

The Brazilian conquest of the new communication frontier in space

ABSTRACT

This article deals with some questions brought about by the Brazilian entrance in the field of space communications.

RESUMO

O presente texto aborda questões relacionadas com a conquista da fronteira do espaço pelo Brasil na esfera da comunicação.

KEY WORDS (PALAVRAS-CHAVE)

- Communications (Comunicações)
- Brazil
- Development (Desenvolvimento)

IN TELECOMMUNICATIONS, "distant is a place that doesn't exist". This power to overcome the barrier of distance became evident to Brazilians at the very start of the national telegraph, in 1861. The interiorization of the new and revolutionary technology, together with the construction of 2268 kilometer lines and the inauguration of 25 stations at several points in the backwoods and the jungle - feat performed by Marshal Rondon, at the end of the last century -, would conquer the imagination of the ordinary people at that time. It would have the same effect that the first spacial expeditions in the 60's by American and Soviet astronauts caused to international public opinion. In truth, at both times the same challenge was in focus: to overcome and dominate the geographical emptiness, integrating them into the cultural human scene.

The fact that Rondon was a military man, another similarity to the majority of contemporary astronauts, gave his missions the strategic character that the conquest of sidereal space had awakened in the 60's and which continues until today. In other words, reinforce the presence and possession of new territories, integrate and make use of these regions and dominate and oppose foreigners. At that point in time, Rondon's mission became paradigmatic because, from then on, it reflected the national political obsession to overcome a potential disintegration of the vast Brazilian continent.

The challenge of the new modern age would be, as asserted by Rômulo Villar Furtado, to participate in the new international race into sidereal space and to make Brazil occupy its own orbital space, assuring therefore "communication between the most remote areas" such as the Amazon and the Mid West.

In truth, the 3.3 million square kilo-

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meters of the forest had for a long time become a source of strategic preoccupation to the Brazilian authorities, legends about the mystery of the jungle and its alleged treasures had awakened foreign curiosity since the beginning of the century.

The development of the Brazilian spacial program was adopted in the 70's, although it would only be implanted in 1985, with some difficulty, due to relative simplistic solutions to the complex problems of this region, in particular, the break of isolation and loneliness of its sparse and dispersed populations, thus guaranteeing Brazilian possession over this territory.

The Amazon has become the most important subject for Embratel since 1974, when satellite communication, via Intelsat arrived there. Since then the subject of satellite communication has become a priority of government politics as a medium term strategic objective to guarantee the dominion of technology and autonomy in this area. So, not only the incorporation of the Amazon to other isolated regions would be guaranteed but also would permit the cultural integration of the country.

The focus of this study is to emphasize the idea that the Brazilian race into space, started in 1960 and concluded with a growing degree of autonomy in the 80's, contains the same strategic Brazilian effort as adopted by Rondon at the end, and which has always looked for ways of possession and control of Brazilian territory. The new sideral space frontier was conquered by military governments instructed in the knowledge of the strategic difficulties of Brazil. Awakened by the development of spacial technologies of other countries in the 50's and, especially since the 60's, through experiences made in its utilization in communication of continental nations, would make the conquest and dominion of this new technology a political priority goal.

This goal would come to prove, as a result, "communication lines and areas of control". More than any other technology until then available - and taking into consi-

deration the necessities of overcoming the physical barriers and frontiers of the Brazilian territory -, the satellite became the ideal instrument to connect dispersed communities to the deliberations of the public authorities. It offered a potential virtue of running and watching distant events as they occurred, just as it permitted interference in the case of the social body presenting any threats. The physical space became, thanks to the new technology, a variable of intervention at the disposition of the Authority.

According to A. Osborne Barry and N. Rose¹, a similar phenomenon of "administrative watching and political protection" was observed when the telegraph was introduced in England. A similar process also happened in the United States, especially during the civil war, when in 1860 the telegraph began its expansion, and in Brazil, when the construction of the lines to the backwoods, the jungle and to the countryside began, particularly after the war between Brazil and Paraguay, due to the preoccupation of the Brazilian state in maintaining control of extreme points of the national territory.

The national telecommunication plan, approved in 1963, reflected these worries when it established that the country "desired a system of integrated telecommunications, capable of satisfying the necessities of national development and security" through national telephone, telegraph, radiofusion, television, data transmission networks and connection to international networks.

