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Brazil's Nuclear Option : The Foreign Policy Context

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SATYA NARAYAN PRADHAN

CENTRE FOR AMERICAN AND WEST EUROPEAN STUDIES
SCHOOL OF INTERNATIONAL STUDIES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI-110067. INDIA
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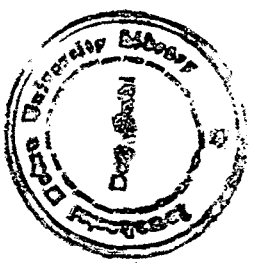

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C H A P T E R - I

INTRODUCTION AND BACKGROUND: THE ORIGIN AND DEVELOPMENT OF A NUCLEAR POLICY

The initial steps towards the formulation of a coherent nuclear policy were taken in Brazil, immediately after the end of the Second World War. The discovery of nuclear power as an energy alternative was of great significance to all countries in international system, big or small, developed or developing. On the other hand, its destructive potential had already been demonstrated in Hiroshima and Nagasaki. For Brazil, the economic significance of nuclear energy as a support for its development offensive was the prime impetus behind its early steps towards acquiring nuclear knowhow. Indeed Brazil's original nuclear perspective underlines the aspect of the non economic or purely destructive use of nuclear energy in the shape of armaments, as a wastage of resources.(1) To that effect President Juscelino Kubitschek (1956-61) put forward the concept that the developing countries should benefit from the resources released by the reduction of expenditure on armaments. The idea was to reconvert resources thus gained towards combating problems of poverty and under development that were chronic to developing countries. In fact the Brazilian foreign policy from the mid-1950s to the early 1960s advocated the '3d' formula of disarmaement, development and decolonisation. These remained for

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1. Brazil was one of the earliest advocates of complete disarmament. During President Goulart's time (1961-64) it became one of the eight members of the United Nations Disarmaments Committee. For details see H. Jon Rosenbaum and Glenn M. Copper: "Brazil and the Nuclear Non Proliferation Treaty" International Affairs: vol.46, January 1970 p.74-90.

sometime the cornerstone of Brazilian foreign policy and by that token established very early the intimate relationship between Brazilian nuclear aspirations and its foreign policy.(2)

Two points of importance emerge from the above analysis:-

i) That the initial shape given to Brazil's nuclear policy was in the context of the viability and promise of nuclear energy as one major input.(3)

ii) that this rationale of development was directly linked on the external front with advocacy of disarmament.

The Brazilian nuclear programme partook of the above two stands, and such an orientation continued till the coming of the military to power in 1964. Subsequently some new considertions emerged with which we shall examine in the course of this chapter. At this point, it is worthwhile to consider the various reasons perceived at that time that served as incentives

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2. Ibidem.

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3. In the 1950s nuclear energy was presented as a miraculous source of energy in the United States, Britain , France and the Soviet Union. In Brazil, therefore, it seemed to be essential input to overcome under development. Also, the marketing drives by multi-national corporations (M.N.C's.) and promotion by International Atomic Energy Agency(IAEA) of the idea of widespread Civil Uses of nuclear energy contributed. See Jose' Goldemberg, "Brazil in Joseph Goldblat (ed.) "Non-Proliferation: The Why and the Wherefore" (Stockholm, SIPRI, 1985) p.86.

for Brazil's nuclear efforts.

In the first place, the economic incentive for Brazil to seek a nuclear alternative for its high energy requirements cannot be overstressed. For a country which traditionally regared extensive economic development as an undelayable imperative, poor fuel potential was bound to be a liability. In such a situation the dramatic possibilities of nuclear energy were hard to overlook. Despite being a huge country, Brazil is exceptionally lacking in forcing energy sources. In fact as recently as in 1946, wood furnished 70% of national energy supply.[4] The promise of oil in the 1950s was soon belied and the economy has ever since been subjected to a constant threat of inadequate energy resources as far as indigenous production goes.[5]

It is arguable of course that the hydro-electrical potential was and is enough to obviate heavy investment in nuclear energy[6].

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4. Robert Wesson, The United States and Brazil: Limits of Influence (New York, Praegar Publications), 1981 p.75-76.

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5. Ibid. However, hydro-electric production has increased three-fold since the mid 1960s leading to fears that the water flow potential near the major cities may be exhausted before the turn of the century.

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6. It is estimated that the hydro-electric potential of Brazil is large enough to satisfy the needs of the country beyond the year 2000. Jose's Goldemberg op cit p.83.
Robert Wesson op.cit. p.76

But then there were other important constraints. Firstly, the bulk of hydro-power potential is rather remote from the main centre of population and carrying it towards those centres from the remote areas involved substantial cost and technological difficulties as well.(7) Secondly, and what is perhaps more important , for long the Brazilian Govt. and technocrats have regarded nuclear as a symbol of modernization.(8) Going nuclear meant entering the select companies of highly advanced nations to refrain meant accepting secondary status and also to succumbing to a technological gap.

There were also other important reasons which could be called politico- strategic. The Argentinian nuclear ambition and her efforts along those lines were from beginning, a prime factor in Brazil's nuclear designs.(9) Argentina started out on the nuclear role earlier than Brazil and this more than anything else provided the trigger to Brazil's precipitate efforts in the early 50s to acquire nuclear knowhow.(10) It is plausible

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7. According to Paulo Nogoueira Batista, the erstwhile chief of NUCLEBRAS "the installation of nuclear reactor will enable these energy resources to be used right there without costly and wasteful long distance transmission". Norman Gall op.cit. p.179.

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8. Robert Wesson op.cit. p.76

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9. Ernest W Lefever, Nuclear Arms in the Third world, (Washington DC : The Brookings Institutions) 1979

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10. Norman Gall, "Atoms for Brazil, Dangers for All" Foreign Policy No.23, Summer 1976 p.52-65.

to underscore here categorically that the Argentinian nuclear behaiour has been is and shall be a constant factor in Brazil's nuclear considerations, whether it be in the nature of confrontation and rivalry or of co-existence and cooperation (a recent trend in the relations between the two countries).(11)

The combination of economic political and strategic incentives along with the perception of nuclear capability as a symbol of modernisation was a factor in making Brazilian decision maker's early endeavours to acquire nuclear technology.(12)
It also led to the establishment of a structural set up to regulate and promote a national nuclear programme. During the second administration of Getulio Vargas (1951-54) the Conselho Nacional de Pesquisas or the Council of National Research took up the task of Nuclear development and made the first effort to secure the nuclear technology. The catalyst to these efforts had been the developments in Argentina. Already in 1950 President Juan Pero'n had set up the Argentina National Commission for Atomic Energy (CNEA). Twenty months before the hydrozen bomb was actually exploded by the United States, Pero'n declared to the world that thermonuclear reactions had been

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11. For details see "Acordo Mais Important' Na Area Nuclear" in Folha de Sao Paulo , 11 Nov.1986.

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12. Victoria Johnson mentions three objectives : 1 to prepare for anticipatory energy demand , 2)to demonstrate greater scientific competence 3) to acquire a security option. See Victoria Johnson "Brazil" in James E Katz and Onkar Marwah, "Nuclear Power in Developing countries" (Lexington, Lexington Books, 1982) p.97-117.

carried out successfully inside Argentina, albeit at laboratory level.[13] These experiments were later proved to the false alarms.[14] However, at that point an alarmed Brazil was driven to seek help in allied occupied Germany. In 1953, Admiral Alvero Alberto, the first President of Brazil's National Research Council visited Germany and met scientists who had allegedly played key roles in the abortive Nazi atom bomb project.[15] A secret deal was subsequently signed up for three gas centrifuges uranium enrichment and also for special training of Brazilian scientists in Germany. Howeever the United States occupation authorities found out the whole deal and seized the equipment just before shipment. Soon after the U.S. Govt warned Brazil against any such misadventurous in her own interest as also of the United States.[16] Nevertheless by 1955, Brazil had once again attempted , unsuccessfully to obtain technology from France.[17]

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13. In 1950 President Juan Pero'n commissioned a research facility in a remote island in a lake in southern Argentina, with Ronald Richter, an emigre Austrian nuclear physicist as Director. "On Feb 15,1951" Pero'n declared soon after "....thermonuclear reactions were carried out.....on a technical scale." Richter added "I control the explosion...." quoted by Norman Gall-op.cit. p. 180-181.

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14. Argentine scientists later found that Richter's achievements were far short of his claims. Ibidem.

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15. Ibid p.181.

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16. Ibid p.182

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17. See Clovis Brigagao' Brazil's Nuclear Policy: Dilemmas and Options' in Helena Tuomi and Raimo Vayrynen (ed) Militarization and Arms Production (Croom Helm, London 1983) p.206.

These failures notwithstanding, the early attempts to obtain technology on the part of Brazil highlighted some points of importance. :-

i) That Brazilian leadership was convinced about the indispensability of nuclear technology for Brazil's development needs, as a cr[illegible] for international prestige; as an effective deterrent against possible Argentinian belligerence.(18)

ii) that Brazil was prepared to deviate from the traditional path of automatic dependence upon the United States on all matters and obtain technology on its own whenever feasible, showing thereby its aspiration for greater autonomy and its external relations.

The second point needs to be qualified. Traditionally Brazil and United States have shared a special relationship from the auspicious beginning in 1822, when United States was the first country to recognize Brazilian independence to the time of the Second World War when Brazil was the only Latin American country to commit troops to Europe. The special friendship was

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18. Both Argentina and Brazil view their nuclear programmes as contributing to several national goals. Development, independence (in Policy Making) , regional influence and a greater role in the international system William H. Courtney "Nuclear Choice for Friendly Rivals" In Joseph Yager (ed) Nuclear Proliferation and US Foreign Policy , (Washington DC Brookings Institute , 1980) p.250

apparent.[19] The post-war period also witnessed a fair degree of Brazilian's dependence on the United States especially on the economic front. The relations however, followed a downward course starting from quite intimate (as during the Presidency of Enrico Dutra (1946-1950) and also of the second Presidency of Getulio Vargas (1950-56) to functional (as during Juscelino Kubitschek's period).[20] In the 1960's the Presidencies of Janio Quadros and Joao Goulart effected the major departures in Brazilian foreign policy and since the sixties to the present, Brazil-United States ties have never recaptured the intimacy despite initial efforts by the military rulers(as by Castelo Branco). The rise of nationalism affected external policy too. Ever since this time there has been a persistent trend in Brazilian domestic and foreign policy to project a more autonomous and independent decision making. To that extent continued dependence on United States, has been , after the 1960's increasingly a matter of choice. In fact, Brazil has constantly shown a tendency since the 1960's of enjoying the economic benefits of living in an Inter-American Alliance system, but to the exclusion of any inter American security ties in the manner of North Atlantic Treaty Organization (NATO). or the alliance between Australia and New Zealand and the United States (ANZUS).[21] The two main aspects of such anti super-powerism

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19. For details see Robert Wesson op.cit. p.15-18.

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20. See Ibid p.19-31.

particularly an anti US orientation in Brazilian external policy have been :-

a) Of Brazil aspiring , for an autonomous decision making capability in her external relations, in consonance with her domestic priorities. Therefore, it increasingly seeks a mutual relation with the United States wherein the latter's influence is limited and less interventionist in matters to which Brazil accords highest priority as national interests.

b) of Brazil willing to recognize the obvious benefit of an inter-American alliance especially on economic and technological front but averse to being party to a security umbrella under the United States or being exclusively dependent on the United States for technology - transfer and economic benefits.

The evolution of Brazilian nuclear diplomacy in consensus with its nuclear aspirations partakes of the above trends in Brazil's foreign policy orientations. It is crucial to note that the United States was the earliest and the principal collaborator in

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21. Since the mid 1960's Latin Americans have been seeking to revise the juridicial structure of the inter American system to strengthen its economy and social function and to de-emphasize political and security issue.

See Margaret Daly Hayes' Latin America and U.S. National Interest : A Basis for U.S. Foreign Policy (Boulder, Colorado, Westend Press, 1984) p.248-251

the development of a "Latin American Nuclear Research Programme" beginning in the 1950's with the Atoms for Peace Programme of which Brazil was a principal beneficiary.(22) Yet since the 1960's the trend has been in the direction of :-

i) a movement away from cooperation with the Unites States.

ii) more bilateral nuclear cooperation among Latin American countries.

iii) Growing instances of cooperation between Latin American and non-Latin American countries.(23)

Given this analysis of Brasilia's nuclear behaviour, it is clear that the study of the origin of development of a 'Brazilian Nuclear Policy ' needs to be seen through a time of two decades or more , i.e. since the early fifties till the early seventes

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22. In the early 1950's the United States signed Atoms for Peace agreements with Argentina and Brazil and it later furnished Brazil with a research assistance. The Atoms for Peace Programme, launched under Eisenhower Administration, was intended to involve a limited sharing of nuclear technology for peaceful purposes- while maintaining overall U.S. control of sensitive processes.

William Perry and Sheila Kern, "The Brazilian Nuclear Programme in a Foreign Policy Context", Comparative Strategy , Vol.1, no's 1 & 2, New York 1978 p.53-70

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23. John R.Redick : Nuclear trends in Latin America in Aspen Institute for Humanistic Study, Governance in the Western Hemisphere, Background papers, June, 1982.

when decisive steps were taken to give concrete shape to a nuclear programme. However prior to the mid -1960''s not much was achieved in substantial terms to manifest a well formulated nuclear policy in Brazil.[24] The German and French "misadventures" in the early fifties, coupled with strong United States disapproval of such attempts , led Brazil to fall back on United States for initial progress in the nuclear area. It acquired some technology from the United States under the Atoms for Peace Programme. In 1955, under another agreement with Washington , Brazil receieved five experimental reactors by 1973. Juscelino Kubitschek's government was the first to decide on the construction of a 150-200 MW power reactor following the United State model. The administration of Quadros and Goulart after him, however, settled for the French models. This was in keeping with Quadros' 'Independent Foreign Policy' efforts. However the military government that came to power in 1964, cancelled the French project even as France itself switched over to the United States models.[25] The post - 1964 military government let the nuclear question in limbo for a few years, before settling down for an agreement with the United States in

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24. H.Jon Rosenbaum and Glenn M. Cooper, op.cit. p.

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25. Brazil's oldest nuclear research reactor, the American designed IEA-R located at the institute of atomic energy near sao Paolo has been in operation since 1957 (5 Mega watt reactor fueled by enriched uranium from U.S). A second research reactor called Triga - I is operating since 1960 at Belo Horizonte . A tried one , Agronaut is in Rio's institute of National Engineering has been operating since 1965. All three reactors are based on US designs and covered by IAEA safeguards.

1967 to purchase reactors from the Westinghouse company [26], the largest exporters of nuclear reactors in the world. Another agreement in 1971-72 provided for uranium mining in Brazil and enrichment in United States for the Brazilian reactor - Angra -I and Angra -II. The EXIM BANK extended credit for the project in 1972 and of course to manage it all NUCLEBRAS was created in 1970.[27] All these exchanges between Brasilia and Washington signified an apparent nuclear dependence of the former on the latter. The equation however was not that simple.

In 1967, at a time when the United States Brazilian cooperation endeavour on the nuclear front seemed to be on a high, the Brazilian Govt. decided to work for an independent fuel cycle which was, for its potential dangers, not acceptable to United States. On the other hand, Washington's condition for nuclear collaboration were also not any more acceptable to

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26. The preference for US models which use enriched uranium was a victory for non-proliferation efforts by United States as natural uranium reactors produce explosive grade plutonium. See Norman Gall op.cit p. 186-187.

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27. The military Govt. relied more on United States friendship, and believed in its advantages in terms of economic and political benefits. On the nuclear front it guaranteed "high technology ;and dependability." Moreover, in the early 1960, the US sold reactors worldlwide in the wake of French and Canadian ventures in Israel and India. - Robert Wesson op.cit. p.75-89.

