1

Redefining the Digital Divide

Information technology (IT) has wrought fundamental changes throughout society. IT has instrumented the shift from an industrial age to a network age. We now live in a society in which the production, acquisition, and flow of knowledge drive the economy and in which global information networks represent key infrastructure. How have these changes affected existing power relations and patterns of inequality? Does IT benefit or hinder progress toward social and economic justice?

Clearly it has the power to do both. In addition to altering commerce, education, government, and communications, IT affects the construction of and response to social problems such as poverty and inequality. The very existence of the "digital divide" – or lack of access to IT for certain segments of the population – is evidence of the ability of technology to exacerbate existing inequality. At the same time, technology can bring education to people living far from good schools. It can promote organizing efforts in disadvantaged communities. And it can connect people to a wide range of opportunities. The community technology movement – a grassroots social movement that employs IT to empower historically disadvantaged individuals and communities – demonstrates the potential of IT to serve as a tool of social change.

The digital divide is now recognized as an international issue. High income OECD countries account for over three-fourths of the world's Internet users.[1] In virtually all countries, Internet users tend to be young, urban, male, and relatively well educated and wealthy. In short, the diffusion of technology both within and between countries has been extremely uneven. Current and historical patterns of access

1 United Nations Development Programme (2001).

to IT illustrate a significant separation between information "haves" and information "have nots" along lines of race, socioeconomic status, education level, household type, and geographic location.[2] Why has the technology gap emerged as such a prominent issue nationally and internationally? Does it warrant this recent attention? Absolutely. IT affects how we work and what we work toward, how we connect with each other and with whom we connect, and how we make decisions and with what information. Living on the wrong side of the digital divide, as do the persistent poor, means being cut off from these changes and disconnected from the information society.

But the technology gap is only one link in a causal chain that has bound certain groups repeatedly to disadvantage. The digital divide is, therefore, a symptom of a much larger and more complex problem – the problem of persistent poverty and inequality. Widespread access to and use of technology will not solve these larger problems, but it can help to show the way out. Used wisely, technology provides new ways to address this problem. To have any significant effect, however, technology must be enabled by effective public policy in cooperation with concerted efforts by the private for-profit and private nonprofit sectors. One goal of this book is to illustrate and analyze the kinds of arrangements between public policy and communities, using technology, that can lead to social change.

The US government discovered the digital divide in 1995. That year, the National Telecommunications and Information Administration (NTIA) issued the first of four reports under the title "Falling Through the Net." These reports documented the existence and particulars of a digital divide in America that separates people with access to information technology (IT) from those without it.

Community technology centers (CTCs) (known as telecenters in most other countries) have emerged at an increasing pace in the last several years to deal with the digital divide. CTCs are locally based nonprofit organizations that link community residents to IT resources. Thousands of organizations are currently working to disseminate IT to local communities. CTCs work to foster the potential positive benefits of the information revolution while combating its associated problems. CTCs address the digital divide comprehensively and advance larger social, political, and economic goals in the process.

2 US Department of Commerce (2000a); Doctor (1994).

Yet when community technology activists talk about the need to narrow the digital divide, they are often met with skepticism. Is IT something people really need, or is it more accurate to think of it as a luxury? Why would low-income people use computers to contact elected officials? They can write letters now, but they seldom do. They can vote now, but the poor are one of the groups with the lowest voter turnout rates. Wasn't the cable access movement supposed to give people a voice? Why has it not made the kind of impact many hoped it would make? Perhaps the Internet, the IT medium of communication, is just the next in a long succession of over-hyped media.

These questions and doubts are legitimate. However, the Internet possesses attributes that make it differ from these other media in key ways. First, the Internet is an open medium that allows broad participation – the shorthand for this characteristic is "many to many." Unlike other media used to deliver information, television and newspapers for example, the Internet allows users both to respond to what exists and to produce their own material relatively inexpensively *if* they possess the skills and access necessary to do so. This "many to many" aspect of the Internet is one of its key cultural features. The Internet's interactive nature creates the conditions necessary "for learning, confidence-building, and self-empowerment."[3] In short, the Internet provides "the capacity for anyone to find his/her own destination in the net, and if not found, to create and post his/her own information."[4]

Second, the Internet enables the creation and support of networks. These networks are organized and maintained for social and economic purposes. The value of networks increases as the number of people who belong to and actively participate in the network increases.[5] The Internet makes joining and remaining engaged much easier, and enables participation across space, thereby increasing the potential for a greater number of users to join. More importantly for the purposes of this book, online networks have the capacity to strengthen and enhance place-based community networks, extending the reach of existing community-based organizations and institutions.

These two attributes – the openness of the Internet and its capacity to support networks – are revolutionizing the way in which individuals, communities, firms, governments, and other institutions and organizations engage with the rest of the world. To ensure that all

3 Sanyal (2000: 146).
4 Castells (2001), ch. 2, p.19.
5 Civille (1995); Brock (1994).

people have the skills and access to participate in the information society is a matter of utmost importance. But before attempting to achieve consensus that this issue must be addressed, we must first agree on the specific nature of the problem.

