*THE SOCIAL SHAPING OF INTERNET FROM BELOW:*
*NGOs and government's roles in Internet development in Brazil and Peru*

*Martha Fuentes-Bautista, Joseph Straubhaar and Jeremiah Spence*
*University of Texas at Austin, USA*

**ABSTRACT**

**The social shaping of Internet from below**

*This paper argues that novel approaches to social development of the Internet have emerged in Latin America. NGOs and social movements were a much greater influence on the early development of the Internet there, relative to commercial and other actors. This seems to have left important effects on the role of the Internet in society. The very early use of the Internet as a international tool for organizing resources and support by the Zapatistas in 1991 was only the most visible of a number of ways that NGOs, social movements and political groups throughout Latin America began to use the Internet to network among each other and mobilize support abroad. Small NGOs in Brazil were often using the Internet before medium size businesses. Peru developed extensive public Internet access before the United States did. We argue that this has given these groups within civil society a considerable agility in organizing and acting that may well create a lasting effect on relative power relations with other more traditional sectors of society.*

*We analyze this different path of Internet development as social construction of technology and public policy in societies with distinct histories. We found several converging factors shaping public access to the Net. First, many activists turned in the 1980s away from state-centered political work to grassroots organizing, often using alternative media. Second, a quite different relationship had developed between university and society in Peru and Brazil, which led professors and students to take technology into activism almost as soon as they discovered it themselves. Third, several NGOs, both global like the U.S.-based Association for Progressive Communications, and national like IBASE in Brazil or the Red Cientifica Peruana in Peru, built on universities and other early knowledge bases about the Internet to focus their operations on bringing the Internet as an organizing tool to a wide range of other NGOs and social movements. These NGOs trained people in how to use the Internet for networking and organizing, trained them in the technical use of the Internet, created and operated non-profit ISPs, and created models almost like non-profit franchises, for how to set up small cybercafes or telecenters.*

*Within these general approaches, there were an interesting variety of approaches, both early in the late 1980s-early 1990s and in the late 1990s to present. This paper concentrates on several cases within Brazil and on the Red Cientifica Peruana in Peru. The study finds that approaches have depended in large measure on: (1) different understandings of the role of technology for social welfare; (2) the meaning of public access to the Internet; (3) the availability of telecommunications, and (4) ISP infrastructure. Those in turn depend on both government regulation of telecommunications and developments within private industry in telecommunications and Internet Service Provision. Civil society in Peru had more open space to use Internet. Telecom use was more open to small businesses. RCP quasi franchise model could multiply freely. Even after privatization, Telefonica left the market open to small business rather than occupying it itself, so a space was created in which many small access centers, called cabinas publicas, flourished. Brazil had more directive policy. Brazilian telecommunication development was more directly driven by corporate and state interest. Both telecom and ISP market were quickly occupied by larger businesses. By the mid-1990s, however it became clear that Internet access needs by poorer people were not being met, so state and local governments, as well as NGOs have begun to create a number of telecenters.*

**INTRODUCTION**

Theories of the information society see technology as the engine of social change and economic progress. From Daniel Bell's concept of "intellectual technology" to Manuel Castells' notion of "knowledge technology" (1996) information technologies are placed core of social development. Making use of Kranzberg's axiom, Castells reminds us that "technology is neither good, nor bad, nor is it neutral" (p.65). His conception of technology may be better identified as a contingent view, a perspective that looks at a specific technology in the particular historical and social setting in which it is deployed. Technology may be a problem-solver or problem-generator, but it is essentially malleable allowing for its selective adoption. This notion attempts to assess both social and technological aspects involved in the process of change, and call for the definition of strategies or policies in this respect. Even this more critical vision, keeps technology as a force that independently acts outside of society carrying "impacts" and "influences" on society.

Studies on Internet development have frequently assumed such perspectives. DiMaggio et al.'s (2001) review on social research of the Internet calls attention to the large amount of studies that has focused on online communities, the Internet's impact on inequality, politics, organizations, and culture. However, the authors argue, all this voluminous research reveals "the need to develop explanatory models that distinguish between different modes of Internet use and that tie behavior directly to social and institutional context" (329). Our study tries to answer this call providing and empirical understanding of the connections and differences between the Network development and social and institutional practices in the specific context of societies with distinct cultural, economic and political trajectory of Internet development. Through the study of the social and economic forces at play in the development of Internet in Brazil and Peru, we attempt to provide a framework for understanding the emergence and evolution of the Network in two developing nations. Our thesis is that Brazil and Peru present different directions of network development. Specifically, both saw creative innovations in policy from below by NGOs who sought to create new forms of access to the Internet for leaders of social movements and NGOs. However, these efforts took different paths precisely because of the differences in the basic understanding of technology's role in social development and the role of public access to achieve this goal. We also analyze the impact of telecommunication infrastructures that had been developed by previous state-led policies, different approaches to commercialization of the Internet, and regulatory goals. We try to understand these differences through a comparative case study method of the social and institutional forces at play in both cases. Implications for issues of access and inequality are further discussed.

**THEORY**

**Social forces shaping Internet**

The literature on Internet development includes a good amount of studies that keep track of the rollout of the Network in particular countries and internationally. Discussions of the 'digital divide' and access commonly focus on indicators of infrastructure development (number of host, computer, telephones), and demand (number of users, subscribers, etc). Uneven distribution of variables of connectivity, and adoption rates are problems explored by these kinds on studies.

Cross-country comparisons in particular, have tended to be centered in these sorts of variables (ITU 1999; Paltridge & Ypsilanti 1997). More refined models used to study the global diffusion of the network have incorporated variables such as income, education and language (Barnett et al., 2001). Comparisons of same portals and web sites across country domains have found differences on local content made available on line (Rao et al, 1999) positively related to income and population (Fuentes-Bautista et al., 2001). We will see below that indicators of growth in access and use can reflect both large and subtle differences in social models of the Internet.

These types of studies have mapped the advance of the network helping to describe major trends, and to identify main structural factors accounting for them. However, for the major picture sketched by this studies need of deeper understanding of the process and context by which adoption and use proceed in society. DiMaggio et al. (2001) remind that research on technological change has taught us that the relationship between technology and society is never unidirectional. Technologies are developed, shaped, and adopted, responding to social needs, and under political and economic circumstances. Moreover, as tools of social interaction, media technologies adopt the contours of society in which it is used. The statement is particular relevant for the analysis of Internet development. The Internet is even more versatile because it combines point-to-point and broadcast capability within a single network (Neumann, 1991; Robinson et al 2000b, Wellman 2001). It can be a telephone, email, chat rooms, and other forms of real-time communication between individuals. It can serve as a library, repository of all kind of information (text, video, sound) or operate as conventional mass medium through broadcast or narrowcast media. "Precisely because it can be all of these things at once—because it affords users choices among multiple modes of appropriation that coexist at any given time—the Internet is unprecedentedly malleable. This malleability raises the stakes for actors who wish to shape its evolution" (DiMaggio et al, 2001).

Few studies have engaged in the discussion or empirical research of institutional and social factors accounting for differences in Network diffusion or the growth of access points to the network. Hargittai (1996) tests the impact of institutional factors through the presence or absence of commercial Internet Service Providers (ISP) worldwide. The author reports that in 1995 three quarters of the developed nations had ISP operating in their markets, while only 10% of developing countries had commercial access.

Through an ethnographic work, Miller & Slater (2000) study the diffusion and adoption of Internet in Trinidad. By 1999 Trinidad exhibited a high Internet penetration in comparison with other less developed countries (LDC). While stratified by income, the Network reached a significant amount of people and close to 30% of the country households had at least one regular user. After working with various communities in the island over a year, the authors conclude that the use of email by residents of an island nation that exports its most successful young people abroad was a *socio-cultural factor* as important as infrastructure and economic development represented by Trinidad's comparatively strong communications infrastructure and healthy economy. In other words, priorities of the locality, the social and cultural practices shape the contours of Internet in this Caribbean nation.