This journey into space is a result of the maturing process started slowly in the late 40's, when the national aeronautic industry began and with the founding of the Technological Aeronautic Institute (ITA) the most important center in training technicians specialized in Aeronautics and Electronics. ITA would be the embryo of the aeronautical center which would also include the Institute of Research and Development, the center responsible for the development of the Bandeirante, the first nationally built airplane.

In 1961, people were already looking into space. On the 5th of August of that year one of the first Brazilian studies about the use of satellites for communication was concluded. It made only one recommendation: that Brazil should make use of the new frontier and thus, through the echo of geostationary aeriels, overcome its main strategic obsession, the vastness of its territory.

The effective measures to connect Brazil to international satellites would, therefore, allow electronic contact between the vast regions of the country and with the world. This would happen at a fast and accelerated pace, from the 60's up to the 80's, when Brazil effectively became a nation with a degree of autonomy and important technological domain. This journey began on the 6th of January 1963, when, for the first time in the country, Brazilian technicians monitored a Relay satellite from the tracking station built in Jacarépagua (RJ).

That year, Brazil was one of the first five countries to communicate with New Jersey via voice and teletype through the satellite. This successful experience which stimulated the adhesion to Intelsat on the 2nd of April 1965, the year that Embratel was founded, would become the responsible for international communication in Brazil. Four years later, the Brazilians already had their first connection station with Intelsat, the Tanguá I, built in Itaboraí (RJ). The Tanguá II would start operating in 1975.

We must remember that until 1967, internal communication inside Brazil was very precarious, through a microwave system of 468 channels between Rio de Janeiro and São Paulo; another with 120 channels between Rio de Janeiro and Belo Horizonte; and a third with 132 channels connecting Rio de Janeiro, Belo Horizonte, Brasília and Goiania. Interstate communication was made with some UHF and short wave circuits. The country was poorly connected to the exterior using submarine cables. In 1977, Brazil was sending its messages to the rest of the world using Bracan, a cable connecting Brazil to Europe, and using aeriels,

situated in Tanguá, connecting Brazil to Intelsat. That year the flow would improve, with the launching of BRUS, the Brazilian United States cable, connecting Fortaleza to the Caribbean (Saint Thomas) and the Virgin Islands, and from there to Florida, a total of 6540 kilometers.

We must emphasize the importance of the 80's: it was the decade of the Brazilian satellite. In 1982, for example, a program of satellite communication was developed by CPqD/Telebrás, whose intention was to develop components, devices, equipment, techniques, and processes for satellite communication. The aim was to attend the necessities of the network stations expansion which operated with Intelsat, and also was to generate technology capable of offering autonomy to the country in this field. These policies would proportion a revolution in the country's telecommunications.

In July 1982 the government of General João Figueiredo would finally approve the SBTS project, defining the year 1985 for the launching of the first national satellite into space. The consortium Spar/Aerospace, from Canada, was trusted with its construction and the launching was given to the French Arianespace. The satellite was placed over São Gabriel da Cachoeira in Amazônia, in a geo-stationary position exactly perpendicular to the Equator.

Additional evidence of the great impulse given to satellite communication in those years was the development program of the said Sonda Rockets from 1982 on. The launching sites installed in Barreira do Inferno, near Natal, and in Alacântara, Maranhão, were the largest of their type in Latin America. Further to these initiatives, the new monitoring station in Guaratiba was finished in 1984.

In 1985, the year of the launching of Brasilsat I, the country commemorated a rise of 16% of telecommunication services offered to the population. The strategic objectives relative to the sector had been amplified. Finally on the 28th of March 1986, Brazil accomplished its historic dream, for the first time, of being permanently inte-

grated, due to the newly operating satellite Brasilsat II. This satellite strengthened the basic microwave network and accelerated the interiorization of the means of communication.

National television networks which utilized Brasilsat from 1986 on, would also expand.

The nationalistic attitude of the Brazilian Authority, at that time, explains the countries opposition of its citizens in receiving Direct TV.

In the 90's there were no more doubts as to the benefits of the new technology. The satellite had become a decisive instrument for world communication and had turned into the principal means of obtaining the dream of national Brazilian unity. The country had a network of 65 operating stations allowing a flux of voice, text, image and data. A new generation of satellites were to be inaugurated with the launching of Brasilsat B1 and B2 in November 1994, serving, especially the east of Brazil with transponders and facilitating communications for the Mercosul.

In the 80's, Brazil would finally give up its opposition to the privatization of space, launching in December 1994 government tenders for the positioning of private satellites, authorizing each group to litigate two orbital positions. In this manner, following international tendencies. As a result in 1993, the country already possessed a million parabolic aerials, showing the expansion of Direct TV, so feared by companies and authorities earlier. In 1990, the companies had expanded at an extraordinarily high speed their private communication networks.

