

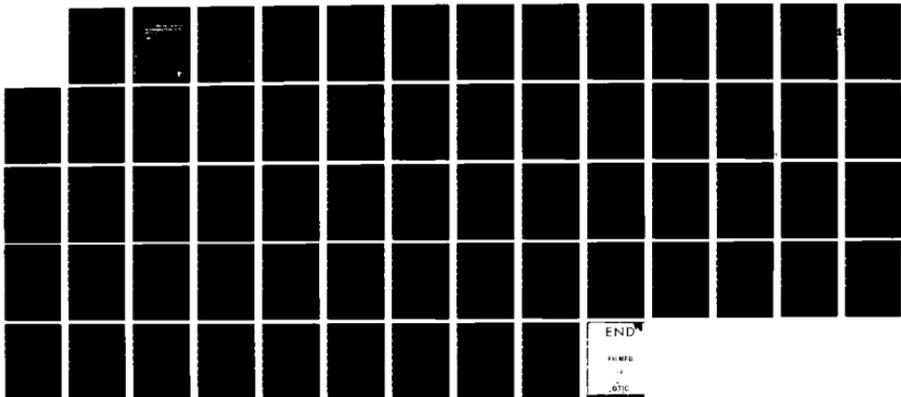
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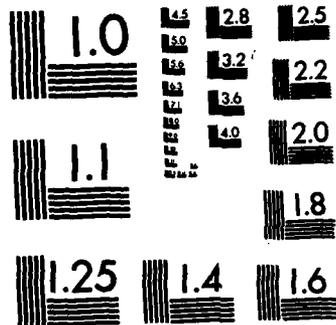


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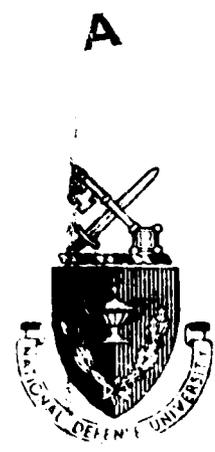
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THE NAVY OF BRAZIL:
An Emerging Power at Sea

by

CAPTAIN DOMINGOS P. C. BRANCO FERREIRA
International Research Fellow

National Security Affairs Issue Paper Series 83-1

1983

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The National Security Affairs Issue Papers

This paper is one of a series of brief research studies on national security issues. The series supplements the National Security Affairs Monographs, which are lengthier studies of broader scope. Papers in both series generally are written by the research fellows, faculty, students, and associates of the National Defense University and its component institutions, the National War College, the Industrial College of the Armed Forces, and the Armed Forces Staff College.

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DEDICATION

To my wife Marlene, whose love, patience, and understanding made this paper possible.

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FOREWORD

I am pleased to introduce this National Security Affairs Issue Paper, which represents the first National Defense University (NDU) publication by an International Research Fellow.

Captain Domingos Ferreira, Brazilian Navy, was the first Fellow to be affiliated with NDU under this new program. Publication of his work speaks well of Captain Ferreira's dedication and industry, since he was a full-time faculty member of the Inter-American Defense College while he helped us launch the experiment of including foreign military officers as NDU Fellows. The success of his affiliation helped convince us of the potential of this program. Several allied nations are now assigning officers to NDU full-time to research security issues of mutual concern to our countries.

→ Captain Ferreira provides a perspective not available from one of our United States Fellows. Many observers foresee an increasingly influential place for Brazil in international affairs. Is the Brazilian Navy prepared to take on an expanded international role? Captain Ferreira examines the history of his country's navy, analyzes current problems, and suggests directions for future development. He identifies the basic issues facing the Brazilian Navy: overdependence on foreign equipment, lack of funds, and excessive concentration of forces in Rio de Janeiro. As possible solutions, he proposes building more ships and naval equipment in Brazil, modernizing and expanding the fleet, and redeploying forces. Captain Ferreira's perceptions of his country's navy are of special interest to US naval strategists and to the national security planning community concerned with issues in Latin America and the South Atlantic.



JOHN S. PUSTAY
Lieutenant General, USAF
President, National Defense
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ABOUT THE AUTHOR

Captain Domingos Pacifico Castello Branco Ferreira, Brazilian Navy, wrote this paper while he was an International Research Fellow at the National Defense University, Washington, DC. Since graduating from the Brazilian Naval Academy in 1955, Captain Ferreira has seen extensive sea duty. Early in his career, he served on destroyer escorts and submarines, and later rose to the position of commanding officer of the submarine Humaita and the corvette Solimoes.

Captain Ferreira's career has combined sea duty with wide experience in the academic arena in both his native country and the United States. He attended the Brazilian and US Naval War Colleges and the Brazilian National War College; he taught at the Brazilian Submarine School, the Brazilian Naval War College, and the Inter-American Defense College.

Captain Ferreira is a member of the Brazilian Institute of Military Geography and History. He has written numerous articles on the Navy of Brazil, including the monograph, Perspectives of the Brazilian Navy in the 1980-1990 Decade. This National Defense Issue Paper represents the first study Captain Ferreira has authored in the English language.

ACKNOWLEDGEMENTS

First I want to express my gratitude to Colonel Franklin D. Margiotta, USAF, Director of Research, NDU, whose kindness and attentions during the year I spent as an International Fellow made possible a friendly atmosphere conducive to intellectual activity.

I am indebted also to Colonel Frederick T. Kiley, USAF, Associate Director of Research, with whom I have enjoyed a rewarding and collaborative relationship. His constructive criticisms of this paper are most appreciated. Fred became a real friend, and his patience and understanding reduced the difficulties I faced in accomplishing this task.

Valuable assistance was also rendered by Dr. Gilbert Williams, who spent many hours helping me overcome the difficulties I encountered with the English language and contributing to the overall quality of the text. I am most grateful for his support.

D.P.C.B.F.

I. INTRODUCTION

The title of an article published in the United States Naval Institute (USNI) Proceedings in February 1978, asks, "South American Navies: Who Needs Them?" To find an answer, the author discusses extensively the relations between the US Navy and its Latin American counterparts and comes to the conclusion that "the US Navy needs its Latin American allies."¹

The USNI article clearly reveals the US orientation on the subject. It is a common theme that quite naturally occurs in nearly all professional United States literature on the military establishments in Latin America. And then, of course, there exists the other perspective: that of the Latin American countries, which the article briefly discusses in dealing with the missions of their navies. But, again, this is done with the purpose of linking them to the United States' strategic picture of the region.

This paper attempts to bridge the "perspective gap" and contribute to a better understanding of the regional points of view on the strategic problems that stem from the political and economic realities of Latin America and of Brazil in particular. Because its focus is naval, the text gives its most extensive treatment to subjects correlated or directly linked to the Brazilian Navy.

The initial pages summarize the Brazilian Navy's historical evolution and acquaint the reader with the major role the sea has played in shaping Brazil as a nation.

A brief assessment of today's world follows, showing the global evolution toward multipolarity in political and economic relations, and an overwhelming bipolarity in decisive military terms. This serves as a basis for an analysis of modern Brazil as a country looking for its place among nations.

The strategic consequences of Brazil's interaction with the world, and the United States in particular, constitute another important part of this paper. Also considered in this chapter are the politico-military consequences of the country's development in the next decades.

More detailed attention is given to the Brazilian Navy in the last part of the text, with emphasis on its present

situation. Also discussed at some length is the prospective evolution of its mission and what needs to be done for its fulfilment.

In summary, the following pages attempt to show that Brazil is destined to be an important future actor in the international arena, and the Brazilian Navy will be vitally needed in the years to come as one of the most important instruments for the accomplishment of national objectives.

II. HISTORICAL BACKGROUND

The Colonial Period

A Portuguese fleet of thirteen ships, on its way to India, discovered Brazil in the year 1500. The Portuguese reached the new colony by sea, and the ocean continued to be, for the next three centuries, the only link in the growth of trade to and from Brazil. Other nations in competition with Portugal for the ownership of its largest colony came by sea as well. Over the ocean they came and over the ocean some returned to Europe, after many attempts at establishing themselves in the New World.

This was the case with the French, the Dutch, and the British. Portugal fought them at sea and also ashore, but the decisive factor in maintaining access to the coast of Brazil and defending the integrity of its increasingly important colony was the control of the sea.

Portugal and Spain were among the major maritime powers of Europe from the mid-15th to the mid-17th century. As an endorsement of this fact, the Treaty of Tordesilhas--signed in 1493 with the blessing of the Pope--divided the newly discovered world between them.

The amazing energy stemming from such a small country as Portugal, with a population of about two million, started to decline when it was joined with Spain as one country in 1580 under Felipe II of Spain. By 1640, when Portugal regained its own identity, it had lost the drive that had led its sailors around the world. Other coastal nations were becoming maritime powers and Portugal began to lose its colonies to them.

The natural solution for the Portuguese was to establish a progressive dependence on the British Fleet to protect their colonies. Of course, the Portuguese paid a price--a high one--for British protection during the next two centuries, using the profits from the exploitation of their colonies.

This was the case with Brazilian gold, deliveries of which started to Portugal in 1699. Gold was used during the entire 18th century to pay the continual debt of the Portuguese

crown to Great Britain. The necessary protection for the merchant ships sailing between Brazil and Portugal was very often provided by British vessels.

Another major sea route of interest to Portugal was across the South Atlantic, the route used by ships carrying slaves from the west coast of Africa to Brazil. These suffering human beings became one of the basic assets in the colonization of Brazil. Because of that, the abominable traffic of the "negreiros" ships was also protected by the Portuguese warships with the acquiescence of the British Navy.

This situation lasted until the first years of the 19th century, when Great Britain, for its own economic reasons, masked with humanitarian principles, decided to halt the traffic of black Africans to Brazil. This created a serious problem for Portugal and Brazil, but the slave commerce continued. The slave ships were usually able to escape from the few men-of-war detached to enforce British government policy in the vast South Atlantic.

With the above-mentioned exception, the sea lines of communications between Portugal and Brazil were kept open without problems during the colonial period. The flow of products from the profitable exploitation of the large colony was secured by the combination of the Portuguese Fleet with the British ships detached to help where and when necessary. No other country dared to menace this well-established and operational relation.

Shipbuilding started in Brazil during the 18th century, with the growth of some shipyards along the coast. The most important were those built in Rio de Janeiro, Salvador, and Belem do Para. The facility in Rio started operations in 1763 and remains, even today, the largest naval shipbuilder in the country.

The invasion of the Iberian Peninsula by Napoleonic armies in 1807 forced the king, Dom Joao VI, to flee from Portugal to Brazil in 1808. His court--a large group of nobles, intellectuals, artisans, bureaucrats, and fellow countrymen--accompanied him. A large number of Portuguese and a few British warships escorted the forty-ship convoy and protected its precious cargo from the French Fleet.