Brazil. Moreover, the latter had separately started working on a fifteen year plan for nuclear independence.[28][29] What is more in the early seventies, the Soviet Union also had begun offering Brazil an alternative source of enriched uranium.[30]

Such deviations from the United States' line was on the part of Brazil, in keeping with its growing power potential, economically and politically. It also was complementary to her search for autonomy in its external relations. It has already been said that nuclear energy was regarded by the technocrats in Brazil, like in other developing countries, as a symbol of modernization. In 1967, President Costa e Silva claimed that nuclear energy camp bridge the gap between 'developing' and industrial nations. Secondly, Brazil was, by the early seventies already seeking to come away from the pale of

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28. In 1967, while Argentina's CNEA was making elaborate plans for construction of ATUCHA,Argentina's first reactor, President Costa e Silva approved a report by the National Security Council of Brazil which recommended some permanent objectives : transfer of Nuclear Technology to Brazil;independence in production of nuclear fuels; creation of an infrastructure of support for the nucleal programme and training of personal. See Norman Gall, op.cit. p. 185-186..

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29. In 1967, CNEN reportedly commissioned a 15 years feasibility study for building an Atom Bomb - H. John Rosenbaum" Brazil's Nuclear aspirations" In Onkar Marwah and Ann Schulz (ed.) Nuclear Proliferation and the Near Nuclear Countries . (Cambridge, Massachusets, Ballinger, 1975). By hindsight it seems to have been a false report.

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30. Robert Wesson op cit p.78.

East-West ideological rivalry and to seek her interest in more natural terms, both in the international and regional spheres.[31] Finally it has to be contended that the triggering factor to Brazilian disenchantment with the United States vis-a-vis her nuclear aspirations was the openly discriminatory attitude of the super powers towards non nuclear states.[32] It amounted to discrimination and denial especially in view of the fact that Brazil still considered the United States as a special friend. The 1977 White Paper on Brazilian Nuclear Programme refers to the NPT as seeking "to legitimize a distribution of power which is unacceptable (to Brazil) ".[33] Such an attitude was seen as monopolistic and one that aimed at freezing the world order into nuclear haves and have nots to the extent that even peaceful uses of nuclear energy were denied to the later. This was unacceptable to Brazil and contributed to her disapproval of United States in transigence to the nuclear ambitions (apparently peaceful) of a faithful ally.

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31. In 1967, Costa e Silva claimed that nuclear energy can bridge the gap between"developing"and "industrialized nations". See Robert Wesson op cit p.83.

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32. Even though the primary relationship in various areas of economic and political consequence around this time were with the United States, Brazil has nevertheless starting being more dynamic in bilateral and multi lateral diplomacy. See Ashok Kapoor "International Nuclear Proliferation : Multilateral Diplomacy and Regional Aspects(New York N.Y)" Praegar Publishers 1979) p.330-355.

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33. " Brazilian Nuclear Programme" Govt. of Brazil, Brasilia, 1977.

Subsequent actions of United States, seemed to confirm Brazil's suspicions. In 1974, the oil crisis came as a rude shock to the later's optimism in the wake of the "Economic Miracle" Years. In the face of a fuel crisis, the seemingly over ambitious programmes of nuclear development now seemed essential for Brazil's economic growth.The Indian explosion in May 1974, was for Brazil a definite proof of the possibility of autonomous development of a successful nuclear programme on the part of a developing nation.(34) To add to this, Brazil's premise of special relationship with the United States was destroyed in Brazilian' perception when the United States Atomic Energy Commission (USAEC) notified her that it could not guarantee delivery of the previously promised enriched uranium. In fact Washington returned the advance payment. Already Brazilian non-adherence to nuclear non proliferation treaty (NPT) had given Washington reason to prevent Westinghouse from building enrichment and reprocessing facilities in Brazil.(35) The Brazilian Govt. on the other hand refused Westinghouse's offers

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34. The Indian explosion greatly affected the nuclear projections of both Brazil and Argentina and there were speculations about the utility of an explosive capacity for the developing countries. For example, the Argentina Journal "Estrategia" praised India's Peaceful Nuclear Explosion '(P.N..E) as showing how an under-developed and technologically dependent countries can attain objective based exclusively or her own appreciation of priorities.) See Norman Gall, op.cit.106

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35. Such policies of denial directly led to Brazilian disenchantment with the U.S. as the only guarantor of the constant supply of fuel. These steps greatly alarmed Brazilian energy planners and made the Govt. to seek out other alternatives.

to participate in enrichment plant construction in United States. The leadership in Brasilia insisted on the entire fuel cycle, 'from ore to kilowatts,' in addition to reprocessing facilities, to be within Brazilian territory and under Brazilian management.[36] The United States policy of intransigence and denial led directly of the signing of the Bonn-Brasilia nuclear accord in June 1975. The Federal Republic of Germany had already shown considerable interest in Brazil's nuclear efforts and in fact a technical agreement had been concluded between the two countries in 1969 itself.[37] In any case that accord signed in June 1975 then amounted to the largest nuclear transfer to the Third World. It not only gave a new dimension to Brazilian nuclear diplomacy but also confirmed the independence orientation of its foreign policy.

From the very first attempt to obtain technology from occupied Germany up to the signing of the "deal of the century"[38] with the Federal Republic of Germany, Brazil's nuclear policy had complemented its foreign policy consideration of autonomy

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36. It is to be understood that by the early seventies Brazil was much interested in exploration and mining of uranium which was then believed to be in potentially large quantities in Brazil's Hence the projection of complete fuel cycle capability as a feasible and desirable programme. For details see Norman Gall op.cit. p.168-177.

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37. FRG foreign minister Willy Brandt visited Brazil in 1968 and had discussed matters of nuclear technology. After the agreement was concluded in 1969, Brazilian engineers began travelling to West Germany and nuclear cooperation was formally instituted in 1971. In 1974 -75 negotiations started for the Bonn-Brasilia Nuclear Accord. See Norman Gall, op cit p.165.

and flexibility of action. From traditional bilateralism to a more pragmatic multilateralism Brazilian external policy was directly reflected by its nuclear diplomacy.(39) The original issue of the evolution of Brazilian nuclear policy, on the other hand, can be logically linked with her domestic priorities. Thus, a chain reaction link(40) can be established between Brazil's domestic pressures , her nuclear policy and her nuclear diplomacy. The last one is an aspect of Brazil's overall foreign policy perspective and therefore not only affects it but also is affected by the same. Thus when the fuel crisis raised new domestic economic considerations for Brazil in terms of a nuclear alternative, it brought home to Brazil the truth that

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38. William H Lowrance "Nuclear Futures for Sale: Issues raised by the West German-Brazilian Nuclear Agreement" in Abraham Chayes and W. Bennet Lewis (ed.)
" International Agreement for Nuclear Fuel Reprocessing " (Cambridge, Massachusets, ;Ballinger Publishing Company) p.201.

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39. In this connection William Perry and Sheila Kern observe "Brazil is currently well advanced in transforming itself from an obscure regional actor, pursuing a clientelistic international policy, on to an autonomy power-centre with a positive and influential world role. In many respects its recently emergent nuclear programme may be seen as catalyst and touchstone of the entire process ....."(emphasis added).....See William Perry and Sheila Kern, op cit p.54.

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40. William Perry and Sheila Kern clearly elucidate this linkage :- "Although the social problem of under development presses....there is also in clear evidence a parallel evolution....which augurs the continuance of a dynamic and self sustained developmental trajectory."

"In the International sphere these increasing capabilities have led to a crystallization of the long latent Brazilian aspiration towards International standing" Earlier they talked about "the nuclear programme as a catalyst and touchstone of the entire process."
See William Perry and Sheila Kern p.54-56.

nuclear dependence contributed greatly to policy dependence and a bold move away from such independence was not only desirable but also imperative.[41] Hence her move towards the "European Option"[42] in the shape of the 1975 accord with the Federal Republic of Germany. This accord not only gave booost to Brazil's nuclear aspirations, but also accredited to her external relations and independence in real terms.

It is significant that Brazilian nuclear policy has over the decades been a touchstone of its foreign policy. This gives rise to certain considerations that give substance to this chapter and the subsequent ones.

Firstly, the question of the connection between incentives (both perceived and real) and the nuclear behaviour of a country, is of primary importance, Brazil's incentives have been largely categorised by scholars under three broad heads:

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41. This point was brought out later by the Brazilian Govt. in its white paper on nuclear policy "the economic growth of the country or its mere subsistence cannot be dependent on third countries' decisions as to prices and supplies of essential fuels." The Brazilian Nuclear Programme Government of Brazil, Brasilia, 1977.

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42. This concept implies lessening dependence on United States and increasing ties with Europe. See William H. Courtney " Nuclear Choice for friendly rivals" in William H. Courtney and Joseph Yager (Ed), Nuclear Proliferation and US Foreign Policy (Washington DC , Brookings Institute 1980),p.252

a) the economic incentive(especially in the context of energy)

b) as a support for the drive for international prestige and globalization of Brazil's role in international politics,

c) Security considerations especially vis-a-vis Argentina (43).

These observations are plausible to the extent that Brazilian leadership over the years has stressed the importance of nuclear capability for realization of Brazilian dream of a great power. For example, Costa e Silva contended that to gain nuclear capability was commensurate with Brazil's developmental aspirations. Similalrly, Brazil has been consistent in its opposition to NPT as also application of treaty of Tlatelolco in its territory, which it consider discriminatory.

The second inference concern Brazil's consistent claim for an open option. Its nuclear diplomacy, taking into consideration all important aspects like its reaction of United States denial in pursuit of an 'European Option', its opposition to exclusive denuclearization of Latin America, its drive on the international fora for a peaceful Nuclear Explosion (P.N.E.). Capability has been underlined by the singular factor of keeping

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43.See Victoria Johnson, op cit pp97 William Perry and Sheila Kern op cit p 55-67; Max G. Manwaring "Brazilian Military: A capability Analysis" In Wayne A Selcher (ed) Brazil in the International: The Rise of a Middle Power (Boulder, Colordo, Westview Press, 1981) p.77-81.

the nuclear option open. In effect it amounts to having a nuclear capability that can at any point be viable both for peaceful and military use. Brazil has refused to recognize the fact that a peaceful nuclear explosion is physically indistinguisable from an non peaceful explosion.(44) This non-recognition can only be understood as a deliberate act of non compliance with the lineaments of a super power imposed non proliferation regime that is inherently discriminatory. It goes without saying that this attitude of Brasilia is in keeping with emerging foreign policy orientation of greater autonomy.(45)

In sum , the Brazilian quest for nuclear capability can be seen not as a manifestation of domestic priorities or an incentive for development only;nor for that matter can one see the Brazilian nuclear policy only as a part and parcel of a politico-strategic consideration of greater security. Similarly it is not exclusively a projection of Brazil's drive for

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44. "Banning nuclear explosions would not be an absolute means of checking the spread of nuclear weapon for, at present level of technology, nuclear weapon can be manufactured without resort of nuclear explosion" - part of statement of Brazilian representative at the 18th National Disarmament Conference -: U.N. Document, ENDC/ PV.363 , 8 Feb,1968 para 51 to 80 (Brazil).

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45. By the mid seventies Brazilian statement revealed a continual plea for an altered world order, an order "stripped of the tragic heritage of power politics". However, underneath this utopianism was the operational element of Brazilian foreign policy i.e. to make room for its own vertiical mobility. See Ashok Kapur op cit pl.342-343.

modernisation and technological independence. It is rather combination of all these incentives that have led Brazil to consider a well developed nuclear programme as a significant element in her search for a more effective role in international politics. To acquire such a status, Brazil has endeavoured over the decades to enhance her much touted potential. One important part of this endeavour has been her nuclear policy and nuclear - diplomacy, through which she has persisted in attempts to argument her autonomy as an independent actor in world affairs. We turn to the next chapter, to an analysis of Brasilia's' quest for nuclear independence and consequent foreign policy autonomy.

C H A P T E R - II

PARAMETERS OF A NUCLEAR POLICY OPTION: THE CASE FOR AUTONOMY

The evolution and conduct of a nuclear policy is dependent on several factors. These factors considered together are all important in giving direction to a programme of especially ambitious proportions as in Brazil.[1] The factors are:

1. Import and export or Transfer of Nuclear Technology.

2. Mining and transfer of Nuclear Fuel.

3. Non-Proliferationm, safeguards and the weapons option.

Brazil's statements and action on these issues of importance, has been consistently directed towards asserting a position of almost uncompromising autonomy. It is interesting to observe that while in many economic, political and strategic matters Brasilia's policies have been influenced by external pressures, its nuclear policy has been singularly self-directed. This has been true even if her nuclear programme has never actually been self sufficient and reliance on external help has been a constant. In fact this dependence has often lead

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In Dec,1967, President Costa e Silva approved a National security Council report that recommended as permanent objectives, " Transfer of Nuclear Technology to our country: obtaining in the shortest time of our independence in the production of nuclear fuels; creation of an infrastructure of support for the nuclear programme ....." Quoted in Norman Gall "Atoms for Brazil's dangers for All", Foreign Policy , Nov.23, Summer-1976, p.186.

Brazilian vulnerability to such factors as denial of technology and fuel by suppliers, conditionalities for transfer of technology and fuel as well as safeguards imposition both by IAEA (International Atomic Emergency Agency) and the supplier countries.(2) Besides; the Govt. of Brazil has been continually under pressure to be a party to non-proliferation resigns like the NPT (Non Proliferation Treaty) and Treaty of Tlatelolco etc. All these factors have however only partially affected Brazilian nuclear intentions. Brazilain decision makers down the year have struck to the long term objective of a comprehensive nuclear capability and any compromise on such a programme has been at best a temporary set back.(3) These set backs have not affected some of the common denominators of Brazilian nuclear policy such as non adherence to NPT and acceptance of IAEA safeguards.(4)

Such consistency has helped in underlining the Brazilian quest for nuclear autonomy. At the same time nuclear,independence

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2. The 1977 White Paper observes: "The Economic growth of the country or its mere substance could be dependent upon the third countries' decisions as to prices and supplies of essential fuels. See Brazilian Nuclear Programme, Govt. of Brazil, Brasilia, 1977 p.11.

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3. See Nigel Hawkes," Nuclear Power: one law for Rich, one for Poor" in The Observer (London) 20th March,1977.

4.Like India, Brazil has accepted IAEA safeguards only partially. There have been rumours about unsafeguarded reprocessing technology within Brazil that are not covered by IAEA. However subsequent developments have not supported such speculations more recent developments being the - Brazilian Agreements in the field of nuclear energy which curtail any chance of a Brazilian Govt. For details, Times of India , Feb 5,1983. See also Foreign Broadcasting Information Service/Latin America Daily Report, 9 Dec. p. D.1-2.

itself has been a major step in the process of realizing national goals that Brazil had considered primary, especially since the sixties - "development, independence, regional influence and a greater role in international system."(5)

The question of transfer of nuclear technology to Brazil has been one of the earliest concerns of her nuclear planners as has been shown in the previous chapter the acquisition of such 'sensitive technology'(6) had not always been easy for Brazil. The very first effort were , in fact, rendered unsuccessful due to external intervention. The US seizure of the gas centrifuges in Germany however did not deter Brazil from attempting to obtain technology from France instead. Considering that around this time Brazil's relations with Washington were quite cordial and that Brazilian decision makers surely not have wanted to damage them, such a 'deviation' from the US line could suggest three points:-

i) that Brazil was convinced about the genuineness of her need for nuclear given the fact that nuclear power was hailed than as

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5. William H. Courtney, "Nuclear Choices for Friendly Rivals" in Joseph Yager's [ed.] Nuclear Prolifercation and U.S. Foreign Policy (Washington D.C. Brookings Institute 1980) p.250

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6. The phrase sensitive technology has generally come to mean reprocessing and enrichment technology which can possibly help immediate production of nuclear weapons. The Latin American's attitude to US allegation of acquisition of such technology to well illustrated by the Argentina statement "We don't believe that technologies are sensitive. We believe that people are difficult" Neucleonics Week , New York, Feb 2, 1984.

a miracle;[7]

ii) that she believed her traditional friendship with United States was not damaged by such aspirations;

iii) that it was appropriate for Brazil to - obtain technology from any source other than United States, if it served her national interests.[8]

It is this last point that Brazil emerged as a prime indicator of Brazil's perception of its role in international affairs. More specifically, it indicated the willingness of Brazil to shake off assumption of 'automatic alliances' and make autonomous decisions as and when warranted by domestic priorities.

