5 – Telecommunications in Brazil

public services and social inequality

Bernardo Sorj

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SORJ, B. *brazil@digitaldivide.com: confronting inequality in the information society* [online]. Rio de Janeiro: Centro Edelstein de Pesquisa Social, 2008. Telecommunications in Brazil: Public Services and Social Inequality. pp. 58-72. ISBN 978-85-99662-48-9. Available from SciELO Books <<http://books.scielo.org>>.

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5 – Telecommunications in Brazil: Public Services and Social Inequality

Background

The development of telecommunications in Brazil can be summarized in three major phases: from 19th century (more accurately since 1852, the date of the installation of the first electric telegraph) until the military coup in 1964; from 1964 to the beginning of the 1990's; and from the mid-1990's to the present time. In the first phase, a long period that will not be detailed here, the telephone companies installed telephone lines in the country in a fragmented form. In 1964, there were 800 telecom companies; but only São Paulo, Rio de Janeiro, and Belo Horizonte were interconnected, while other inter-regional and international calls were carried out on short waves.

In 1922 commercial broadcasting was established and throughout the 1930s it spread quickly as an instrument of national unification, particularly under Vargas' *Estado Novo* dictatorship (1937-1945). Television transmission began in the early 1950s, but until the end of the 1960s its dissemination was very limited.

The military regime¹ (1964-1984) was responsible for the reorganization of the telephone system and a radical transformation of the communications system as a whole. As part of their geo-strategic vision of controlling and ordering the national territory, the military governments promoted a process of nationalization and concentration of telephone companies that put an end to the majority of telephone companies and created the Telebrás system of public companies. One of the Telebrás companies, Embratel, held a monopoly over interstate and international telephone connections.

The accomplishments of the Telebrás system are impressive. In the period from its creation until 1980, the number of telephone terminals went from 1.69 million to 7.5 million. Embratel created direct connections between all Brazilian states and, via satellite, to the international system, and expanded and consolidated a research and technological development center focusing on telecommunications.

During this period was established Radiobrás, a government radio network broadcasting one hour daily through all radio broadcasters across the entire country. But, the central cultural phenomenon of this period is the expansion of television and in particular the television network Rede Globo, which through association with local channels initially transmitted the daily evening news and later a complete set of programming.

¹ The army toppled Brazil's civil government in 1964, leading to some 20 years of military rule.

In a country undergoing rapid urbanization and industrialization, where only a minority of the population had access to print news media, and a considerable part was illiterate, the television and in particular the Rede Globo network, had a decisive role in national cultural integration. In that regard, it served as a functional substitute for the poorly developed educational system. Television was transformed into the primary –and for a large part of the population, the only– source of information and the formation of values, expectations, and habits. In the 1970s and 1980s, Rede Globo, through its television news, had an important role in supporting the military regime. At the same time, through its world-famous televised soap operas, it renewed customs, introduced feminist values, forms of critical thought and expanded horizons and people's expectations.

In the beginning of the 1990s, for different reasons, two of the large institutions associated with the military regime and the period of the economic miracle, the Telebrás system and, later, the Rede Globo, entered into crisis. Rede Globo, the nineties, went in to extensive debt, largely in foreign currency, to make a series of investments in the area of the new economy (cable TV, communication via satellite, Internet portals). These investments did not produce the expected returns at a time where competition among broadcasters of traditional television increased.

The Telebrás crisis was comprised of the same ingredients that caused the reorientation of the Brazilian economy and politics in the 1990s. From the early 80s, Telebrás was affected by the fiscal crisis of the Brazilian state and by inflation. Its investments were cut and the price of its services were kept low as part of a policies to fight against inflation. The return of democracy led to an increasing influence of political interests on public companies. Lack of motivation and salary reductions caused the abandonment of a large number of technical and executive staff. The accelerated expansion of the telephone system of the 1970s ran out of steam. During the 1980's, individual telephone lines were worth thousands of dollars on the parallel market and subscribers who registered for telephone expansion plans waited several years for the installation of a telephone line.