As a consequence, Brazil became a united kingdom with Portugal, gaining international political status that was never

lost again. The Portuguese Navy, having transferred its major assets to Brazil, soon began the creation of the necessary infrastructure to assure its continuity and operational capability. In 1808 the Naval Academy was established in Rio de Janeiro, the Brazilian Marine Corps was created, and construction of support facilities for ships and crews was begun.

As early as 1809 the Portuguese-Brazilian Navy and Army started operations with the successful invasion of French Guyana. This was a retaliatory measure to the French occupation of Portugal and was more a reflex to a European conflict than the result of a regional problem.

The intervention in the region known as "Banda Oriental"--later to become Uruguay--was the next action taken by Dom Joao, in 1811. This was the first military deployment of Portuguese-Brazilian forces as a reaction to a political problem of the South American continent--in this case, an Argentine move to annex Banda Oriental to its new independent nation. The king in 1816 again decided to intervene in that area for the same reasons. He finally decided to annex it as a part of Brazil in 1821 and gave it the name of "Provincia Cisplatina."

These actions at both extremes of the Brazilian coast were taken with the active participation of the Portuguese-Brazilian fleet, whose ships and troops were well employed as strategic tools for the fulfillment of established political goals.

Independence: The Empire Period

The year 1821 saw the return of king Dom Joao to Portugal with many of the ships that had accompanied him in 1808. Wisely, he decided to leave his son Peter in Brazil to act as regent, sensing the inevitability of approaching independence for the former colony. This, he thought, would assure that the Portuguese crown would maintain its presence in Brazil.

Independence was effectively proclaimed in 1822 by Peter, who became the first Brazilian Emperor and assumed the title of *Peter the First*. The immediate important problem faced by the new ruler was the consolidation of the independence movement, threatened by the presence of Portuguese warships and troops in some of the main ports of the extensive Brazilian coast.

The Brazilian Fleet at this time was almost nonexistent, composed of the few warships that King Joao VI left behind. The majority of those ships were in bad condition and ill-armed. Worse than that, they were poorly commanded and manned, because of the inexperience and lack of resolve of their officers and crews.

To remedy these problems, Brazil hired foreign officers and sailors to help organize and operate the newborn navy. Paradoxically, because of their links with Portugal, the British were chosen; almost immediately, they developed and shaped up a small but efficient fleet. Those ships, under the capable command of Admiral Lord Cochrane, conducted successful operations along the Brazilian coast which resulted in the final expulsion of the remaining Portuguese warships and troops. The presence of Brazilian naval units in some distant areas of the country was also a determining factor in extinguishing remaining local resistance to the new central government.

After its participation in the independence movement, the Navy played an important role in maintaining the country's unity, especially during the politically troubled years that followed. In that initial period, Brazil also had to face its first major external problem, the dispute with Argentina concerning the "Provincia Cisplatina."

This dispute erupted into a war that lasted from 1825 to 1828. Military actions took place essentially at sea and the Navy proved rather efficient in blocking the mouth of the La Plata River.

It is interesting to recall that both navies, the Argentine (Unites Provinces of the La Plata River) and Brazilian, were under command of British officers. So it was not surprising that the political results of the protracted conflict were in accordance with the British crown objectives of creating Uruguay as a buffer state between the two countries. The aim was to impede one nation's dominance over the mouth of the La Plata River and to prevent control of the whole South American Atlantic coast by only two states.

In the early 1850s, Uruguay was again the reason for armed conflict between Brazil and Argentina. For the second time the Navy figured prominently in attaining the Brazilian war objective--in this case, averting Argentine dominance in the area.

Nearly 15 years later, the Brazilian Navy played the decisive role in the third and final dispute within Uruguay. This Brazilian intervention, however, triggered another even more important conflict with Paraguay, which was supporting the defeated Uruguayan faction.

The Paraguayans invaded the southwest of Brazil, the Argentine provinces of Corrientes, and the western portion of Uruguay. As a result, the latter three countries formed a "Triple Alliance" and under the leadership of Brazil, fought a long and bloody war against the well-armed "Guarani" nation. This conflict lasted from 1865 to 1870 and constituted the most important and most difficult engagement by the Brazilian armed forces in the 19th century, as well as the biggest war ever fought in South America.

During military actions conducted along the basin of the Paraguay and Parana Rivers, the Brazilian Navy engaged in a struggle for the control of those great waterways. The campaign was a difficult one, for three main reasons:

- o The lack of experience of Brazilian seamen in that kind of warfare.
- o The nonexistence of ships in the Navy suitable for river operations.
- o The adequate preparation of the Paraguayan Navy, which had assembled a sizable fleet of river gunships and built fortified strongholds along the Paraguay river.

The Navy exerted a tremendous war effort to overcome these problems. Brazil found it necessary to build, equip, and train an almost new fleet with proper ships for the theater of operations. At the same time, the logistic support for ships operating in a difficult environment had to be provided at a distance of about two thousand miles from their home port of Rio de Janeiro.

All these actions were taken. Brazil placed orders from shipbuilders in France and Great Britain, but also built and armed many warships in its own shipyards in Rio de Janeiro. At the peak of the conflict, the Navy operated more than fifty combatant ships in the Parana-Paraguay and Uruguay Rivers, with naval facilities to support them and a logistic force that provided the needs of the Fleet.

The operations conducted in those rivers were successful, but it took more than three years to subdue all the resistance presented by the Paraguayan ships, boats, and fortresses. With the accomplishment of this mission, the Navy established free navigation in the area so that full support could be provided for the armies fighting along the rivers.

The Republic: Military Decline

By the end of this war, the Brazilian Navy had reached its greatest strength ever and ranked among the most powerful navies of the world. Nevertheless, this situation did not last long and military forces in Brazil began to decline because of a variety of factors.

First, after the "Paraguayan War," Brazil did not experience any external conflicts for the remainder of the 19th century. From 1870 on, all border disputes with neighboring countries were solved through diplomacy.

Second, the Brazilian economy remained essentially based on agricultural production, with little emphasis on the industrialization process that took place in other parts of the world. As a result, the technological base gained by the war effort was soon lost, and the Brazilian armed forces chose the easier solution of importing almost all military hardware.

Finally, the country experienced major sociopolitical changes. The Army supported the establishment of a republican regime, while the Navy defended the maintenance of the monarchy. The political situation thus evolved until the proclamation of the Republic in 1889 by the Army; not surprisingly, a marshal became the first president of the new republic.

The Navy was strongly opposed, and in 1893 a civil war erupted in Rio de Janeiro under naval leadership, together with a similar movement in some southern states. The conflict lasted until 1894 with no major confrontations, but the Navy lost its political position and many lives, including some of its finest officers. For more than a decade the Navy's share of the national budget was progressively reduced and its ailing ships were not replaced. The senior officers became involved with politics and professional subjects were relegated to secondary importance.

By the turn of this century, Argentina was becoming the richest and most advanced country in South America. The previous competition with Brazil evolved into a strong rivalry that was reflected in the armed forces of both nations. Their navies engaged in an arms race and both placed important orders in European shipyards. Between 1908 and 1910 the Brazilian Navy acquired in Great Britain two battleships, two cruisers, six destroyers, and one support ship. Also three coastal submarines and a mother ship were built in Italy, the first of them arriving in Brazil in 1914.

The presence of this small but modern fleet forced an evolution in the tactics, logistics, and technical skills of Brazilian sailors. Nevertheless, since the country lacked an industrial base, many problems were not solved and dependence on foreign support was almost absolute.

These facts became more evident when Brazil, after having some merchant ships sunk by German submarines, joined the allied nations against the Central Powers in the second half of World War I. Brazil's participation was chiefly carried on by the Navy, which sent to the war zone a naval division of two cruisers, four destroyers, and two auxiliary ships. The patrol area assigned to them was a triangle bounded by Dakar, Cape Verde Islands, and Gibraltar, where they operated under British command.¹

It was with great logistic difficulty that these ships prepared for their task, because the country barely produced anything for their maintenance and operation. These difficulties were overcome, and between May and September of 1918 Brazilian ships participated in actions in their operational area—in spite of having lost about 10 percent of their crews to Spanish influenza.

Naval aviation proved to be another sector to which the Brazilian Navy contributed during World War I. Some of its officers went to Great Britain and, having joined the Royal Air Force (R.A.F.) squadrons, took part in combat missions in Europe.²

The fact that the Navy experienced serious troubles in preparing and employing its ships for the brief campaigns in African and European waters, was a lesson badly learned. The effort in the search for a higher degree of self-sufficiency continued, but not a single significant warship was completed in the country in the next twenty years.

Another important development in that period was the progressive replacement of the British Navy by its US counterpart as the most influential source of technology and material to the Brazilian Navy. Three main reasons explain this development.

The first factor, of course, was the decline of the British as rulers of the sea. The second reason can be found in the establishment of a US Naval Mission in Brazil in 1922; the declared purposes were to

cooperate with the Minister of the Navy and with the officers of the Navy in whatever may be necessary to secure a good organization of the Navy ashore and afloat; in improving the methods of work in the shops, the shore establishment and on board ships; in training and instructing the personnel and in drawing up and executing plans for the improvement of the Navy for fleet exercises and naval operations.³

The third reason for the rising US influence in Brazilian naval matters was the establishment of the Escola de Guerra Naval (Naval War College) in 1914, with the orientation and support of US naval officers.

The trend was toward an increasing dependence by the Navy on its American counterpart, not only in material terms, but also in tactical doctrine and strategic thinking.

At the beginning of World War II a modernization program was underway, with the Navy building three destroyers of American design in Rio de Janeiro and placing orders in Great Britain for another six new destroyers. The war difficulties facing Great Britain forced the cancellation of the orders in that country, and led to the decision to build the six ships in Brazil, using British hull plans, but installing American equipment. This represented the turning point of foreign influence in the Navy, which became almost exclusively dependent on the United States for at least the next twenty-five years.

Brazil's entry into World War II occurred in the middle of 1942, and the Navy was placed by the Brazilian Government under operational control of the US Navy. As a result, both navies safely escorted hundreds of ships with important cargo for the war effort. For this achievement, the establishment of an adequate infrastructure on the Brazilian coast--including naval and air bases, radio stations, and training facilities--was necessary. Also, the Navy received escort ships, ammunition, spare parts, technical assistance, training, and other support services from the US Navy.

Such an integration was beneficial for the purposes of winning the battle against the German submarines and blockade runners in the South Atlantic. It also led to a modernization of the Navy at all levels and activities. Nevertheless, such integration brought with it an overwhelming degree of dependence on the the US Navy, which extended deeply into the postwar period, replete with inherent distortions. (This subject will be treated in more detail in the next chapter.)

It is important to note that in the three major periods of its history, the political and strategic attitude of the Brazilian Navy seemed to have completed a circle. During the colonial period, its mission and composition were obviously determined by Portugal. During the period of independence under a monarchy, the nationalistic tasks were to fight the former rulers, consolidate the unity of the empire, and give definitive shape to the country's borders. Notably, these were done with the majority of its ships being built in Brazil.