Redefining the Problem

What exactly is the digital divide? In order to address it, we first need a deep and specific understanding of the problem. Policy makers and the media have thus far defined the digital divide narrowly and incompletely. In short, the technology gap has been defined as a problem of access in the narrow sense of possession or permission to use a computer and the Internet.

This book challenges the current popular conception of the digital divide, which equates inclusion in the information society with access to computers and the Internet. Access to information technology is increasing at a rapid rate. Although some groups of people, namely, African-Americans, Latinos, and the disabled, remain persistently and disproportionately on the wrong side of the divide, the gaps between those who have access to IT and those who do not are rapidly closing. Groups that have traditionally been digital have-nots are now making dramatic gains. Gaps between rural and nonrural households and between seniors and younger people have begun to narrow. Some divides, such as that between women and men, have disappeared altogether.

And yet the larger problem persists. Deep divides remain between those who possess the resources, education, and skills to reap the benefits of the information society and those who do not. Persistent gaps remain between different racial and ethnic groups, people with and without disabilities, single and dual parent families, the old and the young, and people with different levels of income and education. Low-income persons and minorities, particularly when they reside in inner cities, are among the groups being left behind. Table 1.1 illustrates these changes, and chapter 2 takes up this issue in much deeper detail.

Because the technology gap has been defined narrowly, as a problem of access, policies and programs have also been narrowly focused. Proposed solutions to the digital divide tend to begin with making sure that schools are wired and that every household has a computer. For example, in March of 2000, Governor Angus King of

Table 1.1 Dimensions of the digital divide

	Households with computers (August 2000) (%)	*Individuals with Internet (November 2001) (%)*
General population	51.0	57.6
Gender		
Male	Not available	58.2
Female		57.1
Geography		
Urban	51.5	58.2
Central city	46.3	62.5[a]
Rural	49.6	47.5
Income[b]		
Under $15,000	19.2	12.7
$15,000–24,999	30.1	21.3
$25,000–34,999	44.6	34.0
$35,000–49,999	58.6	46.2
$50,000–74,999	73.2	60.9
$75,000+	86.3	77.7
Education		
Less than high school	18.2	25.9
High school	39.6	48.4
Some college	60.3	63.8
Bachelor's degree	74.0	63.4[c]
Postgraduate	79.0	
Race		
White	55.7	46.1
Black	32.6	23.5
Asian-American/Pacific Islander	65.6	56.8
Hispanic	33.7	23.6

Sources: Computer data from US Department of Commerce (2000a); Internet data from Pew Internet and American Life Project, unpublished.

[a] Pew uses the term "suburban."

[b] Computer and Internet data for income all come from Department of Commerce 2000a.

[c] Pew groups college grad and post-college together.

Maine announced a plan to give every seventh grade student a laptop computer. King stated that he wanted Maine "to have the most digitally literate society on earth."[6] The governor's $65 million plan, however, did not allocate any funds for computer training or for

6 *New York Times*, March 1, 2000.

upkeep of the machines. The focus on simply getting computers to people has resulted in millions of dollars of misspent money. To be fair, some have recently begun to define "access" more broadly. In 2000, for example, the members of the Global Knowledge Partnership met in Kuala Lumpur and defined access to include: physical access to IT; access to training; access to salient local content in the language of the user; and access to the process by which telecommunications decisions are made.[7] Redefining access requires shifting the primary question from who has access to "what are people doing, and what are they able to do, when they go online?"[8]

Clearly, the digital divide is much more complex than a mere lack of computers. Simplistic solutions have therefore masked and perhaps even exacerbated the larger problem. When we provide people with computers, we find that not much changes. IT on its own does not function as a ladder out of poverty. This book defines the digital divide in a broader and more complex way, and suggests similarly broad solutions to deal with the problem. More comprehensive responses based on a more finely textured and nuanced understanding of the problem can be employed to enable disadvantaged groups to participate in today's economy and society, in effect providing the kind of boost necessary to exit poverty.

The way in which a particular problem is defined leads to a specific policy solution. Getting the definition right, then, is key. This introductory chapter redefines the digital divide in order to point the way toward more appropriate solutions. The fact that the technology gap has already been defined as a problem of access creates an additional challenge. It will be difficult to convince key actors to alter their conception of the problem and to expand the toolkit currently employed to address it.

The struggle to create such a change in thinking is worthwhile, however, and informing this change is a chief goal of this book. If we do not reframe discussions of the digital divide, and employ the reframing to create broader solutions, we will have universal access without social change. Policy makers and funders will see that providing access has not altered existing cleavages that separate the privileged from the disenfranchised. The entire issue will be de-prioritized as funders and policy makers move on to search for the next silver bullet to solve the problem of persistent poverty.

