end to the perceived ideological and security threat to South Africa and indeed made the deterrence nuclear arsenal obsolete" (van Wyk (a) 2010: 652). Afterwards, South Africa started to reconstruct its international image, a path also chosen by Brazil. In 1991, South Africa signed the NPT followed by the Brazilian signature in 1997.

Differently than Brazil and South Africa, India chose the opposite nuclear path going nuclear while South Africa was reversing its nuclear weapons path, and Brazil was adapting its program to fit into a nuclear peaceful program, though keeping latency. Since the beginning, India participated in the international talks about disarmament and arms control. India's Prime Minister Jawaharlal Nehru strongly advocated against nuclear weapons that were perceived as in opposition with the Indian moral state. During the 1960s, India's concern with the Chinese nuclear breakthrough and further test in 1964 did not lead the country to balance

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[32] By nuclear option I mean a nuclear program with the complete uranium enrichment cycle operating in industrial scale.

power as neorealism, or any domino effect theory, would have predicted. It took India more than 30 years after its immediate opponent had become a nuclear state to officially go nuclear. Kennedy (2011) argues that India tried nonmilitary measures to ensure its defense, leaving the development of nuclear weapons as a last resort. While India's overt nuclear weaponized came only in 1998, its path towards nuclear weapons started in 1986.

Why India did not balance against China when the threat was first presented in the 1960s? Why going nuclear after international norms towards nuclear proliferations were much more restricted? The answer for these questions is nowhere to be found in a strict look at the international system and its distribution of power. I am assuming that the geopolitical turn in the region with the Soviet invasion in Afghanistan and the consequent approximation between Washington and Pakistan prompts India to consider more carefully the development of nuclear weapons. After all, the American policy towards Pakistan also included a less concerned look over a possible Pakistani nuclear program that directly affected India (Kennedy 2011: 140). Simultaneously it ought to be considered that along the 1980s decade the relations between India and Pakistan have progressively deteriorated leading to the military conflict at the Kashmir region in 1998 (Ganguly 2008).

Drawing from the general question presented in the Introduction, I specifically ask what drives the variation among the nuclear behaviors of Brazil, India, and South Africa if, as regional powers, they have similar power capabilities and if there was no structural variation in the international system by the time they had made their choices. The answer for this question demands the investigation of the domestic and regional levels as well. As this brief historical overview suggests, these countries' nuclear changes are due to multiple causes with varied degrees of relevance from one case to the other. The common aspect among them is that decisions have changed, which brings the focus of analysis to the state level; to decision-

makers, and their perceptions. This puzzle invites a more complex theoretical framework than that offered by Waltz but also that offered by the current neoclassical models. This is the topic of Part III; to refine realism as to make the theory suitable for the analysis of variation in other cases that are not only great or middle powers. But in order to advance this theoretical conversation within realism it is first necessary to make an incursion into the nuclear history of Brazil, India, and South Africa. This incursion will reveal the particular traits of each country's nuclear options, but also outline their similarities. These similarities will be then used to build up a framework for the study of regional powers nuclear choices.

Chapter 2 Reaching both sides of the spectrum: A historical account of South Africa's construction and dismantlement of nuclear weapons.

> *"Where proliferation has occurred due to real or perceived political threat, a reversal towards de-proliferation may occur upon removal of the threat, whether it was real or perceived. This means that international pressure by superpower from outside the region on a would-be proliferator, can be helpful but only up to a point. In the final instance, regional tensions must be resolved before the cause of non-proliferation can be fully realized. This was the case with South Africa"* (Stumpf 1995).

2.1. Introduction

The history of South Africa's nuclear ambitions amaze by the ending: It remains to this day the only country to have ever developed nuclear weapons and, later on, unilaterally dismantled them to then accede to the NPT. Interesting to observe is how South Africa's nuclear weapons program evolved from one for peaceful purposes. On the one hand, this case illustrates the potential problems posed by the share of highly sensitive technology by Western countries to its allies[33]. On the other hand, the risk of Western countries deliberately ignoring while their allies build nuclear capabilities[34]. Largely benefiting from the cooperation developed during the 1950s and 1960s with Western countries, South Africa's nuclear weapons program reinvented the understanding of diplomatic deterrence – with a "bomb in the basement" –, as the country has never publically declared the possession of nuclear weapons and never really intended to use them against human targets[35]. In this regard, former South African president Frederik de Klerk (1989-1994) stated that "there was never any intention to use the devices – which were regarded purely as a deterrent. There was also the idea that the perception that one's country possessed an undisclosed number of nuclear weapons was in itself an important deterrent".

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[33] That is mostly based on selective bias as to which countries can receive nuclear technologies without representing a threat of proliferation.

[34] On this regard see the article Cohen (2014).

[35] Speech on 18 October 2013 in the occasion of the "Nuclear Exits Conference" in Helsink. See http://www.givengain.com/cause/2137/posts/118540/.

Finally, the South African case is perhaps the one that best illustrates the relevance of looking at the regional level in order to understand regional powers' nuclear choices. As Paul (2000: 113) observed, a pure realpolitik analysis would argue that maintaining nuclear weapons would be an asset to South Africa to the extent that the country would have kept a "deterrence capability and a potentially significant power resource in regional and global politics". But as the historical account suggests, great powers and regional powers attribute different meanings and uses to nuclear weapons. For the latter, nuclear weapons proved to be a source of power only under certain conditions.

As it will be discussed, along the decades of 1970 and 1980 there is a clear and progressive shift in South Africa's intentions that accompanied the deterioration of the regional balance of power. The latter in turn triggered a change in decision-makers' perceptions. By analyzing the secondary literature, and cross checking it with interviews and primary sources it is not possible to state that South Africa was in real danger of a *total onslaught* – as the threat of invasion resulting from the regional instability was usually named. But this certainty is not entirely necessary to make sense of the decision-making process. What matters for the current analysis is that the variation in the regional distribution of power was crucial to trigger a shift in South Africa's nuclear program towards nuclear weaponization. Once South African decision-makers were convinced that the country was in danger (whether real or perceived), they progressively authorized decisions that would ultimately lead to the construction of a nuclear arsenal.

Conversely, as the regional situation in Southern Africa started to give signs of change from instability to stability, the nuclear weapons program also started to change its course as it became an obsolete tool for South Africa's domestic and foreign policy interests. As the narrative will show, South Africa's rollback can be divided in four steps. The first crucial

change towards a nuclear rollback came in 1985 when the program was stopped. The second change came in 1989 when the decision to dismantle the program was given. The third change came in 1991 when South Africa acceded to the NPT. Finally, the fourth change came in 1993 when the past South African nuclear weapons program became public.

The argument sustained in this chapter is not that the variation within the region is a sufficient condition to understand the South African case, but that it is a necessary and crucial condition to make sense of the complexity involved in this case. Other aspects related to international pressures and domestic power transition are only tangentially mentioned in this chapter, but this does not mean that they are less relevant for understanding this case. The narrative presented in this chapter is rooted on the two main questions of this dissertation: how and under which conditions the region matter for the decision-making process. The finding of this chapter will be analyzed in the comparative chapter.

As it will be shown in the case of Brazil and India, also in the case of South Africa many variables need to be considered if one wants to really understand the country's nuclear proliferation and further forbearance. To both points in history one must add the international juncture of the Cold War and the leadership threatened mind-set as setting the conditions for proliferation and fuelling the decision making process towards this end. But the timing of the events reveals that the change in the regional environment is the causal mechanism triggering weaponization as well as nuclear forbearance.

2.1.1 Structure of the chapter

In the next pages it will be presented an account of South Africa's nuclear path emphasizing the decades of 1970s and 1980s when the scientific interests of the 1950s and 1960s intentionally evolved to a military program. In order to better situate the transition that took

place in the 1970s, a brief overview of the preview decades will be made, starting in 1948 when the National Party (NP) took office. It is important to outline that the regime type played an important role in the making of South Africa's military nuclear program as well as on the rationale driving the program – but the change in the regime type in 1989 cannot be accounted as the major reason for the disarmament. As the narratives will show, South Africa's decisions and process that culminated with the dismantlement of its nuclear weapons program in 1989 had been progressively put into motion since the 1985.

Section 2.2 encompasses the years between the beginning of the apartheid rule and the end of the 1960s. Section 2.3 analyses South Africa's progressive turn towards nuclear weapons during the decades of 1970s and 1980s. This section assesses domestic aspects related to the development of scientific capabilities and to the political motives for weaponization outlining the deterioration of the regional environment. Section 2.4 summarizes the final transition that took place in the 1990s. Finally in the conclusion some remarks on this case are presented.

2.2. First years

The apartheid's rationale was largely rooted on South Africa's history, especially on the Angle-Boer war (1899-1901) and the exclusion experienced by the Afrikaans. Their loss – lives, language independence, economy, political rights and land – to the British Empire would decades later structure the discourse of the NP reaffirming language, culture, religious values and, ultimately, the power that the Afrikaans possessed before the British Empire came to South Africa. Amid this psychological trauma, grew among Afrikaans the perception that there was no possibility to bring all the different ethnical groups together under one single juridical concept or state. Thus, when in 1948 the Afrikaner minority accede to power, the racist and segregating speeches and practices long rooted in South Africa's society were

already been practiced against the black majority (but also against the colored population) in the country. Roughly speaking, what the apartheid rule did was to deepen the segregation.

> Between 1910 and 1936 a system of rigorous segregation between whites and blacks was implemented. This culminated in the 1936 legislation that removed Cape Africans – about 3% of the total number of voters – from the voters' roll. They would have to vote on a separate roll for three whites to represent them in the House of Assembly. Four whites senators, elected by electoral colleges, would represent other blacks in South Africa. There would be also a Natives Representative Council to discuss issues affecting Africans in both reserves and common area. An additional 7.25 million morgen of land would be bought up for the reserves. Once that was completed, 13% on the country's land would be in black hands (Giliomee 2012: 18-19).

Drawing on Hymans (2006), the leaders of the NP could be defined as oppositional nationalists as their rationale involve a perception of

> "nation as being both naturally at odds with and naturally equal (if not superior) to a particular external other (…) when facing the external other, oppositional nationalist leaders are uniquely predisposed to experience two highly volatile emotions: fear and pride (…) The combination of fear and pride has a number of important effects not only on how the decision making receives and process information, but also on what basic desires the decisionmakers feel and tries to satisfy" (Hymans 2006: 13).

The ascension of the NP to power had also a significant international interface. Ideologically aligned with the Western anti-communist discourse, the NP would define itself – and be strategically considered – as the defender of Western interests and ideals in Southern Africa (van Wyk 2010(a): 562). At the regional level, the domestic stability of the apartheid regime was shielded by the European maintenance of colonies in the region. This situation would abruptly change in the mid-1970s when the end of the Portuguese regime triggered the dissolution of Portuguese colonies in Southern Africa. By that time, Portugal was the sole European country to still keep colonies in Africa – claiming that these territories where not colonies, rather part of the Portuguese Empire.

It is possible to say that the end of the Portuguese colonies in the region progressively brought the Cold War to Southern Africa. On the one hand, the Soviet Union and Cuba would

offer support for many liberation groups in their fight for power – whether or not they had been ideologically sided with communism at first. On the other hand, the Western allies would at least in the beginning support South Africa in the fight against anti-communism in Southern Africa.

When the decolonization of the Portuguese territories in Africa evolved to civil wars backed by Soviet and Cuban troops, South Africa's statesmen took seriously the task to (a) prevent communism from spreading in the region and (b) restrain a spill over process that could affect the stability of the apartheid rule in South Africa. Unluckily, for South Africa's leaders, the West would not unconditionally backup South Africa in its ideological war, rather they would withdraw support in response to domestic pressures in their own countries for the end of support to segregating regimes. It is worth to notice that the decolonization of Africa happened in the 1960s. Since then both the US and Europe – as wells as the international community represented by the United Nations – had been adjusting their policies towards South Africa to the many voices – inside and outside Africa – against the racist nature of the apartheid[36]. Thus, right in the first years after the coup in Portugal, South Africa would find itself progressively isolated; a feeling that would fueled even more the convictions that South Africa's only chance of survival would be to build a small nuclear arsenal and frame its diplomacy accordingly.

2.2.1 Nuclear energy for peaceful purposes

But this turn towards nuclear weaponization, as it will be discussed, only happened in the 1970s. Before this decade, South Africa's interest in nuclear energy was entirely for peaceful purposes, largely accompanying the international trend in this regard. Right after the beginning of the apartheid rule, in 1949 South Africa started its nuclear development. Aside

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[36] The end of the 1960s marks the uprising of the youth protesting in Europe and the US.

from the international furor surrounding the many possible uses of nuclear energy, South Africa profited from its large uranium ores[37]. This geological advantage almost naturally justified the arguments in favor of nuclear developments and pro-nuclear energy. Already in 1948 the Atomic Energy Board (AEB) had been established by Act of Parliament and would become responsible for the control of the production of uranium as well as its trade in the country[38],[39]. By 1953 South Africa was already producing ammonium diuranate (ADU) and began researching for uranium hexafluoride[40] (Pabian n/d: 02-03). South Africa acquired most of its technologies and knowledge on nuclear energy from partnerships with Western countries – especially the U.S. under the Atoms for Peace and Plowshare projects – during the 1950s and the 1960s (Albright 1994: n/p). And already in these years, it developed a nuclear program focused on civil uses of nuclear energy also involving efforts to foster indigenous know-how (van Wyk(a) 2010: 562). "Activities in the early years were based on the peaceful uses of nuclear technology and, as South Africa was (and still is) a prominent producer of uranium, it was almost natural that attention was also given to uranium enrichment technology as a mean to mineral beneficiation" (Stumpf 1995).

1957 marks the beginning of a more structured cooperation with the US on nuclear issues when the US and South Africa signed a 50 years nuclear agreement[41]. The cooperation was

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[37] To this date, South Africa holds one of the largest reserves of natural uranium in the planet. Also, the country is the 3rd largest isotope producer (behind Canada and Sweden). Nowadays its SAFARI I reactor operates with uranium enriched up to 19,9% that is LEU.

[38] In 1982 the AEB together with the Uranium Enrichment Corporation (UCOR) would be merged into the Atomic Energy Corporation.

[39] For more information on the role of the AEB, see http://fas.org/nuke/guide/rsa/agency/aec.htm

[40] ADU is one of the intermediate chemical forms of uranium; a necessary step in processing uranium before enrichment. Uranium hexafluoride (UF6) is the form of uranium used during the process of enrichment. See http://web.ead.anl.gov/uranium/guide/ucompound/index.cfm.

[41] Under this agreement South Africa would receive its first nuclear research reactor and highly enriched uranium (HEU) to fuel the reactor.

based on the US Atomic Act from 1954[42]. Under this cooperation South Africa acquired its first research reactor SAFARI-I. Soon, in 1959, the government approved the establishment of a nuclear industry (Pabian n/d: 03). Following an international trend, in the 1960s, South Africa also started researches on peaceful nuclear explosives (PNEs)[43]. In its first years, the researches on PNEs were limited to the literature and only in the end of 1969 the government charged the AEB with the task to research the technical and economic aspects of using PNEs in mining (Albright 2001: n/p). More concrete studies on PNEs would be done during the 1970s.

Still in 1960, the SAFARI-I research reactor started to be built at the National Nuclear Research Center at Pelindaba[44]. During this decade, the country started researching methods to enrich uranium and to separate plutonium (both preconditions for the development of nuclear weapons and the most complicate steps towards this aim). In 1961, the AEB assumes general nuclear research and development (R&D) at the Pelindaba site. In 1965, the SAFARI I was commissioned at the Pelindaba Nuclear Research Center. The reactor was under IAEA safeguards – because it resulted from the agreement with the US –and it was supplied by the US with highly enriched uranium (HEU). In 1967, South Africa succeeded to enrich uranium on a laboratory scale (Albright 1994: n/p). Due to the positive results achieved with indigenous uranium enrichment process, two years later, in 1969, the government authorized the construction of a pilot plant (Stumpf 1995, Albright 2001: n/p).

According to Anna Mart van Wyk (2010a) the years between 1970 and 1978 marked a progressive shift in South Africa's nuclear program. The knowledge cumulated from the

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[42] The US Atomic Act from 1954 is the federal regulatory law for US military and civil uses of nuclear material. Under this Act international cooperation were also regulated. See United States Nuclear Regulatory Commission http://www.nrc.gov/about-nrc/governing-laws.html.

[43] During 1957-1975 the US studied the feasibility and uses of PNEs. The USSR conducted the same studies between1965-1989 and used PNEs for mining and construction projects. It is worth noticing that PNEs indicate at least latent nuclear weapons capability (Pabian n/d:. 04)

[44] SAFARI-I was a nuclear research reactor provided by the US under the 1957 agreement.

researches made in the previous decades would now focus exclusively on uranium enrichment, studies on the feasibility of developing PNEs, and preparation for underground tests to test the mechanical part of the explosives (van Wyk 2010a: 562). On March 1971, the Minister of Mines, Carel de Wet, gave permission to the AEB to study the feasibility of conducting PNEs (Pabian n/d: 04). "These investigations were based on literature studies, theoretical calculations, and preliminary studies of the ballistics of gun-type devices" (Albright 1994: n/p). After tests with projectile constructed with non-nuclear material in 1974, the AEB was convinced that a nuclear explosive was feasible. The positive achievement led the then Prime Minister, John Vorster (1966-1978), to authorize the construction of a small nuclear explosives capability.

1974 was also the year in which India openly tested its PNE. The episode raised international concerns about the proximity between PNEs, nuclear proliferation, and risks involved in sharing sensitive technologies with developing countries. The Indian case proved that even with a modest budget countries could master highly sensitive technology and build nuclear explosives should they want it to. The Indian episode also rendered consequences for South Africa as the international awareness increased and South Africa was already under international spotlights due to the apartheid regime.

2.3. 1970s developing material conditions for a shift in the nuclear program

Overall, in the 1970s the domestic, regional, and international situation of South Africa started to change. This decade marks the beginning of the economic embargoes against South Africa aiming at weakening the apartheid. In 1975 specifically the SAFARI I reactor would be reached with sanctions, as in this year the US suspended the shipment of HEU to supply

the reactor[45]. The international sanctions against South Africa triggered in the country an effort to build international clandestine channels to assure the continuance of exchanges of knowledge, technology, as well as equipment that the country needed. Many of these channels were with the US, Europe, and Israel.

1970 marks South Africa's important accomplishment regarding nuclear research. Such accomplishments where necessary and crucial steps towards the weaponization process that would come years later on this decade. On July 20, 1970 Prime Minister Vorster announced that SA could enrich uranium – technology developed along the 1960s based on Becker nozzle technology (Pabian n/d: 03). At the occasion, Vorster outlined South Africa's willingness to accept international safeguards but the conditions imposed by the international community were not yet acceptable according to South Africa's government (Stumpf 1995).

> During the 1970s, some of the nuclear weapons states and in particular the USA, increasingly started to apply unilateral restrictions on nuclear states or exchange of information and technology with South Africa (…) These events convinced the South African Government at the time that these sanctions were clearly politically inspired and that accession to the NPT without fundamental political reforms of its domestic policies towards full international acceptance, would be worthless. Accession to the NPT was, therefore, not seriously contemplated at the time (Stumpf 1995).

Also in 1970, the state-controlled Uranium Enrichment Cooperation (UCOR) was created with the aim of building a nuclear facility to enrich uranium. This facility was named the Y-Plant and its construction would begin in 1971 at Valindaba (Pabian n/d: 03) [46]. In 1974, the AEB confirmed the capability to build nuclear explosives. This accomplishment is followed up by an authorization from Prime Minister Voster to the AEB to build PNEs and to construct

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[45] The US unilaterally cancelled the supply for the research reactor, which had been already paid. The payment South Africa has done in advance was also retained and only in 1981 South Africa would receive this money back.

[46] The Y-Plant located in the nuclear site of Valindaba near Pelindaba was designed to enrich uranium and supply the research reactor SAFARI I. The plant was entirely built in 1975 but only in 1978 it started enriching uranium in commercial scale. In 1979 the plant went critical and was shut down. In 1981 it was reopened and worked until 1991. During the years in which South Africa was building nuclear weapons, the Y-Plant also produced weapons grade uranium, giving South Africa autonomy to its nuclear programs.

a test site at the Kalahari Desert for underground tests (Pabian n/d: 04). The test would be made with a device not suitable for military uses. It would be a cold test – that is, with natural uranium – to study the mechanical parts of the explosive.

In 1979, the Y-Plant began commissioning and in 1981 it would produce 45% enriched uranium that would be used to fuel the SAFARI-I reactor.

> After overcoming several technical and chemical problems, the plant was able to produce a steady output of HEU for the weapon program. In addition, the plant produced 45 percent enriched uranium for the SAFARI research reactors, low-enriched uranium (LEU) test assemblies for the Kroeberg nuclear power reactors near Cape Town, and LEU blending stock. The blending stock was mixed with imported, unsafeguarded LEU from China. This mix of low-enriched uranium was used for fuel at Kroeberg (Albright 1994: n/p).

The South African interest for weapons and consequent development of six and a half devices was first the result of scientific interest. This interest then met a quest for prestige associated with know-how acquisition and finally allegedly concrete motives to proliferate. As mentioned elsewhere, underling the whole enterprise was South Africa's strong anti-communist nationalism. As the country did not have the intention to actually use the nuclear devices against human targets, which was seen as suicide, its purpose was solely political, that is for deterrence, even though no clear deterrence strategy was ever elaborated (Albright 1994: n/p).

2.3.1 Changes at the regional environment meeting domestic nuclear capabilities

The year of 1974, and subsequent decade, provided South Africa with the motives it lacked to proliferate. This year marks the fall of Caetano's regime in Portugal triggering the withdrawal of Portuguese troops from its colonies in Southern Africa and consequent decolonization process. This process would be marked by instability and external interference in the region.

Jamie Miller (2012: 183) argues that the coup d'état in Portugal in 1974 "marked the birth of the Southern African theater of the Cold War". The system of Portuguese colonies in Africa had for long time kept South Africa shielded from liberation groups fighting for the independence of the colonies. In this period, "Pretoria had experienced a golden age of economic prosperity, political stability, and state security" (Millier 2012: 184). But once the situation changed in Portugal, it spilled over changes in the regional power-correlation of Southern Africa. The abrupt withdraw of Portuguese troops from Africa created a power vacuum in the former colonies and deepened the civil wars.

> Chaos quickly spread from Angola and Mozambique to Rhodesia and South West Africa [Namibia] as liberation movements regrouped and re-energized, inspired by each other's success and aided in their insurgencies by increasingly porous borders (Miller 2012: 184)

At the domestic level in South Africa, the deepened regional instability would also impact on a number of fundamental changes Prime Minister John Vorster had set forward "towards a unique multi-national society of separate ethnically-based polities" (Miller 2014: 196). In the regional scenario of increased instability, the US would initially support South Africa in Angola, while the Soviets and Cuba would backup liberation movements in Angola and Mozambique under the Marxist principal of anti-colonialism and self-determination to all nations. But South Africa would progressively understand that could no longer count on its traditional international allies.

On April 1975 the Simonstown agreement between UK and SA came to an end. Under the agreement signed in 1955, the UK leased to South Africa its naval base in Simon's Town, South Africa, but the Royal navy would still be allowed to use the base. The agreement also contemplated the shipment of arms and naval forces from the UK to South Africa. In practice, it was an agreement of mutual defense that nevertheless would prove to be of no use

for South Africa during the war against Angola. After 1976, the US would withdraw its support to South Africa in Angola and Pretoria would find itself alone in an instable region.

> This was mainly due to [South Africa's] own racially based internal policies but was also exacerbated by Portugal's withdrawal from its African colonies of Mozambique and Angola and the uncertainties about the true intentions of the Warsaw Pact countries and specially the Soviet Union, in the light of their openly declared expansionist policies in Southern Africa. The strong build-up of Cuban troops surrogate forces in Angola from 1975 onwards and which eventually peaked at 50 000 foreign soldiers, reinforced a strong perception within the government of international isolation should South Africa territory be under threat (Stumpf 1995).