Finally, the republican period, until 1945, reversed this trend. With the exception of the "arms race" with Argentina at the beginning of this century, the Navy again subordinated its strategy to external influences, fighting in two great wars that, in spite of being characterized as global, were essentially European conflicts. Of course, the Navy acquiesced in accordance with national policies, but its own tendency and even eagerness to accept foreign influence resulted in a complete dependency on external sources of material and, worse than that, strategic thinking.

III. BRAZIL IN THE WORLD

The World Structure of Power

The world's structure of power has obviously experienced dramatic changes in the last three decades. For example, in economic terms, the United States evolved from a predominant role in the 1950s, when its gross national product (GNP) represented about 40 percent of the world's production, to a more modest position in this decade, with roughly 20 percent participation in global accounts.¹

Nevertheless, it is important to stress that this occurred not by a decrease of its real production, but through the development of other nations, whose economic activities experienced a higher rate of increase. This was the case of the Soviet Union, Japan, the European Economic Community, many Third World countries—with Brazil as a leader—and even China. (The latter country solved some of its basic structural problems, paving the way for a better performance.)

The economic phenomenon has been naturally associated with the politicomilitary ascension of the Soviet Union as a challenger to the United States, provoking an intensive and extensive change in the field of international relations, and a striking realignment and revision of power relations among nations.

Some of the major indicators of these events were the formulation of the Nixon and Brezhnev Doctrines, the Ostpolitik of Chancellor Brandt, "detente," the Chinese "opening," the Iranian crisis, the North-South confrontation, and the loosening of the politicomilitary alliances, both in East and West.

This process has been accelerated since 1973, with the oil crisis contributing significantly to deepen changes in the world's economy, the results of which are still being felt and will remain for some time. As a consequence, economic and political realities must be faced in the international arena through the acceptance of a so-called multipolar relationship, addressed to five main centers of power: the United States, the Soviet Union, Western Europe, China, and Japan.²

Of course, Third World or developing countries have a role to play, but their ability to influence is still episodic. They can successfully press for changes, as in the case of the Organization of Petroleum Exporting Countries (OPEC), but their capacity is limited to the period of time necessary for the developed countries to adapt themselves to the new circumstances and use their inherent power to press back and readjust the system into another level of balance.

It is also important to stress that the realities of the multipolarity seem to be restricted to the politicoeconomic side of the equation, since the global military situation remains essentially bipolar. The overwhelming nuclear capacity of the two superpowers places them in an unmatched position in this respect, even with other nuclear powers who lack the capacity to challenge them.

Paradoxically, such almost unlimited power for annihilating life on earth is the dominant reason for curbing its use. As stated by Dr. Henry Kissinger:

Both the horror and power of modern [nuclear] weapons tend to paralyze action. . . and as the power of modern weapons grows, the threat of all out war loses its credibility and therefore its political effectiveness.³

Thus all armed conflicts that have occurred since the advent of the nuclear era are automatically limited to conventional weapons, even when there is a direct involvement of a nuclear power, as was the case of the Korean and Vietnamese wars. Also, they tend to occur in "peripheral" areas of the globe, with the exception of the Arab-Israeli wars which, by their extremely explosive potential, are kept limited in time and area.

Despite the nonnuclear character of the last wars, however, it is important to stress the deadly power of the ever-growing conventional weaponry that is spreading throughout the globe. Reports from the US Arms Control and Disarmament Agency indicate that arms sales to Third World nations nearly tripled in volume during the 1970s.⁴

This is because of the arms producers' desires to maintain political influence and solve their balance of payments problems

in a recessive economy, coinciding with the eagerness of less developed countries to assert themselves as important players in regional or even global affairs, in a world of ever-diffusing power. The results of this trend can be seen throughout the first part of this decade by the eruption of conflicts in the Middle East and now in the South Atlantic.

The American and African continents are naturally of more interest to this paper because of their direct geopolitical, economic, sociocultural, and military ties with Brazil. In the first case, it is noteworthy to observe that the post-World War II trend in the relationship among American nations indicates a reduction in US influence as well.

The main reason for the lessened influence is basically the same as the one that altered the relations between Washington and the rest of the world, i.e., the diminished US standing in the global economy and the upsurge of other nations onto the world stage. In this respect, the Soviet Union is playing a leading role by expanding its presence through constant pressure to incorporate American and African countries into its sphere of influence.

Latin America and the Caribbean have experienced great changes in the last thirty years. These countries, with a few exceptions, are currently much more developed and have diversified their interests around the globe, both politically and economically. The simple hegemonic relationship between the "colossus of the North" and its brothers "South of the border" has evolved to a much more complex one, with a probable acceleration of this tendency for the future, including the military aspects. Going further, one can say that the "many and continuing economic, social and political changes in Latin America have helped to transform the region's relationship with the US from quiescent dependence to emerging--though manageable--conflict."⁵

The changes experienced in Latin America and Caribbean countries have affected not only their attitude toward the United States but also toward each other. The shift from agriculture to industry, the development of foreign trade, and the building of a communications and transportation infrastructure, contributed to a greater interdependence and, consequently, to a relative reduction of their traditional reliance on the importation of technology and commercial exchange with more developed countries.

These facts will become more evident and complex in the wake of recent Argentine-British conflict, regardless of its military outcome. The political implications of the sudden and unexpected war of 1982 will become an important factor in the relations among Latin America, the United States, and both East and West Europe.

Africa, as stated earlier, is another area of direct interest to Brazil. There exists a little-known but long tradition of strong affinity between both sides of the South Atlantic, due to three main factors:

- o Geographic proximity of both land masses; the distance between the Brazilian northeastern coast and Senegal is approximately three-fourths the length of the Amazon River in Brazil.
- o The strong political, economic, and military ties established by the Portuguese among their Atlantic colonies.
- o The intense slave traffic from Africa to Brazil during three centuries, bringing millions of blacks, who influenced decisively the racial composition and the culture of the country.

In spite of this mutuality, the relations between Brazil and Africa were kept more or less dormant from the outset of Brazilian independence (1822) until World War II, largely because African countries remained colonies and nearly exclusively tied to their ruling powers.

The liberation movements in Africa in the last three decades—especially in the Portuguese-speaking countries—together with the Brazilian economic expansion and consequent search for new markets, brought a new approach to relations across the South Atlantic. Certainly, one must consider the political and strategic reasons underlying this connection, through the convergence of Brazil's interests and those of the ex-Portuguese colonies. Finally, it should be pointed out that other important West African countries perceive improved relations with Brasilia as an alternative to hidden dominance from former rulers.

Brazil's Role in the World

The "nation of contrasts," the "country of the future," the "sleeping (or awakening) giant," "the next superpower"--these are all epithets coined in the attempt to capture, in a few words, the complexities of a vast nation which occupies about 50 percent of the land mass of South America and holds more than half of the continent's population and overall production.

The last forty years have been extraordinary for Brazil in many respects, representing a new cycle in its existence as a nation. Actually, Brazilian history may be divided into four distinct stages: the colonial period, with its expansion and inherent dependence on Portugal; the Empire, when the country fought for its consolidation as a geographic and political entity; the pre-World War II republic, characterized by political instability, slow development, and growing external dependence; and finally, the last 35 years, which may be labeled as the struggle for balanced development of its enormous potential and affirmation as one important actor in the international arena, in spite of continued political instability and foreign dependence.

At the end of World War II, one could say that Brazil was a typical underdeveloped country, despite its recognized enormous potential. Agriculture formed the economic base. Few roads connected the main regions. Industry was only incipient. Education and sanitation levels were low. Moreover, the population was concentrated along the coast and the interior had vast expanses of uncharted and unexplored land.

The severe shortage of industrialized goods, raw materials, and some kinds of food during the war, caused by German and Italian submarine attacks on coastal and international navigation, served as a catalyst for ideas to explore and develop the country's own vast resources. It is true that it took some time before development would happen on a full scale.

President Juscelino Kubitschek (1956-1961) initiated several daring measures in important national sectors and activities, concurring with his proclaimed slogan of "building 50 years in 5." Energy, transportation, industrialization, agriculture, and education received full government support and the plans laid down provided for the organization or revitalization of efforts in those areas. Roads were opened, dams were built, industries were established and schools were founded in an energetic drive that continues until today.

To be sure, the most important achievement of that period was a sense of national awareness and a feeling that Brazilians could and should do things for themselves, utilizing the immense potential inherited from previous generations. These feelings were brought together when Brasilia, the new capital, was built in a location 800 miles from the sea. This fact symbolized and gave practical meaning to the plans to move to the west and develop the country.

In the last three decades, those efforts have resulted in impressive accomplishments. Brazil now ranks as the eighth largest occidental economy and indications are that it will become the sixth largest before this decade ends, surpassing Canada and Italy. The country is already the second largest agricultural exporter in the world, even though only about one-fourth of its usable land is cultivated.

In addition, Brazil turned into a major producer and exporter of motor vehicles, ships, aircraft, steel, petrochemicals, machinery, and other industrialized goods. In fact, its intensive exploration for minerals led to the discovery of large deposits of diverse resources, in addition to already extensive reserves being explored for internal consumption and exportation.⁶

The favorable developments and promising future do not mean that the Brazilian economy is problem-free. Problems loom as large as the country. The sustained rapid growth was geographically and socially unbalanced and aggravated the unfairness of income distribution. The necessity of sustaining a rate of development in order to absorb the ever-growing work force, obliged the government to invest huge amounts of capital in infrastructure sectors such as energy, transportation, mining, education, petrochemicals, and steel production. These investments, with their long term returns, increased internal and foreign debts, adding to the inflation spiral that reached three-digit values in 1980.

The rise of oil prices that began in 1973 hit Brazil particularly hard. Depending on importation for about 80 percent of its oil needs, the country experienced a sudden blow on the balance of payments and saw its foreign debt top the 60 billion dollar mark in eight years. Despite its ability to pay for it, this sum and its interest represents a heavy burden for an economy that needs substantial investments in nearly all sectors. Even with the oil prices in a relative decline in the last year and successful efforts to reduce its importation and increase national production, Brazil has been carrying out resolute policies to deal with this problem.

Perhaps the most significant policy is that of increasing exports of Brazilian goods and services to a large group of trade partners, while reducing imports only to items essential to sustain economic growth. This policy affects two major matters of interest to this paper: the diversification of markets and sea trade development.

The search for new commercial partners has been a highly successful one, made possible by the political attitude of "responsible pragmatism" adopted by the Brazilian Government to eliminate ideological barriers in foreign trade. Thus Brazil does business today with any country that may offer interesting opportunities for commerce.

As a result of this posture, the overwhelming dependence on the handful of traditional markets tends to disappear and Brazilian products now reach all parts of the world. Diversification was made possible by the improvement of national output in the quality, quantity, and variety of agricultural and industrial products, and also of services.

This fact and the policy of guaranteeing petroleum supplies resulted in expanded relations with Socialist and Third World nations within the last decade. The main effort has been directed toward Latin America (with South America in the front line), Black Africa (with priority to the west coast and Portuguese-speaking countries), Middle East and North African oil producers, West European nations and the People's Republic of China.