The privatization of Telebrás and of cellular telephone services was part of the overall policy of privatization initiated during Collor's presidential administration (1990 to 1992) and continued by presidents Itamar Franco (1992 to 1994) and Fernando Henrique Cardoso (1995 – 2002). At the beginning it seemed that the new telephone system would maintain public companies in competition with private companies, but the approach that was finally adopted completely privatized the sector. In the same way, proposals oscillated between maintaining only one national telecom operator company or breaking it up into independent regional companies. The latter model was eventually selected.

Although the importance of the privatization for enabling expansions of new investments in the sector is subject of debate, privatization has brought unexpected side-benefits. To legitimize privatization policies, the government mobilized a discourse that associated privatization to universal access, consumer rights, and quality services.

Privatization: the impulse and the brake

The privatization of the telephone system resulted in the creation of several competing companies, most of which were controlled by or had strong participation from foreign telecommunications companies. Within a few years, they were able to increase the availability of both standard fixed telephones and cellular telephones dramatically, eliminating the parallel market. Today, in practically all Brazilian cities, telephone lines are available for immediate installation without costs other than the standard technical service fee.

In 1994, approximately 13.3 million fixed telephones had been installed in the country. By 1998, a year of privatization of the telecom system, this number had doubled and by 2001 there were 47 million telephone lines, seven million more than the goals for the year as established in the public utility contract. From 1995 to 2000 the number of telephone lines per 1000 inhabitants increased from 85 to 182 and the rate of phones using digital technology went from 35.5 percent in 1994 to 97.2 percent in 2001. While the prices for installation of new lines fell dramatically, the per-minute costs underwent a less significant reduction. The availability of public telephones also underwent an enormous expansion, from 300,000 public telephones in 1994 to 589,000 in 1998 and 1.4 million in 2001 (8 public telephones for every thousand of the population).

Although telephone lines continue to be unequally distributed between urban and rural areas, between the different regions of the country, and between low and high-income sectors of the population, the greatest expansion has been in the poorest regions and among lowest income groups. The number of families in the lowest income category with telephones has quintupled although still half of Brazilian poor do not have a telephone (fixed or mobile). Among the lowest income populations of the (richest) central southern region of Brazil, 50 percent have a home telephone (equal to the national average).

The numbers for the expansion of cellular telephony are even more dramatic: 800,000 cellular telephones in 1994, 4.4 million in 1998 and 28.7 million in 2001; bringing Brazil to ninth place in the world ranking. In 1994, there were 0.5 units for each 100 inhabitants and by 2001 the number had climbed to 17, the great majority using prepaid service (68 percent of the total). In 2001, 51 percent of Brazilian homes had a standard fixed telephone line. The expansion of the fixed lines during the period when cellular phones were rapidly increasing indicates unmet demand of fixed phones. The current trend is that fixed telephone system growth will slow down while the cellular telephony will continue to expand and is expected that in the coming years cellular telephone lines will surpass the number of fixed telephones.

Although the cellular telephone, as we saw previously, adapts itself better to the necessities of the modern life, the fixed telephone continues to have a strategic importance for the universalization of communication services as the main vector in the convergence between Internet and television. Current indicators show that probably this convergence will take much longer to materialize through cellular telephones.

The growth in the number of telephone lines in the 1990s seemed to indicate that universal telephone service would become a reality in the near future. Unfortunately this was not the case. In the last years the expansion of the telephone system has already begun to show strong signs that it is reaching the barrier of the income limits of a considerable part of the population.

Public utility contracts require that telephone companies install a given amount of lines. After reaching these minimums, phone companies are free to offer their services outside their original areas. Phone companies hurried to install a large number of lines, but today only 75 percent of these lines are in service. A large part of the population is unable to pay the monthly subscription fees, which were once subsidized but have increased since privatization. The deactivation of lines for nonpayment has become a chronic problem. Optimistic plans for expansion among cellular telephone companies have also been cut back even though the market continues to grow.