South Africa's feeling of being left isolated while facing an imminent threat in the region also came from decisions taken by the international community. South Africa was denied the participation in the General Conference of the IAEA and lost its seat on the Board of Governors in 1977[47] (Paul 2000: 113). The same resolution that prevented South Africa to participate in the conference also urged the country to join the NPT and subjects its nuclear facilities to international safeguards. According to Waldo Stumpf[48] no such actions were taken against India, for instance. Also, he observed, many countries with seat in the Board of Governors had not at that time acceded to the NPT (Brazil figured among these instances). Finally, in 1978 the US Congress approved the Nuclear Nonproliferation Act (NNPA) preventing the transfer of nuclear technology to countries outside the NPT. This act affected also South Africa's civil program and the contracts with France under which South Africa's own uranium was enriched in France and then shipped back to South Africa to supply the Kroeberg Nuclear Power station. In spite of the isolation and the perceived abandonment by its Western allies, South Africa would keep its ideological self-perception as the bulwark against communism in Southern Africa that should therefore fight against the regional threats. So South Africa actively fought in Angola, Mozambique, Namibia, and Rhodesia

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[47] South Africa is a founding member of the IAEA and had a seat as the most advanced nuclear country in Africa. After having its seat denied, Egypt replaced South Africa.
[48] Interview held on August 5th 2013

(Zimbawe). In the latter, the end of the white rule in 1979 deepened South Africa's feeling of isolation.

In the 1980s South Africa would feel itself on a deadlock as no South African boarders would be perceived as secured. Internationally, the country would feel abandoned to fight alone the regional instability, pressured for reforms and to end the apartheid rule. Domestically, more pressures for the end of racial segregation would emerge – this had been deepened by the Soweto riots from 1976. In this context, the path chosen by South Africa was to regain the control of their on situation starting by solving the regional problem[49]. Amid conflict and a militarized path, diplomatic steps were taken to overcome the regional instability.

In 1980, Rhodesia was granted independence – mediated by the British and the UN – and emerged as Zimbabwe. For South Africa, this accomplishment meant its northeast boarder was safe. In 1984 the president of South Africa, P.W. Botha (1978-1974 and 1984-1989), and the president of Mozambique, Samore Machel (1975-1986) signed the Nkomati accord that was a military security agreement between the two nations. This episode secured to South Africa its eastern boarder. The two remaining problems were Angola and Namibia. As South Africa would feel progressively more isolated in the region, the understanding was that if Cuban troops marched towards the south the country would be helpless. This situation would only come to a solution in 1988 with the Agreement of New York. Under its lines, Cuba committed to remove its troops from Angola while South Africa committed to grant Namibia independence[50].

Interestingly, in the case of Angola and Namibia South Africa's nuclear deterrence seems to have granted the country some tactical accomplishment, even if South African leaders were

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[49] Victor Zazeraj Interview held in Johannesburg in 07 August 2013.
[50] On April 1, 1989 UN Security Council approved the resolution 435/9978 leading to the independence of Namibia.

not aware of it by the time. In 2010, Jorge Risquet Valdes (Member of the Committee Central del Partido Comunista and responsible for Cuba's strategies in Africa) visited South Africa and ask to speak with Pik Botha, Minister of Foreign Affairs (1966-1994). In the occasion, Mr. Valdes asked Mr. Botha what were the intentions of South Africa's nuclear program. Mr. Valdes revealed that since 1985 Cuba was convinced that South Africa had tactical nuclear weapons and could use them against Cuban troops. According to Mr. Valdes, this perception drove Cuba's strategy in Southern Africa. The troops were divided into two groups, so in the case of nuclear attack one group would still remain in the battle field. Mr. Valdes also recognized that based on this perception Cuba avoided marching through Namibia towards the South African territory[51].

Alone, the coup in Portugal should not be credited as the main destabilizing aspect that triggered South Africa's proliferation. The apartheid regime and the paranoiac-like mindset of the NP must also be credited as sources of instability in the region that together with the remaining colonies produced an artificial and pernicious situation in Southern Africa[52]. This situation would have prompted a security dilemma sooner then later, which in turn would have triggered proliferation.

2.3.2 South Africa proliferates to "secure" the country

Prior to the episodes in the second half of the 1970s, South Africa's domestic prosperity and regional stability gave to Pretoria's leaders a sense of security. In this context, the paranoiac-like mindset of the Afrikaners' leaders of the NP would find no reasons to fear. But once the regional balance of power and balance of threat were perceived as changing, a sense of paralysis followed by a fear of total onslaught fueled South Africa's decision making process.

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[51] Interview with Waldo Stumpf on August 5, 2013 in Pretoria.
[52] In the CIA National Intelligence Estimate from 1972 reads "The program of separate development of white and non-white communities is not working and almost certainly will not work". See CIARR, National Intelligence Estimate, 'South Africa in the New Decade, April 1972.

As Paul (2000: 115) observes, "South African nuclear weapons program sprang from this security environment, characterized by protracted conflicts and enduring rivalries and its near isolation by the international community". This period also marks a government transition in Pretoria as Prime Minister John Vorster would be succeeded by P.W. Botha[53]. With Botha the paranoiac-like mindset would be renewed and translated into a more aggressive domestic and foreign policy. Botha would continue and deepen the *total national strategy* initiated by his predecessor.

> [He] would come to power advocating a drastically increased role for the military in policymaking across the board, an extensive rearmament campaign, and a renewed and uncompromising willingness to engage black nationalist insurgents well beyond South Africa's boarders (Miller 2012: 184-185).

In this context also the latent nature of the nuclear program would give place to weaponization. In other words, an existing rationale would meet motives and capabilities, triggering South Africa's proliferation (Paul 2000: 115). According to Botha's perception, the situation in Southern Africa would lead the region to a Communist dictatorship if nothing against it was done. Already in 1973 he stated:

> There are forces trying to bring about the revolutionary conditions in South Africa. A revolution in this country can perhaps – if it succeeds – hurt and wound white South Africa – but it will eventually lead to the enslavement of the coloured as well as Indians under a Communist controlled dictatorship – which will bring no freedom to the black masses. We are witnessing today how through Chinese efforts a strong grip is being applied by Communist forces on Tanzania and Zambia. They are not being liberated, but gradually enslaved under the false pretences and slogans of the liberation of Southern Africa. We must have the capacity to fight back purposefully and decisively (P.W. Botha cited in Miller 2012: 193)

Bearing this scenario in mind, still under Vorster, the test shafts for a nuclear underground test were drilled in the Kalahari Desert between 1976 and 1977 (Pabian n/d: 15). Also in 1976 South Africa firmed a secret nuclear trade agreement with Israel. "Under this agreement, Israel supplied 30 grams of yield-boosting tritium in exchange for 50 tons of

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[53] PW Botha was the former Minister of Defense in South Africa. He ruled two turns: from 1978 to 1984 as Prime Minister and from 1984 to 1989 as President. The position of Prime Minister as head of the State was abolished in 1984 and replaced by the President.

South African uranium" (van Wyk 2010b: n/p, see also Liberman 2001). In the mid-1977, AEB had built a gun-type device without HEU to conduct a cold test in the Kalahari Desert. The aim was to test the mechanical and logistical aspects for future detonation of a device with HEU. However, in August 1977, a Russian surveillance satellite spotted the test site and alerted the US that consequently pressured South Africa for explanations. The episode precluded South Africa from actually testing a nuclear device (see Pabian n/d; Stumpf 1995; Albright 1994) and raised international concerns about the extension of South Africa's nuclear program. After the explosion, the test site in the Kalahari Desert was sealed and abandoned.

In spite of this incident and international pressures, and because of the rapid deterioration of the regional situation, South Africa fueled its nuclear weapons program in the following years and started building nuclear devices even without a test (van Wyk, 2010a: 562). Thus, when PW Botha took office, the rationale, the material capabilities and motives for proliferation were present. Also, the securocrat apparatus built around the nuclear program echoed the necessity of changing gears from a peaceful nuclear program to a weaponized nuclear program that could "protect" South Africa in case of an attack. This apparatus was composed by Armscor, South Africa's Defense Force, AEB and was founded in December 1978 to initiate the nuclear weapons program.

> All South African officials agree that the shift in emphasis from peaceful nuclear explosives to strategic deterrence was in response to South Africa's deteriorating security situation. (…) Increasingly isolated, the South African buildup was convinced that outside assistance was unlikely in the event of an attack (Albright 1994: n/p).

Following this rationale of a real regional threat and potential invasion of territory, in April 1978, a nuclear deterrence strategy was approved. It consisted of three phases with the overall aim to get Western attention and help in the case of an invasion to South Africa's territory or similar threat. Phase one consisted of ambiguity. At this stage South Africa would neither

accept nor deny regional or international suspicion that the country possessed nuclear weapons. In phase two, South Africa would selectively acknowledge its nuclear program. Mainly European countries and the US would learn about South Africa's capability. Lastly, in phase three, South Africa would publicly acknowledge its capabilities by testing a devise (Paul 2000: 114-115). For this end, the test site in the Kalahari Desert sealed one year earlier would be verified and confirmed as still operational. "No offensive tactical application was ever foreseen or intended as it was fully recognized that such an act would bring about retaliation on massive scale" (Stumpf 1995, see also Albright 1994: n/p , Pabian n/d, van Wyk 2010). In practice, South Africa's nuclear deterrence consisted of nuclear ambiguity. In this regard, former Minister of Foreign Affairs, Pik Botha (1977-1994) shared his conversation with the former US president, Ronald Reagan.

> (…) And then President Reagan looked at me and he asked me, "Mr. Minister, do you have the bomb? Just like that. And I said, "Mr. President, could I put it to you this way, we have the capacity to manufacture one". And then he looked puzzled at me and I said to him, "I want to ask you one thing, and I commit myself. We will never test a bomb without first consulting the United States government. We believe the Soviet Union suspects that we might have the bomb. Do not remove that suspicion." (…) And I said, "Mr. President we need this as a deterrent for the Soviet Union because if they suspect that we have it they will think twice before they overstep the margin of their intervention. (Botha 2014: 490)[54],[55]

In 1978 another nuclear device was built. It was smaller than the first, still not fueled with HEU and could also be used for an underground test should South Africa decided to do so. This decision would have met phase three of South Africa's nuclear deterrence strategy that contemplated the possibility of a public nuclear test to demonstrate the country's capabilities. In 1979 Armscor (the State owned Armaments Corporation) would be assigned to design and to build the gun-type devices while the AEC would provide the HEU and "theoretical and physics support, such as critically calculations and tests and health physics surveillance" (Stumpf 1995). Until this moment, the armed forces were not involved in the nuclear

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[54] See Botha's speech at Onslow and van Wyk (2013).
[55] Albright mentioned in his 1994 ISIS report that some members of the ANC believed that the Apartheid leaders would have indeed used nuclear weapons against the black majority had they felt really threatened.

program, which had been kept under the control of the AEB. In the mid-1979, when the Y-Plant had produced enough HEU, a new device was assembled and loaded with uranium enriched to 80%, still too low for an atomic weapon, and had not been designed to be delivered (Albright 1994: n/p, Stumpf 1995).

> First and relatively small quantity of UF6 was withdrawn from the Y-Plant. During the whole of 1978 and most of 1979, further high enriched UF6 was withdrawn from the plant and converted to HEU in the metal form. This material was still of relatively low enrichment (about 80% U-235)" (Stumpf 1995).

In September 1979, South Africa caught itself in another incident involving nuclear tests. The US satellite Vela detected activity in the Southern Atlantic Ocean that had a signature of an atmospheric nuclear test. Speculations rose about a possible South African test, or an Israeli test, or even a joint Israeli-South African test. But to this date there is no final conclusion about this test. The nuclear program evolved along the 1980s, when it also starts to give sign of a rollback. Finally, a number of international events helped increasing the perception that the security dilemma had been vanished from Southern Africa: the fall of the Berlin Wall, and the imminent collapse of Soviet Union, implying the end of the Cold War, and the rivalry between USA and USSR.

2.4 "Rolling Back"

South Africa's nuclear weapons program was first and foremost driven by a threat perception emanating from the drastic changes in the regional balance of power in the second half of the 1970s (Stumpf interview, Steward, interview). It was not a matter of nuclear ambitions or a matter of technical interest. As Paul (2000: 116) observes the "timing of the decision shows how regional changes can powerfully influence national choices." In this sense, once the regional juncture started to give signs of change, and met domestic and international

favorable conditions, the same political will driving the weaponization will give place to disarmament.

As David Steward[56] observes, probably there would have been no decision to go nuclear without a regional threat, which means that in the case of South Africa, only the development of nuclear capabilities would not have been enough to trigger proliferation. Also characteristic of South Africa's nuclear weapons program, as mentioned elsewhere, is that the use of the nuclear arsenal against human targets was never officially contemplated. This trait, meets that of ambiguity as a strong facet of South Africa's nuclear weapons program. As it has been debated, this ambiguity was not the result of domestic divergent positions, rather a function of a clear strategy to increase political leverage; a strategy very similar to that adopted by Israel (Stumpf, interview; Steward, interview).

In the literature, South Africa's nuclear arsenal is commonly referred as nuclear devices, not weapons, precisely because its size and design was not deliverable. There have never been a clear nuclear deterrence – aside from the phased strategy approve in 1978 – nor clearly defined targets (Steward, interview). According to Stumpf (interview), ARMSCOR, however, had started paper studies on how to reduce the size of the nuclear devices in order to fit missiles. This was a non-approved study, he noted. Thus, once President Botha learned about it, he ordered ARMSCOR not to go further any paper study.

This decision demotivated many engineers who were involved in the nuclear program, as it was clear that the program would not go any further (Stumpf, interview). After this episode, in September 1985 President P.W. Botha revised the nuclear program and decided to maintain it limited to seven gun-type devices (Paul 2000: 114). There was a strategic reason behind this number. One or two devices should be built for underground test. In case one

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[56] David Steward interview on 05 August 2013, Cape Town.

explosion failed there would be a second device as a backup. Two more devices should be built aiming at a possible military use and one or two more for retaliation, even though the use of nuclear weapons was not contemplated in South Africa, as already mentioned. On the same occasion, it was also decided to keep the phased nuclear strategy designed years earlier. The decision to limit the development of the nuclear weapons program can be considered the starting point of the rollback. It marks the beginning of a change in perception that affected the rationale driving the nuclear program; its role and future[57].

> This confirmation of the limits to the programme in September 1985, had marked retarding effect on the programme and was, possibly the first sign of an eventual turnaround of the nuclear deterrent capability. It also put an end to some earlier studies for the possible production of plutonium and tritium in a planned PWR fuel test reactor for the development of fuel for Kroeberg (Stumpf 1995).

Given the racial aspect involved in the regional wars in which South Africa was involved, the regional situation in Southern Africa can be understood as a pre-condition for the domestic transition. The path for change in South Africa was first solving problems on the boarders to then promote the domestic changes. Also, the significant and final changes at the regional level towards stabilization of the balance of power would impact decisively on the purposes of having a nuclear program. "The program clearly lost its rationale with the end of the protracted conflicts in Southern Africa (Paul 2000: 116). Consequently, nuclear weapons became an obsolete facet of South Africa's material capabilities. Ultimately, they would preclude the country from setting forward the domestic power transitions to majority rule already under debate. "In the transformed environment, security threats were no longer crucial, and nuclear weapons seemed unnecessary symbols of a bygone era" (Paul 2000: 116). The obsolete nuclear program would also become a barrier for South Africa to reconstruct its regional and international image.

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[57] The argument related to the 1985 meeting, the limitations to a 7 bombs arsenal and identification of this meeting with the beginning of a reversal path has been signaled by Waldo Stumpf in interview on August 5, 2013 and by David Steward in interview on August 5, 2013.

While 1985 can be considered as putting a limit on the nuclear weapons program, the devices continued to be built as to reach the mark of seven. In 1987, following the decision to keep the phased nuclear deterrence, the Kalahari test site was revisited in order to confirm whether the shafts were still suitable for tests, in case phase three was reached. In 1988 the site was reopened. According to Stumpf (interview) President Botha was a very realistic man. He was aware of the progressive lack of meaning of the nuclear program though he lacked the political will to move forward towards a real change. In this sense, the accession of President de Klerk represented an important step further towards denuclearization and full commitment with non-proliferation.

Right after President de Klerk took office he announced his intention to make South Africa a respected member on the international community. This implied to dismantle the nuclear program and to lead a power transition. Stumpf (interview) highlighted that de Klerk never considered a threat of handling in a nuclear weapons program to ANC. However, he did question whether a power transition including a nuclear weapons program would not make things more difficult. The CIA documents under the Regan's administration, did openly considered the situation as a threat. The ANC was in the US classified as a terrorist organization[58]. It is important to notice that, the USSR, and the USA did know about South Africa's nuclear program[59]. What they did not know was the extension of South Africa's capability; how far the country actually did go. Stumpf (interview) observes, interestingly, that once President de Klerk internally announced his decision to dismantle the nuclear program, there was no surprise among those involved with the program. This is because the process of forbearance had been set into motion years before. When the official decision was

[58] The ANC and Nelson Mandela remained in the US list of terrorist organizations until 2008.
[59] See "Trends in South Africa's Nuclear Security Policies and Programs" FOIA.cia.gov.

announced it was already clear that the program would have gone no were. In the end, for South Africa, nuclear weapons became a liability for the country's development.

> With the removal of external threats, it became obvious that South Africa's nuclear deterrent capability was superfluous and could, in fact, become a liability. Furthermore, as the progress of domestic political reform became better understood abroad, accession to the NPT assumed distinct advantages for South Africa internationally and specifically within the African continent (Stumpf 1995).

This aspect evidences the fact that no nuclear program results from isolated moments, but rather from processes. This also applies to the reversal process. Using a counterfactual exercise, Stumpf (interview) ponders that without the changes operated within the region probably the decision to rollback would not have been made so soon due to the security dilemma South Africa perceived itself involved in. Also, the end of the regional threat perception made the domestic power transition also possible in a smooth way (Steward, interview). Again, the domestic recognition that South Africa needed to engage in a power transition to black majority rule had been already set into motion but lacked the right moment to be realized.

In November 1989, President De Klerk instructed investigation on possible ways to dismantle the nuclear deterrent. To this end a steering committee was created[60]. The dismantlement should be concluded before South Africa's accession to the NPT and the recognition of South Africa's former capability would be overtly acknowledge only afterwards. Until then, the process would be kept top secret (Stumpf 1995). In February 1990, Nelson Mandela was

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[60] As members of the committee were Waldo Stumpf as chairman, and senior officials of the AEC, ARMSCOR and South Africa's Defense Force. The tasks of the committee were: "To dismantle the six completed gun type devices at ARMSCOR under controlled and safe conditions; To melt and recast the HEU from these six devices as well as the partially completed seventh device and return it to the AEC for safe keeping; To decontaminate the ARMSCOR facilities fully and to return severely contaminated equipment to the AEC (such as melting furnace); To convert the AMRSCOR facilities to conventional weapons and non-weapon commercial activities; To destroy all hardware components of the device as well as technical design and manufacturing information; To advise the Government of suitable time table of accession to the NPT, signature of a Comprehensive Safeguards Agreement with the IAEA and submission of a full and complete national initial inventory of nuclear material and facilities, as required by the Safeguards Agreement; and To terminate the operation of the Y-Plant at the earliest moment" (Stumpf 1995).

released after 27 years in prison. This act had been planned way before but it had to be coordinated with domestic and regional transition. His political partners were released before. The whole process, observes Zazeraj (interview) had to lead to a search for freedom instead of feelings for revolution. De Klerk's cabinet needed to build a message of hope. On the same month, De Klerk ordered the dismantlement of South Africa's nuclear weapons. And in March Namibia got its independence. Until June 1991, the dismantlement of South Africa's nuclear weapons was basically completed, which then allowed the country to safely accede to the NPT on July 10, 1991 [61]. On September this year, a Comprehensive Safeguards Agreement was signed between South Africa and the IAEA, and on October the country submitted its first nuclear inventory, fact that was followed in November by the arrival of the first group of IAEA's agents to verify South Africa's declared activities. It is worth noticing that the non-proliferation regime does not look backwards on a country's nuclear program. In this sense, South Africa's past experiences were not reported to the agency at this point: "when it acceded to the NPT in 1991, South Africa was under no obligation to reveal past nuclear weapons activities. The NPT looks forward, although it requires extensive accounting of a nation's nuclear material and facilities when the treaty takes effect" (Albright 1994: n/p).

According to Stumpf (interview), after signing the NPT, the public acknowledgement of South Africa's nuclear program was a matter of finding the right time. 1991 was the Iraq war in which was involved a violation of the NPT and the discloser of a nuclear weapons program. Although in the case of South Africa there was no NPT violation, South Africa did not want

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[61] After acceding to the NPT South Africa's commitments to non-proliferation, as well as regional peace and stability encompassed also topics of chemical and biological weapons. As de Klerk pointed in his 24 March 1003 speech: "The Government acceded to the Nuclear Non-proliferation Treaty (NPT) on 10 July 1991. We became a founder signatory of the United Nations Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction on 14 January 1993. It is also participating in the current review of the convention on Biological and Toxin Weapons". I thank Mr. David Steward (head of the De Klerk foundation and chief of Cabinet during De Klerk's term as president) for this document.

to risk being identified with Iraq. In 1992 took place the last only white referendum in South Africa to which President de Klerk needed full support. This might have been in jeopardy should the Government publicly acknowledged the past nuclear program (Stumpf, interview). It was only in 1993 that South Africa decided to publically acknowledge its nuclear past. On March 24 this year during a joint session of the Parliament, President de Klerk announced that South Africa indeed had possessed nuclear weapons but that the country had decided to dismantle its program and accede to the NPT. In 1993, before the 24 March announcement, Nelson Mandela, the IAEA, the South African ambassador in Vienna and all South Africa's Ambassadors where informed about the program and about the announcement to be made in order to avoid surprises. Then "IAEA was provided onsite access to key nuclear weapons facilities (Circle Facility, Advena Central Labs, SOMCHEM gun-assembly test facility, HE test facility, Potchefstroom, An abandoned coal mine used for temporary nuclear weapons storage)"[62] (Pabian n/d: 23).

In 1993, the first domestic step towards proliferation control was made in South Africa. In august 1993 was promulgated the Non-Proliferation of Weapons of Mass Destruction Act, no. 87 of 1993[63]. In September the same years, South Africa was declared "free of nuclear weapons and fully compliant with the obligations of the NPT" by the General Conference of the IAEA[64]. The same recognition was also made by the UN Annual Conference in New York in November that year. Finally, in June 1995, the negotiations and final draft of the Treaty of Pelindaba – the African Nuclear Weapons Free Zone were concluded.

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[62] See "Activities of the International Atomic Energy Agency Relevant to Article III of the Treaty on the Non-Proliferation of Nuclear Weapons".
[63] See South Africa Council for the Non-Proliferation of Weapons of Mass Destruction. http://www.thedti.gov.za/nonproliferation/#20.
[64] See "Activities of the International Atomic Energy Agency Relevant to Article III of the Treaty on the Non-Proliferation of Nuclear Weapons".

2.5. Conclusion

In the current chapter, I presented a summarized narrative of South Africa's nuclear history. The aim of this chapter was to outline the motivations for South Africa's proliferation and forbearance, seeking to identify the driving forces behind these two movements. It is clear that no single variable can be credited as the sufficient cause of South Africa's peculiar nuclear history. But as the narrative shows, the decision towards proliferation and forbearance accompanied the variations in the regional environment. While South Africa had long been conducting researches on the uses of nuclear energy, including its dual interface – PNEs – South African leaders only decided for weaponization when the regional context deteriorated, therefore increasing the threat perceptions. Likewise, the decision to forgo nuclear weapons followed the same logic. As Paul (2000: 15) argues, states oft behave as "prudential realists" meaning that "the cost-benefit calculation of national leaders [derive] from awareness of their country's position and the probable consequences of their actions antedate the decisions to forgo nuclear weapons".

The regional instability fuelled South African leaders with a sense of insecurity, also because of South Africa's paranoid mind-set and because of the progressive isolation it experienced. In other words, the elements for proliferation were all present (psychology, absence of a reliable ally, and material capabilities) but the causal mechanism triggering the South Africa's decision was the perceived variation on the regional context, while the regional context itself appears as an intervening variable that only interferes in the decision-making process once it is perceived as a threat by the FPE. The analysis of Brazil and India will help sharping this argument. In the case of Brazil, the reader will see that there has been neither a change in the regional context, nor in leaders' perception of the regional situation. On the contrary, in the Indian case it will be possible to notice that while the regional context

changes with the Chinese test, the change in the nuclear behaviour will only change once leaders' perception about the situation have finally changed.