7 See also Gordo (2000).
8 DiMaggio and Hargittai (2001).

If the digital divide is not simply a problem of access, what is the appropriate definition? Access is one dimension of the issue. Clearly people need the basic IT tools, computers and Internet access, at their disposal. But access is only the first component.

The second dimension of the digital divide concerns training, or IT literacy – the ability to use IT for a range of purposes, and the knowledge of how and why IT can be used as a key resource. For example, thus far policy has emphasized getting computers and the Internet into the schools, but these efforts have been incomplete and inequitable. Incomplete because teachers are not trained and supported to integrate technology into what they do. And because when IT is used, it is often used for typing exercises and drills rather than to enable the acquisition of the kind of skills and thinking that the information society demands. Inequitable because great differences exist in terms of the way IT is currently deployed in wealthier and poorer schools. Some schools have state-of-the-art computers languishing in unused computer labs because the teachers do not know how to use the technology. Other facilities are wired, but there is no money to purchase hardware and software. As chapter 5 will illustrate, both the computer/student ratios and the IT activities available are much better in well-off school districts than in low-income areas. The training issue extends beyond schools to disadvantaged workers who cannot find work that pays a living wage because they do not have the appropriate skills to work in the information economy. As with any tool, users of IT must understand and have the facility to fully exploit the potential of IT in order to benefit completely from it.

The third dimension of the digital divide has to do with content, both content that meets the needs and demands of disenfranchised groups and content that is created by these groups. The Internet, like most media, is shaped by the first people to occupy its territory, in this case middle- and upper-income white males. When disadvantaged groups do log on, they often find that there is no content there. The kind of information they seek – information that is directly related to their lives and communities and cultures – does not exist. If and when it does, they often lack the skills to find it. Language and literacy issues create additional barriers for these groups.[9] This content dimension is clearly related to the training dimension; IT skills are needed in order to access and create content.

9 Lazarus and Mora, 2000.

Redefining the digital divide, then, requires broadening the concept beyond access to include training and content issues. Access is a necessary precondition but then engenders a need for training in order to use the tools. Once people have facility with the tools, they demand content that serves their interests and meets their needs. The process of redefinition must also be informed by an analysis of how different groups use IT and for what purposes.

Explaining the Divide's Persistence

Several factors help to explain the emergence of the technology gap. These factors interact with each other to keep certain groups stuck in the "information have-not" category.

Market forces

One obvious explanation for the narrowing of some aspects of the digital divide concerns the drop in prices of computers and Internet services. As prices drop, more people are able to afford IT. Although computers and Internet access have become a necessity in many middle-income households, the price of obtaining and maintaining these IT tools puts them into the luxury category for many low-income families. Computer prices have dropped steadily in recent years but remain out of reach for many. As of August 2000, computer ownership in the United States was at 51 percent, up from 24.1 percent in 1994 and 36.6 percent in 1997.[10]

In addition to the initial purchase price, families also need money to maintain their computers, to purchase software and peripherals, and to pay for monthly Internet access. A 1999 study found that when those with computers were asked why they did not have Internet access, the most common response was that the household's occupants did not want such access.[11] The second most common response had to do with cost. The lower a household's income, the more likely the

10 US Department of Commerce, 2000a. These numbers do not reflect how many of these computers are inoperable or obsolete.

11 Wyatt (2001) looks specifically at the issue of non-use of the Internet, making the important distinction between nonusers who choose not to use the Internet, and nonusers who are excluded from using the Internet because they cannot afford it or because they lost access.

respondent was to cite cost as the reason for not having Internet access.[12]

Unequal investment in infrastructure

Unequal investment in infrastructure also contributes to the technology gap. The Internet has been touted as a medium with the capability to collapse distance and to eliminate spatial inequalities.[13] It is becoming apparent, however, that IT is profoundly rooted in geography.[14] Investment in high-end telecommunications infrastructure is much lower in poor urban areas and rural regions than it is in wealthier areas. Wealthier urban and suburban neighborhoods are typically wired and upgraded before inner-city and rural areas.[15] This inequitable provision of infrastructure is a form of market failure: private companies will invest in infrastructure in areas where they are most likely to yield the highest returns on investment. Although it may be unprofitable to invest in the infrastructure of low-income areas, failure to serve these other areas creates an inequitable situation that warrants government intervention.