The fact that that fixed and cellular telephony is increasingly oriented toward the low income means that the monthly average bill tends to decrease. As we indicated previously, a large part of users sign up for prepaid cellular service, which is used more for receiving than for making calls. This service does not lose money for companies only because they collect fees from the callers to cellular phones through their telephone service providers. In the case of the fixed telephones the expansion of the network for low-income groups has meant a decline in average use as measured in telephone pulses (the number and duration of calls). This results in a decline in the billing amount per telephone line, a natural consequence of the dissemination of the telephonic system, since the average monthly bill drops with the average user income level.

The expansion of cable television confirms this diagnosis and shows that the problem even reaches the middle class. Despite efforts to increase coverage areas, cable TV in Brazil has not kept up with the original plans. In 2001 there were only 3.6 million subscribers with minuscule growth in recent past years. From 2000 to 2002 the number of new subscribers was almost as high as the number of canceling subscribers. Despite reductions in monthly fees, cable television still costs 1/4 of a monthly minimum wage, it is oriented primarily toward the population interested in foreign language broadcasts and generally it is not considered a priority for even the middle-class. The principal company in the sector, NET Services, which also offers Internet access, is in a serious financial crisis.

In Brazil the situation is similar to what has happened in other countries with similar per capita income levels. In the 1990s, there was large-scale expansion of the telephone system in response to demand that had previously been unmet. But after this demand was satisfied, construction of new lines started to face restrictions of income distribution caused by the fact that an important part of the Brazilian population does not have an adequate income for maintaining a telephone line.

The Information Society in Brazil: e-readiness

As with the majority of countries, the Internet was first introduced in Brazil as part of the scientific system, where it spread quickly. In 1987 the National Research Network (RNP) made the first connections between Brazilian and American research centers. In 1991, the first regional network for scientific ends was launched and, later in 1992, expanded to 10 states by the National Council for Scientific and Technological Development (CNPq). In 1994 commercial Internet service was offered in Brazil, initially by Embratel and later through other companies. In 2001 broadband Internet (Internet 2) started to become commercially available and was offered by several companies, especially those with installed television and telephone networks. These services are available only in urban areas, most providers serve specific areas and most addresses only have one option for broadband.

Studies allowing in-depth comparisons between Brazil and the rest of the world in terms of the impacts of the Internet do not yet exist. Most e-readiness evaluations studies rank Brazil at an intermediate level, near the top of the intermediate segment in terms of B2B, e-government, and science and technology. But in terms of software and human resources, Brazil is under-performing compared to other large countries with equivalent or even lower levels of economic development.

According to recent research conducted by Nielsen-NetRatings, Brazil represents 2 percent of the world population with home Internet access, placing the country in seventh place in the international ranking of countries, which is led by the United States with 168.6 million people (79 percent of the population over 16 years old) connected to the Internet.

The Information Society in Brazil: E-Development

Spending in the information and telecommunication industry in Brazil represented 2.7 percent of the total GDP in 1995. This number increased to 8.3 percent in 2000. From 1995 to 2002 software sales went from 700,000,000 to 2,557,000,000 dollars, and the telecommunications industry became the principal source of foreign investment in the Brazilian economy during this period. From 1999 to 2001, the number of people employed by telecommunications companies increased from 152,900 to 250,000 and the GDP of the industry has increased more than 10 percent per year since 1992 (with the exception of 1995 and 1999, a period when the overall national GDP has shown little growth).

In certain sectors of e-development Brazil, stands out in comparison to the rest of Latin America. The country has one of the most advanced automated banking systems in the world and has exported know-how in this area. Brazil is responsible for 60 percent to 80 percent (depending on different evaluations) of B2B transactions in Latin America. Brazil's strength in this area is in large part connected to the importance of the financial industry.

In the area of B2C, Brazil has not reached comparable levels. According to year 2000 data, unlike the rest of Latin America, Brazil's B2C transactions are mainly purchases within of the country. This situation can be explained by the high import taxes that consumers must pay on any product coming from abroad. The B2C sector in Brazil faces another barrier: less than ¼ of the population has a credit card.