Because of Brazil's geographic location, nearly all of its foreign trade is transported by sea, with only a small fraction carried by land within South America and by air to other areas. So, trade expansion and diversification has demanded a similar merchant marine growth and sophistication, with corresponding improvement of port infrastructure and convergent land transportation.

The figures in these areas are quite impressive; it is only necessary to add that Brazilian foreign trade grew sevenfold in the last 18 years and is expected to be \$50 billion in 1982 (export-import). Consequently, to avoid the payment of large sums for freight of foreign ships, the Brazilian merchant marine had to follow similar steps.

Between the alternatives of buying ships elsewhere or building them in the country, the latter was chosen and, in the last 20 years, Brazil has become one of the world's leading merchant shipbuilders. This was made possible by the

establishment or expansion of many private shipyards, financed by both foreign and domestic capital, a large national workforce, and the use of imported or self-developed technology. These ships have been added to the country's already large merchant fleet (about 10 million dead-weight tons in 1982) and have also become a major export item.⁷

Another important maritime sector enhanced in the last 10 years is offshore drilling for oil. The efforts to find new oil fields are currently oriented toward the continental shelf, which already provides more than half the country's output. Of course, these developments demand additional offshore support sea activities and large investments in capital and technology which, in spite of its valuable contribution to the nation's economy, represent a source of concern for those responsible for their protection.

IV. STRATEGIC CONSIDERATIONS

Brazil has long suffered the pressures of other countries' national policies and strategies. These circumstances were normal during the colonial period, when submission to Portuguese rule allowed no other option. In fact, during the 18th century and until its independence, Brazil paid a large contribution to Great Britain's national goals; the drainage of Portuguese wealth was fed by Brazilian gold and other products.

Throughout the 19th century, Britain maintained direct or indirect strategic economic and political influence over Brazil, in spite of US efforts in the second half of the century to change this relationship. All major conflicts involving the country had some degree of British incentive or concurrence and their outcome, although favorable to Brazilian objectives, normally was also in conformity with British interests.¹

This situation began to change before World War I, with the increasing US presence on the Latin American scene. Even so, British influence was still exerted in the peaceful settlements of Brazilian border disputes. But the political and economic results of World War I forced Great Britain's influence to recede in Latin America and paved the road for open US access in areas farther south than Central American and Caribbean countries, which already were under its decisive influence.

At this point it is important to recognize that this Brazilian posture as a follower or dependent state of other countries' policies and strategies was obviously adopted by its leaders with the best intentions and hopes in the search for Brazil's own goals and objectives. Also, Brazil's posture was certainly no exception in world affairs: history tells us that in every age only a few states can afford to assume a leading position among others. Moreover, it shows that such status is not a gift, but indeed the result of a sometimes deadly struggle against various hostile actions and reactions on the part of international actors.

In the case of Brazil, this attitude was inherited from the mother country, which had a paramount dependence on the British. Some negative factors that had affected the formation of Brazilian society, such as lack of an educated elite and the

Portuguese exploitative colonial style, contributed to the maintenance of this situation. Besides, as students of history, we must recognize that the overwhelming power and authority of the British Empire in the world of the 19th century swayed nearly all countries.

The replacement of Great Britain by the United States as the influential state in the region and particularly in Brazil was a natural consequence of tendencies already discussed. The period between the two world wars saw the reinforcement of this dependence throughout the entire continent. US national power, despite the troublesome economy of the 1930s, reached beyond its national borders and required customers and providers for its demands. Brazil with its vast resources and growing market was a natural and--it must be stated--docile client.

Additional steps in this direction were taken during World War II, when commerce with Europe nearly ceased and was replaced by inter-American trade. The decisive US participation in the conflict helped expand its influence in Latin America even further in all fields of national powers. This situation reached its peak in the years following the war.

During the late 1940s and decade of the 1950s, Brazil remained strongly tied to the United States and followed its leadership in almost all aspects of international affairs. Examples of such influence abound in the United Nations, the Organization of American States, the Inter-American Defense Board, the World Bank, and other similar organizations. Concurrently, the United States was Brazil's most important trade and financial partner as well as the model for nearly all manifestations and activities of its society.

The strong anticommunist attitudes of the United States during that period were well-absorbed and adopted in Brazil, which had already experienced internal difficulties with Marxist doctrinaires. The world was seen as either black or white, or evil and good. The existence of the Communist bloc was perceived as a menace to all nations not yet under its domination.

Thus the official policy was to prepare Brazil to face the enemy, both internally and externally. The strategy for development of both Brazil and Latin America should be not only to seek improvements in the conditions of society, but to make Brazil a stronger nation as an ally of the United

States. Perhaps a more important goal for Brazil and Latin American countries was to avoid infiltration of extraneous ideologies which could destroy the Occident.

Consequently, the "automatic alignment" of Brazil and many other countries with US foreign policy was a reality. In the strategic military posture, this was underlined by the signing of the Inter-American Treaty of Reciprocal Assistance (Rio Pact) in 1947, preceded by the decision to continue participating in the Inter-American Defense Board after the war ended. In so doing, Brazil could rely on US strength to provide its protection against direct Communist aggression.

Internally, this attitude influenced the formulation of the "security and development" doctrine that conditioned Brazilian political and strategic official thinking for the next three decades. The security side of this equation was defined, in simplified terms, as "the assurance of conditions for the achievement and maintenance of Permanent National Objectives, in spite of existing or potential antagonisms and pressures."²

With its "external security" assured by the United States, Brazil felt it was important to face the internal enemy, represented by leftist subversive groups, whose actions were directed towards violently seizing power and establishing a Communist government. The political result of such a posture was creation of a strong executive government in Brazil in the mid 1960s, which instituted preventive measures to effectively eliminate subversive activities in society.

As was the case in all of South America, the Brazilian armed forces patterned their thinking, organization, material, training, and readiness to these postulates. The Army and Air Force, in their preparation and employment, gave priority to countering the internal enemy. They took the following steps:

- o Emphasized light equipment and tactical support aircraft to combat any potential guerrilla groups.
- o Pushed for adequate training in tactics and procedures to counter subversive and guerrilla activities.
- o Created an efficient intelligence system to identify and monitor subversive activities.

- o Participated in development activities in the far distant or less developed areas of the country, through actions of effective settlement, mapping, road and airport construction, education, and health assistance.

In spite of its participation in the above-listed activities, particularly the latter two, the Navy maintained its outward orientation. Nevertheless, following the path taken during World War II, the Navy employed a defensive strategic posture, and concentrated on a single type of enemy, the submarine. The menace had shifted in origin from Nazi Germany to the Communist Soviet Union.

Ships, weapons, tactics, and strategic concepts all proceeded from the United States, based on the possibility that the next war would be a global one between the two superpowers but involving the rest of the world. The Brazilian Navy's mission would be to collaborate in keeping open the South Atlantic sea lines of communication (SLOC). This would support the war effort by maintaining the necessary flow of raw materials to the United States and other industrialized Occidental nations, while assuring the delivery to Brazil of necessary imports.

The armed forces' close adherence to the strategic premises of the United States proved to be accurate at times and inaccurate at others. With regard to the Soviet Union's attempts to exert pressure on the United States and Latin America through Cuba, its surrogate state, the postulates were correct. Clear examples were the USSR's attempt to emplace missiles in Cuba, which precipitated the missile crisis, and Cuba's attempts to export revolution to South America, which peaked during the late 1960's and directly affected Brazil.

On the other hand, there were difficulties in accepting the change taking place in the rest of the world from the previous bipolar vision to a new multifaceted reality. The American drama in Vietnam, the economic recovery of Japan and Western Europe, the Chinese schism, and the birth of many new nations were all events that could be used in support of this argument. The clearest indication that different strategic postures were possible, however, was President De Gaulle's decision to

withdraw the French forces from the North Atlantic Treaty Organization (NATO) and develop France's own national deterrent capability.

Brazil's understanding of these facts received a push with the pressures exerted by the United States (and the USSR to a lesser degree) for approval of the Nuclear Non-Proliferation Treaty. The Brazilian Government considered this document to be an unfair attempt by both superpowers to freeze the power status quo in the world.

Another important area of Brazilian distaste in relation to US policies was in military sales. The difficulties faced by the armed forces in successive attempts to replace their aging US equipment with more modern versions forced them to place new orders in the European market. This move resulted in a rediscovery by the Brazilian military that other alternatives existed in the world for their needs. They also found the new partners eager to do business, in contrast to the US restrictions.

Brazilian leaders, including the military, found that excessive dependence on US policies and strategic thinking could be inconvenient in the pursuit of the country's objectives. In more recent years, examples of differences were demonstrated in territorial sea limits, President Carter's negative reaction to the nuclear agreement between Brazil and West Germany and human rights policy, increasing competition in the commodities world market, and US import restrictions on Brazilian products.

The many changes that continued taking place in the world and in Brazil during the 1970s pushed the country decisively in the direction of more autonomy in its foreign relations and strategic posture. The diversification of markets for its foreign trade gave much more freedom of action in these matters but, at the same time, complicated the strategic problem of preserving national interests throughout the globe.

These facts require an improved and more flexible vision of security problems, the external component of which is becoming increasingly important and deserves more attention from Brazilians. At the same time, internal security does not seem in need of immediate attention, so the government should not maintain it as a top priority item.

Undoubtedly, Brazil has all the assets to continue its drive for a more prominent role in world affairs. Its present economic recession does not seem irreversible or to be affecting the permanent trend for growth experienced in the last decades. Economic development will remain Brazil's prime objective and, internationally, it will concentrate efforts in the areas of energy, commerce, and financing its development.³

Concurrently, there will be an ever-growing search for independent action in foreign affairs which may result in marked divergences with US policies, and even antagonism on specific matters. For these reasons it is evident that Brazil will not engage in the Reagan administration's attempts to enlist it more actively in the East-West struggle, be it in a broad perspective or in the Central American and Caribbean problems.⁴

Does this mean a growing Brazilian tendency for neutrality? Probably yes, in the context of Soviet-US confrontation. In a multipolar world, Brazil will no longer accept US tutelage in foreign affairs and will not see the Soviets as an immediate threat to its national objectives.

The military consequences of this tendency are of great significance, encompassing the demands for a major shift in strategic posture, both in the preparation and possible employment of armed forces. Accordingly, two major orientations can be devised: one to support peaceful diplomatic and economic actions abroad and another to avoid involvement in the events of a broad East-West conflict in the Northern hemisphere.

In the first case, the priority given by Brazil in its foreign relations with South American, African, and oil-exporting countries will require, in the short term, a more significant capability than now exists in order to represent its national interests. Brazilian presence has spread and intensified in these areas and can become of immediate concern in case of rising tensions or open conflicts. Building such a capability must be complemented by a real presence (now or eventually) of Brazilian forces in those areas. The presence can be achieved in a typical naval role, or through military sales with the attendant technical assistance and training. These actions will mean a substantial change in the present strategic posture from a passive and dependent approach to a more actively engaged participation in the pursuit of national objectives.