From a political economy of the Web, Schiller, D. (1999) discusses in depth the case of the U.S. and its implications for the global Network rollout. Schiller delineates the creation and history of

cyberspace by the military, government, and certain higher education institutions from the U.S. through the developed nations to the rest of the world following the rationale of "digital capitalism". In Schiller's terminology digital capitalism refers to the condition where "(ICTs) Networks are directly generalizing the social and cultural range of the capitalist economy as never before" (xiv). The analysis contextualizes particularly the local and regional levels of institutional and socio-cultural dynamics, which have been influencing and continuously shaping the digitalization of global economic production and social spaces of the developed economies (USA in particular). The digitalization process has followed the differential trajectory of digital capitalism at supra-regional (North America), national, sub-regional, and local spaces:

> "Sophisticated network systems in turn comprised the increasingly essential infrastructure for engorged transnational corporations, pursuing export-oriented, regionally or even globally integrated production strategies. Corresponding to the ongoing buildup of transnational production chains, therefore, was a powerful pan-corporate attempt to subject worldwide telecommunications policy to United States - originated, neo-liberal regulatory norms" (40).

Schiller contends that this neo-liberal and capitalist networking drive originated in the U. S. have set up the geo-techno-political dynamics in and outside the U.S. In this context, problems of inequality as evidenced by the digital divide cannot be regarded as a simple problem of access. He argues that "the Internet's social exclusivity comprises an alluring enticement to many market-segmenting advertisers" (141) who are only interested in targeting high income audiences. The drive of the market does not the guarantees balanced Network growth. One flaw in his analysis is that it does not consider potentially different forms of market definition and drive outside the United States, indeed outside the major industrialized countries.

Aldrich (1999) has tried to extend the analysis beyond government and corporations to the influence of other social agents upon the development of the Internet. In his analysis of the Web from the standpoint of the "community" that makes the Internet industry, the author distinguishes among governance structures (regulators and informal consortia), commercial users, service providers to those users, browser developers, and other "infrastructural populations" (hardware and software firms, ISPs, search engines, and portal sites) that occupy niches in the Web's ecology. He discusses the major ways in which these bodies relate to each other and the impact of such relationships on Network's trends.

From the diffusion of innovation paradigm, Singhal and Rogers (2001) recently study the process of informatization of India. The authors see Internet development in the context of recent social changes in Indian society, resulting from the applications of new communication technologies such as satellites, cable television. Progress in informatization of the country is researched through the influence of the innovators or visionaries of the software industry, the development of small businesses in the context of liberalization and global forces and agents are found as important factors accounting for these trends.

From a social construction of reality perspective, and in the tradition of social shaping of technology research, this work seeks to describe and compare the evolution of Internet development in Brazil and Peru looking at the interplay of institutions engaged in the process

(government, industry and non-governmental organizations (NGOs) and universities) in a regulatory context characterized by liberalization policies globally generated. We understand 'social construction' in the tradition of the sociology of knowledge (Berger and Luckmann, 1967). It calls for the recognition of the importance of discourse, shared experiences, web of social relations, and institutional process of legitimacy that constitute the control mechanisms that channel individual and collective action. The social shaping of technology' (SST) proposes to explore a range of factors - organisational, political, economic and cultural - which pattern the implementation of technology (MacKenzie & Wajcman, 1985; Williams and Edge, 1996).

As Williams and Edge (1996) explains, a central concern of SST is the concept that there are `choices' (though not necessarily conscious choices) in both the design of artefacts and systems, and in the direction or trajectory of innovation programmes. The analysis of the different routes available and the rationale supporting the chosen path of development are part of the basic method proposed by SST. This approach offers valuable insight for researchers interested in the technology policy studies. Under this paradigm, policy studies of technology examine the values and interests of individuals and institutions involved in the process of implementation of the technology. They also pay close attention to the broader institutional and societal context - including market structures and dynamics, culture, legislation and politics – that underpins technology. Williams and Edge have called attention to the value of cross-national comparisons of these processes as a mean of assessing the influence of particular social formations upon the characteristics of technology.

Few studies have used the SST as a framework to analyze the implementation and adoption of new media across borders. Kubicek, Dutton and Williams (1997) offer a compilation of works or case studies on different issues of Internet policy in the U.S. and varied European countries. By reviewing policy documents and following the history of information infrastructure initiatives, Schneider (1997) sets forth the comparison from a public policy perspective focusing on technological pools and environments, cultural and ideological structures, economic and industrial structures and political institutional structure and policy styles. The author finds major differences between the dominant technological ideologies and bargaining process in policies of Europe and the U.S. In the first level, American populace and institutions show more optimism about the capacity of technology as a problem solver. Europe, in contrast, shows the tendency to see technology as generating different and more complex problems that regulation ought to handle. The Jeffersonian democratic vision of technology in the U.S. seems to lead to two different outcomes. First, there is a more compact base line and less dissidence in early stages of the bargaining process. Second, there is a larger market-like, open competition of ideas during the legislation process. In contrast, European countries tend to bargained their policies in the early stages of the policy cycle through a myriad of networks and constituencies. Schneider contends that the resulting dynamics have impacted the speed of network rollout and technological adoption.

SST has helped to explain adoption or rejection of particular applications of the new technology. Comparing divergences and similarities of interpretations offered by the diffusion of innovations paradigm and the SST perspective, Lievrouw (2002) examines the development of videotext and email to identify instances that explain the failure of the first and the success of the second. Lievrouw finds that videotext developers' faith on the mere ability of technology to attract users

misled them making them blind to everyday users and their everyday needs of information. In contrast, email – as a part of the underlying ARPANET infrastructure- was transformed and diffused by the 'user activism' and the user-innovator dynamic that surrounded the ARPA project. Networks of innovators closely knit to network of users contribute to rapidly perfect the system to levels of applicability and communication potential enabling quick adoption and diffusion.

Through the case of the adoption and diffusion of email, the activist/user component emerges as key to overall diffusion of the Internet. Our work seeks to compare the role of NGOs in the definition of model of Internet development in Brazil and Peru. We specifically compare similarities and divergences in the action of social movements that intervene in the policy process to define policy from below, as well as to offer new access services. In the following sections, we set the context of this comparative exercise in the case of these two Latin American nations. First, we discuss the historical trends of telecommunications access policy in Latin America, and particularly in Brazil and Peru. Second, we introduce the case studies though historical accounts of Internet development in both countries examining infrastructure development and role of policy agents (industry, regulatory agencies and NGOs). Our work is based on secondary data as well as on original interviews with stakeholders and policy makers in both countries. We conclude with a discussion of the major similarities and differences observed and implications for issues of access to new technologies.

ANALYSIS

**Changing Role of the State in Universal Service Policy in Latin America**

Privatization and liberalization of telecommunications begins to redefine the role of state. The central role of the national state in both making policy and delivering services toward achieving universal access to telecommunication and the Internet has declined in countries like Brazil and Peru.  There are several reasons.  One is that forces of economic globalization have tended to introduce change in state-centered policy models, pushing states to liberalize competition in, deregulate and privatize telecommunications. Another is that states in Latin America and elsewhere have suffered a decline in their ability to supply even basic services, such as education, due to debt loads and debt-restructuring programs pressed on them by the International Monetary Fund (IMF) and other international actors.  So a number of other institutions and forces have begun making policy and offering services in areas that they see the national state as unlikely to reach, such as creating telecenters for public access.