The analysis of South Africa's nuclear path sheds light onto very important aspects related to (non)proliferation and offer some lessons that can be used in the analysis of other cases. First, it provides hints on the complex web of motivations driving the decision to go nuclear; second, it illustrates what can happen when capabilities and political motivations meet real threats; third, it suggests that nuclear weapons do not necessarily equal power and can become an obsolete artefact. Reversing the path brought to South Africa credibility, deepened benefits in terms of international cooperation, and helped strengthening South Africa's leading role in the Southern Africa and internationally. Also brought symbolic power (or soft power), as South Africa became an active and recognized actor against nuclear-proliferation.

Fourth, it raises the question on the potential dangerous of sensitive technology transfer based on political alliances; finally, it demonstrates that no nuclear decision is irreversible, but not always the nuclear conditions to do so are given to every country.

Chapter 3 – No weapons, just latency. A historical account of Brazil's *flirt* with nuclear weapons

The importance of Brazil to engage itself in the uranium enrichment race is transcendental. Besides its high economic value, such a decision would put Brazil in the forefront of modern technology
(Ambassador Paulo Nogueira Batista 1971)

3.1. Introduction

Brazil's nuclear history in not a linear one, rather it followed a complex and oft discontinued path. Kassenova (2013) rightly uses the image of a "kaleidoscope" to define Brazils' nuclear trajectory. "In fact, attempting to analyze Brazil's nuclear policy is like peering through a kaleidoscope: many elements are constant but the relationships between them and their prominence evolve over time" (Kassenova 2013: 01). The image of a kaleidoscope also meets the conceptual debate presented in Chapter 1. It captures the complexity and sometimes apparently incoherent or paradoxical choices of regional powers, which largely stem from their particular power-position and their self-perceptions. Brazil's nuclear politics have been influenced and driven by the country's traditional foreign policy aims and political beliefs of autonomy, power projection, and prestige (Paul 2000: 109). Together these three axes – interpreted in different manners throughout history – formed a particular rationale that embedded the nuclear program in ambiguity. As a revisionist state, Brazil has historically questioned international asymmetries of power while seeking better international political positions as well as regional leadership.

Along the following pages, it will become clear that Brazil's nuclear options have been largely driven by its self-perception of a great regional power and aspirant global player. In this context, its nuclear ambitions have been framed according to Argentina's nuclear ambitions, on the one hand, and in opposition to international restrictions to the spread of nuclear technology. Argentina was perceived at the same time as a competitor – reason why

many bilateral attempts to cooperate in this area failed – and as an ally against international constraints.

Brazil's interests in nuclear energy dates back to the beginning of the nuclear age. Similarly to South Africa (see chapter 2), and India (see chapter 4), Brazil also showed interests in nuclear energy already in the yearly years of the nuclear age and sought to profit from international possible cooperation on this matter with Western countries. Initially the US would figure as the major partner, but not the only one: attempts to cooperate would be also made with the United Kingdom, and France[65]. In the 1970s, West Germany became the major partner. With West Germany, Brazil signed the largest agreement involving nuclear technology transfer from a developed to a developing country. Frustration in the results of this agreement, partially due to international pressures against it, would fuel in Brazil an understanding that the country should pursue an autonomous nuclear path and develop indigenously all the technologies related to nuclear energy.

Specifically, the argument developed in this chapter is that during the 1970s and 1980s Brazil's quest for nuclear technology led the country to the edge of becoming a threshold state, though this does not mean that Brazil pursued nuclear weapons. To this date, no document already disclosed in Brazil revealed that the government had ever given a "green light" to a nuclear weapons program. The interests revealed in the documents relate nuclear energy to modernity; the former being a symbol of the latter. In this context, it can be said, the attempts made by the country to develop indigenous nuclear technology under the military regime placed Brazil in a grey zone; that of latency, but still within the margins of

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[65] Going beyond the historical partnerships with Western countries, Brazil will also sing agreements with The Democratic Republic of China and Iraq. As means to overcome the international constrains mainly coming from the US. See Nedal, D. Brazil-Iraq Nuclear cooperation At http://ri.fgv.br/en/node/2064 and Brazilian Nuclear Cooperation with People's Republic of China At http://ri.fgv.br/en/node/2033

legality prescribed by regional and international treaties[66]. Still, Brazil's position raised international concerns about the country's intentions towards nuclear technology, largely because Brazil was under a military dictatorship. Thus, while it is not possible to say that Brazil did seek to develop nuclear weapon, it is also not possible to assure that the country did not invested in mastering a very sensitive and dual technology – which the country actually did. Among the major aims of Brazil's nuclear program was to develop the complete uranium enrichment cycle, and the domain of nuclear explosives for peaceful uses, PNEs. The interest in the latter was the reason why Brazil did not fully accepted the Treaty of Tlatelolco until the 1990s[67].

Because nuclear technology was perceived as a symbol of modernity, and a source of power, it was also considered as a precondition to regional leadership. It is in this context that the relations with Argentina and the nuclear competition between the two South American countries must be analysed. Far from engaging on a regional arms race, Brazil and Argentina would extend their historical competition for regional leadership to the nuclear field. Contrasting with the situation faced by South Africa in Southern Africa and India in South Asia, Brazil will not find itself in a security dilemma or a threatening situation, and would never experience any Cold War disputes in the region. This way, the favourable situation of South America would give Brazil the conditions to *flirt* with the nuclear bomb, but lacking the motives to seriously consider going nuclear – that is, developing nuclear explosives, delivery systems, and the operational procedure the process of weaponization demands.

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[66] During the period in which Brazil developed its covert nuclear program, the country was not a member of the Nuclear Non-Proliferation treaty. Still, what Brazil declared as the aims of its nuclear program would be under the legality proposed by the treaty.

[67] Interestingly Brazil was the first country to propose a Latin American Nuclear Weapons Free Zone in 1962.

3.1.1 Structure of the chapter

This chapter is divided in 5 sections including this introduction. Section 3.2 presents an overview of Brazil's entrance in the nuclear era: the focus mainly given to research at the domestic level, and the search for international partners that could assist Brazil to develop uranium enrichment technology. The international power position of a regional power becomes clear in this first section. The only option Brazil had to overcome its limited material capabilities was to search for international cooperation. Section 3.3 is subdivided and encompasses the period after 1974 when the Brazilian nuclear program acquired more autonomous contour. This section analyses the agreement between Brazil and West Germany, outlining the differences between the Brazilian expectation and the actual accomplishments Brazil had with the deal.

Following this episode, the Parallel program launched in 1978 is analysed as the solution Brazil found to develop indigenous nuclear technology. The focus of the Parallel program was autonomy, meeting the traditional Brazilian axes of foreign and domestic policies. Section 3.4 is dedicated to the relations with Argentina that varied between competition and cooperation, having this two sides of the coin often coexisted. This section evidences that Brazil and Argentina sought cooperation under their official nuclear programs much earlier than what is usually credited, that is, the end of 1980s when both were already democracies. This section thus outlines that the regime change deepened and eased the pace towards nuclear cooperation, but it was not a precondition for cooperation. Finally, section 3.5 summarizes the Brazilian steps towards a more transparent nuclear posture, which was pursued from the late 1980s onwards and was deeply connected to the search for international credibility after 21 years of dictatorship. Also in the 1980s and 1990s, the relation with Argentina played a crucial role. In this period, Brazil signed all the international agreements

related to nuclear non-proliferation, fully complied with the Tlatelolco treaty, and most importantly created together with Argentina a unique system of bilateral safeguards to both countries nuclear programs.

3.2. First Years

Brazil entered the nuclear era already in the 1930s when in 1934 it was created under the University of Sao Paulo, in the department of Physics, a research group on cosmic radiation, and radioactivity[68]. In 1940, Brazil signed with the US a cooperation agreement for prospecting radioactive minerals. In July 1945, Brazil and the US signed a secret agreement on the export of rare earth for the Manhattan project. Two years later, in 1947, Admiral Alvaro Alberto presented to the Brazilian National Security Council (CSN) the first Brazilian proposal on nuclear development[69],[70]. While warmly welcomed, the ideas contented in the proposal were only set forward in 1951 when the National Research Council (CNPq) was created[71]. The Council had among its prerogatives to develop the area of nuclear energy in Brazil, and had Admiral Alvaro Alberto as its first director (Patti 2012: n/p).

During the subsequent years, the Brazilian government sought international cooperation with developed countries to acquire nuclear technology. The attempted negotiations involved centrifuges for uranium enrichment form West Germany, uranium dioxide and uranium hexafluoride from France and the UK, and research reactors from the US[72]. The unexpected

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[68] In March 1934 it was created the National Department for Mineral Production under the Ministry of Agriculture.

[69] Alvaro Alberto (1888-1976) was a pioneer of nuclear energy in Brazil. He served as Brazil's representative at the UN Atomic Commission. He presented the first proposal on Brazilian nuclear development to the Brazilian National Security Council (CSN) and proposed the policy of "specific compensation" that would establish as a precondition to the export of strategic minerals (uranium, thorium) the transfer of technologies relevant to Brazil's development.

[70] CSN stands for Conselho Nacional de Segurança

[71] CNPq stands for Conselho Nacional de Pesquisa. CNPq had as one of its attributions to authorize or deny the export of strategic minerals.

[72] Regarding the attempts to buy centrifuges for uranium enrichment from West Germany, the deal was frustrated by the US that blocked the delivery of the centrifuges.

changes in the Brazilian government with the suicide of Brazil's president Getulio Vargas in 1954 (1951-1954), and the subsequent adoption by the new office of a pro-US foreign policy, compromised and eventually frustrated the aforementioned attempted agreements, aside the ones signed with the US[73],[74].

In May 1952, Brazil signed with the US a second atomic agreement. From 1954 onwards, Brazil's nuclear policy would benefit from the "Atoms for Peace" program. In this context, the country would sing a third (August 1954) and a fourth (November 1954) nuclear agreements with the US known as "The Wheat Agreement". Under these agreements, Brazil would export 5 thousand tons of monazites and another 5 thousand tons of rare earth and cerium sulphate to the US in the exchange for 100 thousand tons of wheat from the US[75]. Finally, on August 1955, Brazil and the US signed cooperation for the peaceful uses of nuclear energy. Brazil continued to supply the US with raw materials under disadvantageous agreements until the mid-1950s when the policy of "specific compensation" was established. "No longer contend to provide the raw materials for other countries' nuclear development, this new policy required that each export of strategic minerals from Brazil correspond to a reciprocal transfer of technology that would help develop the country's nuclear sector" (Patti 2012: n/p).

In 1957 under the "Atoms for Peace", Brazil acquired its first research reactor, the IEA-R1, which would be located at the Institute of Atomic Energy (IEA)[76]. With President Juscelino

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[73] In 1954 President Getulio Vargas (1951-1954) committed suicide being replaced by his vice-president Café Filho. Vargas domestic and foreign policies focused on economic development with international autonomy (traditional axes of Brazil's rationale). Infrastructure areas as well those involving high technologies were perceived as strategic and therefore set as priority. Conversely, Café Filho understood that Brazil's international path should follow a "natural" alignment with the United States.

[74] Brazil also signed agreements with West Germany, Italy, and France for the peaceful uses of nuclear energy along the 1950s, besides privileging the relations with the US.

[75] See CNEN chronology http://memoria.cnen.gov.br/memoria/Cronologia.asp?Unidade=Brasil

[76] In January 1956 the Institute of Atomic Energy (IEA – Instituto de Energia Atômica) had been created from a partnership between CNPq and the University of Sao Paulo. The aim of the IEA was to further researches on atomic energy using the research reactors Brazil purchased from the US under the Atoms for Peace project.

Kubitschek (1956-1961), Brazil's domestic and foreign policy would again assume a more assertive posture, which would positively affect the domestic nuclear agenda. Already in 1956, Kubitschek approved the Governmental Guidelines for Brazil's National Nuclear Energy Policy. During these years, the National Nuclear Energy Commission (CNEN) was created and would take the responsibility over the nuclear field[77]. Nevertheless, until the end of the 1960s, Brazil's nuclear achievements would not advance significantly except for one accomplishment[78]: in 1962 Brazil built its research reactor "Argonauta" with 93% of national components. "Argonauta" was Brazil's third research reactor and the first with indigenous technology[79]. It started operating in 1965.

Largely, the slow pattern of Brazil's nuclear program in the first decades relates to domestic political turmoil. Brazil's situation in the 1960s after Kubitschek's term was marked by instability. In 1961, President Jânio Quadros (January/1961-August/1961) renounced his positon and this decision initiated a succession problem in Brazil. By this time in Brazil, the president and the vice-president were voted separately. Jânio Quadros' vice-president, João Goulart (1961-1964), was considered to be too progressive and therefore a risk for the country's political stability. After some turmoil, João Goulart took office as President, but had his term interrupted by a Military *coup d'état* that in turn claimed to be preventing a communist *coup d'état* in the country (see Vizentini 2004).

Under the military rule (1964-1985) the Brazilian nuclear program would upgrade and acquire a more strategic orientation with concrete projects and aims. The first years, however, would be still marked by a position aligned to the US. While the Brazilian nuclear guidelines

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[77] CNEN stands for Comissão Nacional de Enegia Nuclear. CNEN is the Brazilian autarchy responsible for all nuclear regulation and licensing in the country. Once CNEN was created, the CEME was extinguished. This institution had been created in 1952.

[78] In 1961 Brazil signed cooperation agreements with France, another with the European Community on nuclear energy and with Paraguay on the peaceful uses of nuclear energy.

[79] In 1960, started operation of Brazil's second research reactor TRIGA (Training Research Isotope General Atomic).

approved in 1956 under Kubitschek would emphasize autonomy, from 1964 to 1967 Brazil would temporarily abandon this position, privileging an alignment with the US.

President Arthur da Costa e Silva (1967-1971) would prepare a plan contemplating the full development of nuclear energy in Brazil on the one hand, and internationally would adopt a position opposed to the NPT that was under negotiation (Paul 2000: 110). In this context, "Brazil sought to purchase abroad, in a short time span, nuclear plants that would permit the creation of the nucleus of a national atomic industrial park, while in the longer term it needed to acquire all the technologies necessary to master the nuclear fuel production cycle" (Patti 2012: n/p). In this context, nuclear technology was perceived as mean to bolster Brazil's quest for power and prestige.

While Brazil had by this time a more structured nuclear plan, its first concrete accomplishment made in 1972 indicate a still limited nuclear position that kept the US as Brazil's main nuclear partner. Between 1971 and 1972 CNEN and Eletrobras negotiated and singed with the American Westinghouse a nuclear agreement that would give Brazil its first nuclear power reactor fueled by enriched uranium[80]. In 1972, Brazil started building its first nuclear power plant in Angra dos Reis (Rio de Janeiro) where the power reactor would be installed. The agreement with Westinghouse was, however, an agreement "in the shell" – or a black boxed agreement – meaning that Brazil did not receive any of the technology related to the power reactor or with uranium enrichment cycle. Thus, the agreement with Westinghouse placed Brazil in a dependent position vis-a-vis the US from which country Brazil would buy nuclear fuel to supply Angra I (Paul 2000: 108).

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[80] Centrais Eletricas do Brasil (Eletrobras) was created in 1962 to coordinate all the companies acting in the energy sector in Brazil.

Pinguelli Rosa (2006) outlines what he called the paradox between a political discourse of autonomy – highlighted by Brazil's international refuse to sign the Non-proliferation Treaty – and the domestic nuclear option for enriched uranium and therefore the choice for imported fuel. It is important to outline that during the 1960s, Brazil's nuclear options where still under debate. Among the scientific community, the positions would be divided between those who supported the American way – that is, enriched uranium – and those who would argue in favor of a national option using natural uranium or thorium – natural uranium is the pace chosen by Argentina. As a consequence of Brazil's choice for enriched uranium, in 1973 the Thorium Group, which studied the advantages of using this mineral for energy generation, was extinguished (Oliveira 1999).

The fragility in which Brazil placed itself would become evident in 1974 when, after the oil crises, the US Atomic Energy Commission announced that it would not be able to comply with the commitments made with Brazil to sell enriched uranium to the country's research and power reactors. The oil crises and the international nuclear restrains that followed India's first nuclear test in 1974 would be the background for Brazil's return to a more autonomous and pro-active nuclear path. In this context, Brazil signed in 1975 a nuclear agreement with West Germany. Among many goals, Brazil sought with this agreement to acquire technology to enrich uranium and overcome external vulnerability.

At this point, it is important to stress that the nuclear agreement with West Germany did not represent a rupture with the political relations with the US, nor it represented a choice for a completely new nuclear path. Parallel to the more US-aligned position, Brazil singed nuclear agreements with other counties along the 1950s and 1960sand. Since the beginning of the 1970s, it had been considering scenarios for other nuclear partners from whom Brazil could either acquire or jointly develop technology to enrich uranium.

> Brazil, whose need for enriched uranium will be relatively modest in 1980, would find itself facing four options: (1) to be an importer of enriched uranium, at the then prevailing prices and conditions; (2) to try, then, to import enrichment equipment for its own supply; (3) to try, starting now, to build in Brazil a plant to supply the world market, in association with another country possessing technology already industrialized (gaseous diffusion); (4) to try, starting now, to associate itself with the development of a technology not yet industrially tested (ultracentrifuges of the "nozzle process") also for supplying the world market (Information for the Minister of State, 1971)[81].

The document written by the Brazilian Ambassador to Bonn, Paulo Nogueira Batista, to the Minister of Foreign Affairs, Mario Gibson Barbosa, outlined options 3 and 4 as the most suitable for Brazil. In the case of choosing option 3, that is gaseous diffusion, France was pointed out in the document as the most suitable partner. In case of choosing option 4, other nuclear technologies not yet proved to be commercially viable, West Germany was pointed as the most suitable partner – a "natural partner" as defined in the document. In the case of choosing West Germany, the analysis is that most likely there would be problems to acquire the technology of ultracentrifugation – that was built in a joint project of West Germany, Netherlands and the UK under the URENCO group[82]. In this sense, the document contemplates also the possibility of joining West Germany to develop the jet nozzle technology, even though considering it as a less attractive option.

> The idea would be to demonstrate to the Minister of External Relations of the Federal Republic of Germany, on the occasion of his forthcoming visit to Brazil, that the Brazilian Government is interested in joining the uranium enrichment race and that we would like to consider the possibilities of German-Brazilian cooperation in this field. Since the Federal Republic of Germany is a signatory of the Treaty on the Non-Proliferation of Nuclear Weapons, it is convenient to assuage Minister Scheel right away by stating our willingness to apply IAEA safeguards to any joint undertaking (Information for the Minister of State, 1971)[83].

The topic was indeed debated between Ambassador Nogueira Batista and Minister Scheel in his visit to Brazil in 1971. In a *Communiqué* from Ambassador Nogueira Batista to Brazilian

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[81] "Information For The Minister Of State. Uranium enrichment. Brazilian options for nuclear cooperation ," April 19, 1971.
[82] URENCO group (Germany, Netherlands, UK) was stablished in 1971 operates in field of uranium fuel supply. See http://www.urenco.com/about-us/history.
[83] "Information For The Minister Of State. Uranium enrichment. Brazilian options for nuclear cooperation ," April 19, 1971.

Foreign Minister, Gibson Barbosa, not only the Brazilian exposition was summarized but also the positive reaction of Minister Scheel regarding Brazil's interests in a joint nuclear enterprise to enrich uranium. Minister Scheel promised to take the matter to his colleagues from the technical Ministries in Bonn and return a position to Brazil as soon as possible[84]. The first project envisaged as a result from the ministerial visiting of Mr. Scheel to Brazil contemplated

> the installation, in the San Francisco River valley, of a uranium enrichment plant for 1.000.000 UTS. The project would eventually include the participation of France, whose gaseous diffusion technology would be used in the first stage. The FRG was willing to consider the ultracentrifuge option by the process developed at Jülich and even recourse to American gaseous diffusion *know how* in a multinational project. The German Government agreed also to study with us the industrial scale development of the "nozzle" process, conceived in Karlsruhe[85],[86].

Following this debate, in 1974, the Ministry of Foreign Affairs, Azeredo da Silveira, wrote in a confidential report to the President that the construction of a second power reactor "whose type, size and location are not yet defined, [was] under study". In the document, Azeredo da Silveira pondered "whether Brazil, in order to take forward its nuclear program, should try to develop a national industry in the fuel cycle itself, or not". He continued stressing that given political, economic and national security issues, Brazil should contemplate "[sophisticating] its nuclear program so as to include not only uranium enrichment but also the reprocessing of fissionable and fertile materials resulting from the burning of U-238 in power reactors"[87].

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[84] See "Telegram, Brazilian Embassy in Bonn, 'Relations Brazil/FGR. Visit of Minister Walter Scheel.'," May 12, 1971, History and Public Policy Program Digital Archive, CPDOC Archives, PNB pn a 1968.06.15 pp. 149-159. Obtained and translated by Fundação Getúlio Vargas. http://digitalarchive.wilsoncenter.org/document/116874.

[85] See "Memorandum, Foreign Minister Azeredo da Silveira, Information for the President of Brazil, 'Uranium Enrichment'," April 02, 1974.

[86] It is worth noticing that West Germany could not enrich uranium in national territory as it was defined in the Treaty of Paris from 1954. In this sense, Brazilian decision-makers believed that West Germany would also benefit from cooperation with Brazil (where both countries could develop the jet nozzle technology in industrial scale. As Brazil has a huge hydro-electric potential, the country did not perceive as problematic the highly energy consumption of the jet nozzle process.

[87] See "Memorandum, Foreign Minister Azeredo da Silveira, Information for the President of Brazil, 'Uranium Enrichment'," April 02, 1974.

3.3. After 1974. Search for nuclear autonomy

During the military rule, Brazilian nuclear politics became definitely part of the country's strategy of international insertion, constituting one of the major pillars of Brazil's national interest. On the one hand, it was claimed as an additional source to Brazil's energy matrix (largely dependent of oil and hydro-plants) and as a technology that if mastered could boosts Brazil's economic development (Carpes 2006). On the other hand, the acquisition of a complex and multifaceted technology was perceived as adding to Brazil's international prestige, also because of the symbolic value of nuclear energy.

Under this rationale, and having in mind that the nuclear partnership with the US would not lead Brazil to modernity, in June 1975 the government of President Ernesto Geisel (1975-1979) signed the nuclear agreement with West Germany. This agreement was signed under the scope of the Agreement for Scientific and Technologic Cooperation from 1969 – which already contemplated cooperation on nuclear energy – and resulted from the negotiations already in course during the first years of the 1970s. With this agreement, Brazil aimed at acquiring the technology to enrich uranium, which would be the country's passport for autonomy to run its own nuclear program. The agreement with West Germany was also seen as an entrance to the club of great powers, inasmuch as it would strengthen Brazil's international position as a country capable of mastering highly sensitive and complex technologies (Wrobel 2001: 324). The agreement was also expected to project Brazil regionally, affirming its leadership in Latin America.

The "agreement of the century", as it was considered by Brazilian authorities, was a long term contract involving not only the construction of up to eight 1350 megawatt pressurized water reactors (PWR) but also the import of related material, and the construction of facilities for uranium enrichment and fuel reprocessing (Lohbauer 2000: 67; Adler 1987: 282). Above

all, it established the transfer of the uranium enrichment technology that in Brazil was connected to the discourse on international autonomy. For this purpose, the agreement also included the construction of many new industrial facilities to produce the infrastructure that the about-to-be-born Brazilian nuclear industry would request. While having a major industrial interface, the agreement was secretly negotiated, which means neither the industrial sector, nor the scientific community participated in the negotiations (Nedal and Coutto n/d: n/p)[88]. From West Germany's side, the agreement had a commercial meaning, opening a new market for the German nuclear industry.

But an agreement of this magnitude, signed a year after the Indian nuclear test, was internationally received with scepticism and in times with big concerns. Politically, the US perceived the transfer of technology to a military regime outside the NPT as a potential hemispheric threat that should be avoided (Patti 2012). It is worth to notice that Brazil's main argument for refusing the NPT was its discriminatory feature and the two different categories of countries it established: those with and those without nuclear weapons (Castro 1971). To sign the NPT would mean acknowledging not only a permanent asymmetry of power that was being proposed by the nuclear-weapons-states, but also accepting that Brazil would be part of the group of countries without the right to choose for its on nuclear path.