Avoiding involvement in an armed confrontation extraneous to Brazilian interests is the other main policy that must be implemented. In plain words, this means establishing a deterrent capability that affords a broad spectrum of strategic decisions anticipating any possible conflict, so as to steer Brazil clear from undesirable involvement.

In addition, political measures should be taken well in advance to allow for Brazil's withdrawal from any formal defensive alliance, such as the Rio Pact and its related Inter-American Defense Board (IADB). This must be done to give Brazil the necessary degree of freedom of action in the international arena to take the most advantageous position, in accordance with its interests, in the event of an armed conflict. It has become evident, most notably in the last few years, that the real military value of being tied to either the Rio Pact or the IADB is worthless.

The most important aspect of this defensive posture is the accurate assessment of military capability necessary to bring to bear the needed credibility, once the noninvolvement decision is taken. This will mean that pushing Brazil against its will to participate in a war will entail such unacceptably high costs that it will prevent any attempt to do so by the belligerents.

By the same token, the buildup of a strong Brazilian military capability will provide the necessary power to deter direct aggression from other countries, since the inherent high costs of such action would be unacceptable.

The key element in the pursuit of any of the above-mentioned strategies is development of a strong and well-balanced military establishment, with forces capable of carrying out chosen missions whenever and wherever necessary. In other words, Brazilian military strength must be kept proportional to the nation's ever-growing presence in the international arena.

Even a superficial analysis of the present Brazilian armed forces shows a quite different reality, as demonstrated by the data in appendix A. They are small in proportion to the nation's importance, or by any standard; their material is mainly obsolete, with very few exceptions; their dependence on foreign resupply is high, curtailing the capacity for sustaining even a war of short duration. A comparison between the Brazilian armed forces and those of some more important Latin American countries shows that Brazil's forces, although larger, are more poorly equipped in some aspects.⁵

The main reason for this situation has been the interpretation of the "Security and Development" doctrine adopted by successive governments in the last eighteen years. Paradoxically, the military leaders have intentionally given priority to development actions to the detriment of armed forces expansion or even modernization. The rationale for such policy is the alleged need for the creation of a substantive national economic (industrial) and social base, from which the military establishment will benefit in terms of domestically produced hardware and better prepared soldiers.

Perhaps the best example of this approach is found in the development of a large arms industry in Brazil, today one of the leading weapons exporters. Notably competing with traditional suppliers to Third World nations, Brazilian salesmen capitalize on their nonaligned image. The contradiction is that the Brazilian armed forces take little advantage of this inherent capacity.⁶ Their weapons acquisitions from the nation's own industry have been very modest.⁷

The explanation for this can be found in the ever-decreasing participation of military ministries in the national budget. In the last fifteen years, the GNP percentage of expenditures for armed forces in Brazil has decreased from the already low figure of 2.38 percent in 1967, to .70 percent in 1980. These are surprisingly low figures when compared with the 1980 average of 4.7 percent for the ten highest GNP nations in the world or even with the 3 percent average for the ten most important Latin American nations.⁸

In real values, the Brazilian defense budget for 1982 barely reaches \$1.5 billion. For a country larger than the continental United States, with ten nations on its borders, 4,600 miles of coastline, 125 million inhabitants, \$250 billion GNP, and 270,000 men in its armed forces, this amount is astonishingly low from any aspect. Considering that a sizable portion of this budget is spent to open roads, build airfields, map coastal waters and rivers, educate recruits, and assist populations in poor and remote areas, it is impressive that there still remains some money to train, equip, and renew material for the armed forces.

Of course, this situation has been a matter of concern for the military in Brazil, who view it as a deterioration of the country's defensive capabilities. The non-replacement of aging equipment and the few opportunities for training with it, caused by oil consumption restrictions, have contributed to this trend in the last years.

Political and bureaucratic members of government, especially those dealing with international affairs, are cognizant of this condition. The Malvinas/Falklands crisis helped to educate the general public and, for the first time in many years, Brazil's military capability was the subject of free debate in the media. These facts undoubtedly will tend to turn around the present situation in which less and less resources have been allocated to the country's armed forces.⁹

The Brazilian Navy, naturally, has interacted with all the above-discussed political, economic and strategic events during the last decades. The next chapter examines in more detail the influence these events have had on the Navy; the examination looks for the foreseeable trends in the Navy's evolution, which is likely to become an important factor in the fulfillment of Brazil's national objectives as a significant power of the 21st century.

V. THE BRAZILIAN NAVY

The Present

The previous chapters presented the necessary background information for a better comprehension of the Brazilian Navy as an important national institution. Chapter II summarized chronologically the Navy's role in the country's formation and consolidation during the colonial period, the 19th century Empire period, and the republic period up to the end of World War II.

Chapter III initially outlined in general terms the world's evolution after the last global conflict and explained how it changed from a bipolar to a multipolar distribution of power, particularly in political and economic terms, yet maintained its bipolarity in strategic military assets. The second part described the main aspects of the extraordinary development Brazil experienced in the last thirty-five years, and illustrated how the nation reached its present position on the international scene through diversification of its global interests, and less dependence on previous markets and influential partners.

Chapter IV analyzed the political and military consequences of the increase and spread of Brazil's concerns. Its international posture was described as following two broad orientations: noninvolvement in the East-West conflict and active presence in regions of more vital interest for the country. Military strategies planned in the pursuit of such objectives will demand a profound change from the negative attitudes of past Brazilian rulers, who opposed expanding and modernizing its armed forces for tasks other than combatting subversion and minor sporadic guerrilla uprisings.

The Brazilian Navy is analyzed rather extensively in this chapter. The first part deals with material assets, organization, and strategic posture to accomplish its present mission. The second part forecasts the evolution of this mission, the Navy's new responsibilities in the country's inevitable transition to a more important world role in the future. The final pages project which steps the Navy should follow to become a worthy asset in the pursuit of Brazil's national objectives in the 21st century.

Today's Brazilian Navy is a modest force of 45,000 men and about 80 ships. (See table I.)

TABLE I. SHIPS OF THE BRAZILIAN NAVY

TYPE	QUANTITY
ASW Aircraft Carrier	1
Submarine (3 OBERON, 5 ex-US)	8
Frigate (SSM, SAM, ASWM and Helo)	6
Destroyer (ex-US)	10
Patrol Ship	10
River Patrol Ship	6
Coastal Minesweeper	6
Large Patrol Craft	6
Landing Ship	2
Transport Ship	4
Fleet Tanker	1
Fleet Repair Ship	1
Submarine Rescue Ship	1
Large Landing Craft	4
Hydrographic Survey Ship	5
Oceanographic Survey Ship	2
Ocean Tug	5
Lighthouse Tender	1
Floating Dock	3

About 12,000 men of the total force belong to the Marine Corps, integrated in one amphibious division, whose core is a Regimental Landing Team of command, infantry, artillery, service, and special troop battalions, reasonably equipped and located in Rio de Janeiro. There are also five regional groups stationed at or near naval installations in the rest of the country.

In addition, the Naval Air Force operates three helicopter squadrons: antisubmarine warfare (ASW), liaison, and training. By decree, the Brazilian Air Force has exclusive control over maritime fixed-wing aircraft, whose operation must be coordinated with the Navy. In fact, the Navy has control over the antisubmarine warfare squadron only when aboard its aircraft carrier. The maritime reconnaissance and search and rescue squadrons are permanently under Air Force control.

The Navy Headquarters is in Brasilia and there are bases in Rio de Janeiro, Salvador (Aratu), Natal, Belem, Manaus (Amazon river) and Ladario (Paraguay, River). A Naval Air Base is located in Rio de Janeiro and plans are under way to establish some fleet support facilities in Rio Grande, near the border with Uruguay. (See map in Appendix B.)

Regardless of this geographic distribution along the coast and main fluvial basins, Rio de Janeiro retains the bulk of the naval assets: 70 percent of the ships (100 percent of major combatant vessels), 80 percent of Marine Corps troops, nearly 100 percent of its aircraft, and the Navy Shipyard. Indeed, the highest operational echelons are in Rio, including the Naval Operational Command as well as the Fleet and Marine Corps Commands. The main support facilities are also located there.

A closer look at the Brazilian Navy's assets reveals that only a few combatant ships were recently constructed and equipped with modern weapons systems and electronic gear. Examples of modern vessels include the frigates, Oberon class submarines, and coastal minesweepers. The river patrol vessels are also modern and were specially designed and built in Brazil for the unique Amazon basin characteristics.

Among the older warships, consisting of ex-World War II US destroyers and submarines, Dutch-built patrol vessels, and the aircraft carrier, only the carrier has undergone periodic modernization

and its active life is expected to be about ten more years. Some of the support and survey vessels also are of recent construction, but most will need short-term replacement.

The Brazilian Navy is in fact reaching a critical point in material terms, and consequently is losing credibility as a military force. The authoritative Jane's Fighting Ships (1980-1981) makes this point very clear:

With a coastline of 4,655 miles Brazil has a considerable problem even to patrol the more important areas in peace time. . . . While the patrol and river forces are probably adequate a considerable programme of replacement is needed amongst the larger ships.¹

The Navy's problems get more complicated if one considers three other major setbacks: the dependence on foreign equipment; the aforementioned Air Force control over fixed-wing aircraft; and the excessive concentration of forces and support facilities in Rio de Janeiro.

Most less developed nations depend on more advanced countries to equip their armed forces; it is a typical procedure. Brazil has a similar history, the exception to some extent being during the war against Paraguay in the last century when a substantial part of the military hardware was manufactured or built in national factories or shipyards.

The Navy has scarcely taken advantage of the fact that Brazil now owns the second largest shipbuilding industry in the world. Only a few warships have been built in the country recently. Since the 19th century all major combatant vessels have come from foreign shipbuilders. This is the case with the modern frigates, submarines, and minesweepers that joined the Fleet during the 1970s.²

The main reasons are the lack of investment in the armed forces and the Navy's difficulties in applying technological advances to its materiel. Fleet modernization is based on sporadic efforts, resulting in a discontinuity of programs and increasing dependence on foreign technology and logistics.

As mentioned in Chapter IV, the last twenty years have seen a constant decrease in the armed forces' share of the national budget, recently reaching critical levels of less than 1 percent of the country's gross national product (GNP). The Navy, for instance, received a sum of about \$500 million for its total expenditures in 1982. Obviously, the fraction reserved for investments in this amount is insufficient to sustain even a very modest modernization program.

When materiel reaches critical deterioration, the Navy receives extra funds or authorization to borrow from international financial institutions. The last modernization program, begun in the late 1960s, is an example. Nevertheless, the funds were insufficient to support a large and sustained program that could result in the construction of a significant number of ships, thus justifying investments in domestic production and supporting research and development programs.