Graham and Guy argue that "the Internet is showing signs of 'splintering' and unbundling, adding better infrastructure and connectivity to powerful economic 'hot spots' and furthering the relative backwardness of rural and marginalized spaces."[16] Examining the spatial aspect of this issue broadly, on a global scale, Markusen finds a set of privileged global cities, which she calls "sticky spaces", in which intense clustering of Internet activity exists.[17] She contrasts these sticky spaces of production with slippery places that have largely failed to attract and maintain information industries. These sticky spaces drive the information industries. Within metropolitan regions, a similar sticky/slippery spottiness exists on the consumption side. In short, the same places that are characterized by economic poverty also tend to suffer from information poverty; a pattern has developed in which inequalities in physical and electronic spaces mutually reinforce one another.[18]

12 US Department of Commerce (1999: 38–9).
13 See, for example, Mitchell (1995, 1999b).
14 Graham and Marvin (2001).
15 Goslee (1998: 2).
16 Graham and Guy (2001: 5). See also Graham and Marvin (2001).
17 Markusen (1999). See also Castells (1989).
18 Graham and Marvin (1996: 191).

Both of these first two factors, cost and infrastructure, will be exacerbated as broadband takes root and begins to be used on a large scale. Broadband refers to the increased data traffic capacity, or bandwidth, available via cable and phone lines, as well as wireless and satellite transmissions. Broadband technology will enable firms to tailor pricing much more specifically to use, making high quality Internet access more expensive than it is currently. On the infrastructure side, cities and neighborhoods where willingness to pay is greatest (where "willingness" correlates strongly with "ability") will obtain broadband access first.

Discrimination

Discrimination functions as a third factor that reinforces the digital divide. Schools in low-income areas that overwhelmingly house children of color are much less likely to provide quality access, training, and content than are schools in wealthier districts. African-Americans recently protested against CompUSA after corporate officials claimed they did not advertise to the black community because African-Americans did not shop there. In addition, the content and form of hardware, software, and the Internet reflects the culture, tastes, and demands of those who create the products and of the early users – largely middle- and upper-class white men.

Insufficient policy efforts

Existing public sector attempts to address the technology gap demonstrate a failure to understand the complexity of the issue. For example, the E-rate, which provides subsidized IT access to schools and libraries, is not available to community technology centers, which are the only point of access for many low-income users.[19] And, although public-sector efforts to wire public schools is commendable, they accomplish little if not accompanied by funding for appropriate hardware, software, and training for teachers. Little public support exists for training and content. Policy makers' narrow focus on access is insufficient to the problem. There is a disconnect between policy and need.

19 The E-rate, which is federal, will be discussed in much greater detail in chapter 4. Some states have made CTCs eligible for subsidies.

Culture and content

People who do not fit the typical IT user profile are unlikely to want to explore cyberspace unless they believe that there is a reason to go there. According to Castells: "Technological systems are socially produced. Social production is culturally informed. The Internet is no exception. The culture of the producers of Internet shaped the medium."[20]

The shape of IT tools and the landscape of the Internet must reflect the needs and interests of diverse populations in order to attract a diverse group of users. Those that have crossed the digital divide have found reasons to do so.

All of these factors – cost, infrastructure, discrimination, policy, and culture – interact with each other to keep certain groups from being able to participate fully in the information society.

Rationale for Closing the Gap

Narrowing the digital divide is important for political, economic, and social reasons. Some consider communications policy to be a civil rights issue.[21] Chapman and Rhodes, scholar-activists, go so far as to assert that "access to the Internet is as important a part of civil life as parks, public transit, libraries, and cultural centers."[22] Although labeling access to IT as a right does not guarantee automatic access, it does usefully reframe the debate "since civil rights demand appropriate public action to ensure that they work in practice and not just exist in principle."[23] In reality, communications policy has not heretofore been framed as such but has rather functioned as a sort of regulatory/social compact between business and government.[24] The important point is that failure to address current imbalances in the ability to use IT may lead to more deeply entrenched imbalances between historically privileged and historically disenfranchised groups.[25] Differential

20 Castells (2001), chapter 2, p.1.
21 Lloyd (1998: 1).
22 Chapman and Rhodes (1997).
23 Carvin (2000: 5).
24 Correspondence with John Horrigan. See also Temin and Galambos (1989) and Horwitz (1989).
25 Doctor (1994).

access and use of IT may actually increase existing gaps in education and access to opportunity.[26] A troubling cycle has begun to take shape, in which the lack of access to information technology and its requisite skills contributes both to an inability to compete in the mainstream economy and an inability to participate in civil society.

