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INFRASTRUCTURE AND ITS IMPLICATIONS FOR LATINOS*

By

Armando Valdez, Ph.D.

Policy Fellow

Telecommunication Education Trust of the
California Public Utilities Commission

**A Publication of the
Chicano/Latino Policy Project**

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The Chicano/Latino Policy Project is an affiliate of the
Institute for the Study of Social Change at the University of California at Berkeley.
The views expressed in this report are those of the author(s)
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The Chicano/Latino Policy Project is an affiliated research program of the Institute for the Study of Social Change at the University of California at Berkeley. The Policy Project coordinates and develops research on public policy issues related to Latinos in the United States and serves as a component unit of a multi-campus Latino policy studies program of the University of California system. The Policy Project's current priority research areas are immigration, education, health care, political participation and labor mobility with an emphasis on the impact of urban and working poverty.

The Institute for the Study of Social Change is an organized research unit at the University of California at Berkeley devoted to studies that will increase understanding of the mechanisms of social change for the general improvement of social life. It has a particular mandate to conduct research and to provide research training on matters of social stratification and differentiation, including the condition of both economically and politically depressed minorities as well as the more privileged strata.

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INTRODUCTION

In 1829, after just four years of existence, the future of the Erie Canal, a 365-mile waterway linking Buffalo on Lake Erie to the state capital in Albany, was threatened by a new technology—the railroad. New York Governor Martin Van Buren worried that this new form of transportation would cause serious unemployment and undermine the economic growth and development the canal had fostered. In his appeal to President Jackson, he wrote:

“If canal boats are supplanted by railroads, serious unemployment will result. Captains, cooks, drivers, hostlers, repairmen and lock tenders will be left without means of livelihood, not to mention the numerous farmers now employed in growing hay for horses. . . . Boat builders will suffer and tow-lines, whip and harness makers will be left destitute.”
(Rosenfeld, 1995)

Van Buren's worst fears were realized. The railroads indeed supplanted the previous transportation infrastructure. In their wake, the railroads left widespread unemployment among canal workers and in the allied industries. Yet, like any other transformational technology, the railroads not only created an entirely new labor force and corollary industries, but they also performed prior tasks faster and more efficiently. Moreover, as railroads spread throughout the land and linked previously distant and isolated communities, they redefined the nation's sense of distance and nationhood.

Technologies that alter a nation's infrastructure affect all sectors of society. The changes wrought by a new infrastructure ripple throughout the nation's social, economic, and political institutions and transform its culture. They erode old forms of livelihood and create new ones; they supplant preexisting notions of space and time and connect formerly disparate parts into a more integral whole. The development of a national information infrastructure is such a phenomena.

The United States today is an advanced post-industrial society in which political and economic activity is increasingly conditioned by one's relationship to information. The development of a national information infrastructure—the so-called information superhighway—attenuates this relationship. The national information infrastructure is an economic, political, and social phenomena that will fundamentally transform society. Since it undergirds the nation's economic and social institutions, the development of an advanced information infrastructure will affect all sectors of the economy and all classes

of society. This advanced telecommunications network will radically alter the way society functions. It will redefine the nature of work and commerce, our access to education and health services, our forms and levels of political participation, and even our notions of leisure.

The modernization of the nation's information infrastructure thus has significant implications to Latinos. As is often the case with transformational technologies, it will affect Latinos in predictable and in yet unimagined ways. The national information infrastructure may be a force for greater economic and political integration of Latinos into society, or it may lead to increased marginalization of Latinos.

PROMISE OF THE INFORMATION SUPERHIGHWAY

Technological innovations in the design of integrated circuits and fiber optics have given birth to a high-speed, high-capacity telecommunications network that promises to usher in a new era in telecommunications. The mating of computer intelligence and laser technology has created an exponential leap in the possibilities for producing, transporting, processing, and storing information. This technological leap creates a vast menu of new telecommunications possibilities that will produce the next generation of telecommunications and information.