It is difficult to convince a national private shipyard to interrupt the building of a series of merchant ships and rearrange its assembly line to satisfy small and sporadic Navy orders. This situation, coupled with normal captive market clauses of international financial contracts, obliges the Navy both to build new ships and buy its major parts in foreign countries.

In addition, developed maritime nations normally have modern, if not also large, fleets, high technological levels, and long traditions in building and exporting warships. These nations are able to keep shipyards occupied building vessels for themselves and other navies, usually resulting in an economy of scale because of large outputs. Consequently, even a small order placed by a less developed navy usually can be accommodated in their production line and contribute to overall system profitability.

The Brazilian Navy problem is further complicated since its hardware is quite expensive compared to that of the other armed forces. A Brazilian admiral said recently that a modern frigate may cost \$180 million, while an updated fighter aircraft goes for \$18 million, and a late-generation tank may be in the range of \$1.8 million. This ratio of 100:10:1 clearly demonstrates the dilemma of smaller navies such as the Brazilian, whose entire budget does not cover the price of a handful of medium-size warships.³

With all the obstacles to producing domestically its materiel, the Brazilian Navy now is heavily dependent on foreign suppliers in spite of the country's large shipbuilding capabilities. Undoubtedly, this dependence is the greatest impediment for the accomplishment of strategies devised to fulfill independent national political objectives. Fortunately, the elements needed to overcome this problem exist in the Brazilian reality of today and surely will become more evident in the future.

Another major drawback of the Navy is its lack of an attack/fighter air force; currently it possesses only anti-submarine warfare (ASW) aircraft capacity, and that is restricted to helicopter squadrons. The Air Force owns all fixed-wing aircraft. The presidential decision that led to this situation was taken in 1965 on the grounds of a more economic distribution of assets, and that the Air Force, unlike the Navy, had an adequate infrastructure to operate and support fixed-wing aircraft.

As recounted earlier, the nation's military posture then was exclusively defensive and basically designed for the global East-West confrontation. The Brazilian Navy's main task was to help the US Navy in protecting South Atlantic sea lines of communications against Soviet submarines. As a result, its primary concern was readiness for conducting ASW operations. This resulted in the decision to equip the aircraft carrier with only ASW aircraft, i.e., the Air Force's fixed-wing aircraft and the Navy's helicopters.

These factors, along with the chronic lack of funds for the armed forces, have—in spite its reasonable operational performance—impeded the Navy's possession of attack/fighter aircraft. Its present power projection capability is severely limited because of the lack of proper air support and, by the same token, its antiair warfare (AAW) effectiveness also is restricted. In short, the Navy is seriously hindered in executing some classical tasks that are normally expected of it.

The excessive concentration of ships, facilities, and administrative offices in Rio de Janeiro is the Navy's third major deficiency. One can cite historical, political, economic, and logistic reasons to explain this situation. Nevertheless, it represents a clear distortion of reality from an updated strategic point of view.

Rio de Janeiro was the capital of Brazil until 1960. The city possesses the first large bay North of the Uruguayan

border; it was natural for the Navy to concentrate there. The existence of industries in the Rio and Sao Paulo area since the 19th century gave further support to such positioning of naval assets, both for logistic reasons and to protect this important region against a menace from the south or any other area of the globe.

Its participation in the Second World War forced the Navy to face more important threats in ocean areas to the north of Rio de Janeiro. The US Navy, under whose command Brazilian ships then operated, gave priority to the northeastern coast of Brazil because of its proximity to Africa. Also, the US Navy was concerned with convoys transporting raw materials primarily from the Rio-Sao Paulo coast northward.

This strategic reorientation resulted in a concentration of more significant ships in northeastern ports and in the development of new bases or facilities in that region. These facilities provided support for Brazilian and American ships and airplanes operating there. The cessation of hostilities brought to an end the military pressures on the area, and the Navy moved back to Rio. Brazil's northeastern bases and facilities now provide logistic and administrative support for small regional forces integrated with patrol vessels and minesweepers. The most important bases are located in Aratu (in Salvador, about 700 miles North of Rio) and Belem in the Amazon River delta.

The Aratu base has received priority in investment, and is to become the Navy's main base. Such a strategic distribution of forces has been regularly overhauling ships homeported in Rio, including destroyers. Nevertheless, a permanent relocation of part of the Fleet to Aratu or another base North of Rio de Janeiro has not yet occurred.

Concentrating all significant naval assets in Rio constitutes what may be called a bad Navy habit. It overloads logistics and results in improper management of resources.

Because of the permanent absence of major combatant vessels along nearly three-fourths of the Brazilian coast, there is a dearth of operational experience in these regions, and no need or incentive is felt to build a proper logistic chain to support the Fleet out of Rio. In the event of an emergency in those or in transatlantic areas nearby, the conduct of timely and sustained operations will be quite difficult.

The overload of Rio's logistic and administrative facilities further contributes to the lack of overall preparedness of the

Fleet. Shipyards, drydocks, bases, and depots are already overcrowded, and an increase in the number of ships, or additional demands brought on by an emergency will place almost unbearable strains on the facilities.

It is appropriate now to examine the Navy's ability to accomplish its mission. The classic tasks normally expected of the navy of a country with the geopolitical and socioeconomic characteristics of Brazil are:

- o Strategic deterrence
- o Sea control
- o Projection of power ashore
- o Naval presence

Strategic deterrence, to those who think of generalized nuclear confrontation, would seem to be out of any consideration in the case of the Brazilian Navy. Its capabilities as a deterrent agent are simply none, as is true of all navies not equipped with nuclear submarine-launched ballistic missiles (SLBMs).

Nevertheless, a diminished scenario must be discussed, even though only potential regional problems may perhaps be caused by local countries or international powers. The recent Malvinas crisis, and the defused "lobster war" of 1963 between Brazil and France involving fishing rights on the Brazilian continental shelf, are good examples. In the event of such problems, the previously discussed shortcomings of Brazil's Navy will surely be weighed in the potential foe's evaluation, and the nation's credibility to deter conventional aggressive intentions will accordingly be reduced.

Sea control is another task whose scope may vary from a global attempt to check any enemy permanently, to the exercise of control over selected and much smaller maritime areas. It is clear that the Brazilian Navy lacks the capability to exert global sea control which the US and Soviet Navies possess. Even if it did, such a task would be quite beyond reasonably devised national objectives.⁴

The bitter reality is that the present Navy cannot control even small selected South Atlantic areas and has painful

difficulties patrolling, even for a short time, the entire Brazilian coast. This is true for any kind of sea control operation, including sustained ASW, for which the Navy is better equipped with modern frigates and submarines, operates sea-based aircraft of the Air Force, and has the support of land-based patrol airplanes.

The previously described hindrances all add to these operational restrictions against an enemy employing obsolete conventional resources. If one considers the use of more sophisticated weaponry and platforms, as Great Britain employed in the Malvinas with her nuclear submarines and surface-to-air-missiles (SAMs), the problem becomes untenable for the Navy with its present assets. Such was the case with Argentina's Navy--confined to mainland ports, incapable even of patrolling territorial waters.

A regional approach may somewhat mitigate Brazil's negative situation. All South American and African navies in general have problems worse than Brazil's, notably the latter across the Atlantic. There are some specific exceptions in terms of equipment, e.g., Argentina's naval attack aircraft, Chile's surface-to-surface missile (SSM) capabilities, and Peru's modern submarine force.

No doubt the basic restriction of depending on foreign suppliers applies more heavily to these countries than to Brazil, because they lack an industrial background that could alleviate logistic problems inherent to the sustainability of a protracted conflict. In other words, in the event of a regional war, the Brazilian Navy, can count more on any prospective enemy's incapacity in terms of sea control, than on its own present capabilities.

Brazil's ability to project power ashore also is seriously restricted. As is well known, such projection can be carried out with sea-based actions of shore bombardment using guns, aircraft, and missiles; by amphibious operations (with their inherent complexity); and by the use of small teams in submarines for special limited actions. The difficulty of these operations varies in direct proportion to the distance of the objective, to the enemy's capabilities, and to the overall time spent before the political and military goals are attained.

The conceivable projection scenarios involve application of naval power on South American land mainly on the Atlantic coast; in the western African areas; and in Brazilian territory itself. The Navy of Brazil faces enormous difficulties in executing any projection of power in foreign territories, even for the fulfilment of limited objectives.

Some operations of this kind could be carried out, but they must be close to the mainland and restricted in time and scope because the Navy lacks the resources to sustain the effort. The enemy must not be capable of strong resistance in the chosen area, particularly in local air superiority. This is specially significant in amphibious operations, where the limited size of the troop elements is another potential disadvantage.

Such constraints demonstrate that the Navy's capacity to project power was actually developed to counter an internal enemy, on both the country's sea coast and in the large river basins. This dovetails with the military policies which were developed in previous decades and encouraged and supported by the United States. Priority was given in the armed forces to assure internal security against Communist guerrillas, a point made by a Brazilian admiral in a recent article about naval powers. The Navy has to overcome many obstacles, in fact all of its present limitations, to project power into foreign territory.

The fourth fundamental task is naval presence. Nearly an infinity of subtle methods exists for the employment of naval assets to achieve political objectives. Classic examples are: the menacing display of large task forces, ships permanently stationed in other countries, and the periodic or perhaps random visits to ports in official or operational capacities. The number and quality of resources used, the duration of the stay, the conduct or nonconduct of demonstrations or joint operations with the host navy, and the social events all play a role that must contribute to the purpose of naval presence.

Brazil maintains a long tradition of its naval visits to other countries--the purpose varying depending on the area. The stationing of warships in other countries was done only in the last century in some South American and African countries, primarily to help the British Navy in combatting the slave traffic.

An area of some effective naval presence now is the Amazon basin and the North Atlantic coast to the

mouth of the Amazon up to Venezuela and some southern Caribbean islands. This region is frequently visited by river and ocean patrol ships, based in Manaus and Belem. To the South, Argentina and Uruguay normally receive the call of Brazilian warships during annual joint operations, including the UNITAS, under the political auspices of the US Navy.

Visits to European waters are also annually carried out by the midshipmen training ship, which is a troop transport. Recognizing its deficiencies as lacking combatant realism and its old age, the Navy recently began the construction of a more adequate ship for this purpose, based on the hull and main features of the modern Brazilian frigates. Recently, visits have been regularly extended to a few west African coast ports, where the training ship has regularly joined with one or two destroyers and crossed the Atlantic conducting operational exercises.

Brazilian Naval vessels seldom venture into other oceans, but they have visited both the Pacific and Indian Oceans. These were not operational visits and are normally carried out by the training ship in extended cruises.

In summary, today's Brazilian Navy faces a variety of problems, primarily because of the lack of funds and, despite the country's economic and industrial development, the lack of a self-developed naval technology. The problems do not stem from the Navy, but are the result of long-term national policies affecting the three armed forces, where priority has been given to controlling internal security problems. Only recently has the country become more involved with complex international problems that directly affect its interests as defined by more pressing and autonomous national objectives.

