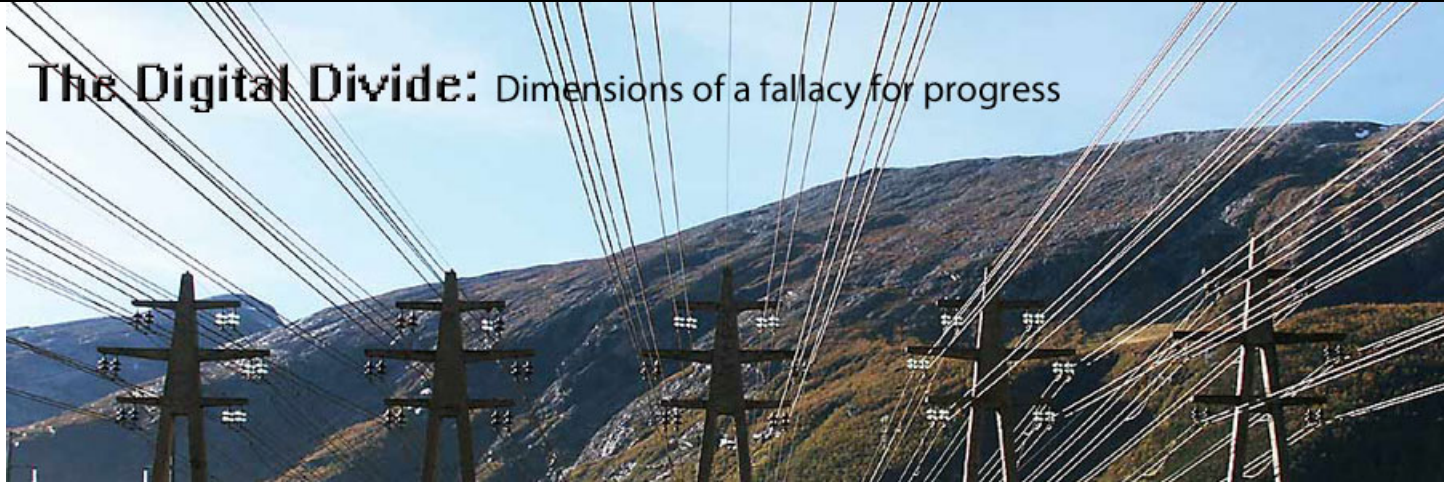


The Digital Divide: Dimensions of a fallacy for progress



Daniel Stringer
Term Paper
EE 391
Prof: Bruce Lusignan

TABLE OF CONTENTS

Introduction	1
<i>Theories of Division in a fledgling IT Society</i>	1
<i>Definitions</i>	2
I. Quantifying Divisions	3
<i>Divisions among Income Levels</i>	3
<i>Racial Divisions</i>	3
<i>Regional Divisions</i>	4
<i>Connected Divisions</i>	4
II. Beyond Quantitative Terms	5
<i>Ways of Looking at the Digital Divide</i>	5
<i>Digital Divide Manifest</i>	7
III. Techno-Economic Division	8
IV. Divided in Education	11
V. Divided Politically	13
VI. From Problems to Promise	16
<i>Theories for Closing the Divide Overall</i>	16
<i>Economic Programs that Address the Divide</i>	17
<i>Educational Programs that Address the Divide</i>	20
<i>Politically Focused Programs that Address the Divide</i>	23
VII. Open Opportunities for Progress through IT	24
<i>Unmet Needs for Economic Development</i>	25
<i>Enhancing Learning with IT</i>	26
<i>Technology Outreach for Political Participation</i>	26
Conclusion: Divided on the Divide	27
<i>What, Who, How, Where</i>	27
<i>Divide vs. Development</i>	28
<i>Goal Oriented Technology Initiatives</i>	30
Bibliography	31

"Accompanying [the "digital revolution"] are startling reallocations of social position and wealth, unexpected changes in local, regional, and even national labor markets, and accelerated concentrations of political, economic, cultural, and social influence" - Gurstein, Michael (Marshall, Taylor, and Yu. 2003)

Introduction

Theories of Division in a fledgling IT Society

Studying at Stanford University, among some of the worlds technological and intellectual elite, it is not uncommon to find students who cannot fathom life without the Internet. I was once privy to a conversation where one student refused to believe that there were individuals in the United States who neither had access to the Internet at home, not had access at a nearby library.

This student's paradigm was similar to what many Americans believed about personal computers and other information technologies during the early to mid 1990s. However, our nation was shocked in 1994 upon the release of "Falling Through the Net", a report of the proliferation of information technology (IT) in the US. The report revealed that while much of America was starting to experience the wonders of personal computing, there was a sizeable population of minority, rural, and low-income Americans that were failing to join the nations' IT revolution.

A follow-up study in 1999 highlighted similar patterns in internet adoption and use: African-American, Hispanic, rural, and poor Americans were not with mainstream America in investing in IT.

Futurists, technologists, and policymakers, starting in the mid-1980s, theorized about the benefits that IT could bring to society (Barlow. February 1996). As the way that the internet came to be used led to the realization of some of those dreams, another body of scholars, activists, and community leaders began to worry that trends in unequal IT adoption would bring consequences for certain populations. As more of America began to work, shop, connect, and express online, concern about those that were not participating in the trend of increased IT usage, those identified in the 1994 and 1999 *Falling through the Net* studies, grew.

Out of this rose the modern study of the "Digital Divide" – the concept of a gap in benefit from IT that exists between more and less privileged individuals in our society. Over the last decade, there have been a small but dedicated group who have developed the idea of the divide, engaged in discourse about its changing nature, and produced suggests for how to bridge gaps that may exist.

Few challenge the fact that when studies were done in the mid 1990s that poor individuals and minorities did not own computers or have access to the internet at the rate of higher income individuals or White Americans. However, as study of the digital divide has grown, more debate has risen about the persistence of such divisions in ownership, real importance of raising awareness about these differences, and the wisdom of policies that seek to increase IT proliferation. This report examines paradigms on the digital divide, and attempts to map them onto the practical ways in which IT is being used. Predominant conceptualizations of the divide do not always fit well with practical IT use, which calls into question the contemporary existence of the divide as it once was.

Definitions

Part of the controversy over the existence and nature of the digital divide is a result of ambiguous terminology in discourse on the topic. These terms will be used throughout this work, with the following meanings:

The Digital Divide: a perceived inequality in access to, distribution, and use of information technology between two or more populations (KCB336 New Media Technologies.)

Information Technology (IT): the branch of technology concerned with the dissemination, processing, and storage of information (Oxford English Dictionary Online). Here, it primarily refers to use of personal computers and/or the Internet

Low-Income: Persons living in households or with incomes close to or below the poverty line as set in 2002. For most, this would be living in a family unit where income was at or below \$30,000 per year.

Disadvantaged: Typically, this term refers to individuals, due to internal or external pressures, may not take advantage of the benefits of a certain product, service, or circumstance

NTIA: National Telecommunication and Information Administration

I. Quantifying Divisions

Although the Digital Divide is a more complex problem than can be understood in simply quantitative terms, it is illustrative of a key aspect of this phenomenon to examine the disparities in ownership of information technology hardware, software, and services among different populations.