This trend became increasingly vivid in the mid sixties with the rise of Brazil's socio-economic capacities. The rapid pace of socio- economic development increasingly rendered 'anachronistic

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7. That Brazil would turn to nuclear power was inevitable. With a rapidly expanding economy; a communist state energy autonomy quarupled from 1940, when 77% of Brazil's energy was derived from wood , charcoal etc. to the present diversity of fuels. Hydro power though high in potential had become increasingly distant from industrial centres.

8. Brazil had kept herself open to technology transfer from West Germany , France as well as United States right from the early years of its nuclear programmes. Germany had many industrial commitments and United States business investment and politico-strategic backing had been a constant. France was less involvled and seemed interested principally in joint uronium ore ventures.

any form of clientelistic international strategy.[9] In this process the acquisition of technology on the part of any nation is seen as an indicator of its present and future capabilities as an actor in international politics. In case of Brazil this has been an important criterion.[10] As observed earlier the Brazilian technocrats saw autonomy in the use of technology as a "symbol of modernization", thereby implying either indigenous development of technology or independence in acquiring technology from various sources. In the nuclear sphere, the second alternative has been more applicable, since Brazilian nuclear development has strongly banked on imported technology.[11] The United States sponsored "Atoms for Peace" programme led to some technology transfer in the fifties.[12] In fact till the mid sixties the United States had enough involvement in Brazilian Nuclear Development to be able to promote or undermine it. However, the nuclear understanding between the two

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9. See William Perry and Sheila Kern "The Brazilian Nuclear Programme in a Foreign Policy context" in Comparative Strategy Vol. 1, No. 1 & 2, 1978 .p.54.

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10. Robert Wesson " The United States and Brazil: Limits of Influence " (New York, Praegar Publishers, 1981,)p.76.

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11. Apart from United States, France and Federal Republic of Germany, Brazil had also signed an agreement with Switzerland for Cooperation in peaceful uses of Atomic Energy. " Keesings Contemporary Archives , London, July 10-17,1965.

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12. The Atoms for Peace Programme inaugurated under President Eisenhower , was intended to involve a limited sharing of nuclear technology for peaceful purposes while maintaining overall U.S. control of revisable processes. See office of technology assessment , Congress of the United States, Nuclear Proliferation and Safeguards (New York, N.Y. Praegar Publishers, 1977 p.5)

countries was far from mutual. Already in 1946, Brazil had turned down the proposal of Bernard Baruch to give up her thorium and uranium because of the injustice of nature.(13) Ever since 1951, uranium was exported only with permission from the Brazilian Military High Command. Moreover, if the period between 1954to the mid sixties was seen as a period of nuclear dependence, it still did not produce much in terms of technology transfer on a large scale. By 1972, when Brazil signed a major agreement with the United States,(Brazil and United States signed a major agreement in 1972 as the Westinghouse company won the contract to build Brazil's first nuclear reactor Angra-I) the trend was already towards a diverse and less clientilistic nuclear programme. The philosophical and technological wedding of the Brazilian nuclear approach with that of the United States was steadily undermined in the early seventies.(14) Ultimately, the 1975 agreement between West Germany and Brazil marked the high point of Brazil's nuclear and foreign policy independence and the decisive drift away from rigid alignement

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13. The very first resolution of the general assembly adopted in Jan 1946, established "A Commisison to deal with the programme raised by discovery of Atomic Energy. The United States introduced for reacting proposals under the Baruch Plan for establishing an International Atomic Development Authority" to which should be interested all phases of development and use of atomic energy (emphasis added) "Thus creating on all embarrasing international monopoly. See D.A.V. Fischer, ' Nuclear Issues ' Department of International Relations, Australian National University, Canberra, 1981. See also B. Bechhoger Postwar Negotiations for Arms Control ,Green wood, Connecticut,1975.

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14. See William Perry and Sheila Kern "The Brazilian - Nuclear Programme in Foreign Policy Context" in Comparative Strategy vol. 1, nos. 1 and 2, 1978.

towards more dynamic external - relations , seeking a "global image" and a potentially "global scope".(15)

A point that needs to be stressed in the Brazilian orientation was the satisfaction of her technological needs (in the nuclear sphere mainly) in that attempts by foreign governments especially to prevent Brazil from acquiring nuclear know-how has been an increasingly unsuccessful phenomenon. While in 1953, overwhelming weight of Brazilian dependence on US allowed them latter to physically stop sensitive technology from reaching Brazil since the late sixties and especially in the seventies and the eighties, the US has only been able to launch a verbal campaign against Brazilian acquisition of technology.

On the other hand, the seventies and eighties have also seen the rise of new supplier nation who has competed for a share in the international market for nuclear technology and know-how and are able to challenge US monopoly successfully. France, Canada and more relevantly the Federal Republic of Germany have

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15. See Ashok Kapur ' International Nuclear Proliferation Multi lateral Diplomacy and Regional Aspects' . (New York, NY Praegor Publishers, 1979)p.334-35.

staged such technological coups.(16)

The second important factor with regard to transfer of technology has been the recent efforts of Brazil itself to transfer sensitive nuclear technology to others countries. Her cooperation agreement with other Latin American countries as also commitment to other extra regional states like Libya and Iraq confirms its independence of its action the nuclear sphere.(17) Thus Brazil has by and large been successful in its nuclear diplomacy to the extent of manouvering itself into a position of almost complete autonomy in obtaining,developing and sharing nuclear technology.

Access to nuclear raw material constitute the other important variables for Brazil's aspirations of nuclear autonomy. It is evident that in the nuclear dealings between countries in the world today transfer of nuclear fuel has had a place as important as the transfer of nuclear technology. An active uranium diplomacy has been a feature of the nuclear behaviour of

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16. The West Germans in counterarguing the United States raised issues about transfer of sensitive technology to Brazil had themselves mentioned that the days of 'industrial nation' hegemony was over and a developing could effectively be denied technology by any one supplier because then the former will simply turn to another country. See William H. Lowrence, "Nuclear Features for Sale" in Abram Chayes and W. Bennet Lewis (ed) International Arrangements for Nuclear Fuel Reprocessing: (Cambridge Massachusetts Ballinger Publishing Company 1977 p.209.

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17. By such acts Brazil had confirmed its emerging role as a second tier supplier country. See for e.g. Leonard S. Spector "The New Nuclear Nations" (New York, N.Y. , Vintage Books,1984) p.196-207.

aspirants near nuclear countries. Brazil could hardly avoid them the problem of fuel transfer given the fact that the early years of its nuclear programme were of total dependence on external help. It was speculated that uranium might be found in large quantities although mining was minimal and the potential unsubstantiated. However, it was confirmed that Brazil had one of the largest reserves of fertile thorium in the world.(18)

Brazil had certainly refused the ambitious Baruch plan. However it did secretly cooperate with United States in shipping strategic raw material to the United States for several years.(19) With the gradual multiplying of experimental reactors , Brazil's need for nuclear fuel became important on the agenda of bilateral cooperation with United States. The eventual agreement in 1972 for the installation of the first reactor (by Westinghouse Electric) brought into greater focus, the need for a steady supply of enriched uranium. The United States was a willing supplier given the fact the other nuclear equipment in Brazil was also largely US supplied. The experiment with the French designs had earlier been cut short by the coming of the

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18. See Norman Gall ' Atom for Brazil - Dangers for all' in Foreign Policy, No. 23, Summer 1976 p.187.

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19. Brazil had for many years secretly exported monazite sand (a mineral rich in thorium) to the U.S. See Clovis Brigado' Brazil's Nuclear Energy Policy Dilemmas an d Options' in Helena Tuomi and Raimo Vayrynen 'Militarization and Arms Production London Croom Helm Ltd, 1983 p. 205.

Military to power in 1964.[20] So the reactors in Brazil were by and large patterned after their US counterparts. Consequently, they required enriched uranium as fuel, of which United States was the principal supplier. Such an umbilical cord between Brazilian needs and US supply became less welcome for Brazil towards the late sixties as it limited her option to only such nuclear material that was approved and supplied by United States. What with the NPT debate and the US conditionality incorporated into the Treaty of Tlatelolco, the prospects of free transfer of technology of nuclear fuel appeared unpromising. Thus along with its aspirations of an autonomous technology the Brazilian leaders saw free access to fuel also as a vital element in their drive towards a nuclear Brazil.

Brazil sought to reduce its fuel dependenccy on United States alone,[21] by signing cooperation agreement with France in 1967. Under the aggrement France was to assist Brazil in uranium exploration in the interiors of Brazil and also in research in fast breeder reactor technology. Such an agreement which focussed on indigenous fuel mining rather than ensuring the other supplier pointed to the Brazilian offensive towards

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20 For details see Clovis Brigagao"Brazil's Nuclear Energy Policy: Dilemmas and Options" Helena Tuomi and Raimo Vayrynen (ed) Militarization and Arms Production . Croom Helm Ltd. ,1983 p.206

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21. Ernest W. Lefever " Nuclear Arms in the Third World " (The Brokokings Institution, Washington, DC 1979) p.106.

gaining a fuel capacity to adequately cater to its technological acquisitions.

The decisive steps towards fuel autonomy were taken by Brazil with the 1975 Bonn-Brasilia nuclear accord which guaranteed transfer of complete fuel cycle, thereby ensuring that fuel manufacture in Brazil could in future meet the rising demands of technological infrastructure advance. It is important to recognize that this deal followed in the wake of the denial by US of further nuclear fuel supplies to Brazil in 1974.(22) Already the oil embargo had made the situation a desperate one for Brazil. The stoppage of further deliveries of nuclear fuel seemed to Brazil a totally unfriendly action on part of Washington that apparently was construed to bottleneck on energy line which has suddenly assumed significant dimensions.

The German deal was significant in Brazil's search for fuel autonomy. The provision of jet-nozzle process was designed to facilitate uranium enrichment.(23) Moreover, the German also

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22. In mid 1974 because of uncertainty about the capacity of the US Govt. uranium enrichment plants (such as at Oak Ridge) to supply fuel for future reactors, the Atomic Energy Commission shifted some long term fuel guarantees to conditional status and returned the deposit payment on them. See William H. Lowrence,"Nuclear Features For sale" in Abram Chays and W. Bennet Lewis (ed) ' International Arrangements for Nuclear Reprocessing ' (Cambridge Massachusetts, Ballinger Publishing Company ,1977) p.204-284

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23. President of NUCLEBRAS Paulo N. Batista predicted that the jet nozzle technology would render "Brazil royalties from worldwide sales" See William H. Courtney in Joseph Yaegar's(ed) Nuclear Proliferation and US Foreign Policy (Washington DC, Brookings Institute, 1980) p.244.

agreed to help Brazil in intensifying her uranium exploration. The most recent developments are however of considerable interest. It was obvious by the early eighties, that the promise of the German-Brazilian accord had been largely belied. Thishad in part contributed to the intensification of indigenous effort in Brazil to develop not only appropriate nuclear technology but also to obtain fuel fabrication capacity. Of special interest is the programme of research conducted by IPEN (Institute of Nuclear and Energy Research), a separate and federally funded research unit at University of Sao Paulo).(24) Substantial portions of work there , including a programme to develop nuclear propulsion system for submarines, are under control of the Brazilian Navy.(25) All such activities have been categorised in Brazilian circles in recent years under the connotation of parallel programme.(26) Of this we shall discuss at greater length later in this dissertation.

The most important issues that involved autonomy in Nuclear Affairs for Brazil were with respect to international non proliferation agreement and the the aspects of weapons option are safeguards that they entailed Brazilian policy towards non proliferation has followed a zig zag course before finally

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24. See for details Leonard S Spector " The New Nuclear Nations: Spread of Nuclear Weapons " (New York, N.Y. Vintage Books , 1984) p.196-197.

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25. Ibid.

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26. Ibid.

setting down to a stance of principled opposition.[27] The initial proclamations in the 1950s were characterised a commitment to complete disarmament.[28] These proclamations were quite well intentioned and sincere. All the same Brazilian leadership was disposed to de-link its nuclear ambitions from proliferation per se with the argument that a peaceful nuclear programme was in no way antithetical to disarmament. That in essence had remained the running thread of Brazils stand on proliferation issues. Consequently the question of safeguards and weapons technology that were frown up with these proliferation debates were dealt with by Brazilian Statesman in a similar fashion.[29]

For more than a decade prior to the NPT negotiations Brazil had been at the forefront of arms-limitation talks.[30] Its declarations on disarmament were quite positive and comprehensive in nature. Brazil's expertise and assertive diplomacy in these matters came to a head during the elaborate deliberations of the UN sponsored Eighteen Nation Disarmament Conference, the Commission for Denuclearisation of Latin

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27. See Ashok Kapur "The Proliferation factor in South America:The Brazil Argentina Cases" in Ashok Kapur, International Nuclear Proliferation; Multilateral Diplomacy and Regional aspects (Praegar: 1979 N.Y.)

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28. For details see H. John Rosenbaum ;and Glenn M Cooper Brazil and the Nuclear Non Proliferation Treaty International Affairs Vol46, No. 1. Jan 1970 p.75-76.

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29. UN Documents see ENDC/PV 293, 14 March 1967, para 37 (UN Documents).

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30. H. John Rosenbaum and Glenn M. Cooper op cit pl 74-75.

America and the 1968 Non-Nuclear State Conference.[31] However when NPT was finally put out for signature, Brazil - categorically refused to endorse its provisions as drafted. Already the Castelo Branco regime had warned of possibility on NPT. While the Government was not actually opposed to spirit of the negotiations, the Brazilian representative to the United Nations Disarmament Conference in 1966, Ambassador Antonio Correa do Lago stated that "among the reservations which could be made to treaty, there is the fear that the non-nuclear powers, by signing it should not only be going up the possibility of having the most dreadful weapons man's imagination has ever devised, but at the same time, should be foregoing the benefits which derive from the peaceful uses of atomic energy."[32]

The eventual Brazilian refusal to sign the NPT was of course not unique in that a number of other countries, including Argentina and India also considered NPT as discriminatory and partial.[33] All the same Brazil had its own perspective which lent credibility and rationale to such a decision. Brazilians at least in the years of the 'Economic Miracle' were fascinated by

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31. Ibid. p.74-75.

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32. Statement by Ambassador Antonio Correado Lago, Delegate of Brazil to United States Disarmament Conference March 1,1966. Quoted in H. Rosenbaum and Glenn M. Cooper op cit International Affairs Vol 36, No. 1,Jan 1970 p.77.

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33. See for details Mohamed Shaker' The Nuclear Non-Proliferation Treaty" (New York, Oceana Publications Inc. 1980) p. 206-211

the application of nuclear explosives for peaceful development purposes.(34)

They were convinced about the applicability of explosives technology to a wide variety of problems ranging from digging canals for irrigation to desalination of sea water. The Brazilian 'tecnicos' cited the benefits of explosive technology derived by the French and the Chinese as proof of the merit in keeping the nuclear explosives option open.(35)

Brazil has consistently refused to equate peaceful nuclear explosive with nuclear weapons. Her argument on international forum has been that a nuclear weapon involves several additional steps over and above a peaceful explosives device.(36)

Brazil's representative at the ENDC summarised the views of his delegation in the following way:

"The development of research in the field of nuclear energy inevitably includes, at a certain stage the use of explosions;

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34. One of Brazil's first important statements on the subject explained that Brazil does act intend to acquire nuclear weapons.....but we shall waive the right to conduct research without limitation and eventually to manufacture or receive nuclear explosives that will enable us to perform great engineering work....." See ENDC/PV, 297, 18 May 1967 para 48 (U.N. Documents).