The present information infrastructure is capable principally of one-way communication, with the single exception of telephone communications. The next generation of telecommunication/information technology is a digital, broadband, interactive network that allows for two-way, multi-user, and multi-media communications. The digital capability of the network derives from integrated micro devices that translate text, data, graphics, audio, and video into bits, which can then be manipulated, processed, and transmitted in a form that is faster, more efficient, and far more agile than the present analog modes. Moreover, this capacity to merge text, voice, graphics, audio, and video signals in the same channel is also fostering a convergence of telecommunications and information technologies in which the differences between television, cable, telephone, and computer is becoming blurred. The need for different media channels to deliver each of these different signals is rapidly disappearing.

The interactive capability of an advanced digital, broadband network makes video telephone communications possible. It also creates a vast new array of

communication modes, including the ability to scan the contents of a video library, make a selection, and schedule a time to download or view the selection. In an educational setting, this interactive capability will enable students to conduct full text searches of libraries across the nation. In health settings, doctors in rural clinics will, for example, be able to hold video conferences with colleagues at research hospitals and to send them x-rays and CAT scans to confirm diagnoses and discuss treatment options. In recreation, broadband, interactive communications can be used in computer games to enable multiple players in different locations to jointly play a game as a team. In government, interactive technology can be used to enable greater citizen participation in sessions of local, state, and national legislative and governing bodies. It can also greatly expand the concept and practice of electronic town hall meetings. The range of uses for an advanced digital telecommunications network are indeed quite vast.

The implications of the development of this information infrastructure for Latinos are monumental. There are a host of questions about the extent to which Latinos will have access to this technology, how access to this technology will likely affect the socioeconomic status of Latinos, and the consequences of limited access to this technology. This new technology also raises questions about policies that should be considered to increase access of Latinos to this technology and to increase its potential benefits for them. Before addressing these questions, it is essential to understand the political and economic context that frames the development trajectory of the "information superhighway."

POLICY ARCHITECTURE OF THE SUPERHIGHWAY

Although the technology of an advanced national information infrastructure is quite robust, the pace and direction of its development and deployment will be conditioned to a major extent by the policies the nation adopts in the near term for encouraging its development and regulating its uses. The current policy debate centers on issues surrounding the deregulation of the telecommunications industry and ownership of the infrastructure.

The nation's telecommunications policy is framed by the Communications Act of 1934. In order to accommodate the pending technology shift in the nation's information infrastructure, legislative bodies at both the federal and state levels are currently

considering bills that will streamline and relax regulations to which the telecommunications industry is presently subjected. This legislation will create a new charter to govern the development and deployment of emerging telecommunications and information technology, as well as ownership of the information infrastructure itself. It will also set the terms for access to the advanced digital network by the nation's citizens.

The impending shift in this nation's telecommunications policy can best be understood in the context of political and economic forces that surfaced in the 1980s during the Reagan years. The political ideology of the day urged a reduction of the role of government and the removal of regulatory obstacles to private industry. In telecommunications, the present policy debate follows a course projected over a decade ago with the breakup in January, 1984 of the telephone monopoly enjoyed by AT&T for over six decades. The divestiture of the regional telephone companies, the so-called Baby Bells, from the parent company, AT&T, set in motion the forces of deregulation and competition in the telecommunication industry.

A decade after the breakup of AT&T, the nation is again on the verge of a telecommunications policy shift that will profoundly alter the character and substance of it's social, economic, political, and cultural institutions. The telephone and cable industries are evolving out of an era characterized by monopoly control of the nation's information infrastructure. They had absolute and exclusive monopolies of the networks through which voice, data, and video were transported. Historically the telephone industry was subject to rate-of-return regulation by federal and state regulatory agencies in return for a guaranteed monopoly franchise. The cable industry was subject to another set of regulations; their franchise was essentially a local monopoly governed by municipalities. The deregulation fervor that swept the nation during the Reagan era altered this arrangement.