Divisions among Income Levels

It is interesting to note that access to the internet at non-home locations varies only by approximately 16% among all income ranges surveyed, ranging from 12% for households with incomes of less than \$5,000/year to just over 28% for households with incomes over \$75,000/yr. However, there is a considerably larger disparity for in-home internet access: from 6.5% for lowest income households to over 47% for higher income households. Overall, this results in a difference of 49% in internet access among income ranges from \$5,000 to \$75,000. On average, only 14.1% of households below the poverty level (represented by an income of approximately \$16,000 for a four person household in 1998) had internet access (U.S. Department of Commerce - NTIA. 1999).

These figures have, most likely, changed considerably since this survey was completed. It is likely that internet access, outside the home for all populations, and perhaps inside the home for more wealthy populations, has increased. So, the outlook may be better from the standpoint of the pure number of individuals with internet access.

However, more recent surveys suggest that the divide in internet access persists between people of different income levels. Furthermore, if the higher income group were further differentiated, trends in this and other studies suggest that for income levels above \$150,000, internet access would be near ubiquitous at 86% (U.S. Department of Commerce - NTIA. September 2004). Understanding these facts is critical to being able to grasp the full nature of the void created by the digital divide.

Racial Divisions

Divisions among racial groups add to the socio-economic makeup of the digital divide. Whites and Asian/Pacific Islanders have the highest level of internet access, with 64.1% recording being an internet user. In contrast, 45% of African-Americans surveyed indicated that they were internet users, as did 37% of Hispanics (U.S. Department of Commerce - NTIA. September 2004).

Regional Divisions

Finally, there is a regional component to this phenomenon. States in the Northeast and West, in general, see the highest levels of internet use (above 61% for a lower bound), while States in the South see the lowest levels of internet usage, with Mississippi notably hosting a usage level of 39.7% (U.S. Department of Commerce - NTIA. September 2004).

Connected Divisions

These factors are interconnected. When this survey was conducted, African-American's income was roughly 61% that of Whites; their internet usage was roughly 71% that of Whites. Hispanics' income was 67% that of Whites, and Hispanic internet usage was 58% that of Whites (U.S. Department of Commerce - NTIA. September 2004).

Likewise, with states, we see comparable trends. The states with the wealthiest residents see the highest internet usage, while states with less wealthy residents see lower internet usage:

State	Average Resident Income (in thousands)	Internet Usage (% - Lower Bound)
New Hampshire	57.3	68.2
Maryland	56.7	62.8
Alaska	54.6	69.3
Louisiana	35.5	47.1
Arkansas	33.9	47.1
Mississippi	33.7	39.7

Derived from data in Falling Through the Net, 2004

The Internet Usage/Income percentages are relatively similar for all states. The staunch contrast between the states with highest and lowest Internet utilization seems to correlate with income. Lisa Servon emphasizes this point by linking access to capital and access to information: "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" (Servon. 2002: 9).

II. Beyond Quantitative Terms

Ways of Looking at the Digital Divide

The Digital Divide as such may be presented in strictly quantitative terms. However, handling of material strictly quantitatively fails to capture the truly complex and multifaceted nature of the divide itself. We must ask “access to what, for what, where, how, for whom, when, and why?” (Gordo. 2000). As with any other technology, information technology is simply a tool whose uses are shaped by the cultural, social, and political forces working in a given environment (McGinn. 1991).

Programs have been implemented that put computer hardware and software into the hands of individuals that would normally not be able to afford them or otherwise access them (Servon. 2002). However, mainstream America, commerce agents, social activists, educational entrepreneurs, are using IT as a means to help their respective areas develop. Hence, *the extent of use of information technology as a means to develop, achieve, and thrive* may be seen as the measures for the digital divide. Giving a middle school student a laptop with internet access does not equate to facilitating that child’s ability to do research for a term paper as well as her classmates. Taking a senior citizen to a library so that they may use public computers does not equate to helping them find prescription drug information from a drug database. Scholars have created various typologies that define the difference in access to the benefits of new information technology by answering the questions of who the individuals on either side of the divide are, how they got there, why are they there, and what can be done to close the divide.

Blaca Gordo, one of the first to write about the divide as if it were a multifaceted phenomenon, defines the digital divide as “the divide between those individuals and places that have the opportunity to participate, compete, and prosper in an increasingly information and knowledge-based economy and society and those who do not” (Gordo. 2000). Her approach to the divide distinguishes the digitally deprived as those who do not have the resources or skills necessary to benefit from new information technologies. For the digitally deprived, interventions need to be made which create opportunities for their communities to grow economically and socially: individuals in these areas need to be able to manipulate technology to receive information, synthesize that information to create knowledge, and use that knowledge to meet objectives. Providing material computer resources is a part of this effort, but so is education and training.

This type of approach to addressing the digital divide is supported by research on how education affects internet usage. Robinson, Dimaggio, and Hargittai demonstrate that

what the internet is used for varies among individuals of different educational status who have internet access in their homes. Those who had completed more levels of education tended to use the internet more for “long term uses related to enhanced life chances via work, education, health, or political participation” (Robinson. 2003: 1).

Pippa Norris has observed the divide as a phenomenon which effects societies internally, and creates international distinctions. She recognizes three facets of the digital divide. The “Global Divide” recognizes that there is a staunch difference between access to information technology in developed and developing countries. The “Social Divide” focuses more on who does and does not have access to information as a result of information technologies within societies. Her last dimension, the “Democratic Divide” “signifies the difference between those who do, and do not, use the panoply of digital resources to engage, mobilize and participate in public life” (Norris. 2001: 10).

Lisa Servon, one of the mostly widely published Digital Divide scholars, created a three part definition that has become a basis for the community technology movement that now seeks to close the divide. Servon recognizes that access, being able to physically reach resources such as

Norris' Digital Divide
<ul style="list-style-type: none"> • Global Divide • Social Divide • Democratic Divide
Servon's Digital Divide
<ul style="list-style-type: none"> • Access • Training • Content

computer hardware, software, and communication networks, is a fundamental basis of a paradigm for viewing the digital divide. This component is where the brunt of policy efforts to eliminate the divide were focused after *Falling Through the Net* was published. However Servon identifies training to use IT as another key area that is critical to look at when thinking about the digital divide. The need for such training appears particularly acutely in schools, where significant strides have been made in placing computers and internet access into classrooms, but where these resources fail to be used because teachers are not trained to use them appropriately (Cuban, Kirkpatrick, and Peck. 2002; Servon. 2002). The last element of Servon’s digital divide paradigm is content. Once groups overcome barriers to accessing computers and understanding how to use them to acquire information, there is the reality that there is little content tailored to marginalized communities. So, after overcoming hurdles to get to the “promised land” of unlimited information exchange, these communities find that very little of the information is meant for their consumption. Servon believes that training is key to enabling these individuals to create content, but that great strides need to be made once training occurs to create content and disseminate it among the communities that could benefit from it.

Digital Divide Manifest

While these approaches differ in their nuances, they all recognize the digital divide as requiring a multi-tiered approach to understand on a theoretical level. The digital divide is not just a matter of some people having computers with internet, and others not.