In theory, Brazil made no claims of developing nuclear technologies for other than peaceful purposes. However, the domestic regime – military dictatorship – on the one hand, and the international context post- Indian nuclear test on the other, were enough to raise international concerns about a nuclear agreement involving technology transfer. Commercially, the agreement between Brazil and West Germany represented a loss for the US, given that Brazil

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[88] See Brazil's 1975 Nuclear Agreement with West Germany.

was until then a traditional trade partner of Washington and entirely depended on American nuclear fuel for its reactors.

These worries appeared in the Ford administration (1974-1977) but acquired concrete contours when Jimmy Carter (1977-1981) took office (Nedal 2013). The Carter administration pressured Brasilia on human rights violations and condemned its lack of democracy. "Apparently Washington did not consider Brazil a 'responsible nation' for which political stability was required" (Wrobel 1991: 330). The Brazilian answer to Carter's pressures was to terminate the 1952 military agreement with the US, through which Brazil received financial support and equipment to modernize its army in exchange of natural uranium and rare earth elements. "The military regime intended to show the United States that nuclear policy and human rights are both non-negotiable" (Lima 1986: 206); both were domestic sovereign decisions that should not receive international interference. Simultaneously, the US pressured Germany to cancel the nuclear agreement, while the United Kingdom and the Netherlands blocked the transfer to Brazil of the technology used by the Urenco Group.

3.3.1. Flirting with the bomb: The parallel or autonomous nuclear program

The result of this international game of push-and-pull was the maintenance of the Brazil-West Germany agreement but in a form clearly opposed to Brazil's interests. The technology Brazil received from West Germany was still in the research phase, and later demonstrated no commercial or economic viability, whereas the treaty itself was placed under international safeguards. Germany was already a member of the NPT, but Brazil was not. Nevertheless, because of international pressures, in 1976, Brazil, West Germany, and the AIEA signed a tripartite safeguards agreement complementary to the 1975 agreement. The safeguards would raise significant limits and control to the research made in Brazil using any material or

technologies received from West Germany (Nedal 2011: n/p). Also, at the domestic level the agreement was criticised. In 1978, it was created a Parliamentary Inquiry Committee under the Brazilian Senate to investigate the alleged irregularities in the agreement with West Germany[89]. By the end of the 1977, it was clear to Brazil that the agreement with West Germany would lead Brazil nowhere.

Thus, in 1978, in a Memorandum from Minister of Foreign Affairs, Antonio Azeredo da Silveira to President Geisel, the reasons for an autonomous nuclear path is contemplated. The analysis provided in the Memorandum contemplated different aspects that along the 1970s precluded Brazil from advancing an autonomous nuclear program: the US constraints regarding the shipping of fuel for Angra I (still under construction by this time); the Urenco refusal, especially from the Netherlands, regarding the transfer of ultracentrifugation technology to Brazil; and the limited accomplishment resulting from the agreement with West Germany, especially because of the complementary safeguards agreement of 1976. With regards to technology transfer, in the Memorandum it is even contemplated the possibility of Brazil singing the NPT as a way to increase credibility and ease the transfer of ultracentrifugation technology[90].

From March to June 1979, a working group was installed at the General Secretariat of the National Security Council with the task to "organize the participation of the IEA in the development of the technology of the industrial production of the UF6" (Memorandum 23/02/1978)[91],[92]. In the working group participated members of the Ministry of Mines and

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[89] The German magazine Der Spiegel published an article denouncing irregularities in the nuclear agreement between Brazil and West Germany that led, in Brazil to the creation of Parliamentary Inquiry Committee to investigate it. See http://www.senado.gov.br/atividade/materia/detalhes.asp?p_cod_mate=40104.

[90] See "Memorandum, Foreign Minister Azeredo da Silveira, Information for the President of Brazil, 'Nuclear Issues. Meeting at 13/02/78. Alvorada Palace.'", February 23, 1978.

[91] See Memorandum, Foreign Minister Azeredo da Silveira, Information for the President of Brazil, 'Nuclear Issues. Meeting at 13/02/78. Alvorada Palace.'," February 23, 1978.

[92] IEA stands for Instituto de Energia Atomica (Insitute of Atomic Energy).

Energy, Secretariat of Planning of the Presidency of the Republic, Government of São Paulo,

Institute of Energy and Nuclear Research, National Nuclear Energy Commission, Nuclebras,

and the General Secretariat of the National Security Council. The Ministry of Foreign Affairs

was invited to follow the development of the working group.

The working group analysed two projects to develop indigenous technology: a project

integrated to the one resulting from the agreement with West Germany (integrated project)

and a project that should be developed parallel to the one with West Germany (autonomous

project). In its conclusions, the working group considered the development of an autonomous

project more advantageous because it

> Increases the political-economic bargaining power; Maximizes the use, in the long run, of scientific, technological and financial resources available in the country; Favors the use of technology in the development of full national capacity in materials, components, systems and instruments for similar technologies in the nuclear field; Renders more difficult the imposition of technical specifications by foreigners, which might restrict the participation of the national industry; Permits the autonomous and independent development of safeguards on alternative processes of isotopic enrichment; Favors the eventual sale of technology by Brazil to other countries[93].

Following the conclusions of the working group in 1978, President Geisel gave the green

light for Brazil's covert nuclear programme called 'autonomous' or 'parallel'. The program

would be placed under the responsibility of the CNEN and researches would be carried on by

the three Armed Forces (Squassoni and Fita 2005: n/p).

> Given these constraints imposed by major powers and international regimes, if Brazil wanted to make real progress on enrichment technology, the argument went, it would have to do so covertly and by cooperating with other countries on the margins of the NPT. This led to the creation of the so-called autonomous (aka parallel) nuclear program free of safeguards in 1978. Brazil would then seek to develop its own indigenous enrichment process as well as a nuclear powered-submarine and nuclear explosives. The means by which Brazil would do this included purchases of material and know-how in the international atomic "bazaar", and cooperation agreements with other developing countries like Iraq, China and, most importantly, Argentina (Nedal 2011: n/p).

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[93] See "Notice no 135/79 from the General Secretariat of the Brazilian National Security Council," June 18, 1979.

This program was developed simultaneous to the official one and had the development of an indigenous capability to enrich uranium as one of its major goal. The focus was then on the production of UF6, because Brazil did not have the possibility to acquire this step of the uranium cycle from the agreement with West Germany[94]. Aside from uranium enrichment, among other things, the parallel program aimed to reprocess fuel elements to produce plutonium, and to develop explosives for tests declared to be peaceful. The three Armed Forces engaged in three different research branches of uranium research. But the one carried out by the Navy gave Brazil the most promising results. It provided Brazil with the capability to enrich uranium, and fostered the project for a nuclear-powered submarine[95]. The Memorandum of 1985 from the National Security Council to President João Batista Figueiredo (1979-1985) presented the structure of the parallel program as follows.

1) General
To develop industrial competence that creates conditions for a wide ranging use of nuclear energy, **also allowing for naval propulsion and the production of nuclear explosives for peaceful purposes**.
2) Specific
a) Solimões (to be carried out by the Ministry of Aeronautics)
1) Development of the technology of uranium enrichment by laser.
2) Development of nuclear explosives for peaceful purposes and enriched uranium.
b) Ciclone (to be carried out by the Ministry of the Navy)
Development of uranium enrichment technology by the centrifuge process and construction of the demonstration plant.
 c) Remo (to be carried out by the Ministry of the Navy)
Development of the technology of naval propulsion with a view to the construction of nuclear submarines.
d) Atlantic (to be carried out by the Ministry of the Army)
 1) Development of the technology of nuclear pure graphite, with the objective of manufacturing moderators for natural uranium reactors.
2) Construction of a reactor of small dimensions with natural uranium and graphite, with plutonium production capacity.
e) Procon (to be carried out by CNEN)
Production of uranium compounds (natural and enriched) needed for the other projects.
f) Celeste (to be carried out by CNEN)
Fuel reprocessing for the production of plutonium
g) Metallurgy (to be carried out by CNEN)

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[94] See "Notice no 135/79 from the General Secretariat of the Brazilian National Security Council" June 18, 1979.
[95] The nuclear-powered submarine is still one of the most promising branches of Brazil's nuclear program since the program was re-launched in 2004. The Navy is responsible for the project that is a civil-military joint program. See http://www.naval.com.br/blog/destaque/submarinos/submarino-nuclear-brasileiro-quo-vadis/.

Preparation of metallic uranium and mastery of the technology necessary for its applications.
h) Radiometric and environmental control of facilities and areas (to be carried out by CNEN)
i) Manufacture of electronic equipment and special materials (to be carried out by CNEN)[96]

While the document reinforced the peaceful nature of the parallel program, it also outlined as a goal "to create the necessary conditions to assure for the Nation the complete and independent mastery of the nuclear fuel cycle and all its forms of application". This statement translated into the fabrication of nuclear explosives and fuel reprocessing plutonium production. Especially the latter met no strategic or commercial justifications in Brazil, evidencing the ambiguous interface of Brazil's interests.

The search for an indigenous technology to enrich uranium, to develop nuclear explosives, and to reprocess fuel raised suspicions, especially in the media and in Congress, about a possible Brazilian interest in nuclear weapons (Oliveira 1999: 447-495). Given the definition elsewhere presented of nuclear weapons as devices that can be delivered, the domestic and international reaction regarding the aims of Brazil's autonomous program remain, to this date, mere speculation. However, it was indeed part of Brazil's autonomous program to develop nuclear explosives under *Projeto Solimoes*.

> In 1986 the Folha de S. Paulo made published that a shaft had been drilled at Serra do Cachimbo in an Air Force base. A commission from the Brazilian Society of Physics (SBF) concluded in its report that the shaft had the dimensions and all characteristics for a nuclear test of a bomb between 10 and 20 kilotons (…) the SBF carried on a comparative study considering the characteristics of the shaft [and concluded in its report that] "the existence of such shaft at the Cachimbo base, without any clear aims and the implausible explanations offered by the authorities to the suspicions that it could be a shaft for an underground nuclear test raise distrust". The report showed that the drilled shaft, for its dimensions, could have been designed for the explosion of a bomb similar to the one of Hiroshima in terms of power (Pinguelli Rosa 2006: n/p).[97]

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[96] Memorandum, Information for the President of Brazil, no. 011/85 from the National Security Council, Structure of the parallel nuclear program. Highlights in **bold** made by this author.

[97] Free translation made by this author. The original text in Portuguese reads "Em 1986 a Folha de S. Paulo denunciou a existência de uma perfuração de grande profundidade feita pela Força Aérea na Base de Cachimbo, no Pará. Uma comissão da Sociedade Brasileira de Física (SBF) concluiu, num relatório técnico, que o poço perfurado tinha as dimensões e todas as características para um teste nuclear de uma bomba entre dez e vinte quilotons. (...) a SBF realizou um estudo comparativo das características da perfuração de Cachimbo. A conclusão do relatório da entidade foi contundente: \"A existência desta perfuração na base de Cachimbo, sem clareza de sua finalidade, e as explicações pouco plausíveis dadas por autoridades em resposta à suspeição de

The motivations behind these interests and the reason why Brazil did not developed nuclear weapons are not yet clear, but the lack of motivation logically figures among the possible explanations. Brazil had never had any real enemies and South America cannot be considered a region under security threat, despite of some isolated conflicts.

3.4. Relations with Argentina

The regional rivalry between Brazil and Argentina is not a mirror of their nuclear rivalry, rather one of its causes. During their military dictatorships, Brazil and Argentina have translated their long historical regional rivalry to the highly sensitive nuclear field. The two largest countries in South America share a history of competition rooted in the period they were still colonies. Before Brazil and Argentina were born as independent states, Portugal and Spain did project their imperialist rivalry in South America, specifically in the southern cone of South America where the Plata basin is located. The European disputes and rivalry for strategic territories and richness in the region were inherited by Brazil and Argentina in the 19th century and partially framed the relationship between the two neighbors along the 20th century. During the military rule, Brazil and Argentina projected their historical rivalry into topics such as the construction of the hydro-electric dam of Itaipu, which shaped their mutual perception and sometimes mistrust in sensitive topics, like nuclear energy. In this matter, "their competition to be number one in this crucial area led to an action-reaction pattern" (Adler 1987: 280) that nevertheless does not characterizes an arms race (Kassenova 2013).

The absence of an arms race can be illustrated by the numbered alternated attempts made by both Brazil and Argentina along the decades of 1960s, 1970s, and 1980s to establish the

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que sirva para testes nucleares trazem um clima de desconfiança (...) O relatório mostrava que a perfuração, pelas dimensões do poço, poderia ser destinada a uma explosão de potência semelhante à da bomba de Hiroshima.

grounds for cooperation in the nuclear field that would be accomplished in the 1990s. This cooperation cannot be, however, credited as the reason to rule out their competition and rivalry in the same field, as the narratives presented in official documents from this period reveal[98]. As Paul (2000: 109) notice, indeed "it was the competition with Argentina that [drove] Brazil's action and reactions in nuclear weapons". In the years of their military rule, both countries ran covert nuclear programs. As neither country had regional or international obligations to declare the aims or accomplishments of their nuclear program, their relation evolved under the shadow of uncertainty regarding one-another's intentions.

Prior to the beginning of their covert programs, the two South American countries sought to cooperate on their civilian programs, partially to mitigate mistrust. Interestingly, the attempts to cooperate evolved during the years in which both countries were running their covert program. In occasions, these efforts would be driven by an interest to dissipate international suspicions that they could be developing nuclear weapons, or by the interest to exchange technical information on the different technologies they were using to generate energy: enriched uranium in the case of Brazil, and natural uranium in the case of Argentina.

3.4.1 Nuclear development between cordiality and rivalry

In the first years of their nuclear research in the late 1950s and 1960s, the relation between Brasilia and Buenos Aires was characterized by cordiality and an aligned international discourse towards non-proliferation. This was largely so due to the insipient stage of their nuclear studies on the one hand, and because of their positive agreement regarding the necessity to build an international regime of non-proliferation, on the other (see Mallea 2013a: 38). Brazil and Argentina continued their political convergence in the nuclear field

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[98] See Digital Archive, Wilson Center, Brazil collection at http://digitalarchive.wilsoncenter.org/search-results/1/%7B%22coverage%22:%2220%22%7D?from_map=1&referer=browse.

when both chose to abstain in the vote for a nuclear nonproliferation regime. In spite of their earlier defense of such a treaty, both countries understood the treaty as discriminatory with the non-nuclear states and that it ultimately created barriers to the national economic and scientific development. Their positions towards the NPT would only change in the 1990s, suggesting that the nationalist and autonomist rationale that drove their foreign and domestic politics persisted independently from the domestic regime. In this context, also India and South Africa were initially pro a non-proliferation regime and would change their positions due to the content of the NPT as it was approved in 1968. At the regional level, in 1967 Brazil signed the Tlatelolco Treaty and ratified it in 1968. Together with Argentina, Brazil disagreed on the article related to PNEs and for this reason it signed and ratified the Tlatelolco treaty without enforcing it. Article 29 of the treaty, regarding the steps towards ratification and validity of the agreement, gave Brazil the arguments to not fully accept it.[99] Argentina signed the treaty in 1967 but did not ratify it until 1994.

In concrete terms, the cordiality between Brazil and Argentina in the nuclear field dates back to 1957 under the International Atomic Energy Agency (AIEA). To avoid competition and diplomatic disputes, Brazil and Argentina decided to alternate position on the Latin American seat at the Board of Governors. The seat should be occupied by the 10 most advanced countries in nuclear technology, a position that was not clearly identifiable in Latin America (Mallea 2013a: 39).

> The outgoing Board of Governors shall designate for membership on the Board the ten members most advanced in the technology of atomic energy including the production of source materials, and the member most advanced in the technology of atomic energy including the production of source materials in each of the following areas in which none of

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[99] Article 29 of the Tlatelolco treaty reads: "Any Contracting Party may propose amendments to this Treaty and shall submit their proposals to the Council through the General Secretary, who shall transmit them to all the other Contracting Parties and, in addition, to signatories in accordance with Article 6. The Council, through the General Secretary, shall, immediately following the meeting of signatories, convene a special session of the General Conference to examine the proposals made, for the adoption of which a two-thirds majority of the Contracting Parties present and voting shall be required". See Tlateloloco Treaty 1967.

This cordiality would, nevertheless, share space with Brazil's pretentions to position itself as the natural Latin American leadership in international affairs. This pretention appeared in the Minutes of the Fortieth Session of the Brazilian National Security Council presented after President Costa e Silva took office. In the following lines Brazil mentioned Mexico, and not Argentina, as the other potential leader of Latin America Brazil sought to balance. Yet, the sole silence towards the Argentine potential leadership can be interpreted as an indication that Brazil already perceived itself as the leader at least of South America.

> To seek support to the Brazilian views, with regard to the Conference in Geneva, with Latin American countries, preferably, Argentina, Venezuela, Uruguay and Peru; ideally, such support should mean securing a Position Paper from each country; by obtaining such support Brazil will be placed as the true representative of Latin America to the detriment of Mexico and this will strengthen our position before the non-aligned countries[100].

Arguments of this nature would appear in Argentine documents along the decades to come, often as an argument against cooperation with Brazil.

Under President Costa e Silva's term, the cordiality acquired contours of attempted cooperation[101]. In 1967, President Costa e Silva approved initiative to approximate Brazil and Argentina in the nuclear field. The proposal had three major motivations:

> to establish a definitive understanding about the Argentine and Brazilian stance regarding the Treaty of Tlatelolco, which aimed to make Latin America a nuclear weapons free zone (the treaty was open for signature but neither country had yet joined); (2) to cultivate allies in order to strengthen Brazil´s position at the Conference on Disarmament in Geneva in negotiations to establish a global nuclear non-proliferation treaty; (3) in order to establish effective cooperation in the nuclear field with a country of similar degree of development in Latin America. (Mallea 2013b: n/p).

In 1968 another attempt to cooperate was made in the occasion of the visit of a delegation of Argentinian scientist to Brazil. In the occasion, the Argentine delegation received from the

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[100] See "Minutes of the Fortieth Session of the Brazilian National Security Council," October 04, 1967.
[101] During the 1960s and 1970s Brazil would also sign cooperation agreements for the peaceful uses of nuclear energy with other South American countries: Bolivia 1966, Paraguay 1961, Peru 1966, Ecuador 1970.

Brazilian side a proposal for nuclear cooperation to which the Argentinians in turn added few suggestions. The draft contemplated studies about centrifuge technology and nuclear explosives[102]. In 1970, a new proposal to further a nuclear cooperation between Brazil and Argentina was proposed by the Brazilian government of President Emilio Garrastazu Medice (1969-1973). However, from the Argentine side, the positive opinions sustained in the 1960s regarding such cooperation would change, and the signature of a nuclear agreement with Brazil would be perceived as a second step subordinated to other sensitive topics of the bilateral agenda that should be solved.

> Towards the end of the 1960´s, there was a growing imbalance between the two historic competitors in South America, which benefitted Brazil in detriment of Argentina. The "Brazilian economic miracle" (1968-1973), in which Brazil´s economy experienced a 9% GDP growth rate, as well as the understanding between Washington and Brasilia woven by the American Secretary of State, Henry Kissinger, led Buenos Aires to adopt a defensive posture in its bilateral dialogue with Brasilia. Argentina's weakened negotiating position was noted in the Argentine-Brazilian presidential summit which took place in March 1972, where the Argentine President, Agustín Lanusse, expressed publicly Argentina´s concern on Brazil´s growing influence in the strategic Plata river basin as well as Brazil-U.S. talks. It can be concluded that Argentine-Brazilian nuclear talks had lost its momentum due to non-nuclear related factors (Mallea 2013b: n/p)

In 1974, while Brazil was considering its nuclear options regarding an indigenous program using enriched uranium and the many possible partnerships to achieve this goal at first, the competition with Argentina appeared in the agenda as a strong motivation to develop indigenous technology. Also, the leadership in Latin America is considered.

> Circumstances seem to indicate for Brazil the convenience of setting guidelines in this field that would ensure for us a position of leadership in Latin America. Taking into account that since the current year Argentina is operating a natural uranium reactor of 300MW that will furnish, annually, 150 kg of PU-239, and that that country already possesses a chemical reprocessing plant to treat that material, Brazil should not postpone a decision on the question of the second reactor and of the uranium enrichment plant, without prejudice to the intensification of research into uranium ore itself (Memorandum 1974)[103].

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[102] For an account of Argentine perceptions towards Brazil see "Report, Argentinian Ministry of Foreign Relations, 'Nuclear Energy'," January 15, 1968.

[103] See "Memorandum, Foreign Minister Azeredo da Silveira, Information for the President of Brazil, 'Uranium Enrichment'," April 02, 1974.

In 1974, The National Security Council elaborated a proposal agreement on nuclear cooperation with Argentina[104]. However, President Ernest Geisel vetoed the proposal arguing that Brazil and Argentina should first solve their problems related to the uses of the Plata basin and the Itaipu quotes.

> There are various issues pending negotiation between BRAZIL and ARGENTINA, including the one pertaining to Itaipu´s quota. A possible agreement of mutual cooperation involving nuclear energy could be negotiated along with the above mentioned matters. I recommend, therefore, [to] wait until the time comes to apply the proper procedure, and in the meantime continue to study and work on this matter as well as on the draft of the agreement to be proposed (Letter 1985).[105]

The allegation that Brazil and Argentina had other prior problems to solve than the nuclear one had been years earlier used by Buenos Aires to refuse a nuclear agreement with Brazil, though in the case of Argentina no specific mention to the Plata basin had been made. In 1977, Paul Findley – Republican Congressman from the US – would propose Brazil and Argentina to cooperate on the nuclear field, starting with a bilateral regime of safeguards and a mutual renounce to PNEs (see Mallea 2013c: n/p). In this occasion, Brazil would be the one rejecting the initiative, in part because by this time the relationships between Brazil and the US were shaken due to the American pressures against the Brazilian-West German nuclear agreement. Finally, in 1979 the attempts towards a nuclear cooperation between Brazil and Argentina would find the right timing.

When João Batista Figueiredo (1979-1985) took office in Brazil; he made efforts to find grounds to a nuclear cooperation with Buenos Aires. Yet, the contentious about the uses of

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[104] The director of the Argentine Atucha power plant, Jose Cosentino, proposed cooperation on nuclear energy in order to dissipate international suspicion of a nuclear rivalry between the two neighbors. The proposal was presented in the occasion of a visit from a delegation of the Superior War College to the Argentine Atucha nuclear plant. The Argentinian argument was sustained on technical basis and on the view that the different nuclear path chosen by Brazil and Argentina – enriched uranium and natural uranium respectively – produced conditions for rich exchange of information. The proposal was positively echoed by the Brazilian Ministry of Mines and Energy as well as Brazilian National Security Council. See "Explanatory Memorandum from the National Security Council to the President of Brazil," September 08, 1974, and "Telegram, Brazilian Embassy in Buenos Aires, 'Visit of an Embassy Employee to the Nuclear Center [at] Atucha'," July 01, 1974.
[105] "Letter, Secretary-General of the National Security Council to the President of Brazil, on Nuclear Cooperation with Argentina," September 11, 1974.

the Plata basin would still be brought to the table by Argentina as a matter to be solved prior to a nuclear agreement. Indeed, in October 1979 Brazil, Argentina, and Paraguay signed a tripartite agreement on the uses of the Plata basin. In May, Figueiredo visited Argentina and the first agreement for the peaceful uses of nuclear energy was signed between the two South American neighbors [106]. This agreement paved the way for a transition towards total cooperation on the nuclear field that would be cemented along the 1980s and 1990s. Thus, it is possible to say that Brazil and Argentina have "[balanced] their interests, capabilities, and intentions to the extent of not threatening others while maximizing their own security in a benign environment" (Paul 2000: 15), thus avoiding a security dilemma.