What some have called the Washington consensus on liberalization of competition and privatization of government-operated companies in areas like telecommunication has spread globally with pressure from the United States government, the World Bank, the IMF, private banks and investors and others. Some have seen this as an essentially ideological operation, driven by the United States and others whose companies and economic interests benefit from privatization of state-owned companies and the liberalization of competition which permits private companies to enter new areas and compete (Hills 1998).  Others see the driving force as a more diffuse push by a variety of interests associated with global capitalism to enter as many areas of activity as possible, particularly those areas, like telecommunication, whose extension

and modernization are essential to the global financial flows necessary for the expansion of global capitalism itself (Urey 1995). Some of the actors associated with this process say that their goal is more basic, the expansion of telecommunications for use by all in the process of development, with privatization as simply the most feasible current means to achieve that expansion (Wellenius 1993). Other forces, like the IMF, see debt reduction as paramount and tend to almost force developing country governments to sell of such assets as part of economic stabilization programs to reduce their debt (Hills, 1998).

With liberalization and privatization, the state withdraws from some areas, such as operation of ISPs.  With debt and related crises, the national states in many parts of Latin America withdraw from areas that they might have claimed in earlier eras, such as formation of human capital, education, information access, etc. All of these processes have tended to reduce the ability of national states, in Latin America and elsewhere, to maintain current investments in telecommunications or find new sources of financing to expand telecommunications services into under-served areas, such as urban poor neighborhoods or rural areas.  States have tried various strategies to continue to pursue universal service in both telephony and the Internet (Fuentes-Bautista 2001). Some states, like Brazil, have had some limited success in regulations that mandate service expansion into under-served areas by privatized telecommunications companies as part of their contracts. However, the overall affect has been to keep the state from investing in or entering many areas that might be seen as desirable, such as increased rural services, subsidies for public access connectivity (as the United States has done with the e-Rate since 1996), or opening and operating public access centers (as the United States has done under Department of Education and Department of Commerce programs since 1996). This has opened a space that some new actors have tried to fill.

This fits together very well with initiatives being taken by activists within Latin American countries like Brazil and Peru. Starting in the 1980s, there was a movement of the locus of political activism in many parts of Latin America away from pressuring the state to act in new areas or change national policy to encourage companies to do so toward direct local activism in areas that had been part of the state domain, like universal service through telecenters, education, and social services (Escobar and Alvarez. 1992).

State and city governments have also begun to move into new areas, like telecenters for Internet access, which the national state has not been able to occupy.  This is particularly true in countries which have more decentralized federal systems, like Brazil and Mexico, and in states or provinces like São Paulo and Nuevo Leon, which have significant concentrations of industry and other sources of finance, where the state can mobilize resources to create things like telecenters.

**Diversifying Approaches to Infrastructure and Human Capital Policy in Brazil and Peru**

The traditional state policy monopoly over both infrastructure and human capital formation is changing, for the reasons noted above. The state had had an exclusive control over infrastructure like telecommunications in almost all nations until the 1980s. It was often seen as the most reliable provider, the one with most access to financial resources, and the one that could be most counted on to act in the public interest (Straubhaar 1995). Similarly, the national state had usually been seen as the best entity for providing education and training, although in more

federal, decentralized systems, including Brazil and the United States, education was often thought of as a responsibility of the either the provincial state or the municipality. It seems likely the national state will remain the main regulator of both telecommunications and education. Likewise, the State remains as the operator of some services, particularly in providing subsidized telecommunications connectivity to areas that are too remote to be feasibly profitable for a commercial company. The state remains a crucial finance source for universal services initiatives to the rural and poor. Likewise, the State remains the main source of education

Privatization has introduced new corporate actors in infrastructure and related policy discussions (Straubhaar 1995). Major foreign corporations like Telefonica (Peru and Brazil) or Bell South (Brazil) now provide most of the privatized telecommunications services in the two countries, so they are both the focus of and powers within policy discussion and the national level.

Social movements and NGOs have begun taking policy initiatives beyond lobbying government and/or central service providers. They are creating aspects of infrastructure, such as ISPs, telecenters, and training programs. They are forming human and social capital by training people, first movement and NGO leaders, then later focusing on larger groups as individuals. They are enabling business development by creating free to use franchise models for telecenters, operating non-profit and for profit ISPs.

**Internet History in Latin America: Universities as Initial Focus of Internet Development**

As in the United States, universities were a focal point of technological development in general, so they naturally tended to lead in the initial development or deployment of the Internet into Latin America in the 1980s. Similarly the early adopters and initial users of the Internet were professors, student technicians, and others associated with universities. This pattern is very similar to US in some ways, but what was crucially different was the greater political involvement of people in the academy in Latin America.

Across Latin America, including Brazil and Peru, many professors, students and university staff were heavily involved in social movements, NGOs, and political organizations. One of the authors recalls a number of conversations in Brazil in 1989-90 with professors who considered their main work to be not their research but their activism with political parties or social movements for human rights, ecology, etc. Given this extensive involvement with various activist movements, it is not surprise that professors and students who learned of the Internet at the university began a rapid transfer of ideas and technology about the Internet to social movements, NGOs and political parties of the left.

**Impact of Global Networks of NGOs**

Globally active NGOs like Association for Progressive Communications (APC) and Institute for Global Communication (IGC) have worked since the late 1980s with national and local partners in countries like Brazil and Peru to spread policy and service alternatives in Internet access and use. They perceived the Internet as an essential tool for organizing among progressive social movements and NGOs in developing countries (Frederick 1993). Rather than waiting for the national state to create conditions for Internet access, they have tended to enable national NGOs

to move in such gaps and begin to offer different kinds of Internet access services themselves, so that social movements and NGOs could begin to use the Internet as a tool well before either government companies or large private companies that moved into privatized or liberalized services, like being Internet Service Providers (ISPs) (Frederick 1993).

Global activist groups like the APC encouraged and trained main national partners like Alternex in Brazil and RCP in Peru, as well as other groups in Latin American countries.  Their goal was encouraging increasing numbers of NGOs to use Internet to network nationally, regionally across Latin America, and globally with North American, European and other NGOs with resources or experiences to share (Frederick 1993).

**Brazilian Model of the Internet**

Brazil provides a base model for examining the development of the Internet in Latin America as it demonstrates a clear manifestation of several contending policy forces. There is not only the early entrance of NGOs into the decision making process but also policy decisions to liberalization ISP competition that changes the role to be played by those NGOs. Both trends affect accessibility by various user groups but also the gradual divisions of access along class lines and the efforts to respond to this dilemma.  Key to understanding the process that underlies the Brazilian model is the understanding of the divergence of four separate phases of Internet access.  The first definable phase is that of higher education access via an infrastructure developed by the state-owned telecommunications conglomerate.  However, as this phase excluded the vast majority of society, several counter models developed.  The second phase involved the interaction between a Brazilian NGO and an international NGO to develop a national point of access to global e-mail networks for use predominately by local and national social movements and NGOs.  This early divergence was significant because it involved a public policy by an NGO rather than the government.  The third phase was initiated by a government public policy decision to liberalize the market place by allowing private Internet service providers to operate outside of the domain of the state-run telecommunication monopolies.  In this phase a rapid commercial massification of access was seen as the private ISP model rapidly became the dominant model for access to the increasingly global medium for telecommunication and information exchange.  The fourth phase of access once again focuses on a response to a need within society and a response by the NGO to develop alternative access models.  The need was that the classes of society with less affluence lack access to the Internet.  The strategies that are being developed to respond to this phase will be explored later in this paper.

**Phase 1 – Initial Telecom Nationalization, Development & Usage**

In the early part of the 20$^{th}$ century the international conglomerate ITT (International Telephone and Telegraph) and later the Compania Telefonica Brasileiro (CTB), owned by the Canadian holding company Brazilian Traction Light and Power, developed a telecom infrastructure that created a teledensity of about 1.4 telephones per 100 hundred people with two-thirds of the equipment and traffic concentrated in the states of Sao Paulo and Rio de Janeiro (Botelho, Ferro et al. 2002).