Using these theories as background, the digital divide should be examined on a practical level. Just as the divide may be defined comprehensively, so may we observe its real-life manifestations by looking at different segments of human experience.

While there is much theory about the many faces of the divide, it is reasonable to ask whether this phenomenon is really as detrimental as claimed, and if so, in what ways. There are those that suggested that the Internet would lead mainstream society to do everything online, allow us to live in alternate realities, and a host of other fantastic revelations (Barlow. February 1996). Some predictions have come to pass, many have not. There are therefore those that suggest that the current "Internet Hype" is overblown. Clearly, the zeal with which American high-technology investors funneled money into Internet startup companies during the late 1990s proved misguided.

Why then, should we believe those that claim that new information technology is the key to development in disadvantaged communities? The success of e-commerce, and other initiatives for bringing elements of financial and social exchange online, attest to the fact that individuals, particularly those in traditionally disenfranchised communities, stand to gain much from access to the opportunities for job growth, education, and communicating available through access to the spectrum of today's information technologies. Because of the ability to provide an interactive, online curriculum, Cisco Systems hosts a program that trains high school students to be system network administrators – position that are highly sought after and that pay well. Community forums such as Craigslist.org allow community members to post and view classified ads for free, thereby reducing potentially substantial middle-man costs for expensive products such as used cars or real estate.

Lacking access to contemporary information technology is more than simply an inconvenience resulting in the need to send letters as opposed to e-mail, shop at stores as opposed to shop online, etc. Obstacles to accessing information technology amount to barriers in taking advantage of the driving forces of innovation, expression, and convenience in the modern age. Approaching the growth of contemporary information technology from an economic perspective, Michael Gurstein compares the ensuing "digital revolution" to the Industrial Revolution (Marshall, Taylor, and Yu. 2003). Just as the Industrial Revolution ushered in a new age of global consumerism, demanded a population

of workers with a new skill set, and forced a shift in existing systems of supply and demand, so too does the growth of commerce and socialization via the internet portend a revolution in existing economic, social, and political landscapes.

As more of America's service infrastructure moves online, the digital divide stands as a problem that may touch every aspect of an individual's life. In the first part of this piece, I take a comprehensive look at three areas which are most impacted by the digital divide: economic, educational, and political activity and status. This is not meant to be exhaustive; it is meant to highlight some of the key areas in which ubiquitous information technology is causing shifts in the way that we live, thereby pinpointing places that anti-divide advocates should focus on to prevent greater marginalization of the digitally deprived. I then observe initiatives aimed at closing the divide in critical areas, analyzing the elements that make them successful. The conclusion deals with areas that are not currently being addressed, and proposes initiatives that by serve to close the divide in these areas.

III. Techno-Economic Division

As the digital divide is closely linked to economics, it is not surprising that much literature on the divide focuses on economic status. Just as the divide in IT access, education, and content separates the rich from the poor, it also increasingly stands to restrict certain populations from access to jobs within the "new", IT based, economy; keep these populations from benefiting from economically advantageous transaction and interactions in virtual space; and limit the creation of inter and intra community development for economic growth.

The development of the modern computer and the internet owe much to commerce: early recognition of the commercial applications for both of these tools lead to an influx of resources for their development (Lessig. 1999; Marshall, Taylor, and Yu. 2003). Perhaps the most visible outgrowth of this investment is the modern American "high-tech" industry. High-tech enterprises, which specialize in manufacturing or service vending related to modern communications, biological, information, and nano technologies have risen to become major contributors to the American market place. As a group, the business generated by these companies accounted for twenty-five percent of economic growth in the US from 1996 to 1999 (Servon. 2002). Furthermore, by 1999, jobs in information technology fields paid seventy-eight percent more than the average job. Work in the high-

tech industry, even after the economic shortfalls that occurred during the late 1990s, stands as an opportunity for notable economic gain and independence.

On a larger scale, commerce, the labor market, and the information technologies that they use have developed concurrently. As a result, IT has become a foundation of the American workplace in general, not just within high-technology industries. In 2001, 9 million out of 10 million IT position vacancies were in non-IT industries (Servon. 2002). Prior to this time, in 1999, it was estimated that half of entry-level positions for individuals who had not graduated from college involved computer use (Information Technology Association of America.). And, on an institutional level, America's shift from a manufacturing to service based economy means a diminution in the quality of low skilled job available: whereas low-skilled manufacturing jobs once provided moderate to high wages and a high level of job security, similarly low skilled positions in the service industry tend to pay poorly and be significantly less secure (Servon. 2002).

As a result of the increasing dependency of many job roles on a high level of fluency with IT, IT skills and access will stand as a divisive force in the job market, and therefore in economic status. It is estimated that by the end of this year, half of US workers will be employed in industries that either produce or intensely use IT (U.S. Department of Labor. 1999). The spread of IT to all areas of the American economy acts to constrain the positions that those who do not have skills in the use of IT to a smaller, more poorly paying sphere of opportunity. Given that people who already have a lack of access to resources are those most adversely affected by this phenomenon, there appears a cyclical relationship between existing economic poverty, resulting in an inability to acquire an understanding of the technologies ubiquitous in jobs that would place individuals above the poverty line, and which results in later acquisition of poorly paying jobs.

Access to IT further allows users to take advantage of economically beneficial transactions and interactions that may occur because of the enhanced ability of producers to link directly to consumers. Online shopping is one of the primary ways that people benefit from this ability to connect: purchasing goods online often provides greater freedom in making purchases (Wolfenbarger. 2001) and may offer better pricing (Brynjolfsson. 2000) than conventional retail shopping. By 1999, over 100 million Americans had taken advantage of this capability, and online shopping rates have grown considerably since that time (Weissbourd. June 2002). Being excluded from online exchange markets for items such as clothing, entertainment, and other consumer goods stands as a possible arena for stratification of disadvantaged classes.

There are also more significant economic considerations involved. African-Americans, a group that among all socio-economic ranges sees lower rates of internet and computer access, use the internet more than average for tasks including searching for information about employment and housing (Servon. 2002). If indeed individuals are able to make more informed, and more lucrative, work and housing decisions based on access to the virtual space of information that exists about these opportunities, then barriers to reaching these resources stand as barriers to key elements of financial stability. Initiating participation in a suboptimal employment arrangement or housing arrangement has the potential of having long term negative financial consequences. Hence, access to and education about online job and housing resources may be one critical area for intervention.

The Brookings Institution has further identified that IT has the potential of facilitating interactions between financial service companies and low-income communities where those connections have failed to materialize in the past. In the past, financial services companies have focused on high income brackets because of a host of reasons including feasibility, limited resources, and misconceptions about the desirability of low-income populations as clients (Weissbourd. June 2002). However, with the proliferation of IT in banking, there is now a greater possibility of efficiently and effectively deploying services to low-income communities, and developing products tailored for these populations. However, the promise of gaining access to financial services from banks, which may be less predatory and more secure than providers such as convenient stores and check-to-cash locations, has been curtailed by elements of the divide. Among the factors stalling the expansion of these services to low-income communities include low computer literacy levels, the expense of access to mediums of data exchange such as the internet, and a lack of content created specifically for low income communities (Weissbourd. June 2002).