3.4.2 Abandoning competition for the sake of cooperation

The 1980 agreement was the first from a series of agreements signed between Brazil and Argentina in the 1980s and 1990s[107]. The major aspect at stake was to establish mutual trust on the one hand, and to vanish international suspicions that either country was pursuing nuclear weapons, on the other. Also at stake was both countries international credibility. As Paul (2000: 15) rightly observes, Brazil and Argentina during the 1970s and 1980s perceived themselves in a situation of security interdependence, meaning that "their behavior in nuclear matters is tied to the expected behavior of other significant states with which they interact (…) and that there are costly reciprocal effects associated with breaking away from such relationship" As Brazil and Argentina were on the pace to become democracies, they perceived as crucial steps to be accomplished to overcome their rivalry, and to comply with regional and international norms, also but not exclusively, on nuclear non-proliferation.

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[106] See "Cooperation Agreement between the Government of the Federative Republic of Brazil and the Government of the Argentine Republic for the Development and Application of the Peaceful Uses of Nuclear Energy".

[107] In the 1980s, Brazil also singed cooperation agreements for the peaceful uses of nuclear energy with other South American countries: Colombia (12/03/1981), Peru (26/061981), Venezuela (30/11/1983).

While the nuclear agreement of 1980 can be claimed as a watershed in the relations between Brasilia and Buenos Aires, it took Brazil and Argentina one decade to consolidate a bilateral nuclear relation based on mutual trust and consultations. After the agreement signed in 1980, another approximation was made by Brazil in 1983 – days after Argentina returned to democracy. On a Memorandum from Ambassador Roberto Abdenur to the Brazilian Minster of Foreign Affairs, Saraiva Guerreiro, from January 10th 1985, Abdenur narrates the conversations between him and Argentinian authorities regarding nuclear energy. He mentions as the starting point of these talks his conversation with the future Argentinian Minister of Foreign Affairs, Dante Caputo, on December 3rd 1983. In the occasion, Abdenur transmitted to Caputo the "possibility that at some moment Brazil and Argentina could make a joint declaration in which they would make, without giving up on the principle of their right to full access and use of nuclear energy, make it clear that they do not have any intention of producing nuclear explosives"[108]. Caputo reacted positively to Brazil's idea, which triggered a series of talks between the two sides along the 1984 and 1985. The position sustained by Argentina was that

> [it was] of great importance to maintain a relationship of cooperation and confidence with Brazil in the area, as much for the benefits that this relationship can signify for both countries in terms of backing up the Brazilians' and Argentinians' positions critical to the nuclear programs as envisioned by the great powers (NPT, full scope safe guards, etc.) as for the concrete benefits that could arise from the greater exchange between scientists and technicians (Memorandum 1985)[109].

By this time, Argentina had already mastered the technology to enrich uranium using gaseous diffusion, Brazil would only declare a similar accomplishment in 1987. Mallea (2013c: n/p) considers that the Brazilian initiative to deepen even more the nuclear dialogue with Argentina was largely prompted by the Argentinian achievement. In the Memorandum,

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[108] See "Memorandum from Brazilian Ambassador Roberto Abdenur to Minister Saraiva Guerreiro, 'Brazil-Argentina. Nuclear energy'," January 10, 1985.
[109] See "Memorandum from Brazilian Ambassador Roberto Abdenur to Minister Saraiva Guerreiro, 'Brazil-Argentina. Nuclear energy'," January 10, 1985.

Abdenur stresses the Argentine explanation for mastering uranium enrichment technology as related to the country's energy supply and the limited capabilities of the hydro-plants. As a strategic aspect of Argentina's future development, this government understood that it was necessary to have autonomy. To this explanation, Abdenur outlined

> that it appeared important to me that the two countries at some time examine the question of how to prevent the search for autonomy in the fuel cycle from degenerating into a nuclear race in the worst sense of the expression. I observed that the core of the question in my view was preventing the production of nuclear explosives, because, if either side manufactured a nuclear device meant for peaceful applications, this in itself would only inevitably lead to a nuclear race, given the impossibility of a practical distinction between the peaceful or military character of a nuclear explosive (Memorandum 1985)[110].

As the Memorandum shows, in practice, Brazil and Argentina made the transition to democracy still having some pending issues in their nuclear agenda, above all the possibility of building nuclear explosives. Differently from previous decades, when the nuclear cooperation was often subordinated to other issues of the bilateral agenda, after the re-democratization the topic became a precondition to deepen the bilateral agenda. Thus, overcoming the remaining nuclear ambiguities became the priority.

Amid some controversial episodes that took place along the 1985, the President of Argentina, Raul Alfonsin, and his Brazilian counterpart, Jose Sarney, met in Foz do Iguaçu. In this occasion, the nuclear cooperation was once again contemplated.[111] Alfonsin proposed to establish a bilateral system of safeguards, but Sarney counter-argued in favor of a bilateral working group to study the options available. The commitment to establish a working group

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[110] See "Memorandum from Brazilian Ambassador Roberto Abdenur to Minister Saraiva Guerreiro, 'Brazil-Argentina. Nuclear energy'," January 10, 1985.

[111] See "Cable from Rafael Vazquez, Argentinian Ambassador to Brazil, Requesting Meeting with the Brazilian Foreign Minister," September 02, 1985. The document reads: "The declarations that, according to "Correio Braziliense" the Minister of the Army purportedly made about such a delicate issue, together with those published to-day in the press attributing them to the President of the Senate and several parliamentarians (see my cable 1313), configure a serious picture which reflects, at a first analysis, a singular exaggeration in dealing with this question. There is no doubt that even in the case such declarations are denied (which very probably shall happen), the situation may lead to complications in the international panorama for Brazil and Argentina.
One might ask, however, whether this situation could be politically used to push forward conversations aiming at a prompt understanding at the highest level between the two countries, based on the common decision to utilize nuclear development – open between the two countries – for exclusively peaceful purposes".

was included in the Joint Declaration of Iguaçu and cemented the transition towards trust-building initiated in 1980. In the document it is stressed both countries

> will to create a joint Work Team, under the responsibility of the Brazilian and Argentine Chancelleries, membered by representatives of the respective nuclear Commissions and companies, aimed at fostering the relations between both countries in this area, at promoting their technological and nuclear development and at creating mechanisms ensuring the superior interests of peace, security and development in the region, without prejudice to the technical issues of nuclear cooperation, which will continue to be ruled by the instruments currently in force (Joint Declaration 1985)[112].

In 1986, two other documents were signed by Brazil and Argentina reiterating their commitment to collaborate in the nuclear field: Protocol 17 and the Joint Declaration on Nuclear Policy, Brasilia[113]. In 1988, two other declarations were made by Brazil and Argentina towards trust-building: the Declaration of Viedma and the Declaration of Ezeiza[114].

The major accomplishment towards trust-building efforts made by Brazil and Argentina was to create the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC). ABACC resulted from the Guadalajara Agreement signed by the Presidents Fernando Collor de Mello (1990-1992), from Brazil, and Carlos Menem (1989-1999), from Argentina, in July 18th 1991[115]. The ABACC is a binational agency that monitors the uses of nuclear energy in Brazil and Argentina assuring its exclusive peaceful purposes. The agency is based on a Common System of Account and Control of Nuclear Materials (SCCC) encompassing a

> set of safeguards procedures applicable to all the nuclear materials used in all the nuclear activities performed within the jurisdictions or in the territories of Argentina and Brazil. It is aimed at ensuring that no significant amounts of these materials are deviated to the manufacture of weapons or other devices of mass destruction (ABACC)[116].

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[112] See "Joint Declaration on Nuclear Policy 1985".
[113] See Protocol 17 and Joint Declaration on Nuclear Policy, Brasilia.
[114] See Declaration of Ezeiza, and Declaration of Viedma.
[115] See ABACC – Bilateral Agreements.
[116] See Argentine-Brazilian Agency for Accounting and Control of Nuclear Materials.

The process of trust-building between Brazil and Argentina can be seen as a positive and progressive pace that was fueled by an almost simultaneous democratization. Thus, the regime change improved Brazilian-Argentine nuclear relations. But there are no evidences that the regime change was the cause of their nuclear transition towards trust-building. As Wheelers (2009: 437) observers "the transition to democratic rule in both Argentina (1983) and Brazil (1985) led to the deepening of trust between the two countries" but did not begin the trust building, as the narrative presented above shows. Paul (2000: 100) also agrees that the regime change is a weak explanation "the territorial disputes and the desire of civilian rulers to reduce conflict in the region were critical factors. The absence of an intense, enduring rivalry of the Indian-Pakistani or Arab-Israeli variety was pivotal in achievement of the desired changes". As Mallea (2013c: n/p) pointed out, the dialogue between Brazil and Argentina towards this aim was "fluid" along the 1980s – even during the period Brazil was still under the military regime and Argentina was already a democracy.

> (…) Brazil and Argentina were able to find a different path. Through a process of mutual reassurance and high levels of transparency, each came to believe that the other was only pursuing a peaceful nuclear programme, and that the developed between them during the 1980s was cemented by their accession to the NPT in the second half of the 1990 (Wheeler 2009: 436).

In the end, the regimes that have invested in ambiguous nuclear programs, largely motivated by regional competition, were the same to make the first steps towards mutual transparency. For both countries, improving the bilateral communications in the nuclear area was also a crucial step towards international acceptance. Finally, it must be said that the leadership of presidents Sarney and Alfonsín in the 1980s and of presidents Collor and Menem in the 1990s played a crucial role in the process of deepening trust and making possible the further development of ABACC.

But historical juncture also played a crucial role; Brazilian-Argentine relations were never framed by animosity and their regional rivalry along the XX century had never evolved to conflict. Paul (2000: 100) argues that the transition from a moderate- to a low-conflict zone since the late 1980s helps explaining the nuclear choices of Brazil and Argentina. The time-trigger was the resolution of the historical rivalry represented in the 1970s by the contention over Itaipu quotes. In this sense, the resolution of territorial conflicts produced a change in the way Brazil and Argentina perceived the utility of nuclear weapons. "The civilian regimes realized that their mutual nuclear competition blocked regional rapprochement" (Paul 2000: 111).

3.5. After all no bomb, only latency – coming clean!

Domestically, it was in 1987 that Brazil finally accomplished its aim to have the know-how to enrich uranium. The achievement was made during the Brazilian transition to a democratic regime and suffered the impacts of the new political and economic domestic junctures. Furthermore, the Latin American debt crisis in the 1980s compromised the financial viability of the program. In August 1988, the Parallel program was integrated to the official Brazilian nuclear program. In October the same year, the new Constitution of Brazil was promulgated, stressing a commitment to the pacific uses of nuclear energy, though arguably still leaving room for peaceful nuclear explosions. This is so, because the differences between a PNE and nuclear weapons are also politically related to a country's aim. In the case of Brazil, this ambiguity was grounded on the fact that the country still had no international or regional commitments with non-proliferation that could preclude the country from building PNEs, if it decided to do so. These commitments would be signed along the decade to come.

In the 1990s, autonomy, prestige and power projection gave birth to a new rationale to Brazil's nuclear behavior. Instead of the contestation of former years, with emphasis on

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autonomy, there were now reasons for Brazil to participate in international regimes and to comply with international norms. The overall aim of this change in perception was the need to rebuild the country's international image after two decades of military rule. In this scenario, there was little space or interest for a bold foreign policy, and the nuclear program progressively entered a stage of dormancy.

The 1990s decade was a turning point in Brazil's nuclear strategies with respect to non-proliferation. The then Brazilian President, Collor de Melo symbolically terminated the Parallel nuclear programme in 1990, which in practice merged with the official one and was progressively placed under regional and international safeguards. As already mentioned, the first step towards this accomplishment was ABACC, through which was created a bilateral system for monitoring the nuclear activities of Brazil and Argentina. In 1991, Brazil, Argentina, ABACC and the IAEA signed a Quadripartite Agreement that in practices placed both countries' nuclear activities under international safeguards[117]. In 1994, Brazil ratified the Tlatelolco treaty, accepting its full scope. In 1998, Brazil signed the Comprehensive Nuclear-Test-Ban Treaty (CTBT), removing any ambiguities left in the Constitution regarding the peaceful uses of nuclear energy in Brazil. Finally, in 1998, Brazil ratified the NPT.

The rationale driving this decision was that Brazil should not stay outside the NPT because of Brazil's overall commitment to strengthening international norms. At that moment, however, Brazil had already developed its own capabilities of uranium enrichment. Also, it can be argued that Brazil did sign the NPT to indirectly gain leverage in its claims for a permanent seat at the UNSC, in accordance with Brazil's quest for power and prestige (Vargas 2011: 97). Still in 1998, Brazil formed the New Agenda Coalition (NAC) together with Egypt,

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[117] See Agreement Brazil, Argentina, ABACC and the International Atomic Energy Agency (IAEA) – Quadripartite Agreement.

Ireland, Mexico, New Zealand, Sweden, and South Africa calling for progress in nuclear disarmament as required by the NPT (Sauer 2013: 02).

3.6. Conclusion

Autonomy, prestige, and power projected in terms of influence are certainly among the motivations to be considered as possible explanations behind the Brazilian 'flirt' with nuclear explosives. The domain of the uranium enrichment cycle and explosives fabrication technology symbolically meets these three political aims and in this sense, the Brazilian interests could be understood. Simultaneously, the competition with Argentina for a South American leadership also framed Brazil's interest to develop nuclear technology in all its possible uses. Finally, the Brazilian critical international position regarding a world divided between countries with the right to master nuclear technologies and those without this right pushed the country to develop its nuclear capabilities to the limit still internationally accepted; an advantage that Brazil could enjoy because of the absence of regional threats (perceived or real).

The Brazilian case shows that the sole acquisition of nuclear technology is not enough for a country to proliferate. Brazil lacked motivation and justifications to do so. The fact that at the international level countries were pursuing nuclear weapons – what could be considered as changing the international distribution of power – was not enough to trigger a change in the Brazilian path. This is so because no real variation occurred within the region, and in this sense Brazil felt itself safe. Comparing Brazil and South Africa one can notice that the difference lays on the regional context and on leaders' perception regarding this context. In the absence of a variation in the former and in the latter there is no reason to change the decisions already taken. The Indian case, our last chapter in the II part of this dissertation tells a different story.

Chapter 4 India: from a nuclear option to nuclear weapons

"We had to do it to demonstrate our independent capability"
(Indira Gandhi cited in Kennedy 2011: 140)

4.1. Introduction

The third regional power analyzed in this dissertation, India, has a peculiar nuclear history. It was the sixth country to become a nuclear weapons state. Given the timing of its nuclear development and the international politics surrounding nuclear proliferation, India did not have its nuclear status internationally recognized. To India nuclear weapons hold a triple meaning. At the regional level, they mean primarily security, but are also a political instrument related to India's quest for power projection. At the international level, nuclear weapons mean prestige and translate the domestic pride of a nation self-identified with a great powers' power-position.

An important trait of India's rationale is the recent colonial experience and the effort to build a country differentiated from its past. "The memories of colonial rule contributed to a political culture, which privileged the concept of national autonomy" (Ganguly and Pardesi 2009: 04). Interestingly, a similar trait is also identifiable in the South African case as it has been mentioned in chapter 2. The main difference between the South African and the Indian rationale in this regard is that in South Africa the past of domination led to the construction of a paranoid-like mind-set, while in the case of India it let to the construction of an internationally critical and domestically moral position.

At the international level, just as in the case of Brazil and South Africa, India also refused to sign the NPT on grounds that the regime was a discriminatory mechanism of the great powers

and promoted a "nuclear apartheid"[118]. India's government was an active actor promoting nuclear non-proliferation – which met the moral side of India's rationale. But the country refuse to sign the NPT once it became clear that the treaty was rather a mechanism to control the acquisition of nuclear technology by non-nuclear weapons states, rather than a mechanism to promote a world without nuclear weapons – which would have demanded from nuclear weapons states a serious commitment with denuclearization. Also, as in the case of Brazil and South Africa, in India nuclear technology was perceived as a symbol of modernization as well as scientific maturity, but the acquisition of nuclear technology should not mirror the pattern followed by great powers. The Indian paradox was that

> acquiring nuclear weapons proves that Indian scientists are as talented as those of the world's dominant powers (…) Yet, if India followed fully the nuclear paths of the United States, the United Kingdom, or China, it would violate its own quest to be morally superior to and more humane than these states (Perkovich 2001: 06).

In the following pages, as the narrative shows, it will become clear that India's nuclear history and long path towards weaponization resulted from an amalgam of morality, regional threats, and the lack of a reliable extended deterrence. The combination of these three drivers explains both the path towards weaponization and the timing of the weaponization. The moral argument, sustained by Perkovich (2001), partially meets the claim made in this dissertation that a sole top-down approach cannot account for states' behavior. Perkovich's analysis introduces a subjective interface to the analysis without denying the material conditions framing the decision-making process. Ultimately it makes clear that a country's path towards or away from nuclear weapons results from the careful analysis of decision makers in given historical moments.

Adding to the moral arguments driving the Indian nuclear path, Paul (2000: 123) outlines the regional and international causes of India's nuclear proliferation, showing that there is an

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[118] For an interesting and concise analysis of the NPT and India's position, see Weiss "India and the NPT", pp. 260-261.

objective reality driving any subjective understanding of reality. The regional causes of India's nuclear proliferation would be the deterioration of the Indian-Pakistani relations, and the Sino-Indian boarder disputes. The international determinant would be India's ambitions to become a global player, and the strong presence of the Cold War in South Asia. These drivers are necessary causes to assess the Indian case, but are not sufficient causes to understand neither India, nor other cases. For instance, as chapter 3 demonstrates, Brazil also aspired (and still does) a global player position but did not proliferate. The variation in the nuclear behavior of Brazil and India can be found in the regional context, on the nature of these countries relations with their neighbors, and on the different intensity with which the Cold War made itself present in these regions.

A third crucial argument to understand India's proliferation path is that sustained by Kennedy (2011). He states that India's late proliferation resulted from India's frustrated attempts to increase its security using non-military means that ultimately would have implied a reliable external alliance. Monteiro and Debs (2014) also include this variable when coining their strategic theory of nuclear proliferation. According to them, countries are likely to proliferate when they lack an ally in which they can rely and through which alliance they can fulfill their interests. India could not enjoy any reliable nuclear umbrella, in spite of the many efforts made towards this aim. Kennedy (2011: 123) sustains that India, a country that has never officially engaged in a security pact or alliance, has however counted on implicit security umbrellas as non-military measures to make the state less vulnerable. The author also considers as non-military measures India's international efforts toward nuclear non-proliferation and arms control. The attempts to secure the country through non-military means associated with a moral understanding of nuclear weapons, the argument goes, would explain the timing of India's nuclear proliferation.

The argument sustained in this chapter takes into account the three key theses summarized in this introduction: (1) India's proliferation was driven by moral prerogatives, (2) India's proliferation path was driven by regional and international constraints, (3) India's proliferation path was the ultimate option available, after the country failed to find a reliable external ally. Thus, my argument reads: India's nuclear proliferation was a gradual pattern driven by a complex rationale involving objective and subjective aspects: morality, India's international quest for power and prestige, the insecurity driven by historical experiences of dominance, the enduring regional rivalry with Pakistan and China, and the absence of a reliable extended deterrence amid the presence of the Cold War in the region. However, I argue, the causal mechanism triggering India's proliferation was the perceived deterioration of the regional environment in the absence of external security umbrella. The comparative analysis of the three case studies made in the next chapter presents the fundaments for my claim.

In assessing India's whole foreign policy, Ganguly and Pardesi (2009) divided it in three phases: from 1947 to 1962, 1962 to 1991, and 1991 to the present. The first period is defined as an idealistic phase marked by a strong moral orientation. The second period marks "a gradual shift away from the early idealism (…) and the adoption of an increasingly 'self-help' approach (…) while retaining elements of the Nehruvian rhetoric" from the precedent period (Ganguly and Pardesi 2009: 04). Lastly, the period after 1991 marks the adoption of a more pragmatic posture. While the authors' characterization relates to India's foreign policy as a whole, their periodization meets India's nuclear trajectory both domestically and internationally. As it will be showed, India's nuclear path towards proliferation was built upon the needs to secure the country amid moral constraints about the meaning of nuclear weapons.

India's nuclear history can be divided into three parts (Perkovich 2001: 04). The first one from 1947 to 1974 encompasses the years "during which Indian scientists developed the technical means to produce nuclear weapons within a polity that had moral doubts and competing priorities". The second period, the most relevant for this dissertation, goes from 1975 to 1995 "in which India surprised itself, the United States, and much of the world by not conducting follow-up nuclear tests and not building a nuclear arsenal". Taking into account Ganguly and Pardesi's arguments, in this period morality and a "self-help" instinct dominated India's decision-making process. This explains the "surprise" of non-proliferation identified by Perkovich, but also explains India's small but firm steps to build a strategic nuclear option. Finally, the period after 1995 until the second nuclear test in 1998, Perkovich argues, is the period when "India's policy of self-restrain began to give way (…) due to developments in the international nonproliferation regime and political changes within India". The question is, what is the underlying factors triggering the changes?

This chapter is divided into 6 sections including this introduction. Section 4.2 presents an overview of the years between 1947 and 1974. In this period, India's interest for nuclear energy was born accompanied by a strong moral discourse against nuclear weapons and an also strong claim in favor of nuclear energy for domestic economic development. Regionally, India would watch the rise of a nuclear China and the deterioration of its relations with Pakistan. Due to a strong self-restrain, India would not yet proliferate. Instead the country would build a latent nuclear capability whereas making international efforts to stop the proliferation pace of great powers. Section 4.3 focuses on the nuclear test of 1974, the reactions to it, and on the arguments for the Indian deliberate delay in weaponize the program. This section calls attention to the fact that the weaponization in the mid-to-late 1980s did not result from an abrupt decision. Rather it resulted from a number of small steps that included the maintenance of a minimum deterrence capability. Section 4.4 discusses the

regional environment involving Pakistan and China, which would largely trigger India's nuclear weaponization. The regional instability and strong presence of the Cold War in the region shared space with India's moral rationale against nuclear weapons – that largely refrained India from an early weaponization. Section 4.5 focuses on India's final steps towards weaponization in the mid-to-late 1980s, emphasizing the concomitant deterioration of the regional environment. It also outlines that India's nuclear turn did not happened because of a governmental change in 1998 when the Bharatiya Jana Sangh (BJP) took office. The whole process had been set into motion since the 1980s in response to a perceived progressive threatening Pakistan, which in turn perceived India as the threat. Finally, section 4.6 offers some final remarks on the Indian case.

4.2. First years

When India was born as an independent state in 1947, its nuclear history also began, marked by a strong differentiation between the positive side of nuclear technology and the negative side of nuclear weapons. India's first Prime Minister, Jawaharlal Nehru (1947-1964), launched an ambitious nuclear plan aimed at producing inexpensive energy for India's economic development, but also envisaging the international prestige of mastering a highly sensitive technology[119]. In this scenario, in 1948, Premier Nehru passed the Atomic Energy Act establishing the Atomic Energy Commission (AEC). Homi Bhabha was appointed its director[120].

> India's interest in nuclear technology has a history comparable in length to that of the West. Dr. Homi Bhabha, who received a PhD in nuclear physics from Cambridge in 1935, proposed the establishment of a nuclear research institute in India in 1944, more than three years before Independence and a year before the first US nuclear test at Alamogordo (Weiss 2010: 256).

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[119] See Country Profile – India - NTI.org.
[120] Homi Bhabha is known as the "father" of India's nuclear program. He was a nuclear physicist and founding director of the Tata Institute of Fundamental Research and of the Trombay Atomic Energy Establishment, later named after him.

Between 1947 and 1974 India developed its nuclear capability amid an understanding that nuclear technology was an important asset for the country's quest for international power and prestige. From the efforts to master nuclear technology for peaceful uses, India would develop the capabilities that decades later would allow the country to build a nuclear weapons arsenal.

Like Brazil and South Africa, India's nuclear program also largely benefited from the Atoms for Peace program. India's first devices were possible due to the cooperation with Canada and the US for the development of nuclear energy for peaceful purposes. In 1955, India built its first research reactor, resulting from an agreement with Canada[121]. In 1960, the reactor went critical and later the plutonium from the reactor was used to fabricate India's devices tested in 1974 (Huntley and Sasikumar 2007: 02). As Weiss (2010: 259) summarizes:

> The timetable for Indian weapons was surely advanced by: (1) The participation of more than a thousand Indian scientists between 1955 and 1974 in US nuclear energy research projects; (2) The sale of US heavy water to India in the 1960s that was used in the unsafeguarded CIRUS reactor that produced plutonium for India's first nuclear explosion; (3) Design work for the Trombay reprocessing facility provided by Vitro International, a US company; and (4) US assistance in the building and fuelling of the Tarapur reactors.