The forces of deregulation and competition that were introduced into the industry a decade ago are still reverberating through the telecommunications industry. In September 1993, the Clinton Administration announced its plans to develop a National Information Infrastructure (National Information Infrastructure, 1993). The hallmark of this plan is competition; it favors continued deregulation of the industry to ease market entry, and privatization of the infrastructure to promote investment in the

modernization of the infrastructure. A key aspect of this regulatory reform effort is a shift in policy toward open access to the network to permit the telephone and cable industries to compete with one another (Background on Telecommunications, 1994; White Paper on Communications, 1994). In this new regulatory paradigm, telephone companies will be able to offer broadcast services while cable companies will be permitted to offer telephone and voice mail services. Local and long distance telephone carriers also will be able to compete with one another. None of these providers of telecommunications services will be prevented from developing and providing their own information products on the network.

This shift in the nation's communications policy raises concerns about the extent to which it will foster equitable access to the digital network by all sectors of society. The Communications Act of 1934 proclaimed a national policy in which everyone could have access to a high-quality, public network at affordable rates. This principle of universal service ensured the same level and quality of telephone service to all households, irrespective of their means. It also ensured that subsidized rates were available to assist low-income households in obtaining and maintaining access to the network. The shift to a deregulated and privatized infrastructure raises the question about the extent to which the public goals of universal service will be achieved in a private, market-driven environment. The new regulatory paradigm requires an extension of the principle of universal service to the advanced, digital network to guarantee that all sectors of society can indeed afford access to the network.

ECONOMIC SCALE OF THE SUPERHIGHWAY

The telecommunication and information services sector accounts for 12% of the nation's GNP. The market for telecommunication and information services and products is estimated by the Commerce Department to be a \$700 billion industry in annual revenues. The U.S. semiconductor industry alone account for over \$43 billion annually; the semiconductor equipment industry accounts for another \$15 billion. An additional \$48 billion is generated annually in exports of telecommunications products (White Paper on Communications, 1994). In March 1995, the Federal Communications Commission announced that its auction of licenses for broadband frequencies to be used for PCS (personal communications services) netted \$7.7 billion. The magnitude of

economic investment in advanced, digital telecommunications and information sectors is indeed staggering and it is projected to increase its share of the GNP in the near future. The advent of the national information infrastructure is expected to foster significant economic growth by boosting investment and increasing productivity.

In the near term, the telecommunications industry will invariably accelerate investment to update and expand its capacity in order to compete effectively in the vast new market for an expanding array of telecommunications and information products and services. A major prerequisite for this new network is the modernization of the telecommunications infrastructure from an analog to digital backbone. A corollary requirement is the development of new devices to process and store digital information transported on the network. This modernization initiative to construct a broadband, interactive, digital network will cost billions of dollars; it will also generate billions more in profits.

The scale of capital investment required to construct an advanced digital network -- and the level of incumbent risk -- are quite substantial. In order to spread the risk and also to place themselves in a more competitive position in the soon-to-be burgeoning telecommunications and information market, firms throughout the industry is presently experiencing a flurry of merger activity. The larger entities in the telecommunications industry, principally the telephone companies, are buying interests in related companies that will supply infrastructure capability, as was illustrated by the merger between AT&T and McCaw Cellular and the attempted merger between Bell Atlantic and TCI. The former merger will provide a national cellular telephone capability to AT&T; the latter would have provided a national video capability to Bell Atlantic. Other cross-industry ventures are efforts to acquire entertainment-production entities and suppliers that provide content to be sold and transported on the digital network. Ameritech, Bell South, and SBC Communications created a partnership with Disney and are investing \$500 million to develop video programming for telephone customers. These cross industry ventures are often multi-national ventures. The strategic alliance announced in March 1995 between Samsung (Korea), Disney (US), and NEC (Japan) to develop CD-ROM multimedia products is but one example of cross-industry, multi-national partnerships prompted by the development of the digital infrastructure.