According to research recently conducted by the Federation of Industries of the State of São Paulo, 88 percent of the state's micro businesses use a computer of which 41 percent used some type of management software. 99 percent of small businesses use computers with 57 percent using management software. In both the cases it was indicated as the main obstacles for computerization the costs of the equipment and software. The SEBRAE (Brazilian Service in Support of Micro and Small Businesses) offers on-line courses for preparing entrepreneurs and launched a project creating tele-centers for entrepreneurs. The contents that will be offered under this program have not yet been decided.

The use of distance education by companies is still low. A recent survey printed in the magazine *Carta Capital* showed that most of the companies surveyed do not use distance education as part of their training programs. Among the companies that do use distance education, it is used mostly for the technology and sales areas, followed by marketing.

As in the rest of the world, Brazil has experienced a process of concentration of portal sites and access providers that have transformed themselves into the main source of information for Internet users. Four large portals represent more of the half of Brazilian Internet site visits. A similar process of concentration occurred with free dialup access providers, a market that became practically monopolized by iG (Internet Grátis).

Considering that the availability of high quality Internet services is a prerequisite for the establishment of new modern companies, in the current Brazilian context information technology increases existing polarizations favoring large urban centers at the expense of the majority of smaller cities.

The Information Society in Brazil: The Digital Divide

Social context - To determine the limits of the possibilities of Internet expansion, the first and basic variable is the literacy level. In 2001, 94 percent of Brazilian school-aged children were registered in schools, but 41 percent of students do not complete their basic educations (from 1st to 8th grade, age 7 to 16). The situation among adults is even more dramatic: 64 percent of heads of households have not completed primary school (1st to 4th grade) and the illiteracy rate among people over 15 years old is 13.6 percent. At least 30 per percent adults are technically illiterate, meaning that they are unable to accomplish sustained reading or writing. On average, Brazilians over 25 years of age have been through 5.9 years of formal schooling and even though the university system expanded, it is still below the levels of countries with similar per capita income.

The socioeconomic situation also affects the chances for Internet access and in this area the Brazilian situation is particularly lamentable. As of 2001, 33.6 percent of Brazilians live under the line of poverty. Of those, 14.6 percent are considered indigent, meaning their income level is less than half of the poverty line. Brazil has one of the highest levels of social inequality in the world.

While the inequality measured in terms of individual income has remained historically stable in the past decades, Brazil advanced significantly, in terms of access to public services. In 2002, 96 percent of the Brazilian homes had electric energy. In relation to traditional communication technology, the situation is also much better: in 2001, 89,1 of homes owned a television and a slightly higher percentage owned radios

Number and Distribution of Users - As we indicated earlier, access to the Internet can be available at home, work, school or tele-centers. The existing data concentrates on home access. There is insufficient data about people who only have Internet access at work while the number of tele-centers in Brazil has not yet reached a relevant critical mass. We will therefore concentrate the following analysis on home access and later we will discuss school access.

To have access to the Internet, using the technology that is currently widespread in Brazil, it is necessary to have a fixed telephone line or cable television. Since people with cable television generally also have a telephone line, the important data relates to fixed telephone lines. In 2001, 51 percent of Brazilian homes had telephone lines. The second necessity is a computer. 12.5 percent of Brazilian homes in 2001 had a computer.

Although low-cost computer distribution has been attempted in Brazil with the help of financing made possible by public sector banks, these initiatives have not yet shown results. Even so the new administration of President Lula has announced plans to launch an initiative in this area.

By May of 2002, the number of registered domains in Brazil approached 500,000. According to Network Wizards, Brazil had 2,237,527 hosts in January of 2003 putting it in ninth place worldwide. This number is as high as all of Spanish speaking Latin America combined. As we have indicated, it is difficult to determine the number of users per computer. In accordance with the Nielsen-NetRatings company, at the end of 2002, the number of people over 16 years of age with access to the Internet in Brazil was 19.7 million, of which 14.3 million people have access from home computers. This represents approximately 8 percent of the population with home access. The study, that measures Internet audiences affirms that the number of Internet users in Brazil increased by 2.1 million in the last year.