Economic rationale

The ability to access and use IT is particularly important given the global economic shift away from manufacturing and toward services and other information-related industries. The two primary characteristics of our current economy are globalization and information reliance.[27] These characteristics mutually reinforce one another. Advanced information technologies enable a global economy in which headquarters, manufacturing, and distribution facilities of a given corporation may be scattered across the globe. Between 1996 and 1999, high technology alone accounted for 25 percent of economic growth and added about 0.7 percentage points to the overall growth rate of the economy.[28] Information technology companies had $800 billion in sales in 2000 and their efforts accounted for 10 percent of the country's gross domestic product.[29]

Politicians use the rhetoric of global economic competitiveness to argue for public and private intervention into the technology gap problem. At the Harlem kick-off event for his 1999 Closing the Digital Divide tour, then Commerce Secretary William M. Daley stated: "We must . . . make sure that America has the skilled workers, the competitive businesses, the digital cities, and the wealth it needs to continue as a world leader."[30] Robert Reich, former Secretary of Labor, argued strongly for investment in training to upgrade the skills of the US workforce as the way to maintain US competitive advantage in global markets. This framing of the issue set the stage for important collaboration across federal agencies. A recent report put out jointly by the Departments of Education, Labor, and Commerce connected global

26 Blakely, Hadi, and Johnson (1995); Goslee (1998).
27 Mandel (1999).
28 Mandel (1999: 5).
29 Information Technology Association of America (2001).
30 US Department of Commerce (2000b).

competitiveness to individual worker earnings. Calling for increased investment in worker education, this report states:

> For America to compete in this new global economy, it can either create low-wage, low-skilled jobs or take full advantage of the Nation's labor force and create high performance workplaces . . . Not only does a better educated and trained workforce create significant productivity gains and better bottom line results for American workers, but the more a worker learns, the more a worker earns.[31]

The Bush administration, however, shows signs of beginning to reverse the trend of increasing support for the agenda to close the digital divide that the Clinton administration initiated. In his first press conference as chairman of the FCC (Federal Communications Commission), Michael Powell downplayed the issue, pointing out that innovative products often reach the wealthy before they spread to the rest of society, and that this did not translate to a divide. He then stated, "I think there is a Mercedes divide. I'd like to have mine."[32] To be sure, the diffusion of IT is not so different from the diffusion of other technologies. According to Rogers, "when the issue of equality is investigated, we often find that the diffusion of innovations widens the socioeconomic gap between the higher and lower status segments of a system."[33]

A mismatch clearly exists between well-paying information economy jobs and the skills of job seekers. An inability of low-income and disadvantaged workers to compete for IT jobs contributes to the accelerating income gap between the wealthy and the poor.[34] The balance of skilled and unskilled workers in the workforce has flipped from 20 percent skilled and 60 percent unskilled in 1950, to more than 60 percent skilled and less than 20 percent unskilled in 1997.[35] Much of the workforce remains unprepared for these skilled jobs. One result is that employers who need high-tech workers – and the majority of these employers are in non-IT fields – are seeking to increase the

31 US Department of Commerce, US Department of Education, US Department of Labor (1999: iii).
32 Stern (2001).
33 Rogers (1995: 125).
34 Holmes (1996: A10).
35 US Department of Commerce, US Department of Education, US Department of Labor, National Institute for Literacy and Small Business Administration, 1999, p.1.

number of skilled foreign workers allowed to work in the US. Raising the H-1B visa ceiling will likely increase productivity, but these gains are unlikely to trickle down to the least skilled.

Wilson makes the important connection between the movement from a manufacturing to an information economy and the increase in concentrated poverty in US inner cities.[36] As the economy has shifted in terms of what is produced, there has been a concomitant shift in where production occurs. Much of the remaining activity has moved out of cities to suburban and rural areas and to less developed countries, where production costs are cheaper. And, at the same time, many jobs have moved away from central cities. New technologies have made it easier for corporations to move many of their operations to the suburbs, resulting in a decrease in jobs, particularly low-skilled "back-office" jobs, in central cities, where poverty is most entrenched. With fewer manufacturing jobs remaining, low-income people are left to work in the second tier of the service sector. Unlike manufacturing jobs, these low-level service sector jobs tend to be nonunion, low-paid, and unstable. They are often part-time or temporary, and seldom come with benefits.

These economic changes have exacerbated the problem of persistent poverty and made the technology gap a more pressing issue. Addressing the digital divide is essential to ensuring that the entire range of workers can benefit from the opportunities the new economy provides. Chapter 6 takes up this issue in greater detail.

Sociopolitical rationale

The digital divide has implications that extend beyond the labor market. The sociopolitical argument for why the gap in access should be closed is that information is a public good to which everyone in society should have access.[37] IT is increasingly a gatekeeper to a whole range of information and resources that "serves to facilitate democratic decision-making, assists citizen participation in government, and contributes to the search for roughly egalitarian measures in the economy at large."[38]

Governments are increasingly going "online," creating more opportunities for citizens to participate in political and civic arenas and to obtain government information and services. No candidate is without a website used for the dissemination of information, and some cities

36 Wilson (1987, 1996).
37 Servon and Horrigan (1997).
38 Schiller (1996: 35).

and states have already experimented with electronic voting and with vetting public issues on the Internet. Unequal access precludes many low-income residents from civic engagement of this kind. For those who lack the technology or the skills to use it, the government presence online may create a wider gap than that which already exists.[39] And a widening gap between the "information rich" and the "information poor" puts our democratic institutions at risk.[40]

IT is also an important tool to strengthen social networks and participation in low-income communities. For example, the Welfare Law Center, founded in 1965, initiated its Low Income Networking and Communication (LINC) project in 1998 to use IT as a vehicle to bring low-income groups into the public debate over welfare policies. LINC has built a communications infrastructure to enable information sharing and collaboration among welfare reform advocates and in addition has created a technical assistance strategy to help low-income groups mount their own organizing efforts.