Another arena of merger activity involves the computer hardware and software industries, which are expected to provide the customer appliances and control systems that will make the "information supermarkets" possible. Merger activity between the telephone and cable sectors of the industry and the entertainment industry will accelerate. The telecommunications industry expects to be a major provider of content on the network and not merely a supplier of telecommunications links through which other industries will transport lucrative products. Increased merger activity correspondingly increases the investment and capitalization demands of the developers of the national information infrastructure in order to fund these acquisitions.

WORKFORCE IMPLICATIONS

The railroads in the late nineteenth and early twentieth century created new opportunities for Latinos, mostly Mexican immigrants to the U.S. In addition to jobs constructing railroad lines in the West and Midwest, these immigrants found employment in the cattle and agricultural industries, both arenas of economic activity spurred by a new technology that permitted the cost effective transport of these products to the Eastern and Southern regions of the nation. Yet the benefits of a new technology, even in a democratic nation, do not diffuse equitably across all sectors and population groups. The diffusion path of technological innovations most often follows pre-existing patterns of social stratification. Thus, although Latinos found employment building the railroads, most could neither afford to ride them nor to purchase most of the products the railroads brought to the market. Several generations later, as the nation prepares to embrace another transformational technology, Latinos may once again be unable to ride the railroad — this time, the digital superhighway.

Unlike the building of the inter-continental railroad, Latinos may not even be among the labor force that builds the information superhighway. While the construction of the railroads required a vast supply of unskilled laborers, the construction of an advanced information infrastructure will require a highly skilled, technical workforce. The principal workforce in an information-based economy is a high-skilled, high-wage labor force. Job opportunities in the new information economy will increasingly require a higher education and advanced technical training beyond high school.

Social indicators suggest that the vast majority of Latinos do not presently have the skills and technical training required to participate in the construction of the new digital superhighway. The present educational status of Latinos remains significantly below national levels, as shown in Figure 1. In March 1993, 11.8% of Latinos ages 25 and over had less than five years of schooling, compared to 0.8% for their non-Latino white (Anglo) counterparts; only 53.1% of Latinos in this age group were high school graduates, compared to 84.1% for Anglos. Only 9.0% of Latinos in this category had a bachelor's degree, compared to 23.8% for Anglos in the same age category (U.S. Census Bureau, 1993; Montgomery, 1994).

Table 1
Latino Educational Attainment
(Persons Ages 25 and over)

Educational Attainment	Latino	Anglo *
Less than 5th grade	11.8%	0.8%
High School graduate or more	53.1%	84.1%
Bachelor's degree or more	9.00%	23.8%

Source: Current Population Survey, U.S. Census Bureau, March 1993. * Non-Latino white population

Despite their lag in educational attainment compared to the Anglo population, Latinos are well represented in the labor force, as shown in Figure 2. Indeed, Latinos are at parity with Anglos among the nation's labor force. However, Latinos are overrepresented among the nation's unemployed, with a rate almost twice that of Anglos.

Table 2
Latino Labor Force Participation
(Persons 16 and over in the civilian labor force)

Labor Force Status	Latino	Anglo *
Number of persons in labor force	10,204,000	98,394,000
Percent in civilian labor force	65.5%	66.2%
Percent unemployed	11.9%	6.1%

Source: Current Population Survey, U.S. Census Bureau, March 1993. * Non-Latino white population

Latinos are also overrepresented in the lower ranks of the labor force, as shown in Figure 3. Latino representation among the white collar, managerial, and professional occupations is 50% below the level of their Anglo counterparts. In the technical, sales, and administrative category, Latinos are virtually at parity with Anglos; yet, they are overrepresented in service, craft, and semi-skilled and unskilled occupational groups.