On a community level, the digital divide may affect economic development indirectly. Even though companies may use information technology to distribute operations over a distance, most companies, both IT and non-IT, have some sort of regional grounding. Many high-tech companies find it beneficial to be based in Silicon Valley, despite high operation costs, because of the availability of labor in the area (Servon. 2002). Intel, for example, lists educated workforce as a critical component of any area it looks at for a new branch location. Large companies may act as a draw to other smaller business, and may serve to begin a process of growth or revitalization for the communities in which they are based. Communities whose members have a very low level of talent fail to attract businesses that require even the lowest levels of technical know-how; given the prevalence of such positions, we once again see a cyclical relationship where a community's existing economic

poverty results in an information poverty, which, because of the need of IT savvy workers in the new economy, leads to a inability to attract new capital investment, and ends in further economic stagnation.

IV. Divided in Education

There is also a very real educational component to the digital divide. The effective application of information technology has potential benefits for opening educational avenues by providing an inexpensive and vast space for the exchange of ideas. Yet, there is a significant population of students for whom the information technology that could be so critical in opening up avenues for learning and information exchange remains unrealized. In 1999, William Kennard, head of the Federal Communications Commission, cited that “78 percent of [wealthier] schools have Internet access – but only half of the schools in low-income areas have access” (Kennard. May 1998). This is a trend that has persisted from the mid 1980s, and those strides have been made in closing the divide in this sphere, there is still a notable gap (Gordo. 2000). In addition to lacking hardware, many lower income schools do not have software or curriculum to properly use technological resources that exist in classrooms, nor do they have teachers adequately trained in the use of technology for educational purposes (Cuban, Kirkpatrick, and Peck. 2002). The educational digital divide hinders disadvantaged students in a number of critical areas: the completion of tasks for day to day assignments, preparation for standardized tests, acquisition of high-level material, and job preparedness in the new information economy.

The use of computers, and more recently computers with the internet, has made methods of learning common before the widespread growth of computer technology more efficient and has helped these methods to encompass a larger body of knowledge. Students who have access to computers to write find that modern word processors streamline composing and editing tasks. Spreadsheets, and other computer aided mathematical tools, make data manipulation much easier than working on paper would be. Students doing research, from the most elementary to the most complex, have access to an entire universe of information sources that convey different perspectives on similar issues. A 2000 study by the Department of Education found that when teachers assigned students technology related work, the most common types of work assigned included “word processing/spreadsheets, Internet research, solving problems/analyzing data, and drills” (U.S. Department of Education. December 2000).

With increased state government demands for accountability during the late 1990s, and the later implementation of the national No Child Left Behind Act, American public schools have seen an increase in standardized tests. Aside from the politics of this issue, the need to pass these tests is a real issue for students, particularly those in high school. Multiple studies have demonstrated the successful use of IT in the classroom to assist in raising the success rates of students on standardized tests. In West Virginia, a study of the state's "Basic Skills/Computer Education" program showed that participating students' math, reading, and writing skills were improved, and that 11% of improvements on standardized tests were attributable to the program. Also key is that this program was found to be a relatively low cost intervention method (U.S. Department of Education. December 2000).

With more than simply baseline achievement as a concern, lacking technology in the classroom also restricts students from access to a resource that may help them to excel in their learning environment. A 1998 study by the Educational Testing service demonstrated that using technology to teach higher-order thinking skills resulted in a .42 increase in grade level for elementary school students (U.S. Department of Education. December 2000). Another study by the Center for Applied Special Technology saw technology as assisting students in critical thinking and information synthesizing. Furthermore, the Dept. of Ed's E-learning report describes the promise for using technology to convey challenging concepts: "For many students, the lack of visual representation of many higher-order concepts makes learning them difficult. In this regard, teachers have been limited in what they can teach by the tools to which they have access. New technologies allow teachers to teach complex ideas and address intellectual challenges more easily" (U.S. Department of Education. December 2000).

Perhaps the greatest educational disadvantage for students suffering from the digital divide presents itself in a lack of preparedness for the modern economy, which is characterized by "globalization and information reliance" (Servon. 2002). The job market is increasingly in need of individuals with IT skills; not just in the IT industry, but across sectors (Servon. 2002). Furthermore, the jobs that demand these skills tend to pay higher than other, lower skill positions (Kennard. May 1998). Using information technology for normal tasks is one way that students develop critical IT skills. Therefore a lack of this technology in the class, or an ostensible absence of use, may result in a divide that persists beyond grade school years. Taking into account the economics of IT access in education, we have the potential to see a cycle of lower income students being shut out of higher

paying jobs as a result of skill sets they could not acquire in their under-resourced school setting.

V. Divided Politically

"A nation comes closest to achieving true democracy when all its citizens have access to information about their government, the knowledge to imagine new possibilities, and the opportunity to participate in political discourse." - (Compaine. 2001: 225)

An area that the digital divide affects that has received less attention is in politics and governance. The internet has been lauded as being a potential means for enriching American democracy through opening channels of communication across bureaucracies. However, it remains to be seen whether the internet's affordances assist low income communities to participate fully in democracy as well as others

The access to information from distributed sources provided by the Internet presents an opportunity particularly well suited for participation in the political process: politics is built upon discourse from a wide spectrum of pundits who bring their different messages to the masses.

One characteristic of the internet that matches well with this discourse is its facilitation of "many to many" communication (Servon. 2002). Unlike radio and television, which take messages from a relatively small number of content providers and broadcast those messages to a wide audience, Internet media carries to wide audiences messages from a virtually anyone interested in posting content. An example of this is the contemporary political blog movement. Weblogs, or "Blogs", are easily crafted websites based on templates which authors use to publish material based on a variety of topics. Because "blog" software is focused on making the internet publishing process easy, and blog search engines exist to direct audiences to blogs with certain content, blogs stand as a way for individuals with little technical expertise to carry their writings to interested readers worldwide. Political weblogs that deal with contemporary issues of importances have become extremely popular as the blogging movement has grown.

Two examples of popular political weblogs include:

- *Back to Iraq*: This blog is written by a former New York Times and Associated Press correspondent who has returned repeatedly to Iraq since America declared war on

the country in March of 2003. Christopher Albritton, the blog's author, has received \$15,000 from readers to help him continue his efforts. (<http://www.back-to-iraq.com>)

- *Talking Points Memo*: This blog, authored by Joshua Marshall, provides commentary on contemporary politics. It registers over 500,000 visitors a month. (<http://www.talkingpointsmemo.com/>)

Through blog services, a number of which are free of charge, individuals may take advantage of the many to many opportunity that the internet, in theory, provides. Being shut out of access to internet, because of economic or other circumstances, equates to lack access to this sphere of open discussion.

The internet is also enabling e-privileged individuals who would normally not have access to government representatives to communicate more directly and effectively. During Howard Dean's 2004 electoral campaign, the presidential hopeful set up an "Ask the Dean Campaign" message board that allowed anyone who cared to access the site to express comments, questions, and concerns to the campaign group. Ultimately, over 400 Internet users took advantage of the opportunity to connect with Dean and his supporters.