Further, IT provides the opportunity to bring together groups of users that share common interests but not necessarily physical proximity.[41] Online alliance building through the creation of "virtual communities" is particularly important given the increasing social and cultural heterogeneity among the poor, and thus, the difficulty for community activists to build support for their efforts by relying on spatially proximate constituencies.[42] Denied access to and appropriate skills for IT, low-income groups lack potentially powerful community-building tools and new means of interacting within and outside of their geographic communities. The technology gap reinforces existing patterns of social exclusion.

Technology can further act as a powerful tool to augment the work and extend the reach of community-building organizations (CBOs), most of which have not benefited from the IT revolution. Some have argued that the infiltration of IT into our society, in the form of teleworking, computer games, and Internet chat rooms, actually has the potential to increase social isolation. William Mitchell argues that "At the extreme, electronic management of face-to-face meetings can render some members of society literally invisible to others."[43]

39 Servon and Horrigan (1997: 65).
40 Doctor (1994: 10).
41 Anderson and Melchior (1995); Sanyal (2000).
42 Sanyal (2000).
43 Mitchell (1999b: 95).

Technology has certainly enabled a greater degree of selectivity over who we come into contact with and under what circumstances. But the belief that Internet use decreases social interaction has not been substantiated.[44] And technology also works very powerfully when it is used in a social way. High-tech corporations clearly understand this attribute of the tools they produce. For this reason, firms such as Netscape are housed in campus-like settings that contain fitness centers, restaurants, florist shops, and dry cleaners. The communal corporate environment enables learning, growth, creativity – and work – to occur around the clock.

Community technology centers (CTCs) and telecenters (a term that is used in other countries) have adopted this strategy of collective learning by creating communal spaces in which neighborhood residents can learn about and use IT. People often go to CTCs initially in order to obtain access. They continue to use the centers even after they own their own computers because of what they continue to learn there, and because of the people they have met.[45] Community technology centers are a new form of community institution.[46] Although some argue that ours is an age of declining social capital and the abandonment of many community institutions,[47] it is important to take note of burgeoning manifestations that arise out of the current economic and social reality; CTCs are thriving as places in which people gather, exchange ideas, and build relationships.

Explaining the Urban US Focus

Why focus this study of the digital divide on urban areas within the US? Can the lessons learned from this analysis be applied to other places? The digital divide most certainly affects rural areas as well as urban ones, as the following chapter will show. This book focuses on urban areas for the following reasons. First, over the past thirty years, persistent poverty has become an increasingly urban phenomenon. Second, the work of the community technology movement has been concentrated in urban areas.[48] Although rural issues and problems

44 Castells (2001).
45 Chow et al. (1998).
46 Gordo (2000).
47 Putnam (2000).
48 Important exceptions of early efforts, such as Big Sky Telegraph in Montana, exist.

differ from urban ones, many of the lessons and recommendations discussed in this book will be useful in rural areas as well.

The digital divide is also clearly a global issue, affecting both northern and southern countries. Economic globalization has caused every place to feel the effects of restructuring. High-tech manufacturing has been the fastest-growing area of world trade and now accounts for one-fifth of the total.[49] Technology is important not only to a nation's economic health but also to human development. A recent World Bank study shows that technical progress accounted for between 40 and 50 percent of mortality reductions between 1960 and 1990, making technology a more important source of gains than higher incomes or higher education.[50] The 2001 Human Development Report from the United Nations Development Programme report cites benefits for human development from technology in the areas of political participation, greater transparency in planning and transactions, increasing incomes, health, and agriculture.[51]

Different countries are dealing with new technologies in different ways. Existing economic arrangements, political systems, infrastructural conditions, and cultural issues will to some extent determine how each country confronts the technology gap issue. In the US, CTCs initiated at the grassroots level have emerged as the new institutions to address this issue; libraries and schools also play major roles. In Peru, informal economy businesses called cabinas públicas make a profit providing Internet services to the poor living in the shanty towns on the outskirts of Lima. The city of Parthenay, France has set up seven centers called *espaces numérisés*. UNESCO and the ITU have backed rural multipurpose community telecentres projects in Mozambique, Mali, Suriname, Honduras, Uganda, and South Africa.[52] Finland has made a tremendous commitment to ensuring equal access. And France has just announced a plan that will help to ensure that all citizens will have inexpensive Internet access within five years. The US is certainly not the only place to look for models. But despite the limits of and problems with US policy, the US has begun to deal with key aspects of the digital divide before many other countries have. In addition, the community technology movement is more advanced in the US than in many other places, and the experiences of this movement need to be lifted up and shared. A few cities, like Seattle, have

49 United Nations Development Programme (2001).
50 United Nations Development Programme (2001).
51 United Nations Development Programme (2001).
52 Cisler (1998).

traveled a long way up the learning curve and have begun to institutionalize their commitment to creating a technology literate citizenry.