Despite the exponential growth in the number of people with access to the Internet in Brazil, the percentage of users with broadband access at the beginning of 2003 was around 5 percent of the total. This low percentage should be a source of concern since, as we have shown

previously, the digital divide is a dynamic phenomenon and the current trend is that an increasing amount of available content is developed for broadband users.

In the northern region of Brazil, 4 percent of computers have access to the Internet; in the northeast region, 3.5 percent; in the southeastern region the number jumps to 12.2 percent and in the mid-west and southern regions, it approaches the national average of 8 percent. Thus, the Internet follows and in some cases deepens national inequality trends because it is a phenomenon particularly concentrated in the largest cities of the country (in 2002 only 350 cities, 6 percent of the total, had local Internet Service providers that could be dialed without long distance charges). 90 percent of users belong to the richest 25 percent of the population whose levels of Internet access are comparable to the average in advanced countries.

Research conducted by the Getúlio Vargas Foundation, with data from the of 2000 and 2001 census, confirms predictable trends: access to the Internet is concentrated among the sectors of the population with more formal schooling, higher income, and who live in urban areas, and in the richest states of the country. The unequal distribution of access is reproduced within each state and city. For example, in the Lagoa neighborhood, one of the wealthiest areas in the city of Rio de Janeiro, 59 percent of the population has access to a computer while in the Complexo do Alemão, one of the poorest areas of the city, fewer than 4 percent have access. The research indicates that homes with small children have lower chances of having a computer, confirming the typical distribution of consumption capacity within the cycle of family life as well as the fact that, in Brazil, the birth rates are higher in poor sectors of the population. The study did not find significant differences in the access between men and women, but they did find that the black population has lower rates of computer access than the national average given the same educational and professional conditions.

Education and Culture

In 2001 Brazil had 94 percent of school-aged children registered in basic education (grades 1-8), and 65 percent of secondary education students (grades 9-11). These rates improved Brazil's relative standing in Latin America. The development was made possible by policies that provided incentives for staying in school (such as offering meals at school and a grant for low income families for each child attending school), as well as policies to reduce failure and grade repetition rates. Further, investments in public education made Brazil the only Latin American country where the number (both absolute and relative) of private school students diminished in the 1990s.

This success is partially overshadowed by the low school achievement levels and educational outcomes in the public schools, which reflects, in addition to the social and cultural context of the family, the poor level of teacher qualification. It is not surprising that the Internet has been presented as an almost magical solution to teacher education problems and the overall quality of education. But despite some isolated experiments, there is still no clear operational plan in Brazil for how multimedia and the Internet should be part of school instruction.

Public schools in Brazil are either supported by cities, states, or in some cases, the federal government. In terms of information technology, they often get support from all three levels. For example teacher training might be supported through one source while another might provide computers. The fragmentation of policies is aggravated by the lack of national curriculum and teacher training policies for use of information technology in schools. In 1997 the Ministry of Education created a program called ProInfo for developing school computer training and content. ProInfo would have access to resources made available through the FUST, a fund that will be explained later, that supports access universalization for telecommunications services. The ProInfo program has been paralyzed by debates in Congress over the use of commercial or open architecture software

According to the 1999 Ministry of Education census, only 3.5 percent of the elementary schools were connected to the Internet. Among private schools, this number is substantially higher and the availability of computers and Internet is used to attract students. One characteristic of Brazilian private education is the existence of large groups that, directly or through franchising, control a large number of schools. These groups generally develop multimedia programs and Web sites for supporting teachers, students, and parents.