Note that this type of outreach, while it seemingly has the potential to reach a broad audience, is targeted particularly to technologically savvy individuals. Not only does it assume internet access, but also a familiarity with certain channels of online political discourse and an ability to use online message boards. Dean's message thread was hosted on a liberal website, which conveys a ostensible political bias. This method of connection is employed across the political spectrum for people with different political affiliations. However, it is not being replicated across levels of IT access. Similarly, congressional representatives actually discourage constituents from sending physical mail, en lieu of e-mail or faxes, because of safety concerns. The new connection to political leaders is built upon digital networks. Just as elite influence pushers use economics to gain access to these leaders, those with the economic and intellectual currency that is valued online may now speak to these representatives. Yet, even in this new era, the poor who were previously excluded remain marginalized (Sifry. 2004).

The ability to network is one of the affordances that makes the internet so powerful as a force for social change; as an element of this, large groups of individuals are beginning to harness this power to affect the political process. Through fast and efficient transfer of ideas and money, political organizations have greater dexterity to address issues and promote agendas. MoveOn.org received considerable attention during the 2004 Presidential

campaign due to its success in mobilizing large numbers of individuals to support issues. Using online forums, e-mail distribution networks, and e-fund transfer processes, MoveOn.org solicited small contributions from over 2.8 million people, and received guidance from these users about which issues these funds should be used to advocate for (Sifry. 2004). MoveOn.org also raises awareness about certain political issues, and creates channels for individuals to contact their representatives to voice concerns. All of this works toward MoveOn.org's mission of "[bringing] real Americans back into the political process"

(MoveOn.org. 2006).

For a full explanation of this issue, click here: http://civic.moveon.org/mediaaction/alerts/Stop_AOL_email_scheme.html

1 Speak Out
A compiled petition with your individual comment will be presented to America Online when you click the button below.

Your Name

E-mail

Your Street Address

City State Zip

Your message to America Online: (optional)

(see [privacy policy](#) below)

2 Tell Others
This campaign is based solely on word of mouth. It is **CRUCIAL** that you tell others. To transmit a brief letter to your e-mail circle, just press:

3 Contribute
Donate: Can you make a [financial contribution](#) to support this campaign?

MoveOn.org Interface 1

Though MoveOn.org's processes may represent an innovative means of encouraging political participation, their glaring omission of the digitally disenfranchised in their efforts to enable "all Americans" reveals a type of oversight common to digital political movements. Though MoveOn.org's rhetoric and motives may be egalitarian,

their means are based on a digital elitism that leaves many real Americans behind.

Another way that networking is being used to expand the way that individuals participate in the political process is by facilitating the development of non-virtual affinity groups. Meetup.com, a website which connects groups of individuals with similar interests, facilitated the connection of over 400,000 people for political meetings during the 2004 electoral season (Sifry. 2004). With the lines between virtual and non-virtual relationships blurring, increasingly an inability of individuals to connect online will influence their non-virtual political actions.

Politics revolves around individuals' ability to communicate with one another, and to policy makers. There has long been a tradition of those with the most economic and social resources being the ones with greater abilities to convey messages to the public and connect with policy leaders. Various organizations and individuals have devised innovative ways to expand spheres of influence to include individuals once left out using IT. However,

while these organizations often tout their goals of providing greater inclusiveness into the political process, they almost entirely ignore the fact that the many who have been traditionally shut out of the political decision making process because of socio-economic barriers, will continue to be shut out of the digitized means of inclusion.

VI. From Problems to Promise

Theories for Closing the Divide overall

Given the theoretical frameworks devised for viewing the digital divide, and the realities of the divide itself, a natural progression is to view the merger of theory and practice in addressing issues of the divide.

Many of the authors associated above with paradigms for looking at the divide meant these paradigms as both a diagnoses of the full nature of the divide and a prescription for how it should be addressed. A derivation of Servon's model, for example, is used to by the Community Technology Foundation of California to classify and distinguish the community technology projects to which it provides grants (Community Technology Foundation of California.). Gordo's digital divide framework was specifically designed for application to policy. In High Technology and Low-Income Communities, Castells puts forth a six point model for integrating IT into disadvantaged communities to promote growth (Castells. 1999).

Castells Model for IT use in Low-Income Community Development:

- Support of new and small businesses to create an economic infrastructure
- Use of telecommuting from community centers with IT access, in addition to from homes
- Increased focus on education for economic readiness
- Employing IT in education
- Improved urban design and increased community influence in media; and the revamping of local governments

While these theories for addressing the digital divide all seem sound based on the definitions of the divide that are provided, it is reasonable to question how well they may be implemented in reality, and once implemented how well they would serve there communities. Gordo contends that in order for technology to be deployed successfully as a

tool to assist a community, that the community's make-up, norms, culture, and needs must be carefully considered (Gordo. 2003). Similarly, it would seem that using these frameworks as a basis for a plan for employing technology to help communities develop would require that the characteristics community itself be a factor in how the plan is implemented. Cases of initiatives that are addressing the various areas in which the digital divide affect different populations are instructive for highlighting where frameworks enable success, and may assist in highlighting new frameworks for viewing the divide that are based on the more nuanced needs of communities.

Economic Programs that Address the Divide

One economic disadvantage cited above that may come to increasingly impact individuals without IT access is a lack of access to financial services. This is described primarily with regard to low income individuals. Addressing this issue requires overcoming the obstacles that Servon outlines: access, education about using financial services provided through IT, and financial service content created for this population. However, there are additional obstacles that are more particular to this sector. Low levels of consumer trust in financial institutions is a barrier that may require some sort of widespread, cultural intervention to fully address (Weissbourd. June 2002). This may be addressed by a concerted effort on the part of financial institutions to outreach to this clientele.

However, this solution comes against the issue of a culture of failing to dedicate adequate resources to low-income customers among financial service providers. This may be countered by the promotion and recognition of research demonstrating the market potential for financial services among low income populations. Other additional challenges include a regulatory structure for this industry which restricts institutions that seek to operate transnationally and internationally, and a lack of demonstrated success for financial service initiatives that seek to serve clients on a large scale. There is, of course, the very basic issue that low-income individuals may not feel as if they have enough income not directed toward survival to divert to purchase financial services.

Case Example: SaveDaily.com

SaveDaily.com has overcome many of these challenges by creating an easy to learn, easy to use online apparatus for individuals to invest small amounts of money. In its original form, SaveDaily.com gave customers the opportunity to put very small (as low as \$5) amounts of money in to mutual fund accounts on a regular basis. The company now facilitates the transaction of micro-rebates, which allow customers to accumulate money in an investment account for purchases at certain websites (Weissbourd. June 2002).

Other efforts are less robust, but nonetheless important. Both Blackenterprise.com and One-Economy.com provide online clearinghouses for financial information of pertinence to low income communities include how to manage debt, how to start a checking or savings account, and how to apply for a loan.