The Brazilian military, which came to power in a 1964 coup, placed great emphasis on telecommunications for a number of reasons: national security, economic development, and

extension of national media reach. By the 1960s, both civilian and military leaders realized the strategic importance of a nationally centralized telecommunication system (McClain & Straubhaar 2002). In 1962, the Goulart administration issued decree 4.117 (Brazilian Telecommunications Code), which granted the federal government a state monopoly to operate and regulate (Noam 1998).

By the late 1970s the military government was able to achieve a national telecommunications infrastructure including national microwave and satellite networks. This national infrastructure emphasized national research and development, which when combined with investment funds, helped drive national technological growth both for the sake of nation security and national economic growth. One extension of the development in national telecommunications infrastructure was the *Rede National da Pesquisa* (National Research Network – RNP), an Internet backbone of the Internet in Brazil to connect the research communities in the federal and state research universities (Dutta-Roy & Segoshi, 1996).

## Phase 2 – International Intervention & NGO Access Points

The national research network for higher education was limited strictly to use by the research universities, which unlike the situation in Peru, did not serve as lynchpin for extending access to the other sectors of society. The first response to this vacuum of access was from the international NGO community that allied with national NGOs to develop a national access point for the exchange of information. The Association for Progressive Communications (APC) partnered with the Brazilian Institute of Social and Economic Analysis (IBASE) to form AlterNex in 1987. This new entity was based, initially, on the bulletin board system, which allowed for the exchange of messages and chat. AlterNex operated via a single phone line that connected to a FidoNet node in the United States to exchange e-mail messages once a day. This constituted the first system for access to Internet in Brazil outside of the closed government research network. In 1992 Alternex received a dedicated 64k Internet connection. With the increased capacity, AlterNex was able to provide connectivity to NGOs around the country, which allowed for the increased exchange of information about causes and strategies. The primary objective of the AlterNex model was the democratization of access to information (Afonso, 1996).

Notably in 1992, when Rio de Janeiro hosted the United Nations Conference on Environment and Development (UNCED, also known as the "Earth Summit") AlterNex took full advantage of the Conference to showcase its complete range of ISP services. With assistance from the APC, the RNP and the Rio Network (Rede Rio), AlterNex coordinated UNCED's Strategic Information Project (UNCED SIP/Rio). The project was used by hundreds of delegates, researchers and NGOs from around the world for electronic exchange between the official conference center and the Global Forum. The success of the project established IBASE/AlterNex as Brazil's technical solutions provider for NGOs (Afonso, 1996). A substantial customer base was developed and AlterNex became a major force in defining Brazil's Internet development path.

The emergence of the World Wide Web in the early-1990's increased the demand for AlterNex' online services. IBASE adjusted quickly by expanding to include WWW-based content, value-

added services and Internet consulting. Unfortunately, financial difficulties at IBASE in 1994 brought to the surface concerns that AlterNex was straying too far from the organization's research and social advocacy goals. Contention over this issue was resolved in 1996 by privatising the ISP. The new for-profit, Sistema AlterNex, was owned partially by IBASE and partially by private investors. The hope was that this private entity could both continue to serve the needs of Alternex's NGO client base and at the same time reach a larger, more general market. Profits from this activity would be used to finance other IBASE projects. Unfortunately, the company operated at a loss and there were no profits to channel back into mission-based projects. By 1997, IBASE sold its portion of Alternex to the private investors. Alternex S/A exists today as a commercial enterprise with out connection to the APC or the NGO community.

In essence, this model begins to fade once the massification of the Internet begins with the growth of private ISPs that allow for all persons and organization to have full access to the Internet at a competitive rate. The mission-based ISP simply cannot operate in a competitive climate because both a lack of a critical mass of users and along with increased cost of infrastructure and interconnection.

**Phase 3 – Open Markets and Private ISPs**

The government decided in the summer of 1995 to open access to the Internet infrastructure at Telebras, the national telecommunications holding company, as a part of a larger strategy to gradually privatize the entire telecommunication sector (Dutta-Roy & Segoshi, 1996). The opening of competition in the realm of Internet Service Providers (ISPs) was an instant success. In the first year after liberalization, the number of Internet users jumped 100,000 to 1,000,000. This growth of Internet access in the private sector was initially focused in the area of small entrepreneurial enterprises; however due to the high cost of access to national and international Internet backbones the marketplace witnessed a rapid consolidation into a small number of national ISPs. A lack of operating capital caused a subsequent integration of the national ISPs with international telecom, ISPs and content conglomerates.

The primary example of post-liberalization enterprise in Brazil is Universo Online (UOL), launched in 1996, which holds the distinction of being the largest Portuguese language web portal and provider of ISP services in Latin America. Based in Sao Paulo, Brazil, the portal was instrumental in the development of the internet market in Brazil, and continues to lead the market in that country across some of its products: UOL Brazil, Bol.com, Zipnet.com and UOL International (Spanish-language sites), which operates in Argentina, Colombia, Venezuela and México. Through the joint-ownership of UOL by the Folha Group and Abril Group, both major Brazilian media and editorial corporations from São Paulo, the portal has developed a significant collection of original and proprietary online content, which provided the basis for UOL's rapid growth since 1996 (Fuentes-Bautista, Straubhaar & Spence 2002).

More recently, UOL has been transformed into an Internet holding company displaying the advantages of vertical integration for young Internet businesses. From Internet backbone to content creation, UOL developed the ability to move faster than its competitors. In September

1999 UOL sold 12.5% of its shares to a pool of banks[1] and Reuters for 100 million US$. These additional resources were used to reach out to neighboring nations' markets. Nowadays UOL operates in Argentina, Mexico, Colombia, Venezuela, Portugal and USA, becoming the best-positioned Latin American player in the regional Internet[2]. Hand in hand with the internationalization of UOL, came its "glocalization".[3] The holding has diversified its presence as content provider and technical of a number of national portals and e-businesses. Local media companies backup UOL operations in Argentina, Mexico, Colombia and Venezuela, while Google shares efforts in U.S. (Singer, October 1, 2001) and Portugal Telecom support operations in Portugal. Recent developments in the NASDAQ market have not favored UOL's plans for internationalization. As investors' focuses shifted from traffic and hype to revenues, UOL has found that its international expansion were a huge drain on resources. The company has now decided to ditch some of its less promising ventures (Spain and Chile) and to concentrate on increasing revenues elsewhere (Helft, December 2000)

## Phase 4 – Digital Divide & Telecenters

As indicated in the statistics from the International Telecommunications Union (ITU) the overall penetration of both telecommunications infrastructure and Internet access are still limited (see Table 1).

**Table 1. Brazil - Internet access indicators**

| Infrastructure | 1997 | 2001 | Production | 1997 | 2001 | Consumption | 1997 | 2001 |
|---|---|---|---|---|---|---|---|---|
| Telephones/100 inh. | 10.6 | 21.8 | Hosts/10,000 inh. | 12.9 | 95.7 | Literacy rate | 83 | 85.0 |
| Mobile phones/100 inh | 2.8 | 16.7 | ISPs | | 280* | Internet users/10,000 inh | 150.7 | 465.7 |
| Computers/100 inh | 3 | 6.3 | | | | Internet subscribers (000) | 941.6 | 3,422* |

Source: ITU, World Bank/Pyramid Research    * 2000

This division can be further quantified by examining use of the Internet from the vantage point of class analysis (see Table 2). This drastic disparity, the so called "Digital Divide", is currently being addressed through the channels of not only governmental action but also through the intervention of local, national and international NGOs, universities, municipalities, labor unions, political parties, and international policy making entities (i.e. IMF World Bank, etc.). Frequently the policy response to this need and subsequent development is manifested in the form of

---

[1] Morgan Stanley Dean Witter Private Equity, Blackstone Capital Partners III, Providence Equity Partners Inc., Credit Suisse First Boston Garantia, DB Capital Partners Latin America, Hambrecht & Quist, Latinvest Asset Management.