Table 3
Occupational Status of Latinos
 (Persons 16 and over in civilian labor force)

Occupation	Latino	Anglo *
Managerial, professional	15.4%	30.9%
Technical, Sales, Administrative	40.9%	43.9%
Service occupations	24.6%	16.0%
Skilled craftspersons	2.50%	1.70%
Semi- and unskilled laborers	14.8%	6.60%

Source: Current Population Survey, U.S. Census Bureau, March 1993. * Non-Latino white population

These indicators suggest that the vast majority of Latinos do not have the educational or occupational status to be integrally involved in the construction of the advanced digital network. Moreover, like the canal workers of an earlier era, Latinos may also be displaced in large numbers as a result of the technical skills and education levels demanded in an information-driven workplace. This tendency will accelerate with the advent of a national information infrastructure.

In an advanced, post-industrial, service economy with an expanding information sector, the labor force will become increasingly segmented on the basis of education and technical training. In such an economy, the service sector will be bimodal and characterized by low-skilled, low-wage occupations at one end of the labor market and by high-wage, high-skilled information-based occupations at the other end. Latinos are already overrepresented at the lower end of the labor market in unskilled and semi-skilled occupations; they are not positioned to become a major part of the

labor force that constructs the information superhighway. Most Latinos will remain concentrated in the lower-wage service and support levels of the workforce.

The potential for labor displacement in the post-industrial economy is enormous and unprecedented. The demise of the agricultural economy caused widespread dislocation. Yet, the expanding industrial economy and growing urbanization created an emerging employment base for the displaced workers of that era. Indeed the expanding industrial sector offered replacement jobs to the masses of unskilled laborers migrating from farms to cities. The industrial and manufacturing jobs that are being displaced offer no comparable replacement jobs for those migrating within this nation or from a rural agrarian economy into the United States. The successive waves of immigration that undergird Latino population trends enter a different labor market than in years past. While immigration of earlier eras provided a steady supply of unskilled labor required for the nation's expanding industrial economy, today's immigrants enter a post-industrial, service economy with an expanding information sector that requires highly skilled workers. Most Latino immigrants enter the low-skill, low-wage end of the service sector, which does not offer occupational mobility into the information sector. The inescapable fact is that Latino immigrant workers increasingly constitute a caste of laborers locked into the lower ends of the economy. There they join a larger pool of Latino non-immigrant workers whose education and occupational status will limit their participation in the information economy. The characteristics that will limit Latinos' access to newly-created jobs will also limit their access to the digital network.

ACCESS BARRIERS TO THE SUPERHIGHWAY

The advanced digital network will foster an economy in which the prime commodity being bought and sold over the network is information itself. In this context of information supermarkets and malls created by the information superhighway, access to information will be directly related to one's financial means, and household income will be a major predictor of access to the information commodities of these digital supermarkets. In an earlier era, Latinos helped to build the railroads, but could not afford to ride them. While most Latinos today will not be directly involved in the construction of the information superhighway, most Latinos

actually will be able to "ride" the superhighway. . . for a fee. Unlike the present interstate freeway system, the information superhighway will be analogous to a toll road that requires payment to travel through it. Perhaps a more appropriate metaphor is that of an information supermarket offering an extensive and diverse inventory of information products and services for consumers in all income groups.

Access to the information supermarkets and malls created by construction of an information superhighway will be restricted. Given the trend towards deregulation and privatization of the national information infrastructure, the information superhighway will be a *laissez-faire* marketplace governed by the laws of an open market and the aspirations of the telecommunications and information industries. Access to the coming information marketplaces will thus be dictated by socio-economic status. An examination of the levels of access to the nation's telephone network—the current national information infrastructure—provides a glimpse into the future levels of Latino access to the advanced digital network. Since this nation has a policy of universal access to the telephone network and provide subsidies for low-income households, which ensures ubiquitous access, the present level of network access is therefore a sound predictor of future access.