The projects given priority, in 1996, also included optical fiber programs, the compression of signals, commuting telephone data, integrated management of the network and services, and technological prospecting. That year Brazil had 23800 kilometers of microwave structure, 3 domestic communication satellites and more than 71 ground stations. A national optical fiber network was also being implanted connec-

ting the main Brazilian capitals. In 1998, the process of digitalization of the satellite network was advancing.

Conclusion and Arguments

The facts narrated up to here allow us to put into order some of the relevant historic facts so as to be able to understand the contemporary Brazilian cultural phenomenon. This was only possible thanks to the consolidation of a continental technological infra-structure in telecommunications, which tried to raise the range of necessary services for the development of the country. Even in the 60's these political and social impacts had clearly been seen beforehand by the Authority, the moment when communication technologies, especially telephony through microwaves, the structure of national television networks and the use of satellites, were to be an effective part of the preoccupation's of the Brazilian authorities. From the 70's on social communication in its diverse forms was seen, after a long period of maturity which started at the beginning of the century, as a condition *sine qua non* to the development of the country, just as the attainment of geo-strategic objectives consolidated in a work of meditation and study made by various thinkers of diverse political tendencies both civil and military, who demanded the possession and control of the territory and the psycho-social dimension of its population.

The structure of this complex network of artifacts should be seen in its own context, i.e., during the cold war at that time in effect and also the military control of political Brazilian life. These facts explain some of the options and decisions, such as:

a) Until the 90's, inspired by a nationalist spirit, private initiative was responsible for the exploration of the telecommunication business, but was not responsible for the construction and control of the support networks. The monopoly in this area would belong to the State, as foreseen in the law

no. 4117, 27th of August 1962, that instituted the already referred to Brazilian code of telecommunications.

b) The dissemination of a common cultural product, e.g., the massification of a national and political doctrine was considered urgent by the Authority due to the strategic understanding that the world had faced an ideological and cultural war during the 70's.

Furthermore, the new communication technologies, especially the satellite, would permit the attainment of political unity, desired since the beginning of the century, while allowing the symbolic consolidation of the Luso-Brazilian bloc in South America, as desired, amongst other authors, by Alceu Amoroso Lima;

c) The formation and development of the television networks through Intelsat and, afterwards, through Brazilsat, was, from the point of view of the State and its interests, the biggest of all its achievements, because it was the perfect technology for the realization of the objectives defined in item b);

d) Television, especially color television, was, in the 70's the instrument of diffusion of the slogan "Forward Brazil" (*Prá Frente Brasil*), an image that remembered modernity and that insisted on the installation and development of a national telecommunication industry (which explains why, for example, the PAL-M standard, somewhat rare in the world, was chosen for Brazilian television by the Authority, assuring, on the other hand, market reserve for the industrialists);

e) To stimulate the dynamics of this sector of services the Authority offered advantages to the television businesses, amongst them tax subsidies charged for using satellites, for example;

f) This model ran out in the 90's. The economic use of the KU band permitted that the Direct TV developed through the use in part of very small parabolic receivers. New forms of signal transmission were developed and others - as in the case of the

domicile optical fiber, considered promising, which took not only the television signal, but also the Internet to each television receiver - advanced quickly and became reality;

g) As a result, there is a list of phenomena that came before the tendencies of the 70's, especially the fragmentation of services, the privatization of space and the appearance of a multitude of actors and cultural producers, rendering the system less controllable, more cosmopolitan and subject to a wide degree of influences;

h) The fragmentation manifested itself not only through the end of the monopoly, exercised in the transmission, lead by a broadcasting station "head of network", through television networks, to which sometimes hundreds of "local broadcasting stations" were associated, but also in the privatization of its own support pillars, such as the country's telephone network. The fragmentation came from space together with Direct TV, contrary to the wishes of the television broadcasting stations. The number and variety of the satellites, in its own satellite network, which served Brazil would also grow, as in other countries.

i) The satellite allowed the expansion of services which Brazil knew very well how to adopt and develop. Apart from those already mentioned, such as the radiodiffusion and the telephony, we must mention the satellite's use in numerous new areas, amongst them, precise agriculture, remote sensorial mapping, and mobile telephony, and others •

Note

- 1 Barry, A. Osborne & Rose, N. Foucault and political reason. Chicago, Univ. of Chicago Press, 1996. pp:123-141.