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35. H. John Rosenbaum and Glenn M. Cooper 'Brazil and the Nuclear Non-Proliferation Treaty' in International Affairs vol 46, No. 1, Jan 1970. p79

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36. ENDC/PV 293 ,14 March,1967 para 37 (UN Documents)

to bar access to explosions would amount to hindering the development of the peaceful uses of nuclear energy;

Banning nuclear explosions would not be an absolute means of checking the spread of nuclear weapons for, at the present level of technology, nuclear weapons can be manufactured without resort to nuclear explosions;

Even after attaining capability to carry out explosions for peaceful purposes, non-nuclear-weapon states would still have to take several additional steps to embark on the manufacture of nuclear weapons;

To contend that non-nuclear-weapon countries ought to relinquish the possibility of developing by national means nuclear technology for peaceful purposes is, grosso modo , tantamount to requiring that peaceful countries refrain from producing conventional explosions for industrial purposes;

Peaceful nuclear explosions may provide a solution to many of the serious problems which confront Latin American countries and developing countries in general in the economic field such as the digging of canals the connection of hydrographic basins, the recovery of oil fields the release of natural gas, etc. (37)

Ibidem.

Thus it is obvious that Brazilians are of the opinion that the signing of NPT would not only foreclose a possible weapons option but will also limit other peaceful uses of nuclear energy. Moreover, Brazil cites that the nuclear powers presented the treaty to the development countries as a "fait accompli" and then asked the non-nuclear nations to sign on the dotted line. The nuclear powers themselves took five years to negotiate the treaty. "After all the world has lived for twenty five years with the constant threat of nuclear devastation and without a non-proliferation treaty and the Brazilians fail understand why they are being prodded into signing a document they consider to be imperfect."(38)

The non-acceptance of NPT regime by Brazil was in many ways a continuum to its attitude towards the earlier Treaty of Tlatelolco. The Brazilian views on the Treaty of Tlatelolco are discussed at length in Chapter IV(39). To be precise, Brazil

interpreted the treaty as one that "allows signatory states to carry out with their own means or in association with third parties, nuclear explosions for peaceful purposes, including explosions which may involve devices similar to those in nuclear weapons" (emphasis added)(40). Essentially

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38. H. Rosenbaum and Glenn M. Cooper, Brazil and Nuclear Non-Proliferation Treaty, International Affairs, Vol 46, No. 1, Jan 1970 p.81.

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39. For details see Chapter IV, p. 78 ff

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40. See SIPRI Yearbook, 1973, p. 438-439.

Brasilia's reaction to both NPT and the Treaty of Tlatelolco has been one of noncompliance to discrimination. In her perception such treaties served only to "disarm the unarmed".(41) They were inherently asymetrical and did not provide a balance between duties and obligations.(42) Moreover such discrimination became obvious given the fact that Brazil was willing to accept IAEA as the third party to ensure proper safeguards. In effect, Brazil waived certain sovereign prerequisites and opened its facilities to the IAEA inspectors. The Brazilian stance duly satisfies the conditions of the Nuclear Suppliers Group Guidelines.(43)

The point that merits consideration at this juncture is whether a posture of studied non-compliance to non-proliferation regimes does highlight Brazil's nuclear and foreign policy autonomy. As for Brazilian statesmen are concerned, it does.(44) The Brazilian leadership claimed, especially in the post NPT period, the right of a developing country to conduct a Peaceful Nuclear explosion as a part of a developmental drive towards

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41. The expression of an Argentine delelgate during the NPT debates. Quoted in Norman Gall op.cit p 79.

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42. H. John Rosenbaum and Glenn M.Cooper op cit p 82.

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43. Brazil to Accept Atomic Controls, International Herald Tribune (Paris), 17 January,1978.

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44. According to the late President Artur Costa & Silva (1967-69), immediate .. potential obstacles (should not) be created that might in any way present hindrance to the full utilization of nuclear energy for peaceful purposes. Otherwise it would mean our acceptance of a new form of dependence surely incompatible with out aspirations for development" Quoted in H John Rosenbaum and Glenn M. Cooper op.cit. p.74

technological competence. The NPT in effect divides the world into those who continue their independent technological development without international constraints and those who cannot.[45] So to deny signature to NPT would at least ensure the possibilities for independent technological advancement which is a prerequisite for social and economic development.

Brazilian nuclear behaviour regularly evaded the question of a nuclear weapon, although occasional nationalistic outburst seems to render a bomb almost indispensable for Brazil's great power aspirations[46]. It is however possible to see some pattern in Brazil's views on the acquisition of nuclear arms as a factor of international importance. Clearly Brazil is unprepared to delink vertical proliferation from horizontal proliferation. It sees horizontal proliferation, as nothing more than a consequence of vertical proliferation.[47]

In the ultimate analysis Brazilian policy on nuclear proliferation regimes has been a reflection of its overall nuclear ambitions. The policy was initiated within the Itamaraty (Foreign Ministry) by its then Secretary General, Ambassador Sergio Corea da Costa.[48] The position was further

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45. Ibid p 80 ff

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46. See Victoria Johnson 'Brazil' in James Everett Katz and Onkar S Marwah. ' Nuclear Power in Developing Countries ' (Lexington Books, Lexington, 1982) p.97

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47. Costa e Silva quoted in Ashok Kapur, op cit p 345-346

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48. H Rosenbaum and Glenn M Cooper' op cit p 80

developed by Paulo Nogueira Batista, the then Minister for Political Planning in the Foreign Ministry and finally adopted by the Foreign Minister himself. Even in recent times prospects of any change in policy towards the NPT are very marginal.(49) A strong coalition of military and nationalistic elements and political leaders has opposed formal closure of the nuclear options. Tancredo News in his elelction campaign appeared to support overall Brazilian effort to gain nuclear capability. In an interview with a major Sao Paulo daily, he declared that "it is important for Brazil to master the entire fuel cycle.....Brazil can not abandon its policy of mastering the atom in all its phases."(50) President Jose' Sarney has not done anything to alter Brazil's nuclear development process. It still remains to be seen if Sarney can curtail military control of many nuclear programmes.

Overall Brazil's nuclear policy has followed strictly a principle of independence of decision making and implementation without undue external intervention. It has not only been acquiring and disbursing sensitive technology on its own, but also has taken steps by itself to promote a nuclear diplomacy that is beyond traditional assumptions of alliance.For example Brazil has of late been trying alongwith Argentina to reduce

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49. See Jose' Goldemberg 'Brazil' in Joseph Goldblat(ed)) Non Proliferation: The Why and the Wherefore (Stockholm) SIPRI, 1981)p.86

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50. Dr Tancredo Neves quoted in Leonard Spector, op cit p 201.

tensions on nuclear issues in the southern core by agreeing to mutual inspection of facilities as well as joint development of technology.[51] The earlier efforts of President Figueredo and most recently the agreement of cooperation between President Sarney and President Alfonsin have given importance to nuclear cooperation.[52] Although there is controversy surrounding the nature of the nuclear cooperation agreement,[53] it is obvious that Brasilia has been handling her nuclear policy without capitulating to any external pressures.

The IAEA's safeguards have been a perpetual sorespot in Brazilian nuclear plans. Although, most technology transfer deals as well as fuel supplying agreements to Brazil are covered by strong IAEA safeguards, presence of unsafeguarded enrichment and mining installations proved controversial.[54] The continuing US embargo of nuclear fuel and reactor exports is an effect of Brazil's refusal to place some of its nuclear installaltions under IAEA safeguards.

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51. Argentina could provide fuel elements made from zircaloy tubing., Brazil can supply reactor equipment See. William H Courtney op cit p.2~~9~~4-55

52. Figueredo visited Argentina in May 10980 and concluded a number of agreements including some in the nuclear field, and established a mechanism for future consultations between foreign ministers. The scope for nuclear agreements included research and development as well as technology transfer. For details see FBIS Daily Report: Latin America May 19,1980 p. D3-D4.

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53. Though officially denied, some Argentine officials confirmed that the agreement was for a plutonium reactor. See FBIS, 9 Dec,86 , Latin America Report

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54. Times of India 5 Feb 1983.

It is to be concluded, in fine, that the nuclear behaviour of Brazil has been commensurate with its growing stature as a world power in her own right.(55) At least, the perception of Brazilian power and capabilities in the eyes of her decision-makers has rendered nuclear 'dependenzia' an anathema. Especially since the beginning of seventies Brazilian nuclear diplomacy has been pronouncedly 'anti-statusquo' in that,she believed that the super powers were trying to perpetuate a dichotomy of nuclear and non-nuclear nations .(56) It was in line with her emergent foreign policy perspective, and ultimately was complimentary to such a process. Hence the Brazilian claim(like India) to secure a theoretical right to acquire nuclear capabilities that give various nuclear option. On the other hand, the question of disarmament itself is considered by Brazil out of the context of a developing country's rights to peaceful nuclear explosion. In her view "the main responsibility for taking concrete steps towards disarmament lies with the nuclear weapon states."(57)

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55. Brazil had cancelled its 25 years old agreement of military assistance with United States over two issues that were those of human rights abuse as alleged by US and the nuclear question That it was prepared to end such an agreement (in 1977) showed its self-perception of a 'great power role' for itself. See James NelsonGoodsell"Brazil's Aims: World Power" in Christian Science Monitor 21 March,1977.

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56. See ' Brazilian Nuclear Programme ' White Paper by the Government of Brazil, Brasilia, 1977.

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57. Costa e Silva quoted in Ashok Kapur, op.cit,.p.245

In the event, however, the apparent contradiction between Brazilian claims to peaceful nuclear technology which is understandable, and its insistence upon a nuclear option, is still a point that can cast doubts on Brazilian nuclear intentions.(58) Moreover, the so called 'parallel programme' with increasing military participation might not possibly confirm Brasilia's claims to peaceful objectives through an autonomous technology. In any case, the pattern of nuclear development in Brazil, as in Argentina and India has revealed a devolution of the capacity of international control, especially of the super-powers. For some time now Brazilian nuclear policy has been travelling the path of autonomy and the future augurs more nuclear independence.

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58. See Jose' Goldemberg, op cit p 86-87.

C H A P T E R - III

THE BONN-BRASILLIA ACCORD, 1975: A CASE STUDY

The Brazilian nuclear programme developed in two phases.[1] The first Phase involved acqisition and promotion of an infrastructure for future nuclear progress. The second phase following the modernization of the country's economy after 1964, saw the following of Brazilian nuclear autonomy. While in the first phase Brazil had endeavoured to set out on the nuclear road with technological help from traditional allies, in the second the ambitions military government perceived, before long, the discriminatory bias of the Non-Proliferation Treaty (in 1969). Following the so called 'revolution' or the military coup in 1964, the military government was largely expected to toe the United States line of anti-communism and pro-US bias in economic, political and military relations. This however proved in time to be a simplistic projection. It cannot be denied that the United States strongly favoured the coup of 1964. All the same, it would have been naive to expect Brasilia to identify Brazilian national interests with the wishes of United States. In fact, the undertone of nationalism in the military coup was bound to come up boldly and it did. 'Exceptional warmth and uncritical admiration for the United States gave way to a 'Brazil first' policy by 1967 obviously spearheaded by the nationalistic tendencies of the Armed Forces.' In terms of foreign policy

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1. See Clovis Brigagao "Brazil's Nuclear Energy Policy: Dilemmas and Options" in Helena - Tuomi and Raimo Vayrynen(ed) " Militarization and Arms Production (London Croom Helm, 1983) 205-222.

meant an assertion of independence.(2) The successor to Castelo Branco, General Arthur Casta a Silva (1967-1960) declared his faith in independent nationalism, reaffirmed Brazilian non-acceptance of the Nuclear Non-Proliferation Treaty,(NPT), withdrew support for the Inter-American Peace Force, demanded tarriff concessions from United States and engaged in a controversy over instant coffee.(3) Moreover, the Garrastazu Medici 1969-1974 Govt. that followed took further steps towards a foreign policy stance that sought to prove that United States approval was no more a criterion for Brazilian policy-making and that Brazil could make important changes in her policy perspectives. Thus President Medici rejected the Kissingerian idea of a five cornered world (United States, Soviet Union, European Economic Community (EEC), China and Japan) claiming a corner for itself.(4) In short the Brazilian foreign policy makers were no more willing to regard Brazil as a satellite to the United States. Such changes inorientation had a direct bearing on the nuclear planning. Already, the Government after 1964 denied acceptance of the non-proliferation regime which was seen in effect as a concerted move by powers with vested interests to close the doors of the atomic club. Indeed in

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2. See Robert Wesson, "The United States and Brazil : Limits of Influence :(New York, Praegar Publishers, 1981) p 55.

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3. Ibid p 56.

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4. Ibid p 59.

December 1967 President Costa e Silva recommended several permanent objectives for Brazil in the nuclear area:" the transfer of nuclear technology to our country; obtaining in the shortest time our independence in the production of nuclear fuels; creation of an infrastructure of support for the nuclear programme; formation and training of teams competent in the different (specialized) areas." (5) Such declarations of intent reflected a Brazilian desire to intensify its nuclear development in her quest for self sufficiency. Several steps were taken in the direction of obtaining technology or technological know-how (6). The highwater mark of this process was reached by Brazil in the signing of the nuclear accord with the Federal Republic of Germany in June 1975. This accord has historic implications. First, it constituted a "major step towards independence by two steadfast post war allies of the United States. (7) Moreover, it ushered in such new issues as massive nuclear technology transfer from the First World to the Third World, greater competition among

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5. Quoted in Norman Gall "Atoms for Brazil, Dangers for all" Foreign Policy , no. 23, Summer, 1976.

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6. Brazil signed deals with France and also with West Germany prior to 1975. It signed a deal with France in 1967 and later one with West Germany in 1969 . Earlier in 1965 it had signed an agreement with Switzerland for cooperation in the nuclear field. In 1970, India and Brazil agreed to exchange specialists and material etc. Under the terms of the agreement Brazil was to be informed of all phases of India's nuclear experiment. Helena Tuomi and Raimo Vayrynen op.cit p.205-222

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7. Norman Gall op cit p.155

nuclear supplier countries, the possibility of military uses of transferred technology and such related issues as safeguards, inspection, safety etc.

For the two parties to the accord the deal was an achievement to the extent that it promised satisfaction of the long standing ambitions of both countries to attain nuclear self-sufficiency.(8) For Brazil, specifically, it constituted a stride towards a great-power status. Foreign Minister Azeredo da Silveira, after signing the agreement said that "Brazil has gained new technological and political status on the world scene with the nuclear agreement."(9)

The details of the agreement can be examined best only in relation to the various efforts that were made by the Brazilian Government prior to the 1975accord. It is pertinent also that we look into the events and factors that caused or influenced the signing of an accord of such momentous significance . For this we need to explore the general background of the agreement.

The Brazilian-German nuclear accord was signed on June 27,1975 in the wake of upheavals in the world energy scenario in the early 1970's. The oil embargo and the crisis that it brought along was however not the sole causative factor behind the

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8. Ibidem

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9. Quoted Ibid p 108

nuclear deal. From the very beginning, Brazilian efforts have been oriented towards a long-term objective of self-sufficiency. Faced with a very real energy problem it was almost inevitable for Brazil to explore non-traditional avenues of energy that were not only high in potential but were at the same time durable sources of energy. However, this did not warrant a straight choice between hydroelectric power and nuclear power. In other words they were not meant to substitute each other. In fact, the primary issue was one of feasibility and time. Hydro-power potential, although among the world's largest was getting more and more difficult to tap because much of the new potential lie for removed from the industrial centres of the South-east.(10)

Under the circumstances, nuclear power seemed to be a promising alternative primarily because it involved not only a major step towards achieving technological modernization but also"connoted high political capital."(11) Hence Brazil's endeavour to explore the nuclear energy option as early as 1951 can perhaps be explained by the perceived connection between nuclear capability and great-power status. Consequently, this signified the fact that Brazilian aspiration of great-power role are not recent but have been long -latent.

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10. See William W. Lowrance "Nuclear Futures Futures of Sale: Issues raised by the West German-Brazilian Nuclear Agreement" in Abram Chayes and Co. Bennet Lewis (ed) "International Agreements for Nuclear Fuel Reprocessing (Cambridge, Massachusetts, Ballinger Publishing Co.,1977) p.203.