The same survey indicates constant growth in the number of schools with computer laboratories. In 1997, 20 percent of elementary students had computer labs in their schools. By 2001, the number had increased to 23.9 percent (they do not indicate real size or the breakdown according to public and private education, but experience indicates that the great concentration is in private schools). Of the total number of 1st through 4th grade students, 14.66 percent had computer labs in schools. About 25 percent of these had Internet connections. Among students in grades 5 through 8, 35.7 percent had computer labs in schools and about 33 percent of these have Internet connections. Among secondary school students, 58.5 have computer labs in schools and 45.6 percent of these had access the Internet. The same dramatic differences between states, cities and urban and rural areas can be found in the school system.

The research also indicates that children with Internet access at home have better school performance. This is an insufficient correlation for explaining student performance: the students with home Internet access are generally the ones who belong to the wealthiest families, with higher educational level and who study in private schools. Each of these factors alone could explain the performance inequalities.

Despite constant growth in the number of schools with access to computers and other information technology, we cannot overlook the fact that in 1999, 29.6 percent of all Brazilian schools lack electricity and only 23.1 percent have school libraries. This situation reaches even more dramatic levels in the northern and northeastern regions of the country.

During of the 1990s several companies were formed that were devoted to the production of Internet material for the education system, particularly for basic and secondary education. With the crisis of the new economy, many of these companies closed or lost momentum.

Today, private foundations, state education secretaries, and large Internet service providers produce the majority of sites designed to support schoolteachers.

University support for school systems is fragmented. The case of the School of the Future, of the University of São Paulo stands out for its long experience in bringing together technological research and didactic products for teacher training. In terms of distance education, Telecurso 2000, a project of the Fundação Roberto Marinho, continues to stand out. The Telecurso 2000 program is designed for students who dropped out of school and are preparing for exams that substitute completion of elementary or secondary education. It is broadcast on television (but can also be obtained in videocassette form) and is complemented by a series of books. As we will see, Viva Rio bases one of its activities on the Telecurso 2000 program.

In the area science and technology, Brazil has been precocious in terms of computerization even by international standards. To date, all public universities staff, and in many cases students, have access to Internet. The National Council for Scientific and Technological Development (CNPq) and the Ministry of Education and Culture make collections of periodicals and library catalogs available to Brazilian researchers on the Internet, facilitating the integration of local libraries with libraries outside Brazil. The Brazilian Institute for Science and Technology Information (IBICT) is developing a project to integrate the computerized databases of all libraries in the country. The work of IBICT is considered a reference point in all Latin American countries.

Despite these developments in the use of the Internet, higher education in Brazil lacks a tradition of distance education. Only within the past few years have public and some private universities started to develop distance education courses, usually at the graduate level, and organize consortiums throughout Latin America. In 1989 was created the virtual public University of Brazil (UniRede), a consortium of 70 public higher education institutions. Its objective is to develop undergraduate, graduate, and extension courses. According to research conducted by Unisul Virtual, in 2002 there were 84,713 students registered in 60 distance higher education programs accredited by either the ministry of education or state education councils.

At the end of the 1990s, the introduction a large number of foreign graduate level programs, generally associated to private Brazilian universities, produced a wave of requests for recognition of foreign diplomas at the Ministry of Education and Culture (2,700 requests in 2002). Given the dubious quality of many distance education programs, the ministry decided that it was necessary to define criteria for distance education program certification, and suspended all new authorizations.

Public Policies

During the administration of President Fernando Henrique Cardoso (1995-2002), important achievements were made in the areas of e-governance and e-government. There were also relevant, though unequal, advancements at the state level, while at the municipal level, progress has been unsatisfactory. It is difficult to exaggerate the importance of government use of electronic means of communication and computerization of public services for reducing corruption, private appropriation of public goods, and the enormous waste and the inefficiency that has been associated with the public system since the creation of the Brazilian state. Access to documents and information concerning bids and general information by citizens and businesses, the unification and improvement of public security databases, the allocation of vacancies in public schools, and the scheduling of appointments in the public health system by telephone and Internet, are all examples of how the Internet is an instrument of democratization of the state.