Despite the presence of this policy and annual subsidies of \$93.3 million for an estimated 3.4 million households, 6.18 million U.S. households do not have telephone service. (Blake, *et. al.*, 1992- 1993). An analysis of these households that are off the network reveals a direct correlation between household income and telephone access. Indeed, households with lower incomes have lower access rates. Households with annual incomes below \$20,000 fell below the 93.7% national connect rate (Belifante, 1994). When race and ethnicity are factored in, the income threshold for household access becomes even higher. Black and Latino households with average annual household incomes below \$25,000 fell below the national connect rate, as shown in Figure 4. This suggests that, on average, Blacks and Latinos require household incomes \$5,000 to \$10,000 more than their Anglo counterparts to achieve the same level of access.

Figure 4
Availability of Household Telephone Service
by Income and Race/Ethnicity
 [Reported by percentage of total households]

Family Income Bracket	Total Telephone Households	Black Telephone Households	Latino Telephone Households
Total Households	93.7	86.6	85.5
\$10,000 - \$12,499	89.0	84.2	82.6
\$12,500 - \$14,999	91.1	88.9	77.0
\$15,000 - \$19,999	93.4	89.2	88.2
\$20,000 - \$24,499	95.2	88.7	91.6
\$25,000 - \$29,999	96.7	94.7	94.2
Unemployed	88.0	83.5	82.9

Source: Federal Communications Commission, November 1994

An analysis of Latino household income distribution reveals that over half (53.8%) of Latino households have incomes below \$25,000, compared to over one-third (37.1%) for Anglo households, as shown in Figure 5. Indeed, half of all Latino households have annual incomes below \$22,859, which is almost \$10,500 below Anglo households. Over four-fifths of Latino households (84.5%) have annual incomes below \$50,000 compared to only 70% of Anglos.

Figure 5
Distribution of Latino Household Income: 1992
 [Reported by percentage of total households and dollar amounts]

Household Income (1992)	Latino	Anglo *
Under \$10,000	20.4	11.9%
\$10,000 - \$24,999	33.4	25.2%
\$25,000 - \$49,999	30.7	32.9%
\$50,000 and over	15.5	30.0%
Median Income (dollars)	\$22,859	\$33,355
Mean Income (dollars)	\$29,102	\$41,646

Source: Current Population Survey, U.S. Census Bureau, March 1993 * Non-Latino white population

The average Latino household size is 3.4 persons, thus the per capita Latino annual income for four-fifths of this population is \$14, 705. As shown in Figure 6, almost one-third (29.3%) of Latinos, and four of every ten Latino children, fall below the poverty level. This translates into an estimated 6.6 million Latinos living below the poverty level.

Figure 6
Characteristics of Poverty Households: 1992
 [Reported by percentage of households]

Population Below Poverty	Latino	Anglo *
Percent population in poverty	29.3	9.6
Under 18 years old	39.9	13.2
Ages 18 - 64	23.9	8.0
Age 65 and older	22.0	10.4

Source: Current Population Survey, U.S. Census Bureau, March * Non-Latino white population

Household income and poverty indicators suggest that access by Latinos to the information supermarkets will be limited falling below the national rate. Despite a national policy of universal access to telephone service, Latinos presently have a level of access significantly below the national norm. Only 86% of Latino households in the nation have telephone service, which is 8.2% below the national level, as shown in Figure 7. The remaining Latino households that do not have telephone access translate into a national total of 927,640 households and an estimated 3,153,976 individuals. However, the lack of access to the nation's public telecommunications network is not distributed equally among Latinos. Mexican-origin and Central and South American-origin Latinos have an access rate almost 10% below the national rate. The Cuban-origin Latino population has an access rate that is 1% above the national norm. Conversely, the Puerto Rican-origin population has an access rate significantly below other U.S. Latino populations and 13% below the national rate. These differential rates of telephone access mirror the income and occupational distribution of Latino national-origin groups in the U.S.