The Future

The last chapter indicated two major strategic orientations that may be implemented in the Brazilian military posture for the years to come:

- o More extensive and full support of Brazil's peaceful diplomatic and economic actions abroad.

- o The avoidance of involvement in the event of a broad northern hemisphere confrontation between East and West or of any other armed conflict extraneous to Brazilian interests.

The Navy naturally figures prominently in these considerations, and the degree of its participation will be directly proportional to the intensity of the country's stance on both issues. The Navy's tasks, defined in its overall mission to defend the country's integrity and its interests abroad, will be emphasized in the first-mentioned strategic orientation.

Support for Brazil's diplomatic and economic actions abroad is clearly linked to the tasks of naval presence and eventual projection of power ashore. On the other hand, avoidance of involvement will be guaranteed by a credible strategic deterrent capability. If the country is attacked, deterrence must be reinforced by the ability to exert sea control in areas of direct interest, particularly along the coasts.

Evolution towards a more active presence abroad must be based on a change from the present defensive and passive attitudes to a forceful posture wherever and whenever necessary to safeguard the national interests. Of course, these efforts must be selective, mainly in the initial period, because of the lack of naval assets to carry them on extensively.

The entire South Atlantic (including the western coast of Africa) is the natural but not exclusive environment for extended presence, which must be consistently and gradually extended to the northern Atlantic coast of South America, the Caribbean, the Pacific coast of South America, the East African coast, and the southern European waters, notably the Iberian region.

The many possible actions which will help implement this policy include the following:

- o Frequent ship visits to regional ports.
- o Joint operations with local navies.
- o Establishment of a more comprehensive net of naval attaches.
- o Scientific explorations of the Antarctic region.⁶
- o Negotiations for the use of local ports and naval facilities by Brazilian ships.

- o Sale of naval ships and equipment made in Brazil.
- o Training of foreign personnel in Brazil.
- o Technical assistance for regional navies, including local execution of services (such as surveys and maintenance).

It is important that these actions harmonize with the national objectives and policies relative to the countries affected. At the same time, some of the proposed measures should be extended to regions or countries not included above, since adoption of the measures will contribute to increasing Navy presence where beneficial for Brazil. Such is the case for the appointment of naval attaches to countries with important navies (USSR and China, for instance), or the efforts to gain new markets for Brazilian naval technology and materiel (Arab countries are a good example).

A committed effort to produce domestically the Navy's materiel is the cornerstone for success of the proposed measures. This is obvious, since the use of ships and equipment built outside of Brazil will always be a psychological, technical, and economic disadvantage in any attempt to influence other countries.

To project power ashore it will be necessary to tackle many of the Navy's present problems. A partial list of the most important measures to be adopted in this decade and the next would include:

- o Expansion of the number of ASW and surface warfare vessels.
- o Improvement in the Fleet and Marine Corps AAW capabilities.
- o Navy ownership and operational control of fixed-wing patrol, fighter, and attack aircraft.
- o Acquisition of at least one new small aircraft carrier with dedicated air squadrons.
- o Development of SSM capabilities.
- o Augmentation of Marine Corps personnel and materiel to at least regimental disembarkment capability.

- o Acquisition of amphibious, transport, troop carrier, and logistic ships and correlated equipment.
- o Development of infrastructure adequate for supporting the proposed expansion.

The magnitude of the evolution toward projection capability calls for a series of strategic options whose precise determination is beyond the scope of this paper. But the important fact is that the proposed measures must be adopted from now to the end of this century. This would mean expansion and modernization of the entire Navy, something badly needed in any case, but an essential ingredient of Brazil's military strategy in the not-too-distant future.

Again, the importance of domestic production of naval technology and industrial base becomes clearly palpable. It would be worthless to adopt such a complex and expensive program if carried out through the acquisition of foreign ships, weapons, and equipment. Of course, all these measures cannot be adopted at once and the process must consider established priorities and prospective national industrial capacities.

Avoidance of involvement in armed conflicts not affecting the nation's interests can be achieved by the buildup of sufficient military strength. Because it would incur a prohibitively high retaliatory cost, an attacker would be discouraged.

The most difficult situation in which this deterrence must enforce a noninvolvement policy would seem to be in a generalized East-West, northern hemisphere conflict. In fact, this may well be a wrong assumption, because the South Atlantic almost surely will be a second or third priority area in such a conflict. This is true even for the traffic of oil, since it is strategically much more sound for the Soviets to attempt an interruption near the production areas, than to conduct a major effort thousands of miles away.⁷

This means that the presence of fighting navies in the South Atlantic may not be an important factor in such a war, as it was in previous global conflicts. If Brazil does pursue a policy of noninvolvement, it may be more easily accomplished if the South Atlantic does not become a high-priority arena for naval confrontation of the main belligerents.

In addition to the power projection measures suggested above, the mounting of a Brazilian strategic deterrence capability for the Navy can be accomplished at the conventional level through the following:

- o Increase in the number of conventional submarines to be employed defensively in selected coastal areas against attacking naval forces.
- o Building a certain number of nuclear-powered submarines, to be employed in the Atlantic and elsewhere, and to counter prospective enemy naval forces or attack their sea lines of communication.
- o Development of SSMs to be carried by submarines.
- o Deconcentration of Naval forces from Rio de Janeiro and strategically redistributing them along the coast.
- o Development of adequate coordination doctrine with the Air Force for defensive purposes in maritime theaters.

The proposed emphasis on submarines (equipped with modern torpedoes and SSMs) for deterrent purposes is easily justifiable because of their high level of efficiency and relatively low cost. Owning and operating a few nuclear-powered submarines would give enough capability and flexibility to alert prospective enemies about the real danger in conducting naval actions against Brazil anywhere. The Malvinas/Falklands crisis provided a didactic example. What would have been its outcome had the Argentine Navy possessed three or four nuclear submarines patrolling around the islands?

Deconcentration of naval forces along the coast is a key element in enhancing the employment of naval assets, for it would promote a large extension and a variety of possible strategic options for the Navy in prospective scenarios of conflict. A corollary of this measure would be a better distribution of logistic efforts and consequent improvement in fleet readiness.

Adequate coordination with the Air Force for the defensive employment of land-based aircraft in maritime theaters is a must. The capabilities of air power to conduct successful actions against naval forces are increasing constantly. The correct use of air resources together with naval forces will contribute decisively in creating a deterrent capability at sea.

"Nationalization," or domestically producing military hardware, returns to the center of these considerations simply because it is impossible to develop an autonomous strategic posture and depend on foreign materiel, i.e., on decisions taken abroad. Deterrence at any level will only be feasible if Brazil develops its own capacity to provide the needs of its military with Brazilian-made equipment. Only then will the nation have the freedom to employ the armed forces in support of national objectives.

The ability to exert sea control is the last comprehensive task to be discussed here. The previous analysis showed the need for an expansion of Brazilian activity not only in geographical areas close to the country but also in some relatively more distant regions, in support of diplomatic and economic actions abroad. Also the analysis linked sea control to the major strategic orientation of noninvolvement, which could result in naval actions to be conducted in areas of interest to Brazil, notably along its coasts, in the event of a conflict threatening the country.

What this means is that the priority must be given to sea control actions to assure quick return to a noninvolvement posture if the country is attacked. Nevertheless, this does not preclude the attempt to gain and maintain sea control—even temporary and restricted in area—in the accomplishment of other tasks, e.g., projecting power ashore. Actually, sea control is a broad, classical naval task that has been the ultimate reason for the existence of navies for centuries. To link sea control with only the two major strategic orientations devised for the Brazilian Navy in the near future apparently reduces its scope. This is, in fact, a theoretical restriction when one considers that the exercise of sea control is attained by accomplishing any number of naval missions.

It follows that the Navy's efforts to prepare for exercising sea control to assure a noninvolvement stance would open up other politico-strategic options. For example, it would be necessary to be present in a maritime area while denying its use to the enemy—precisely the same sea denial tasks involved in power projection.

Preparation for sea control includes all steps proposed for creating a deterrent capability and for projecting power ashore. Also, some measures necessary for enhancing the Navy's presence abroad are directly linked to sea control. Negotiations for the use of foreign ports and naval facilities by Brazilian ships, for example, would obviously allow much more

flexibility in the eventual employment of the Navy abroad in case of war. Finally, the question of domestic production of naval hardware permeates the whole spectrum of measures to be adopted for a better exercise of sea control in any possible strategic action that supports national interests.

The Challenge

This projection of how the Brazilian Navy's tasks will probably evolve until the beginning of the next century has described the broad naval missions required to support diplomatic and economic initiatives abroad and to insure avoidance of extraneous conflicts. Many specific actions have been suggested to prepare the Navy for its evolving tasks.

The common factor in all those projections is the need to budget beyond current levels for the Brazilian armed forces and specifically for the Navy itself. As mentioned earlier, the expenditures in 1980 of the Brazilian military barely reached .7 percent of the country's GNP. This means a budget of about \$1.7 billion in 1982, of which the Navy's share is roughly .5 billion, since this year's GNP is about \$250 billion.

If a political decision is taken to increase the military spending to 2 percent in 5 years, and assuming an average annual growth of 5 percent for the GNP, in 1988 the armed forces budget would be about \$6.7 billion, for a GNP of approximately \$336 billion. This would make a remarkable difference from the present situation. The correlated projections until the year 2000 are shown in appendix C.

Appendix C also shows that (assuming a historical GNP annual growth rate of 6 percent) Brazil could reach the end of this century spending \$28 billion annually on its armed forces simply by increasing its percentage of GNP expenditures from the present .7 percent to 4 percent. This value in today's dollars is equal to what Great Britain spent in 1981 and higher than what France (\$26 billion) and Germany (\$25 billion) spent last year on their military.

If one considers that 4 percent of the GNP for the military budget is below the 1980 average of 4.7 percent for the ten highest nations in GNP in the world, the above values appear very reasonable for Brazil in the year 2000. The projections

show Brazil with the seventh or eighth largest economy of the globe and naturally playing an important role in the international arena--amply justifying increased support for its military establishment.

Indeed the Brazilian armed forces may experience a remarkable evolution from today's difficult situation to a very strong position, if adequate political decisions are taken in time. An increase from the current .7 percent of the GNP to 4 percent in military spending in 17 years can comfortably be absorbed by the economy with a very reasonable annual growth of less than .2 percent. This evolution, in fact, must proceed at a discreet pace because the military establishment cannot cope easily with a sudden growth of its expenditures. Long periods of time normally elapse between initial studies for acquisition of new weapons systems and their delivery to the services.

A concomitant intensive program of expanding the national defense industrial base will foster public acceptance of an enhanced military budget. The positive effects accruing to the already sizable Brazilian arms industry and correlated sectors of the economy will be obvious. By the same token, such "nationalization" can only be achieved through permanent efforts in research and development, and this will also contribute to an overall improvement in the country's industrial sector.