With regards to the moral constraints, Nehru stated a clear opposition to nuclear weapons conceived as immoral weapons. Internationally, Nehru pursued an open campaign against nuclear proliferation. "Nehru's nuclear diplomacy reflected a sense that India possessed a certain moral authority in the international system, particularly in the wake of its nonviolent independence struggle, and it aimed at nothing less than slowing the nuclear arms race between the superpowers" (Kennedy 2011: 126). Underneath India's nuclear foreign policy was a different understanding of what the global order could be; an order without nuclear weapons or indiscriminate use of force, and above all, one of independent states.

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[121] See "**State** Department cable 104613 to Consulate, Jerusalem, "India Nuclear Explosion"," May 18, 1974.

In April 2, 1954, Nehru became the first statesman to propose a "standstill" agreement on nuclear testing as an attempt to reduce and eventually stop nuclear tests worldwide[122]. The proposal, however, did not evolve to a concrete agreement. This was only reached in 1963 when the Partial Test Ban Treaty (PTBT) was created banning nuclear tests – also for peaceful purposes – in the atmosphere, underwater and in space. India signed the PTBT in 1963, but as the treaty did not precluded states from conducting underground tests, India would be free to test its PNE one decade later[123].

Kennedy (2011: 123) argues that India's nuclear diplomacy was part of its efforts to increase security by non-military means. However, Ganguly and Pardesi (2009) outline that this idealistic view adopted by Nehru in the first decades deliberately ignored systemic constraints and led India to neglect regional security threats. Two events that changed the regional balance of power indefinitely would represent a watershed triggering India's progressive shift towards a "self-help" attitude: The defeat in the Sino-Indian war of 1962 and the second Indio-Pakistani war over Kashmir. After being defeated in the Sino-Indian war in 1962, India started to invest heavily in conventional forces to avoid another defeat in the future (Kennedy 2011: 125). In this context, India had to deal with China's nuclear test in 1964 that generated turmoil within the Indian intelligentsia. Right after the Chinese test, in 1965 India fought the Indo-Pakistani war. From this moment onwards, India would progressively seek to balance idealism (or morality) with some pragmatism.

Notwithstanding India's increased threat perception, the new unfavorable regional situation would not yet be enough to trigger India's weaponization. Nevertheless, the country took some small but crucial measures in the nuclear field. Along the 1960s and 1970s India invested in research on nuclear technologies that would ultimately lead to the country's latent

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[122]See CTBT.org
[123] Underground nuclear tests would be banned only in 1996 when the Comprehensive Test Ban Treaty was created. See CTBT.org

nuclear capability and adoption of a nuclear strategic options after 1974 (Kennedy 2011: 124-128).

At the domestic level, with Nehru's death in 1964 and the Chinese first nuclear test in the same year, Nehru's successor, Premier Lal Bahadur Shastri (1964-1966), had to deal with pressures from within the political and scientific establishment pro-nuclearization. Weiss (2010: 259) content that inside India there were many voices, including Bhabha and the Jana Sangh Party (later Bharatiya Janata Party) advocating in favor of the Indian bomb as a reaction to the Chinese tests. These voices were, however, not sufficient to trigger India's proliferation at this point. Shastri, who was himself a follower of Nehru's moral position against nuclear weapons, sought alternative ways to overcome the perceived threat. Eventually, Shastri did approve studies to build PNEs and launched the Subterranean Nuclear Explosions Program that would be used for the 1974 test. (Weiss 2010: 259). The motive would be the uses in industry, but leaving open the possibility to militarize the nuclear program should the circumstances require it.

At the international level, India engaged with the talks that would lead to the NPT years later. India's understanding of non-proliferation was largely connected to disarmament, thus focused first on the responsibility of the nuclear weapons states. India's proposition to non-proliferation, presented by its representative to the talks, Vishru Trivedi, envisaged "a two-stage treaty under which extant nuclear powers would first cease all production of nuclear weapons and delivery vehicles and then reduce their remaining capabilities. Only in the second stage would nonnuclear countries commit not to acquire nuclear weapons themselves" (Kennedy 2011: 127). Had the Indian proposal been accepted, China would not have had the time to transform its nuclear weapons program into a deadly nuclear arsenal. From the Indian perspective, this would have meant an increase in the regional security. However, the

outcomes of the talks and the NPT as it was formulated represented to India an enormous setback.

> Rather than constraining the nuclear powers, the NPT constrained the nonweapons states. Rather than pressuring China to disarm, the NPT recognized China—but not India—as a nuclear power. In the wake of this discouraging defeat, India's leaders seem to have invested much less hope in nuclear diplomacy. As a result, Indian leadership and activity in this arena waned, and New Delhi's approach became essentially defensive (Kennedy 2011: 127-128)

Right after the war with China, India would find in the US an ally. While not an official alliance, this undeclared military support would be enough to temporarily reduce India's sense of vulnerability. The support would be reiterated after the Chinese nuclear test, but it would not last long. Simultaneously, India pursued military and economic ties with the USSR, which became India's largest arms supplier in the 1960s. In the 1970s, the power correlation in the region would change with a stronger presence of the Cold War in South Asia. In this decade, India would watch a rapprochement between the US and China on the expenses of its own sense of security. India's solution at this point was to deepen relation with the USSR, from which the treaty of Peace, Friendship, and Cooperation was signed on August 9, 1971.

Interestingly, in the first years of India's independence, neither the US nor the USSR would pay much attention to India, to which none of the super powers would "attach any strategic significance' (Ganguly and Pardesi 2009: 04). The super powers change in perception in the subsequent decades resulted from their specific interests. In the case of the USSR, India would become an important ally to balance China, while the US, after a brief period of proximity with India, would approach the region on the Pakistani side to counter balance the USSR. Particularly, the Soviet posture towards a nuclear India oscillated between disapproval – during the time of the NPT negotiations – to silence – after India's first nuclear test – to gradually increasing technical support from India's civilian nuclear program, after 1976. On

this same year, Canada terminated the nuclear cooperation agreement with India (Szalontai 2011: n/p).

The deterioration of the regional geopolitics and the frustrating negotiations on the obligations ascribed to nuclear weapons states and non-nuclear weapons states in the NPT slowly pushed India towards a more pragmatic posture. The minimum Indian security response to the Chinese test, nevertheless, did not receive much attention under Shastri's successor, Indira Gandhi, until 1971 when India and Pakistan fought the war that resulted with the independence of Bangladesh. While India was victorious, it felt threatened by the regional imbalance resulted from the military support of the US and of China to Pakistan.

Szalontai (2011) argues that while the Pakistani threat played a crucial role to India's decision to go nuclear, it alone does not explain the timing of India's decision. In 1971, the argument goes, India had defeated Pakistan in the Bangladesh war and afterwards both countries signed the Simla Agreement committing to settle their differences peacefully. In this context, also the Sino-American rapprochement, Nixon's anti-India position and the establishment of diplomatic relations between China and Japan in 1972 are regarded by Szalontai (2011) as also crucial to understanding Prime Minister India Gandhi's (1966-1977) decision. Moreover, the decision was biased by India's quest for prestige and for a greater role in international affairs.

4.3. India's nuclear program between moral principles and real threats

In this scenario, in 07 September 1972, Indira Gandhi authorized the preparations for a nuclear test. In January 1972, the State Department Bureau of Intelligence and Research released an evaluation on the state of the Indian nuclear program and considered the

possibility that India could be preparing for a test still on that year. While the report mistaken the timing of India's test, it captures the emotions circulating in India at the time.

> There are continuing reports that the Indians are preparing to detonate a nuclear device during the next several weeks. While the exact timing described in these reports varies, the date chosen may prove to be the January 26, the day on which India celebrates the promulgation of its post-colonial constitution and the end of domination status. The purpose of the planned detonation is unclear in the report. Some have indicated that the GOI [Government of India] is leaning in the direction of nuclear weapons development. Others suggest that a peaceful nuclear explosives (PNE) program – a rather thin disguise for nuclear weapons developments – would be undertaken (State Department Bureau of Intelligence and Research Intelligence Note, 1972)[124].

Raja Ramanna, director of the Bhabha Atomic Research Center, supervised the project that was kept a secret between the Prime Minister and some scientists. When in 1974 Raja Ramana, reported that India was already capable of testing a nuclear device, Indira Gandhi gave the green light. The test was successfully conducted at Pokhran, Rajasthan Desert. After India conducted this nuclear test, Indira Gandhi presented it to the world as a peaceful nuclear explosion (PNE), though the Western countries interpreted it otherwise, subsequently punishing India with sanctions. The US responded to the 1974 test with a number of sanctions to India. The Soviets, however, only privately condemned the test (Szalontai 2011).

> On May 22, Trivedi, the secretary general of the F[oreign] M[inistry] received the departing GDR ambassador, to whom he said that the Indian government was grateful to the socialist countries because they did not confront India over the Indian nuclear explosion, though they had signed the Nuclear Non-Proliferation Treaty. Comment: The socialist ambassadors of this place consulted with each other on the Indian nuclear explosion, and concluded that it was appropriate on our part to adopt the position that having taken notice of the fact, we expressed our trust in the official Indian declaration, according to which the explosion served peaceful purposes (the communique published earlier this week) (Telegram, 1974)[125].

Interestingly, India's first nuclear test was not followed up by other tests. Despite the capabilities and regional threats, Indian decision-makers took another fifteen years to officially decide for weaponization due to "moral doubts, political turmoil, and the censure of the United States and the international community" (Perkovich 2001: 02).

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[124] See "State Department Bureau of Intelligence and Research Intelligence Note, 'India to Go Nuclear?'," January 14, 1972.
[125] See "Telegram No. 118, Embassy of Hungary in India to the Hungarian Foreign Ministry," May 23, 1974.

Kennedy (2011: 126) outlines the economic costs of developing a nuclear arsenal on the one hand, and the international pressures (especially after 1974) as some of the reasons refraining India from developing a nuclear arsenal, which would have been the logical *realpolitik* measure to counter balance China in the nuclear field. In this sense, what largely drove India's gradual path towards nuclear weaponization were the attempts to first increase its security by using non-military means. On the one hand, the country would still strongly advocate non-proliferation and pro-disarmament. On the other, it would seek to balance power by relying on external support.

> (…) nuclear capabilities symbolize India's achievement of scientific-technical prowess and national sovereignty and establish India's membership in the aristocracy of nuclear states who set the standards of international rank. India also perceives the US-led nonproliferation regime as a racist, colonial project to deny India the fruits of its own labor and tools of its own security. These perceptions have become stronger as India's nuclear capabilities have grown, and they have become politically potent thanks to the exertions of the strategic enclave (Perkovich 2001: 07-08)

This was a normative position adopted by India's leaders to maintain the domestic nuclear choices and international discourses on non-proliferation coherent to the greatest extent possible. Paul (2000: 128) called it a "recessed deterrent capability". Thus, during these years, India's decision to proliferate balanced between the geopolitical context –involving the presence of a nuclear weapons China since 1964, the disputes with Pakistan and the Cold War games between the US and USSR in the region–, and the domestic rationale, divided between a moral commitment to non-proliferation and divergent ambiguous interests related to the meaning of nuclear weapons (Kennedy 2011).

> Since 1974, India had pursued a 'nuclear option' strategy. This entailed the capacity to assemble nuclear weapons quickly – within hours or a few days – paired with the expressed intention not to do so until a grave threat to its security arose. The nuclear option reflected India's normative aversion to nuclear weapons, its emphasis on global nuclear disarmament, and political leader's preferences to concentrate resources and energy on economic development (Perkovich 2001: 03).

Kampani (2014: 87-88) calls attention to the fact that the regional balance of power would progressively deteriorate in the late 1970s with a Pakistani threat and that this change triggered in India a change in perception and attitude towards nuclear weapons. He defines India's revival of its nuclear weapons program after Indira Gandhi (1980-1984) was reelected in 1980 as a "classical internal balancing act". In her new term, Gandhi also put forward a ballistic missile program in 1983 (Kennedy 2014). As Kampani accounts

> India's "option", as it became known, was interpreted as an attempt to develop threshold nuclear capability. The strategy entailed assembling all the components of a working nuclear arsenal that would give New Delhi the means to develop and deploy nuclear weapons rapidly. The option strategy was also thought more economically manageable and far less likely to attract international "negative" balancing efforts in the form of sanctions (Kampani 2014: 88).

In the early 1980s, when Indira Gandhi decided to revive the nuclear weapons program, the decision making process on this matter was entirely under the prime minister's office and it "comprised a loose social network of nuclear and defense scientists. It also sometimes included prime ministers' principal and cabinet secretary; and from 1989 onward, a specially designed coordinator, then Defense Secretary Naresh Chandra" (Kampani 2014: 89). Kampani also outlines that the communication within this "small network" was primarily oral and few was actually registered in official documents. This particular trait of India's nuclear decision making process fueled the complexity of this process and characterizes it as a rather person to person relation, less than an institutionalized process; what Kampani (2014: 90) calls a "dysfunctional state of planning".

Considering the differences between building devices and weaponizing and operationalizing a nuclear program, Kampani (2014: 88) considers that India's planning "was characterized by inefficiency, delay, and dysfunction". To use Fitzpatrick's (2014) definition, in the 1980s India was a nuclear hedging state lacking consensus. Following Kampani's claim, India's complex and at times disconnected nuclear rationale tied the country into knots. This

complexity involved a moral refusal to confront the NPT and in this context the US, and a culture of secrecy involving the members of the nuclear program that precluded the country to efficiently go nuclear.

This structure posits a series of setbacks to the weaponization process in India. For instance, in 1982 Prime Minister Indira Gandhi approved and withdraws her approval on nuclear tests on the same day. The triggering motivation was Pakistan's nuclear advances. Only in 1986 Prime Minister Rajiv Gandhi (1984-1989) would set forward the weaponization process in response to the belief that Pakistan already had or was about to acquire the capability to build nuclear devices (Kampani 2014). Also, a short report from the Embassy of Hungary to the Hungarian foreign ministry transmit arguments that were being made in India about the ultimate positive repercussion of the Chinese test to China's international prestige and India's interest to achieve the same status.

> One of the Soviet counselors said they had become aware that in recent weeks the Indian political research institutes were bringing forward more and more arguments to prove that India's nuclear armament would bring only advantages. This campaign is headed by the institute of Dr. [K.] Subrahmanyam. Their main argument is that China's nuclear armament did not damage China's international prestige. On the contrary, since then China has become a member of the S[ecurity] C[ouncil], in essence achieved the status of the third superpower, and today both the Soviet Union and the USA seek to reach an agreement with China. India's nuclear armament would bring similar advantages (Ciphered Telegram n. 306, 1985)[126].

Still Rajiv Gandhi's decision was embedded in limitation regarding the development of the delivery systems.

> Prime Minister Rajiv Gandhi authorized DRDO to start development of rugged, miniaturized, safer, and more reliable components and subsystems for what might eventually be a weapon system. His mandate was "keep the country's nuclear capability at least at a minimum state of readiness". It stopped short of ordering the building of a weapon or integrating it into a delivery platform. Eventually, in 1989 Gandhi approved weaponization in the wake of the failure of his global disarmament plan and menacing Indian intelligence reports, which concluded in March 1988 that "Pakistan was in possession of at least three nuclear devices of 15-20 kiloton yield (Kampani 2014: 91).

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[126] See "Ciphered Telegram No. 306, Embassy of Hungary in India to the Hungarian Foreign Ministry," October 23, 1985.

4.4. Too many actors for just one region

The nuclear development of India and Pakistan was largely a response to one another. But it was also a consequence of the Cold War in the region. From 1947 to 1999, India and Pakistan have been involved in four wars: 1947-1948, 1965, 1971, and 1999[127]. The number of conflicts in the region characterizes the high level of instability of South Asia and suggests that these states needed to constantly make their domestic and foreign policy calculations based on the prerogatives of a security dilemma.

As it has been already said, in 1971 regional instability took the control over South Asia. While the conflict ended with an Indian victory, external interference would alter even more the regional balance of power as Pakistan would count on US and Chinese support. As an outcome of the war, Pakistan launched its nuclear program. India's reaction to Pakistan came in 1972, when Indira Gandhi gave the green light for a nuclear test. After 1974, Pakistan's nuclear program would evolve as a response to the Indian test, which in turn would be kept as a strategic nuclear option. It is worth noticing that in the early 1980s, scientists would in vein push the government to approve new tests with a smaller device, as the one used in 1974 was by far not suitable for military uses.

In 1979, the regional balance of power would again be shook. After the USSR's intervention in Afghanistan, Pakistan was placed as a US ally and as such received sophisticated arms supply – including delivery systems suitable for nuclear weapons (Paul 2000: 128). This situation implied a loss to India, as the country would no longer have a regional advantage in conventional weapons (Kennedy 2011: 140). The perceived regional asymmetry resulting

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[127] The wars in 1947-1948, 1965, and 1999 were fought over the disputed territory of Kashmir, while the war in 1971 followed from India's support for the independence of Bangladesh.

from external powers in South Asia deepened in India the feeling of threat. According to Paul (2000:129)

> the arms race in the sub-continent follows a familiar pattern, with India obtaining capabilities largely to catch up with China, while Pakistan attempts to balance India's nuclear and space capabilities. The triangular nature of proliferation corresponds to the triangular nature of enduring rivalries and balance-of-power activities of the major states in the region.

Along the 1980s, the regional balance of power would continue to deteriorate. Between India and Pakistan historical sensitive problems such as Kashmir would continue producing disequilibrium between the neighbors, while the Chinese support to Pakistan nuclear and missile program would indirectly interfere in the power relation between Pakistan and India. On a report from January 1982 from Ambassador Ferenc Turi of Hungary in India to the Hungarian Foreign Office, the Indian perceptions towards Pakistan can be captured.

> In recent times, relations between Pakistan and the United States, and between Pakistan and China, have become closer, to the detriment of India. The Indian leadership is worried that the USA is providing Pakistan with massive military assistance. By arming Pakistan, the United States aims at reinforcing its presence in the region, applying direct pressure on India, and ensuring that support is provided to the Afghan counter-revolutionaries via Pakistan. In the last analysis, the objective of the USA is to establish its control over this region by means of Pakistan, and to gain strategic advantages in the area near the Soviet border (Report, 1982)[128].

India would also witness a progressive change in its relations to the USSR. The latter would gradually seek to improve its relations with China. In 1987, Moscow restarted boarder negotiations with China. Simultaneously, Moscow would ease its position towards Pakistan from 1985 onwards, a situation that would be improved with the end of the Soviet occupation in Afghanistan in 1988. India final hope to rely on Soviet support to balance a nuclear China dissipated with the collapse of the USSR in 1991. As Kennedy (2011: 144) outlines, however, the demise of the USSR was only the final blow on India's attempts to balance regional power without openly going nuclear. Overall, the situation in which India caught

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[128] See "Report, Embassy of Hungary in India to the Hungarian Foreign Ministry on Indian-Pakistani relations," January 19, 1982.

itself in the beginning of the 1990s was rather the end of a gradual process that had begun in the mid-1970s.

In the 1990s, the nuclear situation between India and Pakistan can be summarized as "engaged in a game of nuclear shadow boxing by insinuating the existence of nuclear weapons-in-the-basement" (Kampani 2014: 84). Concomitantly their situation was internationally perceived as two "de facto nuclear weapons powers, meaning they possessed the technical capability to assemble and deploy nuclear weapons and the organizational capacity to use them instrumentally" (Kampani 2014: 84).

4.5 India's final turn towards weaponization

As it has be showed, during the period between 1975 and 1989, India's nuclear logic was that of "nuclear deterrence without prior deployment of nuclear weapons" (Perkovich 2001: 03), avoiding this way an arms race. The strategy employed was that of uncertainty that should be enough to deter a rational adversary. Kennedy (2011: 141) defines this strategy as "covert weaponization".

From 1990 onwards the strategic nuclear option, or covert weaponization, started to be criticized in favor of an open weaponization. The international decision to indefinitely extend the NPT and the consolidation of an international divide between nuclear weapon states and non-nuclear weapon states fueled in India the arguments in favor of a clearly defined nuclear doctrine (Perkovich 2001: 03). Also the failure of the great powers to conduct a comprehensive test ban treaty would contribute to India's disappointment regarding a possible disarmament (Ganguly and Pardesi 2009: 15). Facing a regional security dilemma, India understands that it had to develop nuclear weapons if it wanted to be taken seriously both at the regional and international levels (Szalontai 2011). This context created the

conditions for the 1998 test. Nevertheless, as Perkovich (2001: 04) outlines, "no new doctrine guided the tests" and no consensus regarding a nuclear India emerged. Along the ten years between Rajiv Gandhi's decision to weaponize India's nuclear program and the second Indian test at Pokhran in 1998, India was carving its nuclear capability and playing the diplomatic card of ambivalence and strategic option.

At the domestic level, after 10 years of dormancy, in 1989, India began its pace towards weaponization. This is the year when Prime Minister Rajiv Gandhi authorized the construction of nuclear weapons. When Gandhi took office in October 1984, there were concerns about the Pakistani progresses toward the bomb. These concerns motived Gandhi to set an interdisciplinary group to study India's options. The thesis pro-nuclear weapons won Gandhi's attention, even though he did not agreed with it. The Prime Minister wanted to know what kind of arsenal would best suit India's needs and the costs associated to the weaponization process. Even not authorizing the development of a nuclear arsenal at this time, in 1986, Gandhi "authorized several steps to enhance India's state of nuclear readiness. This included the development of weapons designs for a smaller, safer, and more reliable bomb" (Kennedy 2011: 142).

At the international level, interestingly, India continued its international diplomacy against nuclear proliferation. Already in January 1985, the Prime Minister hosted a meeting of the "Six-Nation Five Continent Disarmament Initiative", calling for nuclear test ban and further disarmament[129]. A year later, in 1986, on the occasion of Mikhail Gorbachev visit to India, the two leaders issued the Delhi declaration on the principle of a nuclear-weapon-free and non-violent world". In June 1988, Rajiv Gandhi presented an "Action Plan for Ushering a Nuclear-Weapon Free and Non-Violent World Order" to the Third Special Session on

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[129] Report, Embassy of Hungary in India to the Hungarian Foreign Ministry," February 09, 1988,

Disarmament of the UN General Assembly[130]. The core proposition was to have a world free of nuclear weapons by 2010, which would be accomplished by a three steps process – Weiss (201: 261) called an imaginative proposal[131]. The initiative was, however, not taken as seriously as Gandhi would have expected (Kennedy 2011: 146). The lack of progress in disarmament, in spite of the initiatives proposed, made clear to Gandhi that nuclear diplomacy either bilaterally or multilaterally would not render India any security guarantees.

> By late 1988, therefore, India seemed to be running out of options. Soviet support had become unreliable, and Rajiv Gandhi's nuclear diplomacy had reached a dead end. Under these circumstances, the Indian prime minister took a fresh look at India's own nuclear program (Kennedy 2011: 146).

In 1990, India was already a de facto nuclear weapons state: India had enough plutonium and could assemble devices in a short period of time, but it still lacked reliable delivery systems. Also the devices were neither assembled nor operationally deployed. Along the 1990s, in the course of its weaponization, India acquired short and intermediate-range missiles that could reach Pakistan, China, and several cities in the Middle East. By 1994, India had enough weapons-grade fissile material to produce around 25 devices deliverable by aircraft. In 1995, Prime Minister Narasimha Rao (1991-1996) came very close to authorizing a new nuclear test but refrain from his position fearing the economic impacts the test would bring to India. During the three years separating this episode from the test in 1998, the fear of economic retaliation precluded Indian leaders to authorize the nuclear test, what the BJP eventually did in 1998.

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[130] Provisional Verbat in Record of the Fourteenth Meeting. United Nations General Assembly, Fifteenth Special Session, See http://www.nti.org/media/pdfs/Gandhi_1988.pdf?_=1330461780
[131] "First, there should be a binding commitment by all nations to eliminating nuclear weapons in stages, by the year 2010 at the latest. Second, all nuclear weapon States must participate in the process of nuclear disarmament. All other countries must also be part of the process. Third, to demonstrate good faith and build requires confidence, there must be tangible progress at each stage towards the common goal. Fourth, changes are required in doctrines, policies and institutions to sustain a world free of nuclear weapons. Negotiations should be undertaken to establish a Comprehensive Global Security System under the aegis of the United Nations." See India and Disarmament, at http://meaindia.nic.in/pmicd.geneva/?1017.