Another source of potential economic disadvantage is expected to stem from a lack of access to high quality employment due to unfamiliarity with IT. There are a host of entities, both traditional and innovative, that seek to address this need. These include community colleges, community based training programs, employer led programs, proprietary schools, and, increasingly, technical/vocational programs in high schools (Brookshire. 2000; Servon. 2002). The community technology movement, an effort among a network of community activists, policy makers, and concerned citizens to find ways to harness information technology to enrich, in particular low-income, communities, has taken a lead in providing training with the explicit purpose of addressing issues of the digital divide. A study on Community Technology Centers (CTCs) nationwide showed that 57% of these centers offered some sort of adult education, and 51% offered job training (Servon. 2002). While these centers tend to operate on premises of serving their respective communities, their variation in specific goals, operating styles, and organizational structures creates a difficult situation for evaluating their successes. However, some studies have attested to their functionality as job training centers for IT assistance. Low-income

individuals are twice as likely to get internet access at a CTC than higher income individuals, and CTC users suggest that the centers are “a valuable resource for obtaining job skills and learning about employment opportunities”. Other studies attest to the fact that CTCs assist users by providing IT training classes, offering assistance in finding jobs, and providing networking opportunities (Servon. 2002).

*Case Example: **GlideTech***

GlideTech is a free information technology training program run through Glide Memorial Church. This program prepares participants to take the A+ Certification exam, and teaches other professional skills such as money management and resume preparation. The program targets individuals who would not have access to such training elsewhere: most participants are low income, and minimum requirements include an 8th-grade education and basic computer skills. GlideTech has graduated over 41 students, and by working with partners to secure job placements, sends them to positions paying \$15 to \$16 per hour (Lynem. 2001).

Another program, Youth UpRising’s Media Arts Center, provides disadvantaged Oakland youth with tools and guidance to produce music and other media content that reflects their interests and perspectives. This program is a part of a larger offering of services at the Youth UpRising center, which focuses all of its efforts on the four tenants of consciousness raising, personal transformation, skill development, and leadership development (YouthUpRising.org.).

Both of the above mentioned programs provided services meant to address issues raised in the digital divide frameworks discussed by authors. Common themes of offering access to hardware, software, and infrastructure, and offering training arise in both of these examples. The Youth UpRising project is also directed at creating content. However, there were other elements inherent in these projects that failed to be mentioned in digital divide paradigms. Within GlideTech, there is an additional self-worth component which seeks to provide people with a sense of inner-value and service to community. Within Youth UpRising, there is a similar emphasis on awareness about community issues and leadership.

Some of these elements are alluded to in Castells comprehensive proposal for integrating IT into community development programs. It is reasonable to question whether self development programs and community awareness really fit into digital divide discussions. Clearly, these are elements that digitally empowered communities struggle with, as well. However, if IT is to be used to revitalize communities economically, there must be a mentality among the recipients of access, training, and content that these should be used toward the furthering of community objectives. Perhaps these critical elements are assumed, or perhaps they fit better into a more encompassing discussion of advantage vs. disadvantage in community settings.

Educational Programs that Address the Divide

Within education, the digital divide stands as less a problem of access, a more an issue of correct implementation of technology. Because the grade school education system is primarily under the jurisdiction of state and federal governments, there has been significant investment in at least superficially addressing digital divide issues. These investments have helped to ensure that virtually all public schools have internet access (Servon. 2002). However, while information technology access within schools themselves is not a problem, issues of how this technology is used to enhance education are.

Ways that information technology could impact education were listed earlier. It is the assumption of many that this type of shift in education through information technology would somehow be facilitated by schools. In a sense this is true, although not in the way that educators and policymakers may have envisioned.

Some students are using information technology outside of the classroom to assist with research, word-processing, calculations, and even the acquisition of computer skills. In the sense that the assignments and guidance that students receive prompt this type of behavior, then technology may be viewed as an element, perhaps even a central element, to students' learning.

However, on the whole, computers are not being used in classrooms to further educational goals. Students who tend to gravitate toward computer-based electives, and who tend to use IT for educational purposes, do so out of a familiarity engendered through home experiences (Cuban, Kirkpatrick, and Peck. 2002). This lack of effective computer use in the classroom disproportionately disadvantages students with fewer opportunities for IT access outside of school.

Failure to successfully integrate technology into classrooms may be traced back to a number of challenges: bureaucratic organizational structures which restrict idea and

resource sharing between departments, poor quality technology and technical support, lack of time to integrate technology into teaching methods, and other demands on teachers' time and energy. Technology is viewed as a non-necessary, and sometimes unwanted, addition to an already sufficient curriculum (Cuban, Kirkpatrick, and Peck. 2002).

In response to this phenomenon, alternative and supplemental education programs have arisen which successfully integrate technology into learning environments to the benefit of students that would not necessarily be able to reap the benefits of using IT to enhance education because of lack of access.

Some of these programs have arisen in the form of schools or distance learning programs whose curriculum holds technology as a cornerstone, instead of a peripheral teaching tool.

Case Example: High Tech High Schools

High Tech High, a group of charter schools that started in San Diego and now implements their model elsewhere in California and Texas, teaches students a Liberal Arts based curriculum that uses project based, inquiry driven methods to teach (High Tech High Schools.). Critical to this strategy is the use of information technology for research, idea exchange between students, and communication with primary sources of information about topics of interest: students spend at least half of their day working on laptops, they keep digital portfolios of their work throughout high school, and employ IT to collect, store, manipulate, and publish findings from field research (Mezzacappa. 2006). This mode of teaching is lauded by many of education's stakeholders. Students find the structure engaging compared to conventional educational methods. Policymakers cite HTH's success in ensuring a high level of student achievement during high school, which is consistently demonstrated by exceptional standardized test scores. Community members and education enthusiasts believe that this method is more student focused, and are pleased with HTH's ability to send virtually all of its students to college after graduation. As a charter school, High Tech High is open to all students, and hosts a moderate low income population.

Non-school programs that provide education for youth tend to do so in the area of specific computer skills. The Intel Clubhouse, an international initiative that promotes technology outreach, partners with local organization to provide technology access to students, and promote educational exploration through the use of that technology. At the East Palo Alto Clubhouse, students may learn about video game programming, website design, and mechanical engineering fundamentals (Nguyen. 2005). Here children engage in project based learning, on topics of interest to them, in a structured environment. The instructors are primarily volunteers who are familiar with technology and, contrary to many teachers in conventional school settings, believe that the potential that technology may have for enhancing learning should make its use a priority.

Case Example: Intel Clubhouse

The Intel Clubhouse, an international initiative that promotes technology outreach, partners with local organization to provide technology access to students, and promote educational exploration through the use of that technology. At the East Palo Alto Clubhouse, students may learn about video game programming, website design, and mechanical engineering fundamentals (Nguyen. 2005). Here children engage in project based learning, on topics of interest to them, in a structured environment. The instructors are primarily volunteers who are familiar with technology and, contrary to many teachers in conventional school settings, believe that the potential that technology may have for enhancing learning should make its use a priority.

Within the topic of education, the models of the digital divide previously presented do not seem as well fit to the challenges faced by disadvantaged communities. Access to infrastructure is there, training needed to use computers, on the part of the students, seems minimal, and educational content exists (U.S. Department of Education. December 2000). However, what separates advantaged from disadvantaged students is the extent to which technology may be applied to studies outside of the classroom. Furthermore, it

seems that educational use of technology is so low across all populations that parity in technology use may not be an appropriate aim. If it is found that levels of achievement are lower in disadvantaged communities, then perhaps enhanced technology use may be sought as a means to improve achievement levels, without regard to whether the target level of technology use matches or even exceeds that of other communities.