[2] In March 2002, UOL announced it had 1.3-1.5 million subscribers, 20 million users or unique visitors per month, which made it the most heavily used ISP and portal of Latin America.

[3] Glocalization has been used by Robertson (1995) and others to describe the local adaptation of imported models. The term was first used to describe the Japanese business practice of importing but adapting various technologies and models.

telecenters, although there are variations on this model such as information kiosks and the CDI model.

**Table 2. Brazil – Digital Divide**
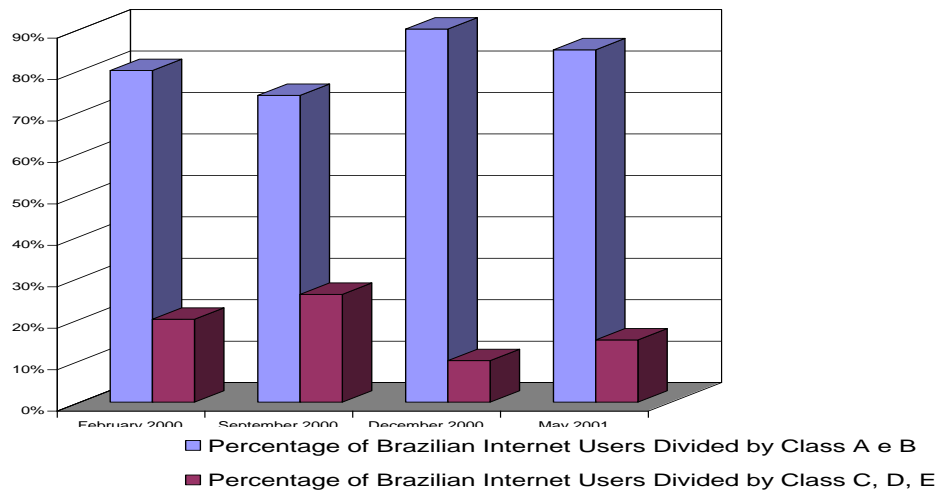


Source: IDG Now and Ibope INTERACT Digital, 2001

Federal and state governments in Brazil have understood that the problem of increasing Internet access and use requires state and private action. In mid-2000 the government announced new plans to enhance e-government solutions and public access asking for private support. The plan Porta Aberta aims at giving free e-mail addresses and providing public Internet access to Brazilian citizens through telecenters. States, cities and NGOs are also moving quickly to install telecenters (E- marketers, Feb. 2001).

A telecenter or infocenter can be defined as a shared site that provides public access to information technologies (Proenza et al., 2001). Telecenters are becoming an almost universal vehicle to enhance access to the Internet, in particular for low- income groups. Brazil is currently committing a great deal of effort and resources to build a national telecenter network that democratizes access to technology.

Internet access kiosks are being installed this year in selected post offices of Rio de Janeiro, the greater metropolitan area of São Paulo and the interior of São Paulo state (Elkin, February 2001). On November 16, 2000, São Paulo Governor, Mário Covas, inaugurated the first "infocenter" of a network that should include 60 locations in Greater São Paulo and 60 more locations in the interior of the state by the end of 2001. This project, called Acessa São Paulo, should benefit 3.5 million "paulistas" having a budget of R$ 4,8 million and partnerships with companies like Microsoft, Hewlett-Packard and Telefônica. Located in a neighborhood on the southern periphery of the city, in the neighborhood Jardim São Luís, this first center is already being utilized to train young people and adults in informatics, use of the Internet and the generation of local information. Goiânia and Porto Alegre were cited in the inauguration as cities planned for similar systems and more will follow. Private companies such as NetCash-PopBanco (an

enterprise), Caixa Econômica Federal (a government bank), Globo Cabo (a cable internet provider), Telefônica Empresas (the business division of Telefónica of Spain), recently announced similar efforts to build points of access at neighborhood paderias (bakeries,) which Brazilians typically visit every day.

One example of a variation on the telecenters model can be found in the socio-educational approach to teaching information technology developed by the *Comité para Democratização de Informatica* (Committee for Democracy in Information Technology – CDI), a Brazil based NGO with the two-fold mission of promoting digital inclusion and creating awareness of Citizens Rights principles through the use of information technology.

CDI opens Information Technology and Citizens Rights Schools in partnership with community-based associations, providing free computer equipment, software and implementing educational strategies for a continuous training of local instructors. Through periodic visits, CDI coordinators monitor its performance identifying key challenges and opportunities. Schools coordinators work together with CDI representatives to find creative ways of addressing problems, formulating and sharing solutions. Each school is an autonomous unit, self-managed and self-sustainable through a symbolic contribution collected from its students. This fund covers the maintenance costs, and the payment of instructors, in an authentic "social enterprise". Furthermore, the model is based on the concept of helping people help themselves. CDI trains the future teachers of the schools, who, in turn, will train others back in their communities.

Presently, there are 617 autonomous and self-sustaining Information Technology and Citizens Rights Schools using CDI´s methodology and model concept. As a result of the organization's work, more than 263,000 children and young people have been trained in information technology and introduced to citizens' rights. In a recent evaluation, carried by an external consultant group, 86% of the students answered that CDI Schools had a positive impact in their lives, such as going back to regular schools, making new friends or staying away from drugs. CDI is continuously expanding its national and international network. CDI is active in 19 Brazilian states, as well as, in Colombia, Uruguay, Chile, Mexico, Guatemala, Honduras, Japan, Angola and South Africa, totaling 48 Information Technology and Citizens Rights Schools.

Brazil is now in the crossroad of balancing forces between commercial and public interests that can effectively enhance people's participation in the information revolution. The major challenge ahead is to build a public access network that meets people's needs by becoming a tool to increase their living standards. This analysis understands technology as a result of the social relations linking users, the innovation and the knowledge that mediates between them. Telecenters can be a potent tool to ease this relationship but they should be placed within a strategy of integral social development.

**Peruvian Model of the Internet**

**Phase 1 –The Internet rush: from the academy to NGO-run *cabina pública***

The Internet entered Peru in 1992 by the hand of a non-profit organization, Red Científica Peruana (RCP), a private non-profit initiative to open public access points set in motion by

academicians. Similar to the process in Brazil, the Internet in Peru flourished in the cradle of public universities that enjoyed access through a State founded network. However, different from the Brazilian case, academic networks rapidly tied into the social fabric of the country, mainly in the city of Lima, where they held and still hold close links with community and social organizations. Accounts collected among member of the pioneering group coincide in identifying poor infrastructure, and the tremendous need of the majority of the population with telephone services, and with no chance to gain access to it in the short term, as the reasons for engaging in the development of a model that prioritizes of public access to the Internet[4]. In contrast to Brazil, where most organizations and many individuals had telephone lines and were beginning to acquire computers, in Peru, even urban intellectuals and activists did not foresee getting individual access to the Internet anytime soon, so they made a clear, early decision to pursue public access.

1992 was also the year in which the Peruvian government announced a plan to reorganize the telecommunication sector but the program did not include any actions to coordinate with the efforts being made by RCP for the advancement of Internet connections or use. Between 1992 and 94, the government merged and vertically integrated the two regional monopolies that served the nation, and by May 1994 it proceeded to privatize the holding. Telefónica of Spain won the public bid for the holding acquiring rights to developed basic telecommunication business in monopoly conditions for the following 6 years.

The monopoly franchise set out goals of network expansion (250,000 new lines by the year 1999), and provisions for the installation of at least one telephone in 1,540 rural settlements with population over 500 inhabitants. During the following two years, Telefónica de Perú (TdP) committed itself to maintain control of the traditional telecommunication market and did not pay attention to what investors regarded as a marginal market in Peru: the market of Internet access.