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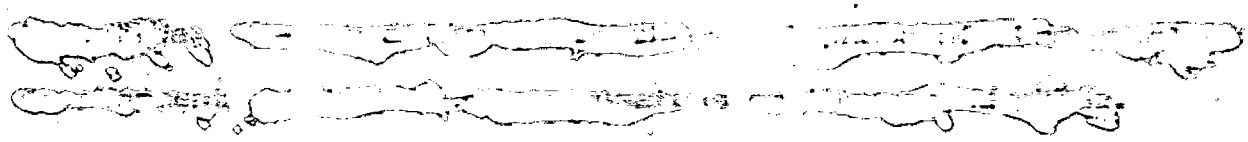
11. Ibidem.

Brazil's nuclear plans tended to favour external dependence in the initial stages. This was unlike Argentina which after initial import of required technology was disposed to explerіment and develop technology over developing it indigenously. In the process the initial tie-up with US nuclear planning led kit to adopt light-water reactors which used enriched uranium. Such a technology was normally used in Europe and United States. Canada on the other hand used and exported heavy-water reactors fuelled by natural uranium. Argentina adopted this technology while also experimenting with enriched uranium reactors.(12) Thus Brazilian dependence on external help,. unlike Argentina a feature of the first phase of



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12. Ernest Lefever "Nuclear Arms in the Third World" (Washington DC, Brookings Institution, 1979) p.18-19)

her nuclear development and had its repercussions on the second phase.

Brazil entered the second phase of nuclear progress with strong reservations towards both Tlateloco Treaty and the Non-Proliferation Treaty.[13] Consequently it saw the need to chart out an autonomous course of nuclear development without any exclusive alliances for help. Therefore it started signing several binational agreements and struck bargains with different countries for her first major purchases.[14]

In 1967 the American firm Westinghouse won the first major contract for building a Brazilian nuclear facility inthe form of a 600. megawatt plant on the coast above Sao Paulo at Angra dos Reis. It was named Angra-I. The President of United States Atomic Energy Commission(U.S.A.E.C.)visited Brazil " to convince the client that "U.S. wanted to co-operate with the new policy. On the other side, the President of the

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13. See for details William H. Courtney "Nuclear Choices for Friendly Rivals " in Joseph Yager(ed) Nuclear Proliferation and U.S. Foreign Policy (Washington D.C., Brookings Institute, 1980) pp. 254-255

14. Brazil has so far signed nuclear agreements with Italy, Switzerland, India, China apart from the United States, West Germany and France and of course Argentina.

See Robert Wesson op. cit pp. 77

Brazilian Atomic Energy Commission pointed out the divergencies between the two countries' approach to production of nuclear power for peaceful uses. Thus while the USAEC tried to show to Brasilia that it would be profitable for the latter to buy nuclear fuel from the United States. Brazil persisted in her desire to achieve self-sufficiency for peaceful uses of nuclear energy. Apparently there was apprehension in Brazilian circles that confirming the nuclear programme to a framework of dependence on limited fuel and technology sources might impede Brazil's progress towards an advanced technological platform while admitting that the acquisition of such a range of technology might mean susceptibility to nuclear weapons production, the Ministry of Foreign Affairs nevertheless argued " that not having comprehensive technology would hinder the development of nuclear energy for peaceful uses."[15]

The atmosphere of suspicion created by the discriminatory attitude of the super-powers during the N.P.T. negotiations contributed in a large measure to the Brazilian decision to diversify the supplying sources. This would at once serve the purpose of bringing

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15. Quoted in Helena Tuomi and Raimo Vayrynen, op. cit. p.207

Brazil out of rigid alignments and also make her increasingly autonomous in her multilateral dealings. In the nuclear sphere Brazil now could choose from any of the three major supplier countries namely United States, West Germany and France with each of whom it had had nuclear dealings.[16]

By the early seventies the United States connection was increasingly seen as a limitation. The German alternative appeared more promising and not without reasons. First, West Germany had for quite some time been a principal participant in the Brazilian industrial sector. It had its own subsidiaries, had also established collaborations and arranged technology transfer. Secondly already in 1953, Brazil had sought German help in securing nuclear technology, thereby setting a precedent for nuclear links with the latter, such a precedent coupled with the evident willingness of West Germany to export nuclear technology might have encouraged Brazilian decision makers to establish a Bonn-Brasilia nuclear link-up. In 1969 Brazil and West Germany signed an agreement of bilateral co-operation

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16. See William W. Lowrance op. cit p.203.

17. Norman Gall, op.cit. p. 165.

A solid foundation had been provided to this agreement by earlier developments like the visit to Brasilia by Foreign Minister Willy Brandt when he had expressed German interest in supplying Brazil with nuclear technology. A few months later, the Siemens Company of West Germany posted a Brazilian as President of her subsidiary firm in Brazil. The 1969 agreement was signed with active support of the President of NUCLEBRAS, Mr. Paulo Nogueira Batista, "who then became Minister Counsellor of the Brazilian embassy in Bonn to implement the accord. In 1971, another agreement was signed with West Germany providing for training of Brazilian technicians and to establish a formal working relationship between Brazil's National Council for Nuclear Energy(CNEN)and the centre for Nuclear Research in Julich(whose representatives were to help promote German nuclear exports).[18] In fact subsequent visits of German scientists to Brazil raised rumours in the press around the world and the Soviets even accused the Germans of playing an " atomic diplomatic game" by making Brazil a stalking horse for Germany's interests"[19]

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18. Ibidem

19. H.Jon Rosenbaum and Glenn M. Cooper " Brazil and the Nuclear Non-Proliferation Treaty" International Affairs, January 1970, pp.58

Norman Gall op. cit p; 163.

The actual intensification of negotiations with the Federal Republic of Germany started as a result of two emergencies affecting Brazilian nuclear plans-:

a) The Oil Embargo of 1973.

and b) the suspension of uranium supplies by United States in 1973-74

These two situations in tandem, coming just at the peak of Brazilian 'economic miracle' greatly affected her energy outlook. It has been aptly described by a scholar as a 'one-two punch'. First came the oil crisis in 1973 as oil prices quadrupled in a year's time following the Arab boycott. Brazil in the meanwhile had achieved in 1973 a remarkable growth rate of 11.4 per cent. Imports, exports and international money supply all grew by half and oil imports by 46 per cent in the same year. But the 1973 Middle-East war brought the Brazilian economic machine to an untimely halt. Brazil was by now the developing world's leading oil importer. A surging economy had over a generation quadrupled her energy budget and her per capital consumption of commercial energy was 60 per cent greater than of the developing countries as a whole.[20] In the event, following the

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20. See Wayne A. Selcher 'Brazil in the world: A Ranking Analysis of Capability and Measures" in Wayne A.Selcher(ed). 'Brazil in the International System: The Rise of a Middle Power. (Boulder, Colorado, Westview Press, 1981) p.40-41

1973 embargo, Brazil ran into deep balance-of payments trouble. It was around this time, more than any other that the talk of fifty(50) nuclear plants by the end of the century, started to seem less an ambition and more a necessity.[21]

If the oil crisis was a life-blow to Brazilian economic progress and energy economy the United States' denial of fuel supplies at this juncture was a greatly disturbing development for Brazil. The United States Atomic Energy Commission not only announced suspension of all new contracts for future supply of enriched uranium but also retroactively classified as "conditional" contracts for 45 foreign reactors that were to begin operation in 1980's. These included two in Brazil and ten in the Federal Republic of Germany. The deposit payments by Brazil were returned. The move affected the contracts for fuelling of Brazils second and third reactors. It generated a feeling in government circles that accession to the NPT had been correctly avoided and that it was imperative for Brasilia to avoid relationship of vertical independence and promote rather a policy of "horizontal interdependence"[22]

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21. Robert Wesson op. cit p. 78

22. Quoted in Norman Gall op. cit p. 162.

Other developments besides the oil crisis and the United States denial, though related to the two, were nevertheless individually contributory to the creation of an atmosphere to which the nuclear accord seemed a logical follow-up. For example, the West Germans had been seeking the Brazilian market for quite some time (i.e. before the 1975 deal itself). It had also attempted tie-ups with Argentina. The fact that the German firm Siemens had won the Atucha-I contract,(Argentina and Latin America's first nuclear power plant)in 1968 might have served as a point of consideration for the "European Option in" the face of United States' high-handedness.[23]

The negotiations for the Bonn-Brasilia accord started only after the United States cut-off of future contacts for enriched uranium in July 1974. Following the visits of several important German dignitaries to Brasilia, agreement on the deal was finally reached on February 12, 1975. Soon afterwards the United States was officially informed about the deal.[24] The U.S.

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23. William A. Courtney op. cit. p. 252

24. William W. Lowrance op. cit. p. 205

Ambassador Martin Hillerbrand was informed in Bonn. A four-man delegation from the U.S. state department arrived in Bonn on the 7th of April and induced the Germans into enforcing stricter safeguards.[25] On June 5, the European Commission also reviewed the agreement for prospective export and informed from Brussels that it had no objections.[26] Ultimately on 27th June, the bilateral agreement was signed amidst much diplomatic fanfare. While the complex 'umbrella nature' of the deal triggerred worldwide controversy, its conclusion was vigorously defended and vociferously applauded in Bonn and Brasilia. On the eve of the signing of the deal the West German Foreign Minister expressed ready appreciation of Brazil's status in the world in eloquent terms. He said, "the weight of Brazil in world affairs increases every day. In a world full of disturbances and contradictions, the conduct of your country, Senhor Minister, appears as a factor of stability and equilibrium."[27] Similarly another official defended Germany's new relationship with Brazil and said that given Brazil's will and capacity

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25. Ibidem

26. Ibidem

27. Quoted in Norman Gall op. cit p. 155

to build nuclear installations of her own, it was only wise that a partner who is faithful to the latter's aspirations should help her combat the "development gap."[28] The Brazilians seemed largely encouraged by the prospects of the deal. The Commanding General of the first Army in Rio de Janeiro contended that the nuclear accord "constitutes a decisive step that reinforces the country's sovereignty" and also that it would transform Brazil" into a great power". Again, Foreign Minister Azeredo da Silveira welcomed the agreement as a step towards'horizontal interdependence for Brazilian relations with other nations.[29]

The international response to the deal was however not so optimistic. Although China expressed "great satisfaction" because the atom ought to serve all humanity and be the monopoly of a few powers, responses elsewhere were characterised by alarm.[30] The New York Times editorialized it as "nuclear madness" and called the move " a tragedy for West Germany as

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28. Ibid p. 166

29. Ibid p. 187

30. William W. Lowrance op. cit p. 201

well as mankind as a whole."[31] Senator John O. Pastore complained about the "peril in the (United States) backyard, while Germany's own backyard was being defended by United States herself. The Soviets though restrained showed concern at the signing of the deal. In any case the signing of the deal raised substantial controversy to invite comment from the German newspaper Neue Rhein-Zeitung that the agreement was "the most controversial foreign deal ever struck by West German industry."[32]

The 'Agreement' was essentially a blanket deal for the supply of the entire nuclear fuel cycle facilities right from the "Ore to kilowatts', plus facilities for reprocessing spent fuel. It contained the following essential features-:

i) Uranium exploration and mining:- Uranium prospecting and mining and conversion will begin immediately with NUCLEBRAS owing 51 percent and working with URANGE- SELLSCHAFT which shall own 49 per cent of the shares. While the promise of

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31. See 'Nuclear Madness' in New York Times, June 13, 1975, p.36

32. Quoted in William W. Lowrance op. cit p.201

uranium was not encouraging, it was agreed to that 20 per cent of any ore mined shall go the FRG. The initial area of exploration was fixed at approximately 73,000 Square Kilometres.

ii)Uranium Enrichment: This was one controversial aspect of the deal primiarily because the pilot-plan to be built with German help by 1981 was to use a technique which was as yet commercially not proven (i.e. by 1975). The process called the Becker jet nozzle technique had in fact not been favoured in West Germany itself. The criticism on this point had been answered with the reply that Brazil's plant will be located near some large dam with ready supply of hydro-power and can thus facilitate better the high electricity consuming jet-nozzle process. The NUCLEBRAS share in this aspect of the deal was 75 per cent.

iii)Fuel Fabrication:- A pilot plant for fabrication was to be built in Brazil by Germans and NUCLEBRAS was to own 70 per cent of the shares.

(iv)Reprocessing Spent-Fuel :- A small reprocessing plant was to be built by NUCLEBRAS with technical assistance by a German consortium. The NUCLEBRAS share would be 100 per cent.

v) Power Reactors:- Finally the power reactors of the 1300 Megawatt Biblis pressurized water-type were to be built by a combine of Kraftwerk Union AG (75 per cent) and NUCLEBRAS(25 per cent). The first plant was to be manufactured almost completely in West Germany, assembled at Angra and t ranferred on a turn-key basis, by 1985. There was also option for six more plants by 1990 with increasing participation by Brazilian industry in the construction and component manufacture (to reach 70 per cent by 1980 and 90 per cent by 1990)[33]

There were a number of other contracts and subcontracts included in the package. However, all said and done, the deal was, on the whole, based on the centrepiece of the transfer of eight nuclear reactors together worth $ 4 billion that would accelerate Brazil's nuclear energy programme toward a possibly generating capacity of 10,000 megawatts of of electricity by 1990.[34] However doubts accompanied

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33. For details see William W. Lowrance op. cit. pp. 201-222
also Norman Gall op. cit. pp. 160; Edward Wonder "Nuclear Commerce and Nuclear Proliferation Germany and Brazil" Orbis vol. 21, No.2, Summer 197 pp. 277-307

34. Norman Gall op. cit pp. 157, also "Brazilians and West Germans sign $ 4 Billion Nuclear Pact" New York Times, June 28,1975.

such claims about the prospects of the agreement. For example it was commented that "the Germans have sold an enrichment process that does'nt work, to enrich Brazilian uranium that doesn't exist." (35) Such observations were not entirely off the mark. For one the German technology was new and commercially not proven. Secondly,the Brazilian uranium reserves have not provedto besubstantial so far.

The initial euphoria died down giving way toscepticism about thefeasibility. Whereas the agreement hadestablished thatthe plants would all beinstalled by 1981 and 1982 it has projected that even by 1990 Brazil might have onlyone out of the eight plants. (35A) The Brazilians themselves seem to be in recent years more optimistic aboutthe hydro power potential. As thethings stand today, thenuclear alternative seems to be less highly regarded inBrazilthan inArgentina. Such a turnabout from the earlier optimism has been caused by a combination of factors such as inordinate delays in implementation projection of cost overruns.

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35. William W. Lowrence op cit p 207.

35A In January 1981 Brazil officially acknowledged inability to meet nuclear plants construction schedule. Brazil's Mines and Energy Minister at the time, Cesar Cals observed that all nine plants would not operate till the year 2000. See Nucleonics Week , January, 15, p.3

and of course domestic opposition in the form of the scientific community's displeasure overthewhole agreement. In fact the very first reactor to beinstalled (by the Westinghouse Corporation) byan agreement concluded as far back as in 1972, came into operation after extensive delays and cost escalation in 1982. (36) The reactor had already gone through various stages of experimentation and had been scheduled to go into operation long before it actually did. However it stopped operating for some time in 1984 due totechnical snags and was later restarted in 1986 after due testing. (37)

The late installation of Angra-I itself broadened domestic opposition to Brazilian nuclear accord with FRG There were subsequent reports of secret project decisions with the FRG ceding control to thelatter of key enrichment project decisions etc. (38) In anycase the fact remained thattechnical controversies notwithstanding the whole programme had to be ultimately defended on economic terms.

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36. See Nucleonics Week, June 24, 1982.p.7

37. Nucleonics Week,Sept 24,1981 p.9

38. Daniel Poneman "Latin America" in Rodney W Jones and others " The Nuclear Suppliers and Non Proliferation : International Policy Choices." (Lexington , Lexington Bokoks 1986) p.183

Already by the late seventies the govt. was hesitant about going through withthe plan and the 1979 Energy Plan mentioned only Angra-I , II and III Reactors.(39) Moreover by 1981, it was clear that Brazil would not purchase all the eight (8) Reactors as per the agreement. In the face of mounting opposition from the scientific community and theeconomists President Figueredo visited West Germany in 1981 "to put a quiet end to the large plans in such other ways of cooperation in theenergy field" (40). By then the prospects for Brazil gaining control of a complete nuclear fuel cycle seemed remote. Neither transfer of technology norextensive training of personnel hadbeen achieved satisfactorily. It was complained that Brazil had infact succumbed to a neo- colonial policy bysigning the nuclear accord. (41) There was approximately US $ 3.5 billion worth of equipment and service imported from the FRG between 1975 and 1980 without any real transfer of technology. (42)

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39. Margret Daly Hayes 'Latin America and the U. S. National Interest : A Basic for U.S.Foreign Policy (Boulder, Colorado Westview Press, 1984) p.206.