All countries will face this issue soon enough. Recent research uses an "Information Society Index" (ISI) which ranks nations based on several criteria and weights per capita penetration rates heavily.[53] The theory behind the ISI ratings is that information and communications technology is available and accessible to all segments of the population. For these reasons, it is worthwhile to take a close look at the community and policy responses to these problems in the US, and to consider them as we think about how to confront the global technology gap.

Bridging the digital divide, even in the comprehensive way that this book recommends, will not get at the roots of the larger problem. There is no technological fix for the problems of inequality and persistent poverty. Providing low-income and low-asset groups with computers and Internet access will not solve these problems nor will it magically level the social and spatial inequalities that currently characterize our regions.

Why then place so much emphasis on this issue and on community technology centers? Given that resources to solve these problems are not unlimited, is it not better to use what we have to purchase more direct relief from poverty? Framing the issue this way, as a choice between immediate needs and potentially productive assets, is harmful. Doing so sets up a false dichotomy that implies that we must make a choice. Persistent poverty is a problem of lack of access to a range critical resources. Solving the problem of persistent poverty and inequality, then, requires that we satisfy both types of needs – immediate and long term.

Programs that confront the technology gap provide the kind of resources that have historically been missing from poverty policy. With the exception of a very few, small-scale and inconsistently supported programs such as microenterprise development, individual development accounts, and higher education programs, poverty policy in the US has concentrated on what I call "first-order resources". First-order resources are those that could be thought of at the base of Maslow's hierarchy of needs. The bottom two tiers of Maslow's hierarchy consist of physiological needs and safety needs. Poverty policy has focused on these, and some would argue that it has not done a great job at that. These resources consist of things like food, shelter,

53 Bruno, 2001. Sweden ranks first; the US fourth.

and clothing that enable people to survive from one day to the next. These first-order resources do not include the tools that the persistent poor need to exit poverty, to shift from a survival mentality to a mindset that enables making long-range plans.

Perhaps this recognition should not be surprising, given that poverty policy in the US has not historically emphasized moving people out of poverty. In the early days, it functioned to take care of groups of people, such as widows, who presumably could not take care of themselves.[54] The War on Poverty and Great Society programs successfully lifted some groups, such as seniors, out of poverty. The thrust of the Aid for Families with Dependent Children (AFDC) program, however, was to provide people with enough to get by, but too little to escape their survival mode. Benefits did not increase at the same rate as inflation, and few AFDC families could make ends meet on welfare alone.[55] Since welfare reform legislation was passed in 1996, poverty policy has been conceived of as temporary assistance to help people get through difficult times. The focus of this new era of poverty policy, the core of which is Temporary Assistance for Needy Families (TANF), is to get people off of welfare and into work. For most, that means moving from dependence on inadequate benefits to working poverty. Neither low-wage work nor public assistance is sufficient to support the vast majority of households comprising single mothers with children.[56] TANF imposes time limits that do not take into account the realities of people's live, the vicissitudes of the economy, the impossibility of providing for a family on minimum wage, or the time it takes to require the tools and support needed to move into the workforce. The only bright spot in welfare reform is that it does allow states to experiment with new ways of preparing people for work. Some states have approached welfare reform by providing public assistance with the more comprehensive kinds of support that are needed to move off of welfare in a stable way.

Moving large numbers of people out of poverty will require policy that couples provision of an expanded set of first-order resources with a set of second-order resources geared toward moving people out of poverty, not only off public assistance. Second-order resources have to do with people's ability to accumulate assets, broadly defined, that help them to exit poverty and remain out of poverty. These resources

54 Skocpol (1995).
55 Edin and Lein (1997).
56 Edin and Lein (1997).

Table 1.2 First- and second-order resources

First-order resources	*Second-order resources*
Food	Post-secondary education
Clothing	Economic literacy
Shelter	Information technology
Housing	Ability to accumulate assets
Primary and secondary education	Soft skills
Healthcare	
Childcare	

include economic literacy, post-secondary education, opportunities to save, and the ability to access and use information technology. Poverty policy in the US has done a poor job of providing some first-order resources – such as quality healthcare, childcare, and primary and secondary education – that are necessary for day-to-day existence. And it has never included second-order resources that truly light the way out. Table 1.2 illustrates first- and second-order resources.