Figure 7
Telephone Access by Latino Households: 1992
 [Reported by percentage of households]

Latino Population	Household Telephone	Telephone Available	Telephone Available	Not
Total U. S. Population	94.2	1.3	4.4	
All U.S. Latinos	86.0	2.0	11.9	
Mexican Origin	85.5	2.4	12.0	
Puerto Rican Origin	81.3	1.5	17.2	
Cuban Origin	95.1	0.7	4.1	
Central & So. American	85.4	1.4	13.2	
Other Latinos	90.6	2.1	7.3	

Source: Current Population Survey, U.S. Census Bureau, March 1993

INFORMATION STRATIFICATION

National telecommunications policy recognizes that access to the present public network is not affordable for some segments of the population, and it contains provisions to assist those households in obtaining telephone service. To increase affordability, subsidies were created to fund programs that provide discounted rates for telephone hook-up and regular telephone service for low income households. A national policy that embraces some form of subsidies to low-income households will likely be adopted as the vehicle for ensuring universal access to the advanced digital network. Yet despite the presence of some form of subsidized access, the prospects for stratified access to the digital, broadband, interactive network are quite real, since even with a subsidy program a significant number of Latinos presently do not have access to the network.

Access to the information supermarkets and malls created by construction of an information superhighway will be restricted. The present course for the information superhighway points to three tiers of stratified access based on socioeconomic status. The top tier is represented by the middle and upper income households that can afford to pay for the new products and services offered by the electronic supermarkets of the

future and will have ready access. The middle tier is comprised of households in the \$20,000 to \$30,000 annual income range. These households will likely receive some form of assistance to enable them to have limited access to the digital network. The bottom tier will include the 927,640 Latino households that presently do not have access to the public network. These households will not have the funds to purchase the hardware to connect to the network nor will they be able to afford the cost of using the network. This bottom tier will likely grow beyond the present 1 million household level and constitute a permanent communications underclass.

Those sectors of society that cannot afford direct access will have to rely on public institutions to mediate their access to the digital network. One approach advanced to provide access to this bottom tier is to link up schools, libraries, and clinics to the advanced digital network. Public kiosks are another suggestion that is gaining favor. These approaches do provide a form of mediated access, yet they are a "pay phone at the corner market" approach to access that eclipse any prospect for meaningful universal access and universal service.

CONCLUSIONS

The development and deployment of an advanced digital network in the U.S. will alter fundamentally the nation's information infrastructure and will correspondingly transform the nation's culture by virtue of its central position in social and economic life. This transformation of the nation's information infrastructure will not likely foster greater social or economic integration of Latinos in this society. An analysis of the empirical evidence suggests that the present pattern of social stratification may well extend into the next generation of information infrastructure technologies. The socio-demographic characteristics of the Latino population in the U.S. will limit Latinos' access to the information superhighway.

Latinos are likely to be marginalized by the information superhighway in ways comparable to those experienced by the advent of inner-city freeways and expressways in the 1960s and 1970s. Large portions of existing Latino communities were razed to the ground to make way for the freeways that also became physical barriers and dividers separating Latino barrios from the rest of the city, again placing Latinos on the "other side of the tracks." Given the present course of national telecommunications policy,

construction of the information superhighway will yet again place Latinos on the opposite side of the tracks.

Economic poverty will be manifested also as information poverty for the third of the Latino population that presently lives in poverty. Their access to the network will be largely limited—to extend the metaphor—to the slow lanes of the superhighway, which will be underwritten by some form of subsidies. All other Latinos will access information products and services for a fee and purchase the hardware and software needed to link up to the network. Recent experience demonstrates that Latinos are aggressively targeted as a consumer market, not only by commodity manufacturers, but also by the telecommunications industry. Thus, Latinos most likely will be targeted as an eager market for entertainment products, such as video on demand, computer games, and home shopping. Premium information and telecommunications services such a video phones and home teleconferences will also be targeted to Latinos, just like premium telephone services are now heavily marketed in this community. Other non-entertainment information services—such as electronic reference libraries, distance learning, and tele-medicine—may be accessible to Latinos largely thorough public institutions. However, the level of Latino access to these information resources in public institutions may well mirror the present patterns of structural inequality that operates within those institutions.