Meanwhile RCP went into significant expansion through two basic strategies: direct operation of telecenters or *cabinas públicas*,[5] and the development of a *franchise model* of the business based upon association with small entrepreneurs. (One could call this model a social franchise, since the RCP did not charge small businesses for its use, indeed they provided considerable training and consulting in the development of small *cabinas* for free.) Former and current directors of RCP interviewed by the authors recognize the 1994 installation of the first telecenter in the affluent neighborhood of *Miraflores* (c.f. Holmes, 2001), as the keystone in the development of a network of public access points that nowadays cover the whole country, including some of the most remote towns of Peru. The success of this *cabina* in particular, attracted the attention of the public and of a large amount of professionals with small capital, who were faired during the privatization and reorganization of State owned companies in Peru between 1994 and 1996.

---

[4] Interviews conducted by Straubhaar and Fuentes-Bautista in Lima, Peru, April 2002.
[5] *Cabinas Públicas* are a type of telecenter, that is, "a shared site that provides public access to information and communication technologies. *Cabinas Públicas* in Peru is a franchise model of telecenter by which the operator and ISP confers to a small entrepreneur the right to operate an access point with basic Internet connection. The manager of the telecenter offer the service for a small cost. Internet telephony, emailing, chats, and music downloads are the services with more demand in Peru (Proenza et at, 2001)

From its site in Miraflores, RCP personnel organized and offered weekly workshops not only on Internet use but also on telecenter management. The workshops offered at no cost were a key social investment for the creation of an extended network of *cabinas*. Between 1995 and 1999, RCP provided training to more than 50,000 people (Holmes, 2001). In a country with less than 4 % of telephone penetration, the "voracious demand for communication and connectivity" (Proenza et al, 2001:7) became a fertile ground for this pioneering initiative.

**Phase 2 –Growth of the RCP: from the NGO to the small business model**

By the beginning of 1996, and based on its early economic success, RCP decided to initiate commercial operations as ISP providing dial up access and dedicated lines to *cabinas* as well as the general public. During all this period, RCP enjoyed a privilege connection to the Internet through State owned, satellite circuits accessible through rights given to the universities and public educational system, which basically translated into minimal operation costs and low rates for the customers and users. International Business Machines (IBM) came into play under the same scheme, and at the beginning of 1996, both companies were the only ISPs in the market (Briceño, 1998).

RCP was the leader providing services to 76% of private users (Briceño, 1998). RCP was already well-known by its telecenter program (*Cabinas Públicas*), and its Internet portal. By the end of 2000, RCP managed 30 and gave support to 470 of such centers (ITU, 2000). The success achieved by the RCP attracted competitor from the private sector, including major players such as TdP, Southwestern Bell and AT&T, the later brought to the country by the liberalization of telecommunication services. A number of small firms that copies the RCP model also followed targeting particular segments of the market, such as videogames for adolescents. Holmes (2001) has explained the striving action of small entrepreneurs in the *cabinas* business (known as *cabineros*) as the newest representation of the informal economy characteristic of the urban landscape in Peru. Cabinas are meeting previous unfulfilled demands for libraries, study places, recreational facilities and community centers of low income communities in Peru.

TdP initiated operations in the private ISP market in 1997 launching two related services Infovia and Unired. The first targeted the dial-up market and the second the business segment of leased lines. Making use of their infrastructure and integrated structure, TdP made its competitors Unired's customers. Under the monopoly franchise awarded to TdP, IBM and RDP could not by-pass the holding to access the international Internet (Briceño, 1998). Infovia entered the market offering tariff plan, which reduced the price of Internet connection to the local telephone charge. At the end of 1997 RDP accused Infovia-TdP of anticompetitive behavior through price discrimination and Ospitel had to step in to settle the dispute. The regulatory agency found proof of cross-subsidy and price discrimination, but the dispute went unsettled until 1998, the final year of TdP monopoly (Briceño). Competition attracted more ISPs and in 1999, the cost of one hour of computer/Internet connection varied between 0.7 and 0.85 US dollar (Proenza et al., 2000). However, the estimated monthly cost of 20 hours of Internet use was 21.99 US dollar, a charge equivalent to 12% of the monthly per capita income of Peruvians (ITU, 2000), so poor, working class and even many middle class people still tended to go to the *cabinas*. A evaluation of telecenters in Latin America and the Caribbean made by the Inter American Development Bank and the Food and Agricultural Organization conclude that cabinas in Peru were "excellent

vehicles for increasing Internet access", in particular among the "low-income population" served by them.  Although private ISP Internet rates in Peru are lower that in countries such as Ecuador and Argentina, they still represent a barrier to enhance access to the Net. A comparison in informatization indicators in Peru, show the significant growth of users in the last four year (Table 2). Much if not most of that growth can be attributed to *cabinas* users.

**Table 2. Peru- Informatization indicators**

| Infrastructure | 1997 | 2001 | Production | 1997 | 2001 | Consumption | 1997 | 2001 |
|---|---|---|---|---|---|---|---|---|
| Telephones/100 inh. | 6.8 | 9.8 | Hosts/10,000 inh. | 1.9 | 5.2 | Literacy rate | 88.5 | 89.2 |
| Mobile phones/100 inh | 1.8 | 5.9 | ISPs | 4 | 54* | Internet users/10,000 inh | 80.6 | 1149.7 |
| Computers/100 inh | 3.6 | 4.8 | | | | | | |

Source: ITU, World Bank/Pyramid Research          *2000

**Phase 3 – Open Markets and Private ISPs**


Public access remains the major Internet alternative for Peru, and the government, the public and ISPs seem interested in making use of the opportunity. In 2000, 48.5% of the Peruvians that went on line declared telecenters as their access point followed by work place and home (INEI, 2000). The latest report of Internet in Peru estimated 1,745 *cabinas* in the country (Osiptel, May 2002) RCP and TdP have continued plans to enhance the telecenter program. In the height of the 1998/1999 dispute between the major ISPs, RCP accused TdP of inefficient management of the national telecommunication network, and successive boycotts to the RCP service. Since 1999 it became evident that the crucial point of controversy was the use of Internet Telephony in telecenters. Table 2 shows a virtual halt in growth infrastructure with the exception of mobile telephony. Only 20% of households with computers have Internet access and cost is the main reason for lack of connection (INEI, 2000).


In spite of the country's modest infrastructure and economic constraints, the vitality of the Peruvian demand is an incentive for the future growth of Internet services. Statistics at the individual and business level show that Peruvians use the web mainly for work. In 1999 Peru was the fifth country in B2B e-commerce in the region (ITU, 2000), and more than the half of the customers in telecenters employs the web for different types of jobs (academic and personal business) (INEI, 2000; Proenza et al, 2000). Peruvian portals reflect the importance of these applications. Olé (TdP-Terra/ Telefonica of Spain) and Yachay (RCP) are the most popular portals, and both offer B2B information and services. Both also back up the flourishing business of telecenters providing information on locations, special plans of access and training programs. By 2001, the Cabinas represented a profitable part of the overall telecom market in Peru (See Graph 2). Major telecommunication firms in the country have gone into de business or serve as intermediaries to retailers. The advance of major commercial forces in the Peruvian Internet market is already a reality. The most recent report of OSIPTEL the regulatory agency, on Internet in Peru (May 2002), shows Terra Networks, TdP's ISP, dominating the market of Internet access from home (52%) followed by RCP (13%). Only recently, the Peruvian government has started to incorporate the *cabinas* model to the public policy model of universal

access in the country (FITEL 2001). Peru seems to be at the crossroad of balancing commercial interest and social forces with social needs.