40. Ibidem.

41. Jose' Goldemberg op cit p 85.

42. Ibid p 83.

Moreover in retrospect, there seem also tohave been an incorrect appraisal of the energy situation of the country in 1975, leading to an exaggerated commitment to nuclear energy. In 1975, electrical energy consumption was growing at a rate of 10% per year which might have led planners to believe that most suitable hydro electric sites might be used up by 1990.(43) Later, the rate of growth of electricity consumption dropped and a revaluation showed hydro electric potential tobe much greater than anticipated. Recent estimates seem toindicate a hydro power potential large enough to satisfy the needs of Brazil beyond 2000 AD. (44) So the nuclear energy programme has turned out so far as a largely redundant exercise given the fact that Brazil to date possesses just one reactor producing 626 megawatts of electricity, which is but a miniscule fraction of Brazil's energy needs. Again this reactor i.e. Angra-I is not a spin-off of 1975 deal but is a product of the agreement with the US from Westinghouse in 1972. Thus it cannot be gain said that the whole nuclear agreement with the FRG has turned out to be"bad business" for Brazil. The atomic dream of the post-accord period, seems to have turned into a nightmare.

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43. Ibidem

44. Robert Wesson "United States and Brazil: Limits of Influence (New York, N.Y. , Praegar Publications 1981) p. 56.

The question that inevitably comes up in the face of a disappointing outlook for Brazil's civilian energy programme, since 1985 obviously centre around the very wisdom of such a drastic step on the part of the military govt. in 1975. Most explanations underscore the nationalist disposition of the military govt. then which envisioned nuclear capability as a criterion of great power status for Brazil. Indeed,given the successful implementation of the programme within the schedule d time of 15 years, Brazil would certainly have mastered thenuclear fuelcycle and thereby commanded several options:- of a nuclear user; of a nuclear supplier; of a nuclear explosives capacity; of a nuclear weapons capacity. But the apparent desperation on part of the military on part of the military govt. to secure all these options for Brazil cannot be justified primarily because :-

a) Brazil's security considerations were not such as to necessitate keeping an open nuclear weapons option. Conceding the Argentina factor , ithas nevertheless to be discerned that Argentina itself would refrain from nuclear weapon production as long as Brazil does.

b) Brazil's economic priorities, given her growing balance of payments' and foreign debt problem s, did not allow room for a resource- diverting programme on such a large scale, and

c) Brazilian energy needs, atleast for the rest of the century could be easily based on non-nuclear sources. (45)

The whole issue might ultimately hinge around national pride and Brazil's image of itself as a great power. There is also the perception that nuclear capability with all options open was the hallmark of a great power. (46) This was true as Brazilian leadership's considerations almost throughout the period of military rule in Brazil, except perhaps in the early 80s when President Figueredo toned down the nuclear drive in the face of criticism from some sections. (47) By the time the civilian government assumed power in Brazil in March 1985, the nuclear plans atleast in the civilian sphere, seemed to have taken a backstage. It has been recently revived by nuclear cooperation agreements between Brazil and Argentina. (48)

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45. See Jose' Goldemberg op cit p.83.

46. William Perry and Sheila Kern "The Brazilian Nuclear Programme in a Foreign Policy Context, "in Comparative Strategy" vol I, No. 1 & 2 , 1978, p. 53-54.

47. President Figueredo also removed NUCLEBRAS President Paulo Nogueira Batista; enforced a 40% budget cut on NUCLEBRAS; postponed construction of two large Iguape research reactors and stretched out completion of Angra-III until 1996. See David J.Myers, "Brazil : Reluctant Pursuit of Nuclear Option" Orbis Winter 1984. p.895.

48. The agreement signed between Brazil and Argentina in December 1986 envisaged mutual inspection and joint construction of a fast breeder reactor(FBR) . See Foreign Broadcasting Information Service (FBIS) / Latin America Daily Report, Dec 9,1986. p.D1-D2.

Some other conclusions also need to be drawn from a study of the 1975 Bonn-Brasilia nuclear accord. First , very important rationalising ideal of autonomy in decision making in reaction to the United States policy of denial, with the opening of an "European Option" is in itself a proof of the general orientation of contemporary Brazilian foreign policy. The 1977 withdrawal from the 25 years old security arrangements with United States soundly confirmed the fact that Brasilia was now prepared to chart a predominantly independent course in international politics.

Secondly, while in terms of pure technological gains , the 1975 deal has proved to be a disappointment for Brazil. It had helped Brazil to display freedom of choice and willingness to change policy according to priorities. Thus Brazil had , just after the 1975 accord, signed an agreement with France and has eversince signed agreements with a number of countries including China, Italy, Switzerland, India , several African and Middle East countries and of course with the Latin American neighbours including Argentina. (49)

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49. For details, see Clovis Brigagao op cit p. 205-222.

The nuclear deal between Brazil and West Germany can be seen as productive in the sense that its implications for Brazilian external policy are significant. Indeed, if nuclear policy choices of Brazil have proved to be the cornerstone of her foreign policy orientations in more ways than one , then certainly the 1975 deal has been a watershed in this process. The deal, as has been stated earlier, was of momentous significance in terms of Brazilian bilateral and multilateral relations. It transformed the nature of Brasilia-Washington ties, and also underscored diversification in Brazils external contacts. This was a proof of the coming of age of Brazil as "a middle-power" in its own right and with definite potentials of achieving greater status in the future. (50)

The deal also signalled a victory for Brazilian nuclear dipolomacy, though in the end the watering down of the whole programme might have reflected negatively on the initial optimism. All the same, the very fact that Brazil quickly switched over to an"European Option" for nuclear technology and fuel supply was indication of the seriousness of Brazil's nuclear offensive during the 70s.

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50. Wayne A Selcher (ed) ' Brazil in the International System: The Rise of a Middle Power" (Boulder, Colorado, Westview Press, 1981).

The slow-down of the programme ever since the later years of the military has been primarily a consequence of economic constraints. This has manifested largely as a set back for its national nuclear plans. Thus, NUCLEBRAS, which is incharge of the implementation of the German deal has been consistently suffering budget cutbacks. (51) It has also been described at times as an organization solely concerned with its own upkeep.

However, there has been another fall-out of the nuclear drive in Brazil ever since 1975. This is the so-called "Parallel Programme" which is oriented primarily towards military uses. (52) Recent developments in technology and other innovations have given a definite purpose to the programme under the auspicies of the Comiçao Naçional de Energia Atomica (CNEA) . Committed involvement of the military in this programme has provided room for some concern. However, the objective apparently has been to develop useful explosive technology not necessarily connected with weapon-making.

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51. Nucleonics week, January 13, 1983 , p.12

52. See Leonard Spector, The New Nuclear Nations (Vintage Books, 1985) p.198 ff

Today there is a definite touch of pragmatism in Brazilian nuclear plans, with obvious concern to attend to other economic priorities. This dovetails withBrazilian nuclelar diplomacy todaywhich has byand large been open-ended about seeking partners for cooperation. Especially the agreement for cooperation with Argentina proves the point about Brazilian efforts to dispel undue suspicions about Brazil's nuclear intentions. Adding to this the various accords of co-operation with other Third World nations one can infer thatBrazilk has travelled far from the time when it needed to be secretive about its nuclear ambitions. All these developments in Brazilian nuclear behaviour has been apart and parcel of her foreign policy in recent times. The contribution of theBonn-Brasilia nuclear accord of June 1975 in serving as a watershed for these trends in Brazilian nuclear diplomacy in particular and foreign policy behaviour in general can hardlybe overestimated.

C H A P T E R - IV

BRAZILLIAN NUCLEAR POLICY AND LATIN AMERICA : REGIONAL PERSPECTIVES

For the best part of its history as an independent nation Brazil had been no more than a peer state in the South American region.[1] Brazil did not enjoy any notable advantage over her important neighbours, geopolitical potential notwithstanding. It started out strongly on the process of achieving such a status only since 1950s. The unfolding of the 'Economic Miracle' gave Brazil decisive upward mobility that has brought it to the cadre of 'new influentials' in the international power heirarchy. Today, in the Latin American region, Brazil's pre-eminence is matched only by Argentina. Apart from this almost one-to-one balance of power ratio between Brazil and Argentina, Brazilian capabilities seem now to be superior to any other neighbour in the continent. Indeed, in agregate terms Brazilian capabilities may outmatch Argentina itself. Thus"political stability" and rapid socio economic development have raised Brazil in the last few decades above simple peer status in the region.[2] Such a rise in status has however not been translated into any designs of regional hegemony. What may be the reasons?

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1. William Perry " Contemporary Brazilian Foreign Policy: The International Strategy of an emerging power" (Beverly Hills, Ca. , Sage Publications, 1976) p.35.

2. William Perry op cit p.36

First , historical experience reinforces a semblance of isolation on the part of Brazil from her Spanish speaking neighbours. This may be accounted for by citing cultural differences, but they can not be substantial. Secondly, and this is more plausible, Brazil's close association with the US almost to a degree of exclusiveness might have fostered wariness and suspicion among neighbours. In any case, primarily the Brazilian Foreign Policy orientation has been more international than regional. Having historically given low priority to relations with neighbours, she has chosen to play a low-profile role in regional affairs. The decision makers envisioned Brazil more as a future world power than a regional hegemony. (3)

In recent times, however, Brazilian external policy concerns have appeared to be less global in dimension. Especially in the 1980s relations with Latin American countries have risen highest in its foreign policy agenda. (4)

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3. Robert D. Bond, "Brazil's Relations with the Northern Tier Countries of South America" in Wayne,. A Selcher(Ed.) "Brazil in the International System: Rise of a Middle Power ", (Boulder, Colorado, Westview Press, 1981) p.123.

There seems to be greater realization among decision-makers about the prime importance of good relations at the regional level. The potential benefits of economic solidarity in the region can hardly be ignored, what with the promise of Latin America as an important subsidiary market and a source of increasingly crucial raw materials. Another factor that has coloured attempts to promote a more purposive Latin America policy, has been the increasing concern with the immediate regional security environment over the hemispheric security considerations. Thus the recent trends in Brasilia's foreign policy have largely sought to affirm genuine autonomy in decision-making commensurate with her increasing capabilities.

The changeover of Brazilian foreign policy perspective from a primarily global to an evidently regional orientation has provided the grounding for Brazil's nuclear diplomacy also. However, unlike the delayed concerns the regional security or regional economic solidarity, Brazilian nuclear politics has been concerned with regional affairs almost from the beginning of Latin American nuclearisation.(5)

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4. On assuming office in March, 1979 Brazil's new Foreign Minister, Ramiro Saraiva Guerreiro, stated that the Figueredo administration would give top priority to relations with Latin America. See Robert O. Bond, op cit p.123.

Brazil had initiated the efforts to prevent penetration of East-West nuclear rivalry into the continent. Although Brazil had stepped up its own quest for nuclear capability, it had nevertheless stressed the need for disarmament and justified her nuclear efforts in purely economic terms. It has to be understood that Brazil did not view the objectives of disarmament and acquisition of nuclear as contradictory aims. This was manifestly a refusal on part of Brazil to acquiesce to a position to technological dependence. Thus one essential component of autonomy was highlighted.The two objectives were indeed not contradictory because while the one prevents the continent from being embroiled in an unprofitable and resource-diverting arms race, the other is indispensable for the realisation of the economic and political aspirations of a developing nations. This is because basically Brazil sees the super powers arms race as dangerous and detrimental to the Third World, Latin American and its own national interests, but does not see the acquisition of peaceful nuclear capabilities as a contradiction of a national interest or one that is incompatible with international peace and security. Rather the pursuit of a nuclear status is, for Brazil,a necessary complement of its developmental offensive.

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5. H Jon, Rosenbaum and Glenn M Cooper "Brazil' and Nuclear Non-Proliferation Treaty" in International Affairs Vol.46, No. 1, Jan 1970 p 74-90.

The Brazilian position vis-a-vis the Treaty for Prohibition of Nuclear Weapons in Latin America (1967) is a good illustration of Brasilia's 'atomic dipolomacy' reflecting the above-mentioned attitudes. These are also confirmed by the Brazilian policy in the Latin American region as such i.e. in its 'nuclear relations' with other Latin American States in general and Argentina in particular.

Before analysing Brazilian nuclearpolicy in the Latin American region, it would be pertinent to outline its foreign policy stands on the so called 'nuclear option' in general. Keeping in view the continents' security interests it has to be underscored that Brazil has been one of the first countries to actively campaign against the spread of super power nuclear rivalry into Latin America. Having been an early leader in Latin American de-nuclearization movement it has always supported initiatives against nuclear weapons proliferation on regional and world scales.(7)

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6. H Jon Rosenbaum and Glenn M Cooper, op cit p.79

7. See. for details John R. Redick "Regional Nuclelar Nuclear Arms Control in Latin America" International Organization, Spring 1975 p.429.

In Latin America , Brazil has been the earliest advocate of disarmament and nuclear non-proliferation in the region. Even before the Cuban Missile Crises of 1962(which brought home to the Latin American nations the need to think in terms of non-proliferation and denuclearization efforts), Brazil had publicly expressed support for the creation of a Latin American nuclear free zone.(8) Subsequently, on April 29,1963 President Goulart joined the Presidents of Bolivia, Chile, Ecuador and Mexico proclaiming that their governments were in favour of a regional agreements involving all Latin American Governments. The signatories undertook not to manufacture, store or test nuclear weapons or devices for launching, nuclear weapons.(9) Such a thrust for denuclearization was greatly strengthened when eleven Latin American countries proposed a resolution on the floor of the General Assembly urging negotiations for such an agreement and seeking cooperation of the nuclear powers.(10) But for 15 abstentions the resolution, when put to voting,

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8. Ibidem
9. William Epstein, " The Last Chance: 'Nuclear Proliferation and Arms Control" (Free Press Washington , 1976)p.117,56.
10. William H Cokurtney "Nuclear Choices for Friendly Rivals" in Joseph Yager (Ed) " Nuclear Proliferation and US Foreign Policy (Washington D.C. Brookings Institute 1980) p.255.

was never directly opposed by any member country.(11)

Though the early spirit of nuclear non-proliferation efforts has not died down, the coming of the military to power in 1964 added a new dimension to these policies. This was evidenced in the Treaty of Tlatelolco (The Treaty for Prohibition of Nuclear Weapons in Latin America) of 1967 wherein Brazil has consistently appealed against closed nuclear options. Brazilian policies and reservations towards non-proliferation regimes as sponsored and instituted by nuclear powers was confirmed further by its refusal to sign the Non-Proliferation Treaty in 1968. What are the essential elements of Brazilian policy that have reflected in its denial to give full evidence to the Treaty of Tlatelolco? How has its nuclear diplomacy succeeded in securing these essentials in keeping with perceived national interests? The answer to these and similar questions can be uncovered by a careful examination of Brazil's stance on the treaty.