The Navy urgently needs an increase in its budget for investments in ships and equipment. Spending constraints have resulted in a long interruption of naval shipbuilding despite the efforts of successive administrations to the contrary. In fact, 1972 was when the last keels of two significant combatant vessels were laid down in Brazil--the frigates Independencia and Uniao. Even counting the frigates built in England for Brazil, the last one was laid down in 1975 and none has been started since.

A program for new construction that includes one aircraft carrier (sea control ship), submarines, surface combatant vessels, and amphibious ships is now underway. This plan emphasizes "nationalization" and continuity, both to be achieved by building ships in series instead of single units. For instance, a series of 12 corvettes of Brazilian design, will soon be started to replace the 10 aging ex-US destroyers of World War II vintage now in service in the Fleet. Priority has also been given to a smaller series of submarines of foreign origin but to be built in Brazil.

This modest program was first proposed in 1976. But economic problems and the already mentioned low priority in military expenditures resulted in successive delays. As in previous programs, no major vessel has yet been laid down with the exception of the midshipmen training ship. The present naval leadership however, has recently been successful in obtaining some extra budget support from the government.

This will allow the start of the corvette series in 1983, with ships to be built both in naval and private shipyards. The submarine series will follow immediately thereafter pending a final solution of technical and financial aspects. Even so, the ships and equipment to be procured in this decade do not measure up to the numbers, variety, and quality of those called for in this paper.

Realistic professional positions stemming from sound strategic thinking must take into account evidence that Brazil will become a major power in the decades to come. The country possesses all of the elements to achieve major power status despite its current economic problems. The figures cited in appendix C show that the Brazilian military establishment can be raised to a significant position as an instrument of national power to achieve the nation's future objectives. Getting to that position will depend on politicoeconomic decisions taken early enough to allow strategic measures to be adopted in a timely and orderly manner.

The Navy will certainly be called on for increasingly important roles in this context, since naval forces traditionally join with diplomacy in pursuit of a country's interests abroad. Achievement of the goals discussed will depend on the Brazilian Navy leaders' understanding of all these factors and the actions they take to prepare their cherished institution for the fascinating challenge of the future. The author is sure that our leaders are striving tenaciously in this direction, and that they will achieve success in due season.

ENDNOTES

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8. Unclassified data compiled from publications of the Brazilian Institute of Geography and Statistics (IBGE), Getulio Vargas Foundation (FGV), and The International Institute for Strategic Studies.

9. "O Choque da Guerra" (The Shock of War), Veja, Rio de Janeiro, 30 June 1982, p. 74.

Chapter V

1. John E. Moore, ed., Jane's Fighting Ships 1980-1981 (London: Sampson Low Marston and Company, Ltd., 1979), p. 56.

2. Actually, two frigates were built in Brazil, but they involved very little domestic naval production.

3. Armandol A. F. Vidigal, "A Industria Naval Militar no Brazil Atraves do tempo" (The Naval Military History in Brazil through Time), Revista Maritima Brasileira, Rio de Janeiro, January-February-March 1981, p. 84.

4. "Sea control" here is understood as "denying the use of the sea by the enemy," often considered as a separate task. The definition of sea control is more narrowly evolving to mean control of selected maritime areas, due to the growing difficulties of exerting permanent control over vast expanses of sea.

5. Mario C. Flores, "Poder Naval. Fundamentos Instaveis e Rumos Incertos" (Naval Power: Unstable Fundamentals and Uncertain Courses), Revista Maritima Brasileira, Rio de Janeiro, October-November-December 1980, p. 67.

6. The Navy has already been assigned responsibility for the implementation of Brazil's recently established policy for the Antarctic region, which includes regular exploration of the area with ships and fixed stations.

7. Flores, "Poder Naval," p. 62. This reasoning expressed by Brazilian Admiral Flores, and here endorsed by the author, differs from that presented by Adm. Harry D. Train II, USN (Ret.), SACLANT, in the Sixth International Seapower Symposium (See Harry D. Train, II, "Remarks," in the Sixth International Seapower Symposium (Newport RI: Naval War College, 1 July 1981)).

APPENDIX A

BRAZILIAN MILITARY FORCES*

Population: 125,000,000

Total Armed Forces: 272,850 (133,900 conscripts)

Military Service: 12 months

ARMY

Total Personnel: 182,750 (132,000 conscripts)

- o 2 armies, 2 regional commands, 8 military regions, 7 division headquarters
- o 1 armored cavalry brigade
- o 3 armored infantry brigades
- o 5 mechanized cavalry brigades
- o 1 mechanized Infantry brigades
- o 11 motorized infantry brigades
- o 1 mixed, 1 parachute brigades
- o 2 light jungle infantry brigades
- o 2 engineer groups
- o 75 M-4 MBT: some 250 M-3A1, some 300 M-41 1t tks; 138 EE-9 Cascavel, M-8 armd cars; some 120 EE-11 Urutu, some 60 M-59, some 600 M-113 APC; 500 M-116 75mm pack, 413 105mm, 135 M-114 155mm towed, some 60 M-7 and M-108 105mm SP how; some 240 57mm to 304.8mm (12-in naval) coast arty guns; 81mm, 4.2-in, 120mm MOR; SS-60 108mm MRL; 240 M-18A1 57mm RCL; 3.5-in RL; 106mm RCL; 200 Cobra ATGW; 30 35mm, 30 40mm, some 180 57mm, 90mm AA guns; 4 Roland II SAM.
- o (On order: 50 X-1A2 1t tks; SS-60 (FGT-X40) 300mm MRL.)
- o Reserves: Trained first line 1,115,000; 400,000 subject to immediate recall. Second line (limited training) 225,000.

Source: International Institute for Strategic Studies, "The Military Balance, 1982-1983," in Air Force Magazine, December 1982, p. 136

NAVY

Total Personnel: 47,300 including naval air force and marines
(1,900 conscripts)

- o 8 submarines: 3 Oberon, 5 ex-US Guppy II/III.
- o 1 ex-Br Colossus aircraft carrier (capacity 20 ac, incl 7 S-2A ASW ac; 4 Sea King hel).
- o 12 ex-US destroyers: 5 Sumner (1 with 1 x 4 Seacat SAM, 4 with 1 Wasp hel); 2 Gearing with ASROC, 1 Wasp hel; 5 Fletcher.
- o 6 Niterio frigates with 2x 3 Seacat SAM, 1 Lynx hel; 2 with 2 x 2 Exocet SSm, 4 with Ikara ASW.
- o 10 Imperial Marinheiro patrol vessels.
- o 5 river patrol ships; 2 Pedro Teixeira, 3 Roraima.
- o 1 river monitor with 1 x 3-in, 2 x 40mm, 6 x 20mm guns.
- o 6 Piratini large patrol craft.
- o 6 Schutze coastal minesweepers.
- o 2 ex-US LST; 4 ex-US 1610 LCU.
- o 3 tp, 1 river tpts.
- o 1 repair, 1 spt, 2 tanker, numerous auxiliary ships.
- o (On order; 1 submarine, 4 corvettes.)

- o NAVAL AIR FORCE: (13,100; 13 combat hel.)
- o 2 ASW sqn with 4 SH-3D Sea King, 9 Lynx Mk-89 hel.
- o 1 liaison sqn with 9 Wasp, 7 AB-206B, 6 AS-350M Esquilo hel.
- o 1 trg sqn with with 10 AB-206B hel.

- o MARINES: (14,500)
- o Fleet Force: 1 amph div (1 comd, 3 inf, 1 service bns, 1 arty gp).
- o 1 Reinforcement Comd: 5 bns incl 1 engr, 1 special operations, supply.
- o Internal Security Force: 9 Regional Gps.
- o EE-9 Cascavel armd cars; EE-11 Urutu APC; 105mm how.

AIR FORCE

Total Personnel: 42,800; 227 combat aircraft

Air Defence Command: (15 combat ac)

- o 1 interceptor sqn with 13 Mirage IIIEBR, 2 DBR.

Tactical Command: (183 combat ac)

- o 2 FGA sqns with 32 F-5E, 4 F-5B.
- o 8 coin/recce sqns with 139 AT-26 Xavante (11 RT-26 recce); 8RC-95 (photo/lt observation).

Maritime Command: (29 combat ac)

- o 1 ASW sqn with 8 S-2E, 9 S-2A (7 in carrier).
- o 1 MR sqn with 12 P-95 (EMB-111).
- o 4 SAR sqns with 3 RC-130E, 8 SC-95 ac; 2 Bell 47G, 6 SA-330 Puma hel.

Transport Command:

- o 1 hel sqn with 9 UH-1D.
- o 13 tpt sqns with 2 Boeing 737, 31 EMB-810C (U-7/A) Seneca II, 9C-130E/H, 2KC-130H, 8 HS-125, 1 Viscount, 12 HS-748, 19 DHC-5, 98 EMB-110 Bandeirante (58 C-95, 20 C-95A, 20-B), EMB-121 (VU-6) Xingu, 5 C-47 ac.
- o 3 liaison sqns with 62 U/LU-42 Regente ac; 23 UH-1H hel.

Training Command:

- o 50 T-23 Uirapuru (being replaced by 100 YT-17), 86 T-25 Universal (being replaced by T-27), 59 AT-26 ac; 16 Bell 47 (H-13J) hel.
- o 1 calibration unit: 2 HS-125, 2 C-95A, 4 EC-95. AAM: R-530, Piranha.
- o (On order: 88 AM-X, 12 EMB-120 Brasilia tpts, 100 YT-17 Tangara, 115 T-27 Tucano (EMB-312) trg ac, 8 UH-1H Iroquois hel.)

PARA-MILITARY FORCES

Total: Some 185,000 Public Security Forces; state, private militias in addition



*Indicates naval bases and/or support facilities

APPENDIX B: MAIN PORTS OF BRAZIL

APPENDIX C

PROJECTED BRAZILIAN MILITARY EXPENDITURES*
(ESTIMATED 1982 GNP - \$250 BILLION)**

5% GNP Annual Growth

<u>Year</u>	<u>GNP</u>	<u>Military Expenditures</u>		
		<u>2%</u>	<u>3%</u>	<u>4%</u>
1984	276	5.52	8.28	11.04
1988	336	6.72	10.08	13.44
1992	407	8.14	12.21	16.28
1996	494	9.88	14.82	19.76
2000	601	12.02	18.03	24.04

6% GNP Annual Growth

<u>Year</u>	<u>GNP</u>	<u>Military Expenditures (% of GNP)</u>		
		<u>2%</u>	<u>3%</u>	<u>4%</u>
1984	280	5.60	8.40	11.20
1988	354	7.08	10.62	14.16
1992	445	8.90	13.35	17.80
1996	561	11.22	16.83	22.44
2000	708	14.16	21.24	28.32

* Values in US \$ billions.

** The estimated GNP figure may vary depending on the value of the Brazilian currency because of the country's current high inflation rate.