In the absence of a national policy that not only transforms the information infrastructure but also the nation's opportunity structure, Latinos will not fully enjoy the rights and privileges of living in an advanced, post-industrial information society. The same barriers that impede access to education, health services, and employment will also impede access to the information superhighway. The same premise that applies to improving Latino access in those arenas applies to the information superhighway: access to the advanced digital network is a civil rights issue. Yet there is an added dimension to this arena—the nation's information infrastructure encompasses all aspects of Latino life in the U.S. Thus Latino access to the information superhighway is an urgent and overarching civil rights issue that embraces education, employment, health, political empowerment, and other issues. It cannot be regarded as an esoteric, futuristic concern. Moreover, the nation is presently engaged in the policy formation that will shape the future course of the advanced, digital, information

infrastructure. A Latino voice in this national debate is crucial to ensure that Latinos have equitable access to the benefits and promise of an information superhighway that will carry this nation into the next century.

The factors that inhibit the potential benefits of a digital information infrastructure for Latino are the severe structural inequalities faced by this population. While telecommunications policy cannot directly address these conditions, the adoption of a national policy that favors inclusion rather than exclusion of individuals and households from the coming digital network can provide an avenue for growth and mobility into the information society. The present national policy of universal service needs to be updated and upgraded to ensure levels of access and service on the digital network that are sufficient to overcome the shortcomings of the present policy. The core elements of a policy that genuinely promotes universal and ubiquitous service are: (1) universal access to the network itself, and (2) a base level of access to information services available through the digital network.

Universal access to the network can be achieved by adopting a policy of universal connectivity to the network in which every premise in the nation, whether household, school, clinic, library, factory, office building, or other workplace, is linked to the network. This strategy can be achieved and financed in a manner comparable to the way we currently link water, gas, and electric conduits to every premise in the nation. Indeed it is inconceivable and unacceptable in this day and age to bypass low income household from the water and power grids in the nation. In an advanced, information-based society, it also should be unacceptable to exclude any household, school, library, or clinic from the nation wide digital, telecommunication grid. Advances in wireless communications offer another technology option for extending connectivity to the national grid irrespective of a household's geographic location, whether it's in the inner-city or in a remote rural location. In education, universal access should extend not only to the school site, but also to every classroom in the school to enable students and teachers to conduct remote searches of libraries and other information resources and to benefit from the expanded learning settings afforded through distance learning.

Universal service in the age of the digital network should be supported by a policy that ensures ubiquitous and affordable access to the diverse information

products and services available on the network. The present policy of subsidized access for low income households should be extended, along with the base from which these subsidies are drawn. The burden of subsidizing universal service should be shared equally across the industry and include not just the telecommunications carriers, but also the suppliers of goods and services through the network in a manner comparable to the present interstate freeway tariffs, excise taxes, and gasoline taxes that support the interstate transportation infrastructure. Universal service on the digital network should provide a base level of service bundled into the basic rate for telecommunications service. This bundle should include a healthy ration of connect time to educational, public service, and health institutions. It should also provide unlimited access to emergency services, and to local, county, state, and national elected officials and their public meetings. In an advanced, post-industrial democracy, the nation's information infrastructure should be guided by a policy that reflects the democratic ideals of democracy, universal education, and political participation of all citizens.

In the absence of a policy that ensures universal access and service to everyone, the development of a national information infrastructure will only serve to widen existing racial, ethnic, and class cleavages and lead to a society of increased divisions and tensions among the population. Conversely, the presence of an effective universal service policy can create the conditions to widen opportunity and extend the benefits of an advanced digital network to all. Moreover, like the present telephone network, the digital broadband, interactive network of the future is a technology whose social and economic value grows in direct proportion to the base of users on the network. A universal service policy that is inclusive offers the greatest benefit to the greatest number of people; it represents the best investment that will ensure the greatest yield from the nation's social capital.

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