The Treaty of Tlatelolco was opened for signature on February 14,1964.(12) Brazil had signed it (on 9th May 1967), subsequently,

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11. UN Documents A/5515(Nov 27,1963) p. 14-15.
12. William H. Courtney op cit p.255.

and since then twenty two (22) other Latin American countries have also signed. But then while Brazil has also ratified (on 29th January, 1968) it, Argentina has not. Despite subsequent promises to ratify the Treaty Argentina has not done so as yet.(13) The upshot of all this is of course, that if Brazil has signed and ratified the treaty it has done so in consistent pursuance of its precious policies of denuclearization in the Latin American region. The answer as to why Brasilia has refused to be a full party to the treaty and has not allowed the treaty's operation inside Brazilian territory may be found in the linkage of this refusal to a similar decision to not sign the Non-Proliferation Treaty (NPT).(14)

The Tlatelolco Treaty is effectively a regional version of the NPT. It is significant however that it was arrived upon prior to the Non-Proliferation Treaty of 1969, thanks perhaps to any early Brazilian initiative and the subsequent mobilising effect of the Cuban Missile Crisis in 1962.(15) The 1977 White Paper on 'Brazilian Nuclear Programme states that Brazil has since

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13. For details ee Daniel Poneman "Nuclear Proliferation Prospects for Argentina" on Orbis , Winter, 1984, p.876.
14. See William Epstein, op cit p 137, 73-78.
15. It was on Nov 3,1962 a few weeks after the Cuban Missile Crisis, that Brazil proposed in the United Nations, the creation of Latin American Nuclear Free Zone, William A. Courtney op cit p 255.

1958 signed all important non-proliferation agreements except the NPT for its "discriminating character." (16) What is true of the NPT is as far asBrazil is concerned true ofthe Treaty of Tlatelolco. Nevertheless Brazil has signed and ratified the agreement. Ratificationhas however not led to the invoking of the Treaty provisions in Brazil itself. ButBrasilia insisted on showing that the very ratification of the treaty is of more than symbolic significance. In the 1977 white paper, the ' Brazilian Nuclear Programme', Brazil pledges commitment "according to the canons of international law, not to perform any act which defeats the objectives (of the treaty of Tlatelolco). However the same paper underlined that full enforcement of the treaty depended upon the commitment of external powers, particularly nuclear weapons states, as expressed in support of Protocols I and II. (17) Thus the perceived discrimination is still the prime factor behind refusal of total adherence. What

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16. ' Brazilian Nuclear Programme' Govt of Brazil, Brasilia, 1977 p.

17. See John R. Rekdick "Nuclear Trends in Latin America" in Aspen Institute for Humanistic Studies: Governance in the Western Hemisphere(Background papers, June 1982) p.247.

constitutes this discrimination according to Brasilia?

The root of the controversy lay in the making out of a distinction between nuclear weapons and nuclear explosive devices. It was Brazil along with India which had stressed that the NPT could not cover nuclear explosive devices for peaceful purposes upon signing and ratifying the Treaty of Tlatelolco, Brazil made the following statement:-

"The Brazilian government wishes to reaffirm its interpretation of the meaning of Article 18 of this instrument. It is the understanding of the Brazilian Govt, that the aforementioned Article 18 allows the signatory to carry out with their own means or in association with third parties, nuclear explosions for peaceful purposes including explosions for peaceful purposes including explosions which may involve devices similar to those used in nuclear weapons". (18)

Characteristically, Argentina has also adopted a similar stance. Indeed, Brazil and Argentina had, all through the negotiating period of the Treaty tried consistently toretain for all contracting parties the right of peaceful explosion of nuclear devices.

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18. Mohamed I. Shaker The Nuclear Non-Proliferation Treaty: Origin and Implementation (New York, Oceana Publications, Inc. 1980) vol I, p. 210.

Under Additional Protocol II of the Treaty of Tlatelolco, the existing nuclear weapons states that is the United States, the Soviet Union, China,France and great Britain agreed to recognize and respect Latin America as a nuclear free zone. The United States however pointed out the apparent 'contradiction' between Article 18 and Article I and 5 together (19). Thus while Article 18 does not preclude the parties from going for peaceful nuclear explosions (P.N.E.) Articles 1 and 5 together disallowed detonation or acquisition of nuclear weapons. Washington emphasized the direct relationship between acquisition of peaceful nuclear explosion capacity and nuclear weapons capacity. (20)

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19. The Article 18 of the Treaty of Tlatelolco reads as follows: (Only Part 1 is relevant)

Part I

The contracting parties may carry out explosions of nuclear devices for peaceful purposes, including explosions which involve devices similar to those used in nuclear weapons or collaborate with third parties for the same purpose, provided that they do so in accordance with the provisions of this article and the other articlies of the Treaty, particularly Articles 1 and 5. See Ibid Vol. 3, p. 996-997.

(20)

capacity.

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20. Articles 1 and 5 read as follows:-

Article 1 : OBLIGATIONS

1. The contracting Parties hereby undertake touse exclusively for peaceful purposes the nuclear material and facilities which are under their jurisdiction and to prohibit and prevent in their respective territories:

a) The testing, use, manufacture, production or acquisition by any means whatsoever of any nuclear weapons by the Parties themselves, directly or indirectly on behalf of any one else or in any other way; and

b) The receipt, storage, installation, deployment and any form of possession of any nuclear weapon directly or indirectly, by the parties themselves or by any one on their behalf or any other way.

2.The contracting parties also undertakes to refrain from engaging in, encouraging orauthorising, directly orindirectly, or in any way participating in the testing, use, manufacture , production, possession, or control of any nuclear weapon.

Article 5: DEFINITION OF NUCLELAR WEAPONS

For the purposes of this treaty, a nuclear weapon is any device which is capable of releasing nuclear energy in an uncontrolled manner and which has a group of characteristics that are appropriate for use for warlike purposes. An instrument that may be used for the transport or propulsion of the device is not included in this definition, if it is separate from the device and not an indivisible part thereof.

Hence this was naturally not allowable. Brazil and Argentina strongly oppose this interpretation in the face of severe criticism from active participants, especially Mexico which was the host organizer.

Eventually, Brazil refused to waive off article 28 of the Treaty. Paragraph 2 of the article 28 permits certain conditions to be waived and the agreement to come into full force.(21) Brazil had ratified the treaty but like Chile has refused to waive off the conditions to allow the treaty to come into operation inside Brazilian territory(unlike all other parties). The extra continental implications of Brazilian non-compliance with the majority interpretation in the case of the Treaty of Tlatelolco (as well as inthe case of NPT) are dealt extensively elsewhere in this dissertation.(22)

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21. The Paragraph 2 of Article 28 reads as follows:

All signatories states shall have the imprescriptible right to waive, wholly or in part, the requirements laid down in the preceeding paragraphs. They may do so by means of a declaration which shall be annexed to there respective instruments of ratification and which may beformulatled at the time of deposit of the instrument orsubsequently. For those States which exercise this right this treaty shall enter intoforce upon deposit of the declaration, or as soon as those requirements have been met which have not been expressly waived.

Mohamed I. Shaker op cit vol. 3, p 1000-1001

22. See Chapter II p22 ff

For the moment it is important to see the regional consequence of the Tlatelolco regime.

In the first place the question looms large as to what extent has the Treaty been a factor of Brazilian foreign policy in the continent. In this context, it is important to understand, first of all, Brazil's efforts to play down its national capabilities advantage over its many Latin American neighbours.(23) Surely the Treaty for a Nuclear Freezone Latin America was a well received Brazilian initiative. Ironically the treaty was not to be accepted in full by its very originators. This was significant of the fact that Brazil had clearcut designs regarding its nuclear aspirations which were basically directed towards foreign policy autonomy.(24)

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22. See Chapter II. p 22ff

23. Robert D. Bond op cit p.125-145.

24. See William Perry and Sheila Kern "Brazilian Nuclear Programme in a foreign policy context" in Comparative Strategy , vol.1, and 2 , 1978.

In the recent decades thesecurity concerns ofBrazil havecome to acquire more of a regional character.(25) Upward mobility in the international hierarchy since the 60s has been a major factor in changing the tenor of Brazil's traditional security relationship with the West.(26) Greater Brazilian economic and military capabilities have already given a domestic impetus to Brazil to withdraw from a totally dependent equation with the United States. Moreover, the emergence of an international system characterised by multipolarity and detente and the qualified withdrawal ofthe United States from commitments abroad makes Washington's security guarantee less important and possibly less credible.(27) On the other hand, greater Brazilian capabilities impelled the national leadership to aspire towards a more significant and independent international role. The existing foreign policy consensus in Brazil views it as rapidly emerging towards some form of major power status.(28)

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25. William Perry, op cit p. 29.
26. Ibidem.
27. Ibidem.
28. William Perry and Sheila Kern op cit p.54

This goal is rather vague but at a minimum it encompasses the attainment of full economic development, the possession of an adequate and independent national (technological) security and the recognition of Brazil as a political peer by other world powers.(29) Policy makers were duly aware of the changing power equations in the international system. The then Foreign Minister Antonio Azeredo da Silveira elucidated clearly the Brazilian perception:

"During the cold war, a rigid alignment with the leader of the Western bloc was required of the Nation's of the developing world that share thebasic values of the West....These realities no longer apply.....(and)...an emergent power with wide range of interests in many fields could not allow rigid alignments, rooted in the past,to limit her actions on the world stage."(30)

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29. William Perry op cit p.22.

30. William Perry and Sheila Kern op cit p.56

Nuclear power was bound to be considered as one of the vital inputs in the rise of Brazil's status. Moreover changing roles of lesser powers like India or Iran and ofcourse the growing status of Argentina(including a nuclear power potential) could not be ignored. Unlike Brazil, Argentina has not been an active campaigner for nuclear non-proliferation in the initial stages.(31) Indeed from the outset of her nuclear programme, She has sought independence in decision making commensurate with the Peronist concept of a 'Third Position'. As early as 1957, the Argentinian nuclear planners decided to stop importing nuclear technology and to promote indigenous development. The CNEA (Argentinian National Commission for Atomic Energy) had decided in 1957 to stop importing research reactors and fuels too. Jorge Sabato, a CNEA scientist observes "the CNEA in 1957 made a fundamental decision: not to import research reactors but to build them in Argentina. In this way we would not only have , in these reactors, a tool for training and research, but their construction would also allow us to develop our own capacity for nuclear engineering.... In 1957 the CNEA also decided not to import fuels. These should be manufactured in Argentina.And so it (gradually) occurred."(32)

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31. Argentina joined the original Tlatelolco negotiations considerably later than most of the other signatories and showed reluctance to accept a number of provisions including the ratification procedures.

32. Quoted in Norman Gall 'Atoms for Brazil, Dangers for All' Foreign Policy No. 23 , Summer, 1976, p.183.

Brazil was a late starter as compared to Argentina in building up a nuclear infrastructure. Nevertheless, the rivalry between the two dates back to the early post war period. As we have already seen, Brazil's efforts to obtain nuclear technology from post war Germany were spurred on by apparent Argentinian efforts under Pero'n to master sophisticated nuclear technology.(33) Soon however Argentina moved well ahead of Brazil. In 1958 she became the first country in the continent to operate research reactors. Subsequently in 1968, and 1974 she became , respectively the first to operate a chemical reprocessing plant (to obtain plutonium from spent fuel) and thefirst to start Latin America's first nuclear power plant.(34) Such Argentine progress served as a important catalyst to Brazilian nuclear endeavour. By the late 1960s Brazilian efforts to pull up alongside Argentina in nuclear capability became intense. From lthe 1967, National Security Council's report,(which was approved by President Costa e Silva) up to the 1975 accord with the FRG. There was a sequence of decisive steps togive Brazil's nuclear design a concrete shape.

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33. For details see Chapter I,p.
34. Robert Gillette, "India and Argentina: Developing a Nuclear Affinity," Science June 28,1974 p.1351.

The 1975 agreement , in fact sparked off apprehensive speculation in Buenos Aires , that the accord was an indication of Brazil's intentions of making the bomb. Juan E. Gugliamelli writing in 'Estrategia' warned that "it is possible to affirm that (Brazil) has taken the firm decision to the nuclear club, that is to make an atom bomb under the concept of peaceful uses...the decision to manufacture the nuclear explosives and the opportunity are critical for Argentina since our neighbours' nuclear device without a counterpoint, will affect our security palpably and decidedly".(35) This reaction is indicative of the nature of Brazilian-Argentinian relations at that time and their understanding of each other. The undertone of mutual suspicion is basically a historical hangover and also perhaps a case of cultural rivalry. However, for a long time now, there have never been any conditions necessitating in military face-off between the two countries and as of now the two have no possible motives to fight a conventional war. It follows therefore that neither of these countries would risk acquiring nuclear weapons and consequently trigger a nuclear arms race in the region.

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35. Juan E. Gugliamelli, "Y si Brasil Fabrica la Bomba Atomica?" Estrategia May-June 1975, p.13-14

All evidence is against such an eventuality. On the contrary development since 1980 have confirmed the desire of the two nations to promote cooperation and greater understanding vis-a-vis the nuclear issue.

Brazil and Argentina have begun to take steps to establish mutual confidence about nuclear contentions. (36) Serious efforts began with the historic visit of Brazilian President Figueredo to Buenos Aires. Among other agreements, the President also signed an agreement for nuclear cooperation and established a mechanism for future consultations between Foreign Ministers of the two countries. The agreement for nuclear cooperation included research and development on experimental power reactors, to exchange raw materials , uranium research, prospecting and processing and also the manufacture of zircaloy and fuel elements. (37) In the final analysis, the visit of President Figueredo to Buenos Aires drove home the point that no rivalry is beyond reconciliation.

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36. In February 1980, Castro Madero, the then President of CNEA declared that Brazil could complement Argentina's nuclear programmes effectively. See Nucleonics Week , Feb 14,1980 p.10.

37. See Nucleonics Week May 22,1980 p.12.

The coming of civilian rule first to Argentina in Dec 1983 and then to Brazil in March 1985 in the wake of military rules went a long way in reducing nuclear rivalry in the region. (38) Moreover, both these Governments have expressed desires, immediately after assuming office, to promote cooperation with each other. In March 1985,President Raul Alfonsin of Argentina made a dramatic offer to Brazil for reciprocal nuclear inspection of facilities in the two countries. (39) The prospects for cooperation have since reached a new high. In Dec 1986, President Raul Alfonsin visited Brasilia , and signed a number of agreements. Nuclear cooperation featured prominently in the list of agreements. (40)

The mutually planned overtures of cooperation that Brazil and Argentina are making in recent years has proved that there is ample room for cooperation between the two nations. Primarily the rationale for greater cooperation lies in thefact that the two nations operate in a security environment i.e. largely out of the pale of East-West rivalry. Secondly, Brazil and Argentina are both expanding economies and both could readily utilise alternate sources of energy (Brazil more than Argentina, because unlike Argentina it faces acute shortage of other energy sources,notably oil).

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38. Leonard S. Spector, " The New Nuclear Nations: Spread of Nuclelar Weapons (New York, N.Y Vintage Books,1984)p.196-197

39. Ibid.

40. See "Acordo Mais Importance E'Na Area Nuclear: in Folha de Sao Paulo, Nov 11, 1986.

Thirdly, there can be little doubt that both countries aspire for an international power status which can satisfy their national-cultural ambitions. In such a pursuit cooperation need not be a hindrance but can be an effective complement. Finally both countries are natural giants of the continent and in such capacities can promote nuclear cooperation not only among themselves but also among the Latin American countries as a whole. Consensus for nuclear technology sharing can be formulated in constructive emulation of such agreements elsewhere in the world e.g. EURATOM . (41)

The above speculations are not presented as future inevitabilities. Infact cooperation between the two Latin American giants has hardly been a manifest trend in the past and so far it still has to show signs of any visible permanency. The possible suggestion that cooperation efforts in the Southern zones is overplayed cannot be brushed aside. The countries have quite similar nuclear choices and can be grouped under four broad options:-

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41. Jon R Redick "Nuclear Trends in Latin America" in Aspen Institute of Humanistic Studies Governance in Westenn Hemisphere . (Baqckground Papers, June 1982) p.238.

a) as a nuclear users; (b) as a nuclelar supplier; (c) as a holder of nuclear explosives capacity(peaceful i.e.) and (d) as a possible owner of nuclear weapons. (42) These can be as well areas for cooperation as of rivalry. The choice lies with the respective countries.