When applied to education, solutions to the digital divide become less clear as, simply bridging the divide may not achieve the result of ensuring educational development in the educational environments of disadvantaged populations.

Politically Focused Programs that Address the Divide

Much of the discourse about the digital divide focuses on how programs may be engineered to address issues surrounding economic and educational disadvantage. Yet, as politics stands as a realm where increasingly the digital divide may begin to have an impact on how communities, digitally empowered and disempowered alike, are governed, it is worthwhile to search for examples of initiatives aimed at closing the digital divide in the political realm; if for no other reason than to highlight an area that may warrant additional attention and resources.

Drawing from previous conclusions, in the political realm the digitally disadvantaged are shut out of processes for receiving information of pertinence to governance, restricted from online channels that ensure greater access to government representatives, and are limited from participating in dispersed discourse on political matters facilitated by communication networks. Programs aimed at remedying this would address these concerns in ways that take into account the specific needs of low-income or minority communities.

Many major advocacy networks, that sought to address issues of importance to marginalized communities before the prevalence of the internet, have added an online component to assist and encourage these communities to participate through online means. These efforts, by organizations such as the ACLU, NAACP, and AARP, allow users to quickly and easily participate in

Become an Advocate

Get involved to make a difference for older Americans.

AARP is making a difference — whether it's fighting for a Medicare prescription drug benefit or working to ensure retirement security for all Americans. But we can't do it without you.

[Get Involved!](#)

What It means to Be an AARP Citizen Advocate

When you sign up to get involved, you'll begin receiving free e-mail updates and action alerts from AARP. These monthly alerts, the AARP Grassroots Update, will keep you informed of what's going on in the White House, Congress and your state legislature.

We'll also provide you with the tools to make your voice heard on the issues you care about.

Simply fill out the form to [start getting involved](#).

advocacy by sending letters to representatives or donating to the organizations. These sites do not seem to provide services that are significantly different than those provided by organizations like MoveOn.org. However, the difference in content, and the name recognition among certain communities, may make these organizations' web portals more attractive to disadvantaged communities. Furthermore, the agendas of these organizations create a more attractive opportunity for empowerment for marginalized communities than more mainstream interest groups may be prompted to provide.

One approach to assisting disadvantaged communities to participate in the political process is to assist organizations in building their technical capacity, thereby allowing their members to act in a way that best utilizes available technologies. The Welfare Law Center's *Low Income Networking and Communication* program enables individuals through a website, similar to organizations listed above, and provides a network listserve that encourages collaboration among advocacy organizations (Servon. 2002). This method leverages relationships that organizations may have with disadvantaged communities, and uses the technical knowledge of a smaller group to assist those organizations in achieving their political goals.

More recently, software and content providers have developed a market of products aimed at assisting non-profit organizations in advocacy efforts. Convio, a company that produces constituent relationship management software, assists advocacy organizations by helping them to tailor announcements and requests to users. For groups with a large user base that may be unfamiliar with navigating through steps to participate in online advocacy, this may be critical to ensuring participation (Aitchison. 2005).

Many of the politically aimed initiatives mentioned mirror similar initiatives targeted at other audiences. Acts to bridge the political divide seem to be an extension of other digital divide closing programs. This reveals an underlying belief that political discourse is similar to other online information. More could be done to push individuals to participate in this process by consuming political material.

VII. Open Opportunities for Progress through IT

Among the programs discussed here, there are a variety of motivations and means to reach objectives. Fundamentally, all seek to find some way to serve a set population of individuals by assisting them in using information technology for their own respective goals. However, there are some consequences of digital deprivation that arise in the realms of economics, education, and politics that are currently not being met. As a result of the

potential marginalizing effects that this continuing deprivation may have in the long term, there is reason to address these through some means. There are specific areas where *outreach*, conveying information or services to a given population in a way to which they will be receptive, could be used to better empower communities for positive change.

Unmet Needs For Economic Development

A large proportion of community technology initiatives aimed at using IT to improve economic circumstances focus on job training (Marshall, Taylor, and Yu. 2003; Servon. 2002). The idea presented by the Brookings institution for bringing financial services to low-income communities through IT seems another promising, if under-explored, method for helping community members to develop economically. Such an initiative would have a wide appeal: as many as 35 million American households are either unbanked, or marginally banked. The majority of these are low-income (Weissbourd. June 2002). For their financial service needs, these households often turn to providers such as Credit Unions, check-cashing establishments, convenient stores and community banks. Convenient stores and check-cashing locations, in particular, charge high premiums for services – upwards of 390 percent in some states (Rhine, Sherrie L. W., Greene, and Toussaint-Comeau. 2002). Clearly, this represents a hardship on people who already live close to the poverty line. In addition to the potential of reducing exorbitant check cashing fees, developing a relationship with a more conventional financial service institution may help individuals to secure savings, and give them leverage for future loans or mortgages (Weissbourd. June 2002).

Hence there is a need for programs which provide financial services to the poor. Because of the relative efficiency of doing business, the ability to distribute over large distances, the ability to store large amounts of other transaction data, and other benefits, financial service institutions are increasingly using IT and online data transfer to carry out day to day business. It would therefore be appropriate, if these institutions were to begin outreaching to lower income communities, to use information technology as a tool to provide services. There have, as yet, been few attempts to take advantage of IT for these purposes. Some means of doing so have included:

- *Micro-Investment websites*: These allow individuals to invest in small amounts in regular intervals.
- *Accessible ATMs in Post Offices or other Public Spaces*: Accessibility may be a key concern for individuals who do not live close to banking branches.

An as yet untested program:

- *Community Finance Technology Centers:* Hitherto, there has not been a focus among a large number of CTCs on teaching individuals to navigate the finance system using the wide variety of online and other digital tools available. A community location that acted as a technology outpost for a financial institution could serve this purpose.

Any of these could help to fill the existent void for programs to aide low-income individuals in the use of information technology.

Enhancing Learning With IT

Numerous studies, completed both by the government and by third parties, make clear the message that within public schools, technology exists, but teachers tend not to use it (Cuban, Kirkpatrick, and Peck. 2002; U.S. Department of Education. December 2000). This stems from a lack of training in how best to use technology in lessons, a reluctance to take the time needed to integrate technology use into lesson plans, and a need to prepare students for standardized tests that do not necessarily reward technological fluency. Of these three issues, being trained to properly use technology stands out the central problem out of which other issues arise. Schools, such as the High Tech High Schools, have demonstrated that with proper training, teachers need not spend undue time preparing lessons that integrate technology, and that teachers may develop lessons that allow students to pass mandated tests. Hence, there is a need within education for teachers to be trained to use technology. New programs could potentially address this need by developing a curriculum for teachers based on existing models of effective technology use in classrooms that is time and cost effective, and teach this model during mandated professional development time. It is hard to imagine that such initiatives do not already exist. However, perhaps a more centralized program that scales well would be more effective.

Technology Outreach for Political Participation

Political outreach to low-income and minority communities, with or without the aide of information technology, is challenging. Representatives do not have a particularly strong financial motive to cater to low-income individuals, as they are less able to make campaign contributions. Therefore, these individuals may feel detached and ambivalent about the political process. A number of organizations participating in admirable programs that outreach to this group were mentioned beforehand. However, as individuals in low income

communities may not know about these organizations or their actions, a more concerted effort could be made to publicize them.