During the Fernando Henrique Cardoso administration there were many success stories in the area of e-governance. Brazil was one of the first countries to introduce income tax declarations via Internet, and today it is among them the international leaders, with almost all businesses and 80 percent of individual contributors declaring via Internet (this also reflects the narrow base of contributors in Brazil). The Brazilian experience in electronic voting is exemplary and among the most advanced in the world in both efficiency and reliability. The Law of Fiscal Austerity requires that federal and state governments publish information concerning their budgets on the Internet, increasing transparency and the possibility of overseeing government activities.

Another area where the government has had success is with bidding for government contracts, a traditional source of corruption and embezzlement. In 2002 approximately 5 percent of government purchases were carried out in electronic government auctions and more than 50 percent through bidding processes via Internet. The government made advancements in the consolidation of the public key infrastructure that will ensure standards for security, certification and authentication of electronic documents. At the inter-ministerial level and all official communication with the presidential offices is carried out electronically.

All branches of the federal government have Internet pages with constantly updated information concerning various services related to documentation, tax payment, benefits, obtaining certificates and documents, and public job offerings. Though the many federal government web sites are at different levels of developments, there is a searchable portal with links between the web sites of many public institutions. In many states, the court system provides online services for keeping track of legal processes.

Brazil has made important advancements in creating legislation that facilitates the expansion of Internet businesses such as: punishment for electronic crimes, due process for documents, and privacy protection. There is still a need for further developments in this area particularly in adapting commerce laws to electronic transactions, legally recognizing digital signatures, taxation of products and services, and the rights of the Internet consumer.

The legislation concerning copyrights was expanded to include the audiovisual sector, computer programs, and databases were consolidated in the 1998 laws No. 9609 and 9610. Copyrights for software is protected for 50 years regardless of whether the software is registered or not and the law requires that software vendors offer technical assistance. The government is developing proposals concerning Internet commerce and electronic signature. A law for official government documents has authorized the use of electronic signatures.

At the end of 1999 was created the Program for the Information Society in Brazil (SOCINFO). In 2000, SOCINFO produced an excellent document, *The Information Society in Brazil Green Book*, which maps out the Brazilian situation and proposes specific policies. The program aimed to promote greater coordination of activities and identify and promote programs of strategic value. During its first few years, SOCINFO supported the development of projects in the areas of connecting libraries and non-governmental organizations to the Internet, developing a national health card, creating citizen service terminals, developing of an electronic commerce program for small businesses, and developing technology for automatic text translations to Portuguese (all software associated with PROINFO use open source technology).

SOCINFO played an important role in international forums as a leader in outlining regional positions. Despite the impact of The Green Book, considered an international reference, and the high technical qualifications of the staff, the program was in large part paralyzed by its dependence on FUST resources, which, as we will see, were never liberated. The fact that SOCINFO is part of the Ministry of Science and Technology, a ministry with limited political weight and resources, makes it difficult for the program to be transformed into an effective center for the coordination of government activities.

A second center for decisions affecting the fight against the digital divide is the National Telecommunications Agency (Anatel). Anatel is responsible for the regulation and enforcement of the telecommunications system and the execution of the FUST fund for universalization of services, which will be analyzed in more detail in the box at the end of the chapter.

At the state level, the dissemination of the Internet is steadily advancing but at an unequal rhythm. Some cities and states have policies for creating tele-centers like the mayor's office of the municipality of São Paulo Plan for Digital inclusion with Tele-centers offering free access and relies on the GNU/Linux operating system and, at state level, the ACESSA São Paulo program, which is supported by the state government with a similar program of tele-centers with free access and training for the most needy populations..

The states in the southern regions and north-east state of Bahia have higher levels of Internet use and information dissemination, offering various services, among others, registering for school, data on taxes and services for enterprises. Many of the state sites adhere to the federal government online purchasing program. The situation is much more jeopardized at the municipal level. Although the largest cities are at a level comparable to the most

advanced states, the large majority of municipalities do not offer any information services via Internet, and many are not even computerized.