**Graph 2: Fixed dedicated lines subscribers in 2001**
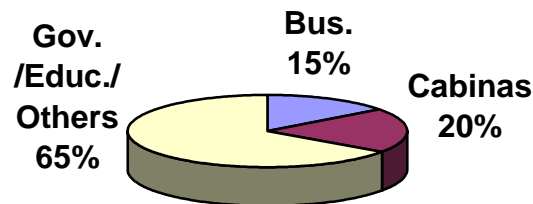


Source: OSIPTEL 2001

## DISCUSSION

The early social turn of the Internet in Brazil and Peru had common origins in the close connection of activists within the University to activists within society and in highly influential contacts with the APC/IGC. However, the form of action decided on by Internet activists in the two countries took quite different directions. Development of the telecommunications infrastructure in the two countries was quite different, which guided the activists' choices. Brazil under military until mid 1980s had expended considerable public funds and incurred considerable public debt in order to extend telephone service to the point where most institutions and organizations had access, most towns had at least a pay phone and frequently a few phone lines (Fuentes-Bautista 2002), from which – in fact-- local elites and increasingly activists could get to for Internet access. In contrast, in Peru, even the main activist organizations needed public access, since many individuals and many NGO and movement institutions did not have access to telephone lines. The first Peruvian telecenter, or *cabina publica*, went into one of the most prestigious neighborhoods in Lima in 1994 and found great success providing public connectivity to a segment of the privileged population. This speaks to the need of communications existing even in the middle and upper middle classes of society in Peru in the early 1990s, in contrast to the equivalent social groups in Brazil.

With 32.4 % of the region's number of users and 45 % of the regional hosts, Brazil is considered the leading Latin American market by investors and marketers that set in motion the world digital economy (Elkin, 2001; Rojo, 2000). Brazil experienced a very strong surge of growth from 1996, when private ISPs began to offer service around the country to those who could find a telephone line and computer. Those new affluent users also represented most of the potential market for e-business. However, those with that level of connectivity and income have almost all been incorporated into the Internet public and those that are left do not have either the telephone fixed line connectivity (many new telephone users have cell phones) or the income to buy a computer and pay monthly ISP fees. For observers less concerned with potential revenues of the e-economy and more concerned with social inclusion, Brazil presents a contradictory trend: the deceleration of users' growth, which has caused the country to fall lower in the ranks of Internet use in the region. The expansion of infrastructure is not accompanying the demand for Internet

use further down into the ranks of the lower middle class, working class and poor, or into rural areas. Brazil has fallen from the fourth to the seventh place in the rank of user per capita in the region between 1998 and 2001 (Table 1). Meanwhile, Peru has grown by thousands of percent of increase in the number of new users to gain the third place in the overall penetration of users in society. Public access possibilities in Peru permit the constant expansion of the user base, whereas the user base in Brazil is stalemated until public access growth to include those who do not have the connectivity or income for in-home access.

**Table 1. Internet Use Rank in Latin America**

| Rank 1998 | Users/ 100 people | Rank 2001 | Users/ 100 people |
|---|---|---|---|
| 1  Uruguay | 6.99 | 1  Chile | 20.00 |
| 2  Costa Rica | 2.60 | 2  Uruguay | 11.90 |
| 3  Chile | 1.68 | **3  Peru** | **11.49** |
| 4  Brazil | **1.51** | 4  Costa Rica | 9.33 |
| 5  Venezuela | 1.50 | 5  Argentina | 8.00 |
| 6  Mexico | 1.41 | 6  Venezuela | 5.27 |
| 7  Panama | 1.08 | 7  Brazil | **4.65** |
| 8  Colombia | 0.89 | 8  Mexico | 3.62 |
| **9  Peru** | **0.81** | 9  Colombia | 2.69 |
| 10 Argentina | 0.55 | 10 Panama | 3.17 |
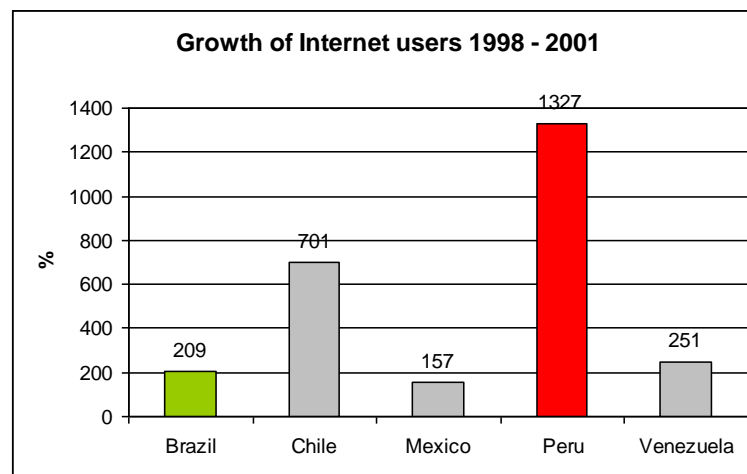


The ITU has warned that among Latin American countries, Brazil presents the most class-stratified access to the Internet (ITU, 2000). Interviews with Internet users have shown the emergence of an elite that uses the Internet to become further integrated with the global elite (Hannerz, 1992). This role of the Internet for the Brazilian elite has strong digital divide implications, since it may widen gaps between Brazilian elites and others in terms of access to information, to economic opportunity and to global networks of contacts. Initial work also shows a growing use of the Internet by middle classes who find in it a more in-depth version of the national media they already know, represented for example, by UOL.

The commercialization of the Brazilian Internet is taking place at very fast pace in a process characterized by vertical and horizontal concentration of both access and content. Scarcities in the backbone infrastructure have structured a market driven by the supply of basic services, which tends to promote concentration of ISPs. The government has allowed and even stimulated vertical and horizontal integration of UOL to proceed. The recent announcement of a UOL strategic alliance with Embratel (MCI) will allow UOL direct access to Internet peering points at faster speed, a privilege that not many Brazilian ISPs can offer now. Others trying to survive are pushed to association with large corporations, which most of the time are transnational capital in search for local partnership.

Fortunately, a number of organizations are beginning to create strategies for offering public access to the Internet in Brazil, to go beyond limits of what the private sector will do. The initial lead was taken by a national NGO not unlike the Peruvian RCP in many ways, the Committee for the Democratization of the Internet, based in Rio and run by Roberto Baggio, who has received a great deal of attention from both the NGO and corporate sectors for his approach which tends to partner local NGOs with corporate sponsors, like Microsoft, to implement branches of his social franchise model for setting up and operating telecenters. Baggio and the CDI tend to stress learning work skills, along with access, per se, which has been controversial with those who want to stress civic participation or social movements instead. His stress on learning Microsoft software has also been controversial with those who stress a budding trend toward open source software, like Linux, in order to reduce economic dependence on costly licensed software, like that of Microsoft. State and city governments in Brazil have begun to offer other telecenter models, more focused on access, per se, and civic participation. They tend to partner, as does the CDI, with local neighborhood social groups and NGOs.

This movement in Brazil reflects an interesting decentralization and defederalization of policy, since many initiatives are now being taken more by NGOs, corporate sponsors, and city and state governments, rather than the federal or national state. In some ways, this reflects a long-standing Brazilian balance between federal and state/local power. While such state/local initiatives work relatively well for more affluent states, like Sao Paulo, they are not like to work nearly as well for a number of more impoverished states, which tend to depend much more on federal resources and federal initiatives.

In Peru the process launched by thriving NGOs and small businesses have been finally welcomed into the realm of public policy. FITEL, the national fund responsible for the implementation of universal service programs has successfully completed a pilot plan based on telecenter development for rural areas, and it is about to embrace officially the *cabinas* model into its strategy to extend the service to isolated or economically depressed populations. Peru is a clear example of how social agents can become influential public policy agents and generators of change. On the one hand, the Peruvian example shows that should be a community articulated around social interests, and on the other hand, it is crucial to count with a socially sensitive regulator that opens spaces for policy change to work with models that come from below..

**REFERENCES**

Alfonso, C. (1996) *The Internet and the Community in Brazil: Brackground, Issues, and Options*. *IEEE Spectrum*. July 1996:62-68.

ALTERNEX/IBASE: Brasilian Institute for Social and Economical Analysis. (1992) *Nodo Alternex*. Presented at the Biodiversity Network Workshop. Campinas, Brazil (27 - 31 July 1992). < http://www.bdt.fat.org.br/bin21/ws92/alternex.html>.