Thus, while the decision to test nuclear weapons in 1998 was the result of an official decision of the new elected BJP, it was a process from a technological and political point of view. In this sense, the argument of a regime change as triggering a nuclear weaponization does not hold if confronted to history (see Ganguly and Pardesi 2009: 15; Paul 2000; Kennedy 2011; Perkovitch 2001; Kampani 2014). In this sense, Paul (2000: 130) states that

> some authors argue that Indian leaders, especially Indira Gandhi, may have maintained a nuclear option and tested weapon for political power and prestige. The 1998 tests were perhaps conducted to increase support for the BJP. Although both suggestions are credible, I argue that they may help explain the timing of the tests, but not the underlying causes of India's nuclear policy. During the last three decades, governments of different ideological leanings have supported nuclear capability. National security reasons arising from the systemic and sub-systemic processes are the primary sources of such behavior.

Ganguly (2008: 46) argues that the overt test conducted by India and Pakistan in May 1998 have reduced the risk of full scale war in the region and have therefore contributed to strategic stability. This argument meets that of Waltz, who considers nuclear weapons a stabilizing weapon.

4.6. International Reactions to India's 1998 test

The international repercussions of the Indian decision to go nuclear were immediate and negative. On 6 July 1998 the UNSC approved Resolution 1172, condemning the tests (as well as the tests carried out by Pakistan the same year), urging both to sign the NPT and the CTBT "without delay and without conditions" (Weiss 2010: 267). The resolution also called upon India (and Pakistan) to

> refrain from weaponization or from the deployment of nuclear weapons, to cease development of ballistic missiles capable of delivering nuclear weapons and any further production of fissile material for nuclear weapons, to confirm their policies not to export equipment, materials or technology that could contribute to weapons of mass destruction or missiles capable of delivering them and to undertake appropriate commitments in that regard" [and] encouraged all States to prevent the export of equipment, materials or technology that could in any way assist programs in India or Pakistan for nuclear weapons or for ballistic missiles capable of delivering such weapons.

Specifically, the US imposed sanctions on India on the basis of its domestic anti-proliferation law. The initially hostile reactions that India received at the international level would a few years later give space for more reconciliatory offers.

4.7. Conclusion

As the narrative presented here demonstrates, the history of India's nuclear weaponization is objectively the result of a deep instable region with the absence of reliable external support, intense presence of the Cold War in the region, and frustrated international to advance disarmament and non-proliferation. Subjectively, it was the result of changes in leaders' perceptions that security could only be achieved by national means; by "equalizing" the regional balance of power with nuclear weapons. Hence, an enduring regional instability was strong enough to convince Indian leaders that the country's moral mind-set would have to incorporate nuclear weapons, what in turn changed India's behavior. Using other words, it was only when leaders' perceptions regarding the regional context have changed, that a real change occurred in India's nuclear behavior. This way, perceptions appear as the causal mechanism while the enduring regional instability appears as a new intervening variable.

II. 4. Conclusion of part II

During the Cold War, the South African rationale – which I called paranoid-like mind-set – would be fueled by a self-perception that the country belonged to the Western world and should, therefore, defend the principles propagated by this bloc against any communist threat. In the nuclear field, South Africa benefited from cooperation with the US and Europe and so could develop its nuclear capabilities. Regionally, South Africa was protected by the maintenance of the Portuguese colonies in Southern Africa and by the presence of other segregating regimes in the region.

When the regional *cordon blanc* was removed from the region after 1974, South Africa's leaders took seriously the task of defending the Western values in the region and to protect itself from a possible communist invasion. The progressive isolation in which South Africa would perceive itself to fight alone the communist enemy on its boarder made the paranoid-like mind-set give room to a probabilistic understanding that a total onslaught was imminent. Thus, to protect itself South Africa relied on nuclear weapons. These weapons were, however, conceived as an instrument for bargaining support rather than lethal weapons to be used against human targets.

Under the dictatorship, the main axes of Brazil's foreign policy – autonomy and prestige – materialized in a quest for nuclear energy. The latter was associated with modernity, economic development, and therefore power. As in the case of South Africa, Brazil also profited from cooperation with Western countries to build its nuclear capabilities. But Brazil's choices in the nuclear field led the country to a deadlock. Having made the option for enriched uranium, Brazil needed to develop the whole uranium enrichment cycle to keep the discourses and practices towards autonomy consistent with each other.

In this context, Brazil signs a nuclear agreement with West Germany in 1975. But given the international pressures to end the agreement, Brazil's statesmen would soon understand that the only way to acquire the desired nuclear technology would be indigenously. In 1979, Brazil started its parallel program that would be active until the beginning of the 1990s.

Amid international pressures, Brazil's autonomous nuclear program would have among its aims researches on nuclear explosives and fuel reprocessing. Simultaneous to Brazil's nuclear program, Argentina, also under a military dictatorship, was developing its own nuclear program. The historical competition between the South American countries for regional leadership would be incorporated in the nuclear field without, however, evolving to an arms race. Instead, they would seek means to cooperate in the field, lacking the timing to further concrete cooperation.

India was born under the sign of autonomy, non-violence, and self-determination, due to its past experience of colonization. Also, modernization and a sense of belonging to the group of great powers, framed India's development in the nuclear field. Nuclear energy would be perceived as a legitimate road towards domestic development, while nuclear weapons would be morally condemned.

Like Brazil and South Africa, India would also profit from cooperation with Western countries on the peaceful uses of nuclear energy. But in the case of India, the profit would be even larger as the plutonium used by India in its first nuclear devices tested in 1974 would result from the CIRUS reactor India acquired from Canada in 1955.

India had to balance its moral rationale towards nuclear weapons with an enduring regional instability triggered by historical rivalries with Pakistan and also China. Both countries also develop nuclear capabilities: China already tested nuclear weapons in 1964 and Pakistan

would develop its nuclear program parallel (and often in response) to India's nuclear program and only test it in 1998.

By looking at the cases, it is possible to rule out some aspects as potential causes of variation in these countries' nuclear behaviors, and outline others. For instance, the regime type cannot be credited as a generalizable cause of nuclear proliferation. Comparing these three regional powers, two were non-democratic regimes and on was a democracy. Still, they shared similar understanding of what benefits nuclear energy and nuclear technology could bring to the country in terms of symbolic and material powers.

If the regime type seems to be a week explanation, the narrative showed that the variations in leaders' perceptions accompanied the turmoil or tranquility within each region. All three regional powers, at first, approached nuclear energy for peaceful uses. They have also associated nuclear energy with modernity and, in some cases, with prestige. However, India and South Africa soon would add to this initial rationale an understanding that nuclear energy could and should also be used to increase the countries' sense of security. The relation of regional powers with their neighbors offers important hints to understand the characteristics of these regions and to understand the variation in the nuclear behavior of India, and South Africa, and lack of variation in Brazil's behavior.

In South America, the relations between Brazil and Argentina can be characterized by competition and rivalry, without arms race. Brazil, as several times mentioned, has developed its nuclear program under the sign of regional stability. Brazil's nuclear program assumed a bolder interface largely as a result of difficulties to achieve nuclear know-how from international cooperation. But the timing of changes towards a more transparent nuclear intention accompanies the end of the competition with Argentina. While it is not possible to

talk about a variation in the regional distribution of power, the end of the rivalries between neighbors in other fields contributed to a change in the nuclear path Brazil followed.

South Africa's relation with its neighbors was one of peaceful coexistence until the end of the Portuguese colonies in the region. In the 1970s and 1980s, the relations between South Africa and its neighbors would be marked by hostility and animosity. The presence of Soviet troops in the region and the absence of support from the US would deepen in South Africa the sense of isolation. But there would be no Cold War power games in Southern Africa. Differently from Southern Africa, South America has always been under the US security umbrella and therefore cannot be credited as a region under dispute during the Cold War. South Asia is the extreme opposite of South America. The relations between India, Pakistan, and China were marked by distrust and animosity, often escalating to military conflicts. The Cold War was constantly present in the region, which contributed to the regional instability and the sense of insecurity. Differently than South Africa, India took several years to really respond to the initial threat posited by a nuclear China. The proliferation in this case was refrained by moral principles driving India in the first years of its nuclear program. The importance of these principles decreased with the deterioration in the regional level.

Thus, the change in the rationale framing nuclear energy happened to India and South Africa because of the deteriorating regional environment perceived as such. However, the timing of the Indian and the South African response to the regional increasing insecurity diverge. In the case of South Africa, the timing of changes in the nuclear program – proliferation and forbearance – directly accompanied the timing of changes at the regional level. In the case of India, the nuclear program changed gradually but as a response to the oscillation in the regional balance of power not to an oscillation in the international distribution of power and was for long time refrained by morality.

This is an important aspect to have in mind when building a theoretical framework. The variation in the timing of proliferation shows that changes in a country's rationale are not a direct answer to a threat. It is rather the result of objective and subjective changes affecting leaders' perceptions and then shaping behaviors.

Independent of any particular traits of each case, it is possible to say that the international distribution of power alone cannot be credited as the cause of these regional powers' change in behavior. The international system framed the set of possibilities each of these countries could followed. It also partially helped building states' leaders rationale. All and all, they developed nuclear programs under the Cold War, watching a nuclear arms race among great powers. Like international variables, domestic variables also played an important role in the decision-making process. The particular rationale of each of these countries helps explaining the timing of their proliferation – as in the case of South Africa and India. But neither the international nor the domestic levels, or an analysis that only considers the interaction between these two levels is not enough to explain the cases.

For this reason, I am making the claim that beyond international and domestic variables, one must look at the region in order to understand the nuclear behavior of regional powers. The differences in the regional context and in leaders' perceptions regarding the region in which Brazil, India, and South Africa developed their nuclear programs explain the variation in the nuclear paths they followed from the 1970s onwards. The regional environment and perceptions also explains the variation – or absence of variation – within each case.

Part III - Sewing a Thread of Wool -Theory Building

> *Theories are sparse in formulation and beautifully simple.*
> *Reality is complex and often ugly.* (Waltz 1996: 56)

Chapter 5 - Comparing nuclear behaviors

5.1. Introduction

The analysis of the individual case studies has been structured around a same body of specific questions introduced in chapter 1. In the present chapter, these questions will serve as the baseline for a comparative analysis. The aim is to identify how and under which conditions the regional context as well as the perception about changes in this level influenced in the decision-making process of Brazil, India, and South Africa. Moreover, the questions help identifying patterns from which hypotheses will be derived and ought to be tested in new cases. It is worth to outline once again the centrality of this universe of countries to the overall agenda of nuclear (non)proliferation. In today's world, the risk of proliferation comes from regional powers. In this sense, understanding past experiences might shed light on patterns helpful to asses current or future cases of (latent) nuclear proliferation.

5.2. Q&A on the nuclear behavior of Brazil, India, and South Africa

1) What are the domestic characteristics of these regional powers?

As discussed in chapter 2, South Africa was under the Apartheid during the period in which the nuclear program was active. The same regime that gave birth to the nuclear weapons program was responsible to dismantle it. The nature of the domestic regime played an important role in framing a very peculiar rationale for the Afrikaans in power. I called it a paranoid-like mind-set that was built upon a historical experience of exclusion and suppression of cultural and linguistic traits, as well as upon a loss in power and agency.

As discussed in chapter 3, Brazil was under a military dictatorship during the period in which its nuclear program was not entirely under international or regional safeguards. Like in South Africa, the same regime that built the nuclear program would be responsible for changing the nature and the rationale driving this program.

Differently from Brazil and South Africa, India was a democratic regime during its whole history as an independent state. But like in the former cases, the same FPE that build the program claiming peaceful uses would lead the program towards weaponization.

2) What is the nature of the relations between regional power and its neighbors on the one hand, and regional power and international main actors on the other hand? Is there animosity, competition or distrust within the region? Does any great power have any interest in this region?

In the case of South Africa, at the regional level, the relation between South Africa and its neighbors oscillated from peaceful coexistence to conflict. The reason for the change was the decolonization process of former Portuguese territories in the region and the civil wars triggered by the abrupt power vacuum that was left. At the international level, South Africa's ideology placed the country under the Western bloc. South African leaders went further enough to define the country as the sole European land in the continent surrounded by African countries. As part of South Africa's rationale, the country should defend itself and the region from any attempts of a communist invasion.

At the international level, initially, the relation between South Africa and the US (but also with other Western countries) was marked by cooperation, and cordiality. Along the 1970s and 1980s, this relationship would gradually change and South Africa would find itself isolated in the region. The Apartheid and, in occasions, South Africa's nuclear program, would be the reasons for international sanctions and withdrawal of international support to the country.

While the Cold War would be present in the region when Soviets and Cubans troops backed up the liberation movements in the Southern Africa, it is not possible to say that Southern Africa was a region under dispute – to use the concepts debated in Part I. The power games between the two superpowers would not be played in Southern Africa. Actually, the absence of the US support to South Africa in the region would deepen the sense of isolation and push South Africa to militarize its nuclear program. In the late 1980s, the regional tensions and conflicts would progressively be replaced by stability, which would make South Africa's nuclear program meaningless.

In the case of Brazil, at the regional level, the relation between Brazil and Argentina has been historically marked by rivalry and competition for regional leadership. In the military field, this competition has never evolved into an arms race, even when both countries were military dictatorships and were developing unsafeguarded nuclear programs. At the international level, South America has always been under the US umbrella and therefore did not experienced Cold War games or power disputes within the region. In this vein, threat perceptions did not played a role in the development of Brazil's nuclear program. The ambitions were related to prestige and led the country to, at best, flirt with explosives.

In the case of India, at the regional level, the relations with China and Pakistan have been marked by distrust, animosity, and have often been resolved in the battlefield. Unsettled territories and boarder disputes framed the relationship within South Asia. Differently than Southern Africa – where South Africa wanted the interference of Western countries, mainly the US – in South Asia the non-requested presence of the superpowers and their Cold War games largely contributed for the enduring regional instability. The support, absence of support, or unclear support provided by either superpowers to India or Pakistan promoted an artificial balance of power, which fueled the sense of insecurity and uncertainty in the region.

3) What kind of region is this?

Southern Africa can be characterized as a region of moderate level of instability that evolved into a region with low level of instability. The instability was provoked by the decolonization process initiated after the *coup d'état* in Portugal and an increased presence of the Cold War in the region, supporting liberation groups in the former colonies. The instability increased in South Africa a sense of insecurity and led the country to perceive itself in a security dilemma. The resolution of these conflicts and consequent removal from Soviet and Cuban troops from the region led to an increase in stability.

South Asia was and still is a region of high instability rooted in historical rivalries. The enduring instability increased in India the sense of vulnerability but did not trigger an immediate nuclear response to the Chinese threat. Different from Southern Africa, South Asia remains a zone of instability largely because of the presence of nuclear weapons that in turn had been built to secure these countries from their nuclear neighbors.

South America can be characterized as a region of low instability, though Paul (2000) called it a region of moderate instability. The narrative presented in this dissertation evidences that the relations between Brazil and Argentina was marked by historical rivalry that during the 1970s was translated into a competition also, but not exclusively, in the nuclear field. This competition, however, did not bring instability to the region and these countries did not perceive their relations as a security dilemma.

4) What was the rationale framing the nuclear enterprises of these regional powers at first?

In the first years of its nuclear program, South Africa's nuclear program would be driven by interests on the peaceful uses of nuclear energy. In this context, it profited from the Atoms for Peace program, receiving not only nuclear technology from Western countries but also

having the opportunity to train its researchers abroad. Along the decades, nuclear technology would acquire other meanings to South Africa. So, if in the first years of the nuclear program, the rationale in which nuclear technology would be embedded was that of modernity, with the years this rationale would leave space for an understanding that nuclear technology was ultimately an instrument for a country's defense; to increase its sense of security.

In the case of Brazil, like it was for South Africa, nuclear technology would be a synonym for modernity. Brazil also profited from the Atoms for Peace program in the first years of its nuclear development. Brazil's nuclear program would face difficulties given international restrictions to the sale of enriched fuel and to negotiations involving nuclear technology transference. Different than South Africa, it is not possible to say that Brazil's rationale towards nuclear energy and technology has changed along the years; it perhaps became bolder given its leaders' ambitions to indigenously master nuclear technology. But the understanding was the same, that is, modernization, prestige, and autonomy.

In India's first years, the rationale driving the nuclear program was the same as in Brazil and South Africa. Nuclear energy and nuclear technology were passports to modernity. They could boost the country's domestic development while internationally increasing the country's prestige. India also benefited from the Atoms for Peace and from exchanges with Western countries. Strongly than Brazil and South Africa, India would internationally advocate nuclear non-proliferation, which for India should start with a strong commitment from the great powers with disarmament. India's nuclear rationale was then framed by a moral commitment with non-proliferation and a strong interest in prestige and national development. This rationale would change along the years and progressively yield to nuclear weapons.

5) Did this rationale change over time? And if so, what triggered the changes?

As already mentioned, South African leaders adapted the initial rationale driving the nuclear program to regional circumstances. The change happened in the 1970s and accompanied the deterioration of the regional environment. The South African overall rationale, named here paranoid-like mind-set, largely helped increasing in South Africa the sense of insecurity. Thus, when the decolonization process in Southern Africa was followed by civil wars backed up by Soviet and Cuban troops, South African statesmen identified a potential communist onslaught been orchestrated as if the country was again about to be invaded and submitted to an enemy. South Africa, progressively isolated, would use its latent nuclear capability to build a small arsenal. This arsenal, however, should be used to increase South Africa's political leverage with its former Western allies and so to deter the enemy. The absence of a clear nuclear strategy and means to deploy the bombs corroborate the political, not military, meaning of nuclear bombs to South Africa. South Africa's rationale would again change in the mid-to-late 1980s when the nuclear program would first be stopped and later gradually dismantled. Interestingly, this change accompanied the increase in regional stability, or at least on South Africa's sense of security.

In the case of Brazil, there was no change in the rationale driving the nuclear program. Perhaps boldness is the best way to define the slight variation in the Brazilian nuclear program along the 1970s. When Brazilian statesmen understood that the path towards autonomy in the nuclear field would not be facilitated by cooperation with other countries, the decision for an autonomous program appeared as a logical one. The competition with Argentina in this field can also be credited as an extra incentive to Brazil, but Brazil's nuclear program was not a response to an increased threat perception triggered by Argentina or any external threat to the region.

In the case of India, the initial understanding that nuclear energy should help boosting the country's economic development and modernization would progressively give space to a more pragmatic and militarized approach towards nuclear energy. What is peculiar in the case of India's change in perception is the timing. Differently from South Africa that immediately responded to the deterioration in the regional environment, in the case of India the process was rather gradual. By assessing this case, it is possible to say that the moral aspects of the Indian rationale slowed down the change in the Indian approach towards nuclear energy, but it was not enough to deter India from weaponizing. When it became clear that no other means could assure the country's security, Indian leaders assumed that weaponizing the country was the path to be followed.

6) Was there any significant variation in the regional distribution of power during the period of change in the nuclear rationale? If so, did this variation at the regional level follow a variation in the international distribution of power?

As it has been mentioned several times, South Africa's interests in nuclear energy dates back to the 1950s and had for long time profited from cooperation with Western countries. These countries were also perceived by South Africa as allies. In the 1970s, the regional environment in Southern Africa changed triggering in South Africa a sense of insecurity. The regional distribution of power did not change, but the presence of Soviet and Cuban troops in the region was perceived by South African leaders as shifting the balance of power. The situation was aggravated by a progressive feeling of isolation that South Africa would feel after its Western allies removed support to South Africa's cause. These variations at the regional level, however, did not result from structural changes at the international level; everything happened under the Cold War period. The variation at the regional level was rather fueled by one isolated external change: the *coup d'état* in Portugal triggering an abrupt decolonization process in Southern Africa.

In the case of South America, no changes operated in the regional distribution of power; neither perceived nor real. Brazil's nuclear program changed towards a more ambitious and autonomous profile due to the difficulties Brazil faced to acquire nuclear know-how from international cooperation. The end of the competition with Argentina in other areas did contribute to put an end in the nuclear competition between Brazil and Argentina.

In South Asia, the distribution of power was in constant change. The first change occurred in 1964 when China conducted its first nuclear test. Along the following decades the presence of the US and the USSR in the region contributed to a constant oscillation in the regional balance of power. This oscillation, in turn, contributed to an increased sense of uncertainty and instability among the regional rivals, especially India and Pakistan. The enduring instability in South Asia did not result from a change in the international distribution of power and persisted in spite of the end of the Cold War. In this sense, the Cold War itself deepened historical problems, but was not the cause of it. Ultimately, the end of the Cold War did not bring a solution to the region either.

7) Chronologically, did the changes in nuclear choices follow which event: the changes in the regional distribution of power or the changes in the international distribution of power?

As it has been exposed with the other answers, and also in the empirical chapters, South Africa is the only country that really experienced a huge variation in its nuclear choices. The variation is a direct response to the increase and decrease in the regional instability. However, South Africa's path towards weaponization would not have been possible, if the country did not have mastered the necessary technologies by the time the regional security environment deteriorated. Also, as chapter 2 shows, the decision to forgo nuclear weapons would not have been made should the regional instability persisted. Brazil and India represent the two extremes of the spectrum of nuclear proliferation: Brazil did not proliferate at any moment and India followed a gradual, but constant, path towards weaponization that, in occasion

seemed to neglect regional threats. In both cases, the path followed can be connected to the regional environment. India's path was conditioned by perceptions.

Even considering the rivalry between Brazil and Argentina, it is not possible to characterize South America as a region under a security dilemma. The regional stability in South America allowed Brazil (and also Argentina) to flirt with nuclear explosives and all the dual uses of nuclear energy without having any incentives to proliferate. Differently, in the case of India the regional environment did not offer any possibilities for India to follow other path than that of proliferation. In spite of India's moral rationale, which explains the timing of India's proliferation, the country's leaders had to gradually adapt its idealistic principals to a more pragmatic and self-help approach to reality as to survive. Because South Asia remained a region of enduring instability, in spite the end of the Cold War, India has no incentives to reverse its proliferation path.

8) What kind of "causal chain" can be established between regional, international and domestic changes in the case of regional powers?

Independent Variable = International incentives and constraints -> **1° Intervening Variable** = regional incentives and constraints -> **2° Intervening Variable** = state action -> **Dependent Variable** = foreign policy. **Causal Mechanism** (affected by the presence or absence of the intervening variables) = leaders' perception about changes at the regional level

The variation in perceptions during the periods under analysis shows that changes in the international distribution of power (from bipolarity to multipolarity) were not the decisive factors driving the changes in the foreign policy of Brazil, India, and South Africa. The bipolarity ends *after* the perceptions of leaders have already changed. The regional context, however, changed before the perceptions, but have only affected the decision making process once the perceptions about these changes have happened.

In the case of South Africa, the region will be perceived as varying from pacific coexistence to insecurity, and then to a cooperation-like environment. In the case of India, the regional environment will continuously deteriorate. Finally, in the case of Brazil the regional environment will slightly improve once Brazil and Argentina overcome their rivalries and deepen cooperation.

The Indian case, when analyzed together with the cases of Brazil and South Africa suggests that the region matters more to the decision making process of regional powers than the international one and that change in perceptions is the crucial aspect triggering a change in the outcomes. If taken isolated, the cases of Brazil and South Africa do not make clear the extent to which perception really are the causal mechanism triggering changes in regional powers decision-making process. In these two cases, the international system changes after the domestic decisions in the nuclear field were made, but they appear intimately related to the variations (or absence of significant variation) in the regional environment. Alone, the analysis of Brazil and South Africa suggests that changes in the region and the perceptions about these changes matter, but it is the Indian case that shows the nature of this relation.