Brazilian nuclear policy in the light of the Latin American region, has been one of contribution to regional restraint to the extent that such efforts served its national interests. Moreover it has also sought to promote regional solidarity on the issue of maintaining an open nuclear option. Brazil has also set an example of foreign policy autonomy as evidenced in its sustained stance of freedom in nuclear policy options. Finally, Brazil has tried to orient its nuclear policy towards regional cooperation, especially cooperation with Argentina in exercising nuclear autonomy more effectively. This can be conceived as a part of a general North-South confrontation wherein the developing nations of the South see greater nuclear independence as one of the factors complimentary to its own independence in nuclear policy pursuit.

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42. See William H Courtney, "Nuclear Choices for Friendly Rivals" in Joseph Yeager (ed) " Nuclear Proliferation an d U.S. Policy " (Washington DC, Brookings Institute, 1980) p.271-279.

C H A P T E R - V

CONCLUSION :

PRESENT SITUATION AND FUTURE PROSPECTS

The civilian Government that assumed power in Brazil in March 1985 inherited, most significantly an economy that was in a conspicuously in a bad shape. By the end of 1986, the economic difficulties of Brazil had aggravated. In the circumstances, the nation's nuclear programme could not be revived following the setbacks it had encountered in the previous years. Especially, the implementation of the Bonn-Brasilia nuclear record had already been ruled out as largely non-feasible "due to lack of resources" , by the Figueredo Govt. The latter envisaged the completion of only two out of the eight reactors provided for by the treaty(the two reactors being Angra-II and Angra-III) (1) In any case, there has been no marked revision of policies in recent years. In the event the essential features of the nuclear programme implementation remained practically the same, with the programme costs far out of proportion to the outputs. For instance, the major declared aims of electricity generation some nuclear reactors has not been fulfilled substantially. The statistics as regards implementation in this area remain as they were at the end of the military rule:-

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1. Luiz Pinguelli Rosa "A Politica Nuclear O Caminho das Armas Atomicas",. (Rio de Janeiro, 1985) p.7

i) Operable reactors - 1 Unit - 626 Mwe (output)

ii) Reactor under construction - 2 units-2490 Mwe

iii) Reactors planned - 2 units -2490 Mwe(2)

Thus in effect the total output of electricity from nuclear energy in Brazil is merely 1.7% of total electricity generated. (3) This is comparable to the programmes in certain others developing or newly developed countries like India(2.2%),Argentina(11.3%), Korea RP(22.1%), Taiwan (53%)(4).

Brazil has a nuclear programme of three decades involving a total programme cost so far (i.e. upto 1985) of over US $ 4 billion,(5). More specifically the implementation of the accord with the Federal Republic of Germany has been particularly costly. According to experts, the initial projected cost of US $ 10 billion would ultimately climb up to US $ 30 billion i.e. thrice the initial projected cost, in case the programme was fully implemented. Thus the Brazilian nuclear policy and programme have had to deal with major operational hurdles and in the process the programme had not succeeded to any marked extent, despite its scale.

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2. World Nuclear Industry Handbook, 1987,(of Nuclear Engineering International) (Surrey,International Business Press) p.137.
3. Ibid. p138
4. Ibidem.
5. Nucleonics Week, May 1986 p.6

However despite economic difficulties aiding and abetting programme delays and costs overruns , the Brazilian Government's commitment towards its nuclear programme cannot be said to have diminished greatly. (6) Indeed, the Commission appointed by President Sarney to analyse the Brazilian's nuclear programme, when giving its report in April,1986 reasoned that Brazil needs nuclear energy for the coming decade and should consolidate achievements in the field so far. (7) This is a bit surprising considering the fact that the hydro electric potential of Brazil is established beyond doubt today. Moreover, the feasibility of _total_ implementation of the accord with Germany, has already been put out of consideration, atleast for the present. How then does one account for Brazil's on going interests in maintaining and expanding its nuclear programme? The answer to this question is of great relevance as it will also indicate the reasons for Brazil to persevere with her nuclear policy that externally (vis-a-vis an emerging power status) and internally (vis-a-vis domestic factors) has changed only marginally in orientation.

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6. See John R Redick, "Nuclear trends in Latin America" in Aspen Institute for Humanistic Studies "Governance in the Western Hemisphere , Background Papers, June 1982.

7. For details ;see Nucleonics Week August 14,1986 p.12.

The explanation for persistence in Brazilian commitment to the growth-oriented nuclear policy, despite circumstantial impediments , may be sought by underlining a logical point. It has to be clearly seen that if the Brazilian nuclear programme appears to be no more than "white elephant" at present, it does not necessarily follow that Brazil needs to give up on her nuclear aspirations. There is hope that the accumulated infrastruture its maintenance & improvement would pay in the future and that nuclear energy in Brazil would one day be economically relevant. (8) This constitutes a very real possibility in a not very distant future and so cannot be ruled out as an argument for Brazil's persistence efforts to keep her nuclear programme alive. This explains such moves like new policy formulation or new nuclear cooperation agreements with other countries. These serve as components ofBrasilia's continuing efforts to keep the nuclear options alive.

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8. According to some scholars , the Latin America region , especially with countries like Brazil, Argentina and Mexico may beone of the most favourable areas in the world for expansion of nuclear power. According to one US trade publication Latin America was identified as the largest export market for reactor vendors in the next 20 years, suggesting further that there could be 20 to 30 operating power reactors and 30 to 40 under construction by the year 2000. John R Redick op cit p.213.

One important point that needs to be explained here is that Brazilian decision makers over the years have stressed the importance of modern technology for national development as well as national prestige. One of the important facets of this aspiration for technology in Brazil has been the effort to keep abrest of emergent technologies. Nuclear technology today is a part and parcel of the cutting age of modern science. Like many other aspirants developing countries, Brazil too would not wait to be out done in the race for latest nuclear technology and its various applications. This is well explained by the number of experimental facilities that are installed in Brazil to conduct nuclear research and investigate application areas. (9)

The apprehension that such commitment can lead to possible use

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9. There are uranium purification facilities(Instituto Pesquisas de Energia Nuclear-IPEN - Sao Paulo); uranium conversion plans) as in Resende and Sao Paulo on both pilot scale and laboratory scale); uranium enrichment plants(in Resende,Belo Horizonte, Sao Paulo); fuel fabrication and reprocessing unit(Resende, Sao Paulo) and finally research reactors(IEAR-1 in Sao Paulo, RIEN-1 in Rio de Janeiro, Triga-VMG in Belo Horizonte).

cannot be ruled out. Certainly Brazilian capability verges on being self-sufficient. Once the entire nuclear-fuel cycle is mastered, it is very on the part of a country to use technology for both peaceful and military purposes.(10)

Brazil's nuclear ambitions rest on the assumption that in the nuclear age, science and technology condition the development and welfare of the nations, especially their national independence. But the dynamics of politics do not always highlights a one to one relationship between technology and peaceful development. Indeed it has to be seen how national prestige alone has constituted an important variable and keeping Brazilian nuclear policy positively oriented.

Technology can be justified not only economically,but also politically. The latter is a specially applicable in the short run. Thus Brazilian decision makers have often proclaimed nuclear capability as a symbol of national prestige and something that complements Brazil's growing stature as a global power. The point of relev ance here is to examine how Brazil intends to use nuclear capability to give it political leverage in the international arena.

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10. Mr Rex Nazare' , President of CNEN disclosed in Dec 1986 about reprocessing of uranium on a laboratory scale. He also said that the programme,which he heads,seeks to master the entire fuel cycle and stressed that aims were entirely peaceful. The Economist , Jan 24-30,1987 p.84-85.

The declared Brazilian's policy is to acquire nuclear capability, to the extent of self sufficiency and for purposes deter peaceful. But at present there are two distinct track that Brazil's nuclear affairs are following. One is carried under the aegis of NUCLEBRAS and is concerned primarily with the implementation of the Bonn-Brasilia accord. The second track of nuclear activities has been dubbed as the "Parallel Programme" and is said to have started in 1979 with the development of nuclear technology for the production of uranium hexaflouride (11) Subsequently, despite speculations to the contrary the "Parallel Programme" was declared to be oriented towards social impact areas. However, this programme remains the less open side of nuclear activities in Brazil. Some of the institutions under it are literally controlled by the military. For example, the Centro Tecnico Aerospacial is the centre for active research under the Airforce. Similarly, the Navy is involved in IPEN (a federally funded research unit at the University of Sao Paulo) (12)

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11. This programme operates under the CNEN of which Rex Nazare' is the current President. The body controls and regulate the programme but there are speculations that the armed forces operate almost independently within the programme. See Economist op cit p.84-85; also Foreign Broadcasting Information Service (FBIS)/Latin America Daily Report, 19 Dec,1986 p. D.2

12. Leonard Spector, op cit p.188-189.

Apart from obvious connection that decision makers see between great power status and nuclear capability (i.e. without necessary utlization of such capability on a largely scale in the states economy), there is one more factor that has kept Brazilian interest in nuclear technology alive. The military has been carrying on almost independent research on the possible non civilian uses of nuclear technology. Although , that does not invariably have to do with apprehension of foreign aggression, there are other important points of consideration.

Brazil today has a sophisticated military. The military has traditionally played an active political role and the long period of 21 years from 31st March,1964 to 15th March 1985 have ensured that military's role in decision making atthe top in a constant. This phenomenon has been markedly true in the case of nuclear politics. The military not only controls key areas of nuclear activities but also decides about possible areas within its hold where nuclear research may be profitably utilised. Obviously, this constitutes in part , an effort to make the standing military equipment more sophisticated and efficient.

For example Rex Najare, the President of Comicao Nacional de Energia Nuclear (CNEN) admitted that Brazil was headed in the direction of building a nuclear propulsion submarine. (13)

Such probabilities as are outlined above contribute the new elements in Brazilian nuclear policy making both on the domestic and the internal front. Brazil's nuclear diplomacy has become increasingly oriented towards cooperative efforts in the Third World in general and in the Latin American region in particular. Again, Brazil has become more amenable, into IAEA safeguards was on her nuclear efforts. (14) Brazil has agrreements for collaboration with such developing countries as Somalia , Iran, various Latin American neighbourers and ofcourse with Libya. (15) The last case is of special interest and it gave ample room for specialization. Brazil has been a major supplier of arms to Libya and thus exercised also diplomatic ties.

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13. FBIS/LAAI, 19 December 1986 p. D2
14. FBIS/LAAI Oct 15,1984 p.D1
15. See Leonard Spector op cit p 189-202 also FBIS/LAAI Oct. 9,1984 p.D-1. Also Dec.26,1984, p.D1

Secondly, Libya suffers from a nuclear embargo imposed by major western supplier nations despite in fact that it is a party to the Non Proliferation Treaty (NPT). However given Libya's "long-standing interest in acquiring sensitive enrichment and reprocessing technology and Brazil's growing capabilities in these fields, such cooperation could pose significant proliferation dangers in the years ahead." (16)

Despite these changes and prospectus of further changes in Brazilian nuclear diplomacy there are certain elements of continuity that provide flesh to her nuclear policies. Firstly, she has been consistent in her demand for the right to Peaceful Nuclear Explosion (PNE) as a part and parcel of a peaceful nuclear programme. Secondly, she has continually refused to agree to the Nuclear Non-Proliferatin Treaty (NPT) regime and her reasons for doing so are still the same. (17) Thirdly, she

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16. See Leonard Spector op cit p 202.

17. According to Jose' Goldemberg, erstwhile Director of the Institute of Physics of the Sao Paulo University, there is no prospect of Brazilian adherence to the NPT in its present form. Jose' Goldemberg, __Brazil__ in Joseph Goldblat(ed), "Non-Proliferation: The Why and the Wherefore" p.86.

is still an active votary of arms reduction and nuclear disarmament in various international fora. Fourthly, she has not yet conceded to the application of the Treaty of Tlatelolco on her territory. (18) Finally but fundamentally there is the continuing Brazilian policy of keeping open her weapon's option by not agreeing to anyexpressed proposals of shutting out the possibility of such use of nuclear energy.

Given these elements of change and continuity in Brazil's nuclear diplomacy the question to ask is what would the future hold? The possibilities are several. First, and what is perhaps of greatest concern to the rest of the world, is whether Brazil will some day decide to exercise her weapon's option which she has been preserving for so long. The question is at best conjectural and not based on any solid evidence of present efforts to that end. (19) However, as has been shown elsewhere

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18. Refer p. of this chapter.
19. President Jose' Sarney's Govt. formally denied any projects for fabrication of nuclelar weapons and said that Brazil does not "have sufficient technical developments for this nor a programme for testing to this end . " Nucleonics Week,August 14,1986 p.12.

there are enough catalysts to turn the possibility into reality. In any case, Brazil might explode a peaceful nuclear device in the manner of the Indian explosion in 1974.

Secondly Brazil is bound to increase her nuclear cooperation efforts with various countries , particularly of the developing world. Ofcourse, if the present trend is any indication then Brazilian-Argentinian nuclear collaboration is going to expand significantly.

Consequently it is going to have significant implications,for instance, a possible adoption of the Treaty of Tlatelolco in wider regional interests, the possible formulation of a regional atomic groupings (e.g. a LATINATOM) as Argentinian and Brazilian efforts at regional nuclear cooperation with various Latin American countries converged. (20)

Thirdly, Brasilia's policy towards NPT is likely to continue in the present form. Indeed, the Brazilian stance on non-proliferation issues might become more rigid given continued United States opposition to Brazilian policies.

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20. Argentina had wished in the past to promote a Latin American coordinating group for nuclear energy, similar to EURATOM. Brazil had resisted the idea in the past. John R. Redick op cit p.238.

Finally it is possible that Brazil would actually seek to promote a Third world nuclear cooperation nexus. Countries like India Argentina can alongwith Brazil serve as nodal points of such a network.(21)

In sum the nuclear programme of Brazil stands on crossroads. It has the necessary infrastructure for "a nuclear take off." The commitment to persevere is also not lacking. However, given the present economic difficulties (especially the huge debt problem), any concentrated efforts to consolidate and build up an effective nuclear sector is bound to be a drag on overall econmomic growth. In any case Brazil would treat nuclear energy more as a future alternatives and would carry on nuclear actively . The policies of the present Govt. reflect this situation in that not much has been manifestly done to

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21. In Feb 1985, Argentina rebuffed Indian overtures for nuclear cooperation (Nucleonics Week, Feb 21, p.11). Brazil and India however have a standing nuclear pact . They had signed an agreement in 1970 to exchange men and material. India also agreed to inform Brazil about all subsequent nuclear experiments.

expand the nuclear programme. (22) Indeed in keeping with economic constraints there have been cutbacks on budgets and postponements of various projects. (23) However, this logic of sound economics has not been strictly applicable to the parallel programme which, among other things, comprises research for military applications. Indeed the military is resentful of any interference in its programmes. (24)

Surely, the activities at IPEN suggest that research towards military use of nuclear technology continues independently and without much hindrance.

What obtains from all this is that Brazil today can pursue a nuclear policy that is characterised by a studied ambiguity i.e. while having the capability to use nuclear facilities for both civilian and military purposes, it might openly pursue only the civilian end and carry on a clandestine programme for

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22. In Aug 1986 President Sarney announced plans for rekindling the nuclear programme. An official statement at that time clarified that budgetary restrictions had to be applied with a view to"new economic reality". Nucleonics Week, Aug 14,1986 p.12.

23. In June 1987, while opening the meeting of the Economic Development Council the President categorised postponement of Angra-II project as one of the steps to bring austerity into national planning. See FBIS/LAM June ,1987. p.1

24. FBIS/LAM, 19 Dec 1986 p.D.1

primarily non-civilian purposes. Indeed, a peaceful nuclear explosion by Brazil will intensify speculation as to her nuclear capabilities and intentions. But until this happens Brazilian nuclear programme is bound to stay as a low group profile area. That Brazil has a nuclear capacity to speak of will continue to help its global ranking as a rising power. To that end Brazilian nuclear diplomacy can continue to portray a stand that underlines nuclear rights of the nuclear have-nots and upholds the needs for disarmament. Yet ambiguity that is characteristic of such principled stances,in contradistinction with Brazil's own refusal to clearly define her nuclear goals is likely to be the case for some time to come. Lastly, if the swing of the political pendulum brings the military back to power then the nature and objectives of Brazilian nuclear programme might be transformed.

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