Barnett, G.A., Chon, B., Park, H., Rosen, D. (2001) *A Network Analysis of International Internet Flows*, Paper presented at the 2001 International Sunbelt Conference. Budapest, Hungary.

Bell, D. (1983) The information society: The social framework of the information society. In Forester (Ed.) *The microelectronics revolution*. Cambridge: MIT Press, 500-549.

Berger, P. and Luckmann, T. (1967) *The social construction of reality*. Harmondsworth: Penguin.

Botelho, A.J.J., Ferro, J.R., et al. (2002). *Telecommunications in Brazil*. New York, Virtual Institute of Information, Columbia Business School.

Briceño, A. (1999) Regulating anticompetitive behavior in the Internet market: An applied imputation model for Peru. In S.E. Gillet and I. Vogelsang. *Competition, regulation and convergence: Current trends in telecommunications policy research*. 27-49. London: Lawrence Erlbaum.

Castells. Manuel (1996). *The information age I. The rise of the network society*. Massachsetts: Blackwell.

CDI Institutional Profile. (2002). <http://www.cdi.org.br>.

DiMaggio, P., Hargittai, E., Neuman, W. R. and Robinson, J. P. (2001) *Social Implications of the Internet. Annual Review of Sociology* 27:307-336

DOC – Office of Telecommunications Technologies (2001) Brazil – Telecommunications Market. *Guide to Latin America and the Caribbean*. Available http://telecom.ita.doc.gov/ot/latinam.nsf

Dutta-Roy, A., Segoshi, N. (1996). *Going online with the Internet*. *IEEE Spectrum*. July 1996:54-59.

Elkin, N. (February 2001) *How cheap we can get?* E-Marketer report.

E-Marketers (2001) *Internet no Brasil Deve Crescer Mais que nos Estados Unidos. E-Marketer report*. Available at http://www.ponto-com.com/punto/por/Atualidade/_diario/Internet+no+ Brasil+deve+crescer+mais+que+nos+Estados+Unidos.htm

Escobar, A. and S. E. Alvarez., Eds. (1992). *The Making of social movements in Latin America : identity, strategy, and democracy*. Boulder, Colo., Westview Press.

Fox, E., Ed. (l988). *Media and Politics in Latin America:  The Struggle for Democracy*. Communication and Human Values. London / Newbury Park / Beverly Hills / New Delhi, Sage Publications.

Frederick, H. (1993). *North American NGO Networking on Trade and Immigration, Rand Report*.

Fuentes-Bautista, M. (2001). *Universal Service in Times of Reform: Affordability and Accessibility of Telecommunication Services in Latin America*, University of Texas at Austin Department of Radio-TV-Film.

Fuentes-Bautista, M. (2002). Universal Service in Times of Reform. *Communications Policy and Information Technology:  Promises, Problems and Prospects*. S. Greenstein. Cambridge, MA, MIT Press.

Fuentes-Bautista, Martha, Straubhaar, Joseph and Jeremiah Spence.  (2002). *Converging Print and Electronic Media in Brazil: The Rapid Rise of UOL (Universe Online) to Dominance as both ISP and Internet Content Provider in Brazil*, International Communications Association, Seoul, July 2002.

Helft, D. (December 2000) UOL goes AWOL in Spain and Chile. *The Industry Standard*.

Hills, J. (1998). U.S. Rules OK?  Telecommunications Since the 1940s. *Capitalism and the Information Age.  The Political Economy of the Global Communication Revolution*. J. B. Foster. New York, Monthly Review Press**:** 99-121.

Holmes, V. (2001) *The Internet, inequality and exclusion in Peru: the social impact of cabinas públicas*. Unpublished dissertation. Institute of Latin American Studies, University of London.

IBOPE (2001) *Pesquisa Internet POP. Ranking Nacional*. E-Ratings. Available at
http://www.ibope.com.br/digital/produtos/internetpop/index.htm

INEI (2000) *Resultados de ENAHO-I Trimestre 2000*. Instituto Nacional de Estadística e Informática del Peru. Available at www.inei.gob.pe

International Telecommunication Union (2000) *Americas Telecommunication Indicators 2000*. Geneva: ITU

International Telecommunication Union (2000/2001) *Yearbook of statistics: Telecommunication services, chronological time series 1988-1999*. Geneva: ITU.

International Telecommunication Union (1998b) *World telecommunication development report: Universal access and world telecommunication indicators*. Geneva: ITU.

International Telecommunication Union (2001) *World Internet Indicators*. Available on-line at http://www.itu.int/ti/industryoverview/at_glance

Kubicek, Dutton and Williams (eds. 1997) *The social shaping of information superhighways: European and American roads to the information*. New York: St. Martin's Press.

Lievrouw, Leah A. (2002) Determination and contingency in new media development: diffusion of innovations and social shaping of technology perspectives. (183: 200) In Leah A. Lievrouw and Sonia Livingstone (eds) *Handbook of new media: Social shaping and consequences of ICTs*. Thousand Oaks: Sage.

Miller D, Slater D. 2000. *The Internet: An Ethnographic Approach*. New York: Berg

McClain, S. and Straubhaar, J. (2002). Telecommunications Liberalization and Privatization in Brazil: The Politics of Waiting for Competition. Paper presented to the International Studies Association Conference. New Orleans, USA.

MacKenzie, D. and Wajcman, J. (eds.) (1985) *The Social Shaping of Technology: How the Refrigerator Got Its Hum* Milton Keynes, Open University Press.

Munn-Venn, Karri. (1997). Case Overview: IBASE/AlterNex (Brazil). < http://www.apc.org/english/capacity/business/buscase/ibase.shtml>.

Neumann, RW (1991) *The future of the mass audience*. New York: Cambridge University Press.

Noam, E.M. (1998). *Telecommunications in Latin America*. New York, Oxford University Press.

Paltridge & Ypsilanti (1997) A bright outlook for communications OECD Observer. 205:19-22.

Proenza, F., Bastidas-Buch, R. and Montero, G. (2001) Telecenters for socioeconomic and rural development y rural. Washington D.C.: Inter American Development Bank (IADB). Available at <http://www.iadb.org/regions/itdev/telecenters/index.html>.

OSIPTEL (May 2002) *Diagnóstico de la situación de Internet en el Perú*. Working paper. Accessed on line (August 2002). http://www.osiptel.gob.pe/Index.ASP?T=P&P=3271

Schiller, D. (1999). *Digital capitalism*. Cambridge: MIT Press

Scheneider, V. (1997) Different roads to the information society? In Kubicek, Dutton and Williams (eds.) *The social shaping of information superhighways: European and American roads to the information*. (339:358)New York: St. Martin's Press.

Straubhaar, J. D. (1995). From PTT to Private: Liberalization and Privatization in Eastern Europe and the Third World. *Telecommunications Politics: Ownership and Control of the Information Highway in Developing Countries*. J. Straubhaar, Lawrence Erlbaum Associates**:** 3-29.

Williams, R. and Edge, D. (1996) The social shaping of technology. *Research Policy* Vol. 25, 856-899

Straubhaar, J.D. and Fuentes, M. (2001). Improving public Internet access in Brazil: moving beyond connectivity… Paper written for the School of the Future at the University of Sao Paulo. Sao Paulo, Brazil. < http://www.cidec.futuro.usp.br/artigos/artigo5.html>.

Urey, G. (1995). Telecommunications and Global Capitalism. Telecommunications Politics: Ownership and Control of the Information Highway in Developing Countries. J. Bauer. Hillsdale, NJ, Lawrence Earlbaum Associates.

Wellenius, B. (1993). Telecommunications  World Bank Experince and Strategy. Washington, The World Bank.

Wellman, B. (2001) Physical place and the cyberspace: Changing portals and the rise of network individualism. International Journal of Urban Regional Res.