By looking at this case, one can notice that leaders must acknowledge the regional change to promote a change in states' behavior; this is what I call a change in perceptions triggering a change in the decision-making process. The Indian case also strengthens the argument that if a given regional context endures, regional powers' behavior are less likely to change even when the international system changes. The Indian decision to further a nuclear weaponized program happens while the international distribution of power was still bipolar. However, the system changes to a multipolar architecture in 1991 while India was still developing its nuclear weapons program. As the country does not reverse its path due to changes in the international distribution of power it can be suggested that alone this level does not explain

the decision making process of regional power. Hence, first and foremost, regional powers adapt their foreign policy to the changes operating at the regional level. If the distribution of power at this level does not change, like in the case of South America and South Asia, the foreign policy is likely to remain the same instead of varying due to changes in the international distribution of power.

Chapter 6 Neoclassical model for the study of regional powers' nuclear behavior

6.1.Introduction

As the analysis of the empirical cases demonstrated (see chapters 2-4) and the comparison of the cases summarized (see chapter 5), the international system sets the broader framework within which decisions take place based on leaders' perceptions. While the system is the same, it does not set the same framework to all countries. Waltz was already outlining that systemic incentives and constraints affect states differently, depending on their power position. But beyond international power position, the variation in the set of incentives and constraints posit by the system to states also largely depends on their regional position and finally on domestic aspects that affect leaders' perception; for instance a specific rationale, historical experiences, or political culture. Lastly, in the case of regional powers, one must assume that the information emanating from the region and that emanating from the international system most likely contradict each other. This is so because regional powers are the great powers of their regions – and in this sense in the region their leaders could marvel ambitions similar to those of great powers – while being only intermediate states internationally – in this sense their leaders need to balance their privileged regional power position to the limitations of their international power position to define what ambitions are really possible to be fulfilled, especially at the international level. Finally, the double trait of regional powers' power position raises a question to their security. Not always these states can alone account for their own defense, especially when regional instabilities are also provoked by the presence of external powers in the region. Facing such deadlock regional powers with latent nuclear capabilities are more likely to proliferate.

In order to comprehend regional powers' nuclear choices in specific junctures, one must look at international, regional and domestic variables in order to understand *how* they interact and

which are the causal mechanisms triggering the interaction. International and regional environments define the immediate set of constraints and opportunities a regional power has to face. At the domestic level, the external drivers are captured through perceptions, analyzed in relation to previous conception statesmen have about the world and about the country in the world, and finally translated into concrete decisions. While the international and regional constraints can be accessed on the basis of material distribution of power and state's power, the analysis of the domestic level can be much trickier due to the number of new variables it can unleash. The question is then how to access the domestic level without getting lost in the complexity of this realm? By keeping in the horizon the assumption that the structure ultimately shapes states' behavior, one can explore domestic variables and then connect these findings to the bigger picture, which is framed by the regional and the international constraints.

6.2. Building a framework

As it was discussed in Part I of this dissertation, neoclassical realism draws on the neorealist assumptions about the ultimate influence of the international system over state's possible actions. Nevertheless, its proponents refuse a direct causal relation between international pressures and states' foreign policy, arguing that it is necessary to analyze the domestic level in order to understand how states respond to international opportunities and constraints in a given situation (Brawley 2009: 97). Neoclassical realists do so by focusing the analysis on statesmen decisions that, they argue, can only be apprehended if light is shed on a set of new (intervening) variables. In this sense, neoclassical realists return to the classical realist tradition by bringing the state and the analysis of statesmen back into the debate (Reichwein 2013: 43; Taliaferro 2006: 472). Foreign policy is, therefore, the results of (1) the way leaders perceive the international system and (2) how this perception is translated into state's action.

Figure 2 systematize the neoclassical view of the relationship between international level (independent variable) and foreign policy (dependent variable).
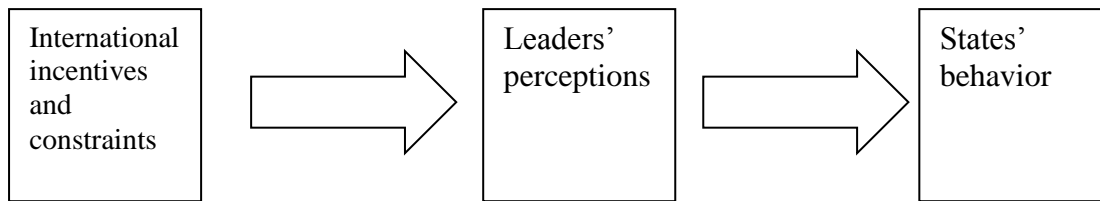

Figure 2

Neoclassical realism offers a framework to explain short and medium term states strategy' formation, as well as variation in the choices made, because it includes a throughout examination of the domestic level. The approach makes international politics more complex by refusing a direct and exclusive causality from the structure to the states, and by implicitly suggesting that the foreign policy of all states matter. This is because the way each state perceives the system, and its own position in the system is internationally projected via foreign policy and, therefore, affects the way the international system functions. Simultaneously, the system – partially a construct of states perceptions and actions (Rose 1998: 153) – affects states, their perceptions about the world, and, furthermore, will be again imprinted in their foreign policy. Thus, the research agenda of foreign policy, from a neoclassical realist perspective, paves the way for the study of the strategies of states other than great powers. Overall, the behavior of all states to some extent influences and shapes the international system that in turn influences, and shapes states' perceptions and behavior.

Yet, the literature is still very much focused on the study of great powers' foreign policy. Because of that, the main interaction they observed is still that between international and domestic levels. There is a silence, so to speak, about how the region is perceived, the extent

to which, and under what circumstances it influences leaders' decisions. According to Lobell Ripsman, and Taliaferro (2009), *a priori* neoclassical realism does not exclude other categories of countries from its analyses. These authors observe that in the case of regional or small powers, not only the international pressures should be taken into account, but the regional ones as well. Also, they observe that the regional distribution of power must be considered. Yet, little has been written about it so far[132]. In order to advance the neoclassical realist research agenda so that it can fully analyze regional powers' behavior, I propose the following approach from which new hypotheses are derived. Figure 3 illustrates the approach that will be presented in the next sub-section.

Figure 3

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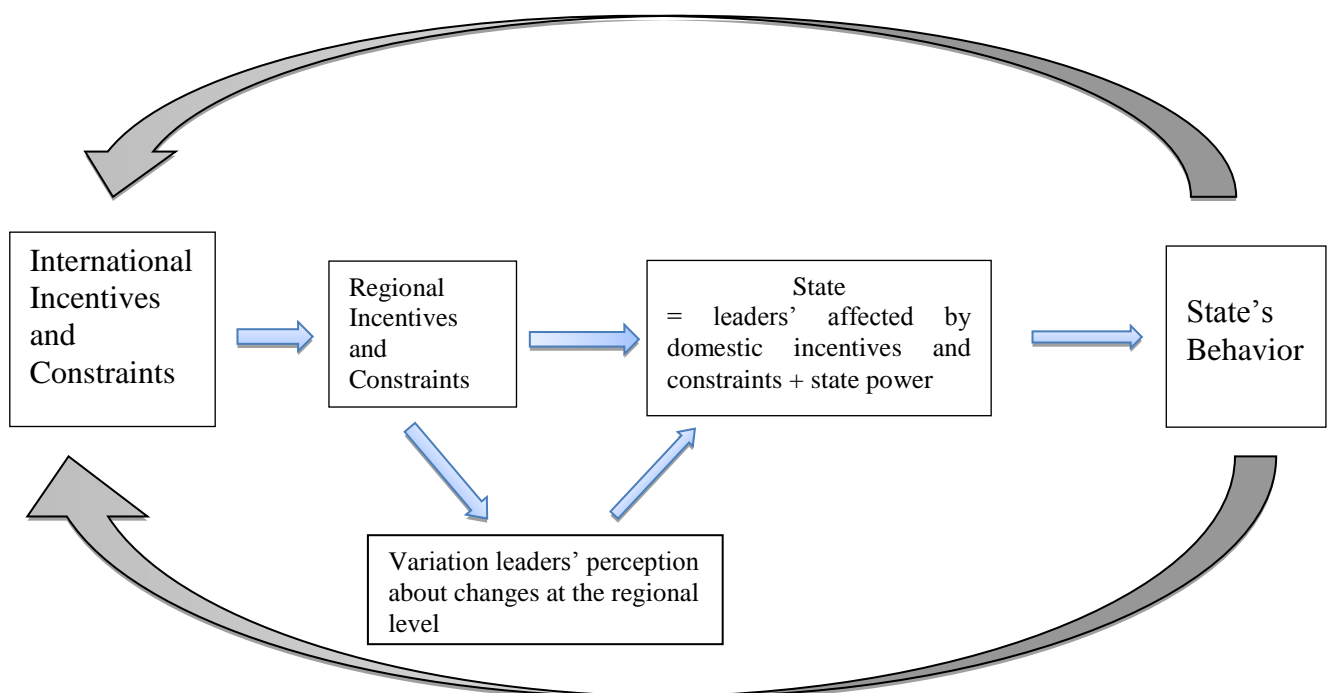
[132] For a debate closer to this topic see: Sterling-Folker (2009) and Williams; Lobell.; Jesse (2012).

6. 3. Phased neoclassical framework to foreign policy

The approach starts from the general question asked by neoclassical realists: what are the outcomes of international incentives and constraints on states? The answer to this question is: a specific behavior adopted by a state (A) in a given moment. This answer invites a follow up question already addressing variation: why state A and state B did not adopt the same behavior when facing the same international incentives and constraints?

The follow up question focuses on the process that led the independent variable to generate the dependent variable; that is on the set of intervening variables and the causal mechanisms setting the process into motion. Thus, the answer to the follow-up question lies within the domestic and regional levels. To answer the follow-up question without losing track of the analysis, I am proposing a phased analytical framework.

Before introducing the three phases, it is worth to notice that these steps were thought to be performed in the order of appearance: from one to three, and should respect a historical chronology. This does not mean ignoring the previous information the researcher might already hold about each of the phases. In this case, it is just a matter of placing them within its respective phase, avoid letting these information contaminate the analysis.

Phase 1 – Analyzing the domestic level.

The domestic level is only analytically the starting point of the research, for it is where decisions are formed and strategies adopted. A state itself has no prior meaning or identity. It is the result of the numerous interactions that happen at the domestic level across time. Thus, one must know the internal dynamics of a state to make sense of its behavior. At the domestic level, a specific set of intervening variables must be identified. And because neoclassical realism is an analysis of mediation process, one must take leaders into account, but also the

environment in which leaders decide. As Jervis (2013: 157) rightly acknowledges, decisions imply "an interaction between individuating and circumstantial factors". Given the complexity that characterizes the domestic level, it is of paramount importance to work with a fixed set of intervening variables. Along the analysis, other intervening variables might appear but they should not be included *ad hoc* to an investigation in progress, unless it becomes clear that they are key elements to the research.

In the neoclassical literature, perception (together with state power) is the most mentioned intervening variable. But methodologically one cannot access perception, so the task must be to identify a second class of intervening variables that affect perception and consequently the decision-making process. In the literature, these intervening variables usually are: belief system, political culture, ideologies, and history. In my approach, I argue that this second class of intervening variables form a rationale that set the frame for leaders' decision; they affect perceptions and largely shape decisions. In domestic politics not only one but many different rationales can coexist and struggle to become the hegemonic rationale ultimately framing leaders' decisions[133]. The relation between the hegemonic rationale, perceptions and decision is not automatic. Here is where Phase 2 begins.

Phase 2 – Connecting domestic and international levels

After the domestic level has been explored, and key actors, environments and rationale have been identified, the state is not anymore an empty objectified entity that mimics optimal rational human behaviors. The state is now a complex instrument connecting two completely different realms: the domestic and the international one. The state itself becomes a new intervening variable between domestic and international politics (see Lobell, Ripsman, and

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[133] For a comprehensive debate on the domestic struggle among parochial groups of interests and foreign policy, see Allison's analysis of the Cuban Missile Crises, and Putnam's two-level-game model. Sagan (1996/97 and 2013) also furthers an interesting debate focusing specifically on nuclear dynamics.

Taliaferro 2009, introduction) and in this form can be analyzed. Thus, the state – or the FPE – is a combination of decision-makers whose perceptions are informed by a hegemonic rationale. As an intervening variable between domestic and international realms, the state has to balance the domestic hegemonic rationale and the international incentives and constraints as to formulate foreign policies. State's decisions result from a constant tug-of-war between the domestic hegemonic rationale on the one side, and the international incentives and constraints on the other. The rope in this game is the perception of states' leaders that has to accommodate or balance the two opposite sides. This image illustrates an important aspect: states' rarely can contemplate both sides, and oft need to privilege one of them; the one that seems more appealing or undefeatable. Ultimately, the parameter to measure which side is more appealing or undefeatable is states' ultimate goal: survivor. But other aspects will also play a crucial role: in which relative power position this state is located, and which place does the international politics occupies in the hegemonic rationale framing perceptions. This means to carefully analyze state's ambitions: Is this state a great power or does it aspires to become one? Or does a second-tier position in international politics suffice the ambitions of this state?

Phase 1 and Phase 2 systematize the neoclassical realist approach long used by the proponents of this tradition. But how one can analyze regional powers with this approach? When neoclassical realists mention that in the case of regional powers, regional variables must be added to the theoretical building, they do not make clear how this can be done and what place should be given to the new variables. Phase 3 answers these questions.

6.3.3 Phase 3 – Bringing the region in

After assessing the state and identifying which international incentives and constraints are affecting the state, it is time to include the region in the analysis of regional powers decision-

making process. In fact, roughly speaking, Phase 3 could be used to analyze any state that is not a great power. Except for the latter, virtually all other types of states; middle powers, regional powers, and small states need to consider the region in their strategic calculation in some point. But how the region can be included? First, one should follow a similar procedure of that used to assess the domestic level, and map what kind of region and what kind of regional power is being analyzed. As it was discussed in chapter 1, regions are peculiar systems in which anarchy and hierarchy coexist. Simultaneously, regional powers hold a double trait for they are stronger in the region than they are internationally. These are general traits of regional powers and region. But they are not enough. One must seek to identify whether and the degree to which an external power is present in the region; the level of regional institutionalization and interdependence within the region; the regional distribution of power; and the level of stability in the region.

Additionally, one must look back to the domestic level as to identify whether the region is part of the hegemonic rationale framing regional powers leaders' perceptions. The fact that a regional power is stronger at the regional level than it is at the international level is not enough to assume that a specific regional power's primary goal is in the region. Like in Phase 2 – when the model asks what are the international ambitions of a state –, in Phase 3 one must ponder what are the regional ambitions of a regional power. The higher the weight of the region to regional powers ambitions the more a regional power's behavior will be sensitive to any variations occurring at the regional level. Also, the more balanced the regional distribution of power, the more sensitive a regional power will be to any changes in the distribution of power.

The phased model helps to analyze with more accuracy states foreign policy, but can also be a starting point to develop testable hypotheses. The latter is the final task of this chapter.

Based on the comparison conducted in chapter 5 it was possible to conclude that the region interfere in the decision-making process of regional powers in two ways. First, in the form of perceptions, the region appears as the causal mechanism triggering changes in the decision-making process. The region is part of states' rationale. Even when states do not have a clear regional ambition – like in the case of India – the vulnerability of a regional powers increases if the regional distribution of power changes. The empirical cases showed that once leaders' of regional powers perceive a variation in the regional distribution of power as a threat, they change decisions taken, changing state's behavior. Second, the region – in the form of the regional distribution of power - is an intervening variable between the international system and the state, and as such affects leaders' perceptions. With this analysis in mind some hypotheses can be advanced.

6.4. Advancing hypotheses

The general hypotheses sustained in the dissertation is that whenever there is a change in leaders' perception, a change in states' behavior is likely to occur. As neoclassical realists stress, there is no direct transmission belt between distribution of power and states' behavior. States rather adapt their behavior according to their perceptions of changes in the distribution of power. In the case of regional powers what triggers any change is primarily a change in the perceptions about the regional distribution of power.

Beyond this optimal hypothesis other aspects intervene in this equation in the case of regional powers and nuclear proliferation. Thus, if leaders of regional powers perceive the international distribution of power as changing but do not perceive the same pattern occurring in the region, states' behaviors are likely to remain unaltered.

States that have mastered nuclear technology but do not face a real or perceived threat in the region are less likely to proliferate. Conversely, the closer the threat the higher the possibilities for regional powers to proliferate.

The more belligerent is a country' rationale, the higher is the likelihood that any variations in the regional distribution of power will be perceived as an imminent threat; countries are likely to proliferate. Conversely, the more morally driven is a country's rationale, the lower is the likelihood that this country will proliferate; even when the regional balance of power has changed. A country's rationale can blur perceptions.

Finally, the higher the weight of the region to regional powers' ambitions, the more a regional power's behavior will be sensitive to any variations occurring at the regional level. Also, the more balanced the regional distribution of power, the more sensitive a regional power will be to any changes in the regional distribution of power.

Conclusion of the Dissertation

This dissertation started from the identified insufficiency of the Waltzian neorealist assumptions that the international distribution of power shape states behavior, leaving them with two options: to balance or to bandwagon. While this assertive cannot be claimed as wrong (one could also contend whether an assumption could be in any case wrong) it is by far insufficient to explain the behavior of states, especially when it involves variation. In the three empirical instances presented in this dissertation, there was a significant variation among their nuclear choices, on the one hand, and on the other hand, a temporal disconnection between the variation in their behavior and the variation in the international distribution of power – the solely independent variable assigned by many realists, including Waltz.

The first question raised in this dissertation was what, if not the international distribution of power alone, shaped these countries behaviors. While I was writing this project, my answer was: the region. Phrased as a hypothesis to be added to the theory, I pondered that whenever there is a variation on the regional distribution of power, regional powers would be likely to vary their behavior. Without denying the central role of the regional context to assess the behavior of regional powers, this hypothesis was also not enough. In the way it was first formulated, it would have been a simple change of level of analysis: from the international to the regional preserving the same black and white neorealist rationale. In this sense, the region would have been treated as a function of the international system, mirroring whatever logic that applies to the international level.

After assessing the cases, it became clear that regions are not merely functions of the international system but much more complex systems that combine anarchy with more or less intermittent periods of hierarchy. The latter is represented by the presence of one or more

external powers in the regional affairs, or by institutions. Also, the particular trait of regional power: great in the region but intermediate in international politics compromise any attempt to apply a simply top-down deductive logic. Regional powers do not and cannot pursue power in the same ways great powers would do because they lack the capabilities to do so. However, as the great powers of their regions, their self-perception is that of great international powers that nevertheless lack the material conditions to play this role. Consequently, their strategies of power-maximization combined assertiveness and fragility, seeking therefore prestige, and influence but also ways to increase state power. Nuclear technology resumes all these aspects. Its symbolic and material aggregated value makes it appealing for regional powers.

The literature on nuclear dynamics evidences the complex amalgam of variables that need to be contemplated in order to understand states' choices to proliferate or not. But they mainly vary between international and domestic variables. The neorealist framework cannot account for the complexity of the domestic level, but the neoclassical realist framework can and does. What lacks to the neoclassical realist approach, as well as to the neorealism and to the literature on nuclear dynamics is a proper account of the region and of regional powers and independent categories: the former as a system that combines anarchy and hierarchy, and the latter as countries that are at the same time great regional and intermediate international powers.

It is in this intersection that the contributions of this dissertation can be situated. Without denying the ultimate role of the international distribution of power in framing states' behavior, this dissertation started from two assumptions: the region matters and the power position of regional powers preclude their decision-makers from reproducing the same logic of power maximization followed by great international powers. This dissertation used the

lessons learned in the analysis of Brazil, India, and South Africa to refine the neoclassical realist framework of foreign policy analysis as to include the particular traits of regions and regional powers. It took into account the neoclassical realist argument that more than the international distribution of power in itself, what counts for the analysis of foreign policy is the perception of decision-makers regarding the distribution of power on the one hand, and their self-perception within the distribution of power. This dissertation used the empirical cases to assess how and under which regional conditions, states' behaviors change. It concludes that alone a variation in the regional distribution of power does not change regional powers' behavior. On the contrary, when occurs a change in the way leaders perceive the regional distribution of power then there is a change in behavior. This makes the regional distribution of power a new intervening variable and perception about changes the causal mechanism triggering variation in states' behavior.

The dissertation was divided in three parts related to research design, concepts, and methods; case studies; and theory development respectively. Part I presented the realist theory and its variants to foreign policy analysis, arguing about the richness of neoclassical realism. The latter, however, is still very much focused on the analysis of great power, leaving an open door for the study of other countries. Seeking to fill this gap in, Part I of this dissertation also introduced the debate on regional powers, focusing on authors and analysis that did not question the realist ontological core. This was a methodological choice to avoid a degenerative theoretical construction. After presenting the realist framework and defining the concept of regional powers, Part I proceeds with a brief overview on the most relevant realist contribution for the study of regions and regional powers.

The overview outlined a recurrent problem of realist: its silence with regards to the analysis of the domestic level. This silence is only partially broken by neoclassical realism that

nevertheless failed in deepening the analysis of regional powers. It is at this intersection that Part II of this dissertation starts. Part II seeks to expose the three regional powers, which nuclear behavior cannot be explained by a simple top-down approach (as it would be the case of traditional neorealist theories) or by looking at the domestic level without thinking carefully about the regional context (as it would be the case of the existing neoclassical realist theories). In this vein, Part II addressed the case of South Africa, Brazil, and India seeking to identify the causal mechanism triggering their different nuclear behaviors. The overall question driving the cases studies was: why their nuclear behaviors vary? The question addressed variation within-case and cross case. While a multitude of variables form the domestic, regional, and international levels had to be addressed in order to make sense of the cases, the narratives build upon secondary and primary sources placed the causal mechanisms for the variation in the nuclear behaviors at the regional level. It was the variation in the perception of the regional environment that triggered the change in the decisions taken leading to an ultimate change in these countries' nuclear behavior. Together, Brazil, India, and South Africa oscillate between nuclear non-proliferation, proliferation and nuclear forbearance, respectively, composing a rich spectrum from which hypotheses could be derived. This task, realized in Part III made possible the development of my framework. Part III was dedicated to the development of a neoclassical realist framework for the analysis of the nuclear behavior of regional powers. In this part of the thesis, part of the debate presented in Part I were brought back and refined based on the findings of the historical analysis.

This dissertation did not directly debate the role played by external powers in the regions for three reasons: 1) the literature on deterrence already offers important empirical contributions in this regards, 2) the realist literature that take the region into account deals primarily with

the presence of external powers in the regions, and 3) the three cases analyzed in this dissertation are instances of absent extended deterrence or of failed extended deterrence.

The test for the arguments developed here should include instances of successful extended deterrence as to refine even more the model and answer the question *how leaders of regional powers frame their foreign policy under the presence of other powers in the region?*.

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New cases to further the analysis

The argument that can be advanced based on the analysis of Brazil, India, and South Africa is that the study of the nuclear behavior of regional powers has to take the region into account not only as an intervening variable, but also as a causal mechanism. In the case of regional powers, the assumption that what ultimately shapes states' foreign policy are international pressures remains incomplete, as it does not consider the intricate role of international, regional, and domestic levels in strategy formation. The causal mechanism that explains the behavior of regional powers involves not only the perception of stimuli emanating from the international but also from the regional system that are interpreted and translated into foreign policies.

The analysis here presented has been based on three instances of regional powers in which the outcomes of the dependent variable did not followed the changes in the international distribution of power in a temporal causal chain. The cases show that the end of the Cold War was not the decisive causal explanation for the changes in the nuclear strategies, rather the variation the occurred or not at the regional level. As an outcome of the research, it is possible to say that the nuclear choices of Brazil, India, and South Africa were much more affected by how decision makers perceived the regional distribution of power, than by

changes in their international relative power. Putting it differently, the region had a central role in the decision-making process of these regional powers. While these cases do have a relevant role for the debate of variation in the nuclear strategies of regional powers, they are far from offering conclusive explanations.

In this sense, the current analysis presents itself as a first step of a new research agenda. Following Georg and Bennett, the findings presented in this dissertation should now be tested against new cases. This should strength the explanatory power of the variables and mechanisms identified here and further the development of a mid-range theory for the study of regional powers' nuclear choices. This implies analyzing other regional powers that during the same period also faced the question of proliferating, building latency or foregoing their nuclear enterprises. Cases such Argentina, Australia, Iran, Israel, Pakistan, South Korea, and Taiwan, for instance could confirm or challenge the current analysis, pushing the research agenda on nuclear strategies of regional powers forward.

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