Non-governmental Organizations

The Internet and non-governmental organizations have had a precocious association in Brazil. IBASE, a non-governmental organizations located in Rio de Janeiro, originated in a proposal to create alternative information systems for low-income sectors. It was the first private institution in Brazil to offer Internet services to the public. In 1995 The Information Technology Network for the Third Sector (RITS) was created with the objective of promoting the incorporation of the Internet in the work of non-governmental organizations offering technical support, and information.

There are many initiatives in the fight against the digital divide in Brazil, not only through non-governmental organizations but also universities and enterprises. The experience of the non-governmental organization Viva Rio, that will be discussed in the following chapters, stands out in the fight against the digital divide for the amplitude and variety of its activities, the inclusion of programs related to the struggle against other forms of social inequality, and for the production of innovative content and products. But before introducing the work of Viva Rio, we will briefly discuss the world in which it operates, the world of the *favela*.

Box F – Telecommunications Regulation and Universal Service in Brazil

The National Telecommunications Regulation Agency (Anatel) was created as part of the process of privatization of the telephone companies. Its goals are to promote competition and reduce prices, preserve the interests of investors and shareholders, ensure respect for contractual terms and the goals of the public utility agreements, including the universalization of telephone services. There are various definitions for universalization of services, but the general sense is availability of service for all users at prices within their reach.

Though its creation did not include all necessary precautions and preparations that should have been taken before privatization, Anatel has shown great operational effectiveness and is considered a model by international standards. It has transformed itself into the principal reference for telecommunications consumers who made 4.21 million complaint calls in 2001. According to Anatel, 92 percent of these complaints were resolved through Anatel's services. Anatel's price reduction role has yielded limited results and has difficulties in establishing effective competition in the telephone industry where structures continue to be oligopolic (a problem common even in the countries that pioneered the privatization process, such as the United Kingdom).

With the objective of assuring access to telecommunications services, the Fund for the Universalization of Telecommunications Services (FUST) was established in 2000. The objective of FUST is to finance expenses associated with universalization in areas where building infrastructure would not be commercially viable and support project that are outside of the goals established for the public utility companies. FUST resources originated in a 1 percent tax on the gross revenue of telecommunications service companies and 50 percent of funds collected in fines. The Ministry of Communications is responsible for defining the broad priorities and uses for the FUST and Anatel is responsible for the operational and enforcement components.

FUST has operational difficulties not only because its resources are limited considering its objectives (in the United States a similar fund receives 2.2 percent from telecommunications company invoicing), but also because until 2003 the projects associated to FUST have not left the planning stage. FUST funds have been on contingency by the federal government to assure budgetary surplus.

Anatel also possessed neither the instruments, nor the internal qualification to implement, enforce and oversee the use of FUST funds. In fact these activities could raise conflicts of interest for Anatel between the exemption requirement of its regulating function and the political leverage necessary for effective implantation of universal access. The goal of universal telecommunications services, particularly Internet services, surpasses the Anatel mandate and its operational capacity. Goals for universal access are part of public utility contracts between the government and the utilities but the contracts refer only to the availability of lines. As we have shown, the barrier to universal access to the Internet is

individual income. Part of the problem is related to high costs of telephone services due to high taxes, among the highest in Latin America.

The limitations of Anatel and its ability to carry out universalization policies don't mean that it cannot develop initiatives that favor excluded sectors of the population. For example, Anatel recently proposed the creation of differentiated access numbers for Internet dial-up service (Project 00i0). This will allow Internet users without local access providers to connect to the Internet's without long distance charges. This would be an important step in supporting digital inclusion.

At this moment, proposed solutions for creating new collective access points continue to be paralyzed. Free access kiosks at post offices and electronic presence points of the federal government are still in the planning stages. Some projects, like the creation of the national health cards, computerization of schools, and digital networks that link the entire school system and professional education network, not only suffer from unrealistic deadlines for their realization but are also based on inflated assumptions about the availability of local human resources and should be develop through pilot programs. Most of the existing projects lack detailed analyses of local contexts, and in the case of schools, clear programs for teacher education and development of curriculum suitable for critical Internet education.