Some have argued that it is frivolous to provide the poor with access to IT before these other needs are met. During a series of remarks in the summer of 2000, Bill Gates told audiences that he had decided to focus the work of his foundation more on children's healthcare issues than on the digital divide, citing the former as a more pressing need. I am by no means arguing that poor children should have computers before receiving inoculations against disease. At the same time, ignoring the "second-order" resources means that we will forever be ensuring that poor people have what they need to survive, but will never be able to get ahead. Resources such as IT can function as ladders with which people can exit poverty.[57]

Second-order resources are important because they create opportunities and enable behavior that allows people to climb the ladder out of poverty. They allow for the creation of networks, nest eggs, and safety nets that buffer people and families during the difficult times that all families encounter.[58] Unless poverty policy incorporates second-order resources, it treats the symptoms of the problem without ever getting at its causes.

57 This concept of the "ladder out" derives from Friedman (1988).
58 Oliver and Shapiro (1997: 7).

This book takes a close look at one rung of the ladder out – information technology. IT is a critical resource because it enables full participation in our current society. The skills necessary to work, prosper, and participate in current society are intrinsically bound up with the ability to use information technology tools.

The research presented in this book shows that, although gaps in access to IT have begun to close and will likely continue to do so, deeper and more firmly entrenched gaps remain in terms of what kind of access, training, and content are available for specific groups. Using a computer at school or at work is insufficient. We need to do more to close the gap between those who are using IT tools in sophisticated ways and those who have access but little or no instruction.

On an individual and community-level basis, CTCs are functioning as ladders out of poverty. These locally rooted social experiments employ IT in ways that connect disenfranchised people and communities to the opportunities offered by the information society. In innumerable places, they have demonstrated an ability to operate as effective hooks, drawing people in with technology and then teaching them new ways to think and participate.

The examples of innovative community-based programs discussed throughout this book demonstrate that IT is a tool, not an end in itself. Policy interventions must therefore be geared toward exploiting the potential of IT as a tool to break down historic divides that fall out along the lines of race, gender, and socioeconomic status. If this goal, rather than pure access, drives policy, then social change is possible.

The point is not that technology is the answer, but that it is a critical resource – one of many. Without it, the persistent poor will have one more obstacle to overcome in order to compete for jobs and for policy that reflects their needs and desires. IT tools enable greater civic participation, provide the key to better-paying jobs, and create the conditions for more engaging communication and the formation of networks.

The problems of poverty and inequality are complex, and the forces that combine to create them multiple. Access to IT must be supported as part of a much larger effort to address these historic and deeply entrenched problems. In addition, any effort to use IT as an intervention into these problems, however, must derive from a deep understanding of the complex nature of US poverty and of the specific communities in which the intervention is being undertaken. If low-income populations are to benefit at all from the emergent

information revolution they must first participate in it.[59] Ensuring universal access, and coupling it with appropriate training and relevant content, is the first step toward enabling all people to benefit from the information society. Technology is a tool. It has the potential to provide people with skills and information that they can use to move beyond a focus on day-to-day survival. But it is the means, not the end. Without creative and purposive application, it accomplishes little.

Organization of the Book

The book begins with a close look at the digital divide. Having established the reasons for intervention in this chapter, chapter 2 takes a step back to examine closely the parameters of the technology gap. This chapter demonstrates that the digital divide is a dynamic problem and that there is not one divide, but many. Chapter 3 lays out the history of the community technology movement, introducing a typology of community technology programs and exploring the relationship between CTCs and traditional CBOs, and discussing the lessons learned and challenges faced by CTCs. Chapter 4 establishes the policy context by examining public sector efforts to mitigate the digital divide on the federal, state, and local levels. This chapter shows that current policy remains limited, fragmented, and unstable.

Chapters 5 through 8 move to the level of specific communities and particular areas in which community technology has begun to function as a ladder out of poverty. Chapter 5 focuses on CTCs that target youth and explores how organizations that serve low-income youth have exposed children to the opportunities available through IT – providing them with the future orientation to go to college and the skills to obtain good jobs. Chapter 6 examines the IT labor shortage and investigates how community-based IT training programs are moving disadvantaged workers from unemployment or working poverty to earning family wages with less than two years of training. Chapter 7 shows how information technology can be employed to strengthen and extend the existing community development infrastructure, helping resource-thin organizations do a better job of leveraging funding dollars and reaching greater numbers of constituents. Chapter 8 synthesizes key analytical lessons from the preceding chapters and employs Seattle as a case study of the city that has come

59 Sanyal and Schön (1999).

closest to comprehensively addressing the technology gap. Chapter 9 concludes the book with a broader argument about the role IT can play in alleviating persistent poverty.

This book moves beyond documentation of the technology gap to a broader and more fine-grained understanding of the problem and of potential solutions. It illustrates a range of efforts emerging form the federal, state, local, corporate, philanthropic, and private nonprofit arenas that show some promise in terms of dealing with this problem. It is my hope that shining a light on these relatively small initiatives will help to generate momentum and support for the critical task of bridging the digital divide.