In addition, it does not appear as if IT has been extensively used to gather public opinion on issues of importance to low income communities. If members of these communities were prompted to regularly provide their opinions on issues of concern in a way that did not disrupt their normal lives, but that could easily be aggregated, then their sentiments could be used as leverage to prompt government sponsored development projects. Such information could be gathered via the following means:

- Access terminals in frequently visited public spaces (shopping areas, schools, post offices) with a touch-screen interface similar to that used for ATM machines, self-checkout devices, and airplane check ins.
- A text message address used to collect responses.

Both of these means would take advantage of interfaces that users would be familiar with, and would provide up to date information about public opinion.

Conclusion: Divided on the Divide

What, Who, How, Where

These questions, when asked with reference to the digital divide, provide varied responses when viewed from the perspectives of scholars in the field. There are a range of beliefs about whether the divide exists, and to what extent. Ben Compaine, by citing statistics showing that gaps in the divide between those with access to information technology and those without it are closing, and suggesting that "intelligent devices" tend to get easier to use over time, instead of more difficult, expresses sincere skepticism about the existence of a digital divide (Compaine. 2001). Much of the evidence that I have cited suggests that the digital divide is real, and that it is something that technological progress will exacerbate as opposed to relieve. Still others see the divide as a spectrum (Lenhart. 2003).

The digital divide, whether it is defined in terms of access, learning, and content, or otherwise, is somewhat challenging to fit with potential uses of information technology for the benefit of disadvantaged individuals within a broad range of activities. Educationally, it appears as if there is a small minority of environments that effectively use technology to teach students. These appear more as programs within schools than among entire schools

themselves, and they focus, primarily on teaching technology related subjects. Students in other classrooms tend to have computers available, but do not use them in class.

From a political standpoint, it seems access and education are issues, but that interest in engaging in online political discourse is what separates individuals on all levels of income and computer access. From an economic standpoint, the divide and its consequences are clearer. The impacts on job readiness and access to information for individuals without access to information technology is more easily quantifiable economically; indeed the conventional ways of looking at the divide seem most appropriate when it is viewed from this perspective.

Observing the digital divide's effects on all of these areas leads to questions about whether contemporary paradigms are too robust, or robust enough. Within the growing digitization of politics, for example, it appears as if there is content, sufficiently simple interfaces, and access for individuals to participate. The real divide exists between people who know about the content and are motivated to take advantage of it. So, above and beyond the dimensions of access, education, and content, there is an alternative dimension of outreach. Piper Norris' Democratic divide perhaps better encompasses this type of division, but is unclear how she believes this dimension of the divide should be combated.

Within education, there is definitely an issue of education about how IT may best be used in the classroom. However, the divide here seems to be between the full potential that the education system has for enhancing education with the IT tools that it currently possesses, and where the system as a whole stands today. There are divides between schools, but public education on the whole lags behind where it could be.

And, even within economics, it is unclear how the divide applies to individuals outside of the area of IT intensive job readiness. There has been some limited study done on how much money may be saved by shopping for simple consumer goods via the internet. Yet, it is not clear how access to IT affects how much individuals eventually spend on larger investments such as homes and loans for other large expenses such as education. Furthermore, little research has been done on whether, for individuals with similar skill sets, IT access provides more lucrative job search results. And, there are layers of knowledge above and beyond simple IT use skills needed for individuals to benefit from the use of digitized financial services.

Divide vs. Development

Discussions of the digital divide may also be muddled because the term conveys a certain motivation that is not explicitly stated. If one is to view the digital divide as the split

between those that have may access and fluency with information technology, and those that may not, then there is not necessarily a strictly economic distinction. This may also be true of the idea of a “Democratic” digital divide. Scholars tend not to advocate for closure of the digital divide simply to remove it, but because there is a belief that empowerment through information technology may work to the general benefit of communities. This seems to be the rationale behind expanding the concept of the digital divide beyond simple access to computer technology: disadvantaged groups that have access to IT do not automatically benefit from these technologies. Servon and others argue that to benefit appropriately from information technology, the divide should be defined more broadly. This reveals the underlying motivation that fails to be conveyed as explicitly as the digital divide theory: the idea that by closing the digital divide that exists between disenfranchised groups will somehow bridge other social divides as well.

This argument is problematic. The digital divide is symptomatic of poverty and discrimination. Therefore, solving the divide without addressing more underlying issues would represent a failure to achieve significant change. Castells, in his 1996 work about using IT to empower communities, does not focus on achieving parity amongst communities in use of information technology (Castells. 1999). He suggests methods that this technology may be used, given the contemporary context that exists for these communities, to revitalize these communities and help them grow. All uses of IT for certain communities may not be appropriate and useful for others. Indeed, this type of normative thinking, that reflects the idea that all IT may be used the same way for benefit by all people, is what Servon and Gordo speak against in advising that content be created for groups that do not currently benefit from IT proportionally. However, in citing a “divide” that exists between the digitally privileged and underprivileged, there is comparison between potentially dissimilar populations that obscures what type of interventions need to take place as our world becomes increasingly digital. Low-income communities and minorities should not strive to close the digital divide simply for the sake of it. Like all communities seeking to grow, they should first define goals for community prosperity and development. In creating plans to reach these goals, they should weigh the benefits and risks of employing the information technologies that are increasingly influencing the way that society operates. Where appropriate, resources should be designated to providing *access, training, and content* for the use of these technologies, possibly using other communities’ procedures as a model, toward the realization of those goals. In other areas, the use of information technology should not be mandated, simply because other communities have seen successes there.

Furthermore, focusing too acutely on the digital divide may take away from the recognition that there are many areas where information technology is not being used optimally or appropriately, and that correcting these uses may benefit the users themselves and society as a whole. Health IT systems, which have the potential to significantly reduce medical error, have not seen widespread successful use for communities of any income level. It is likely that these systems will appear first in higher income communities. However, their successful development and deployment will spell a great leap for medicine in general. Hence, the type of goal-setting, plan development, and execution that should be used to use IT to develop disadvantaged communities, may also be used to bring information technology's benefits to society as a whole.

Toward Goal Oriented Technology Initiatives

Our realities are built upon our interactions with the outside world and our connections with others. As these interactions and connections are increasingly facilitated by new information technologies, our reality becomes increasingly digitized. Is the digital divide just a way of describing poverty, discrimination, and unequal distribution of resources that appreciates both the increasingly prevalent nature of information technology? Or, is it a fundamentally different phenomenon that is, at best, connected to these other disparities?

Before the widespread publicity of the fact that many were many failing to be included in the information technology revolution that many hitherto believed was sweeping the entire nation, there was a concerted effort among community leaders, technologists, policymakers, and scientists to try to find the best ways that new technologies could be used to benefit society. That effort continues today. However disputed the nature of the digital divide, the rise of this concept has drawn attention to those who, for whatever reasons, are not making full use of information technology's potential. This attention has led to the infusion of new paths of inquiry and strings of discourse among those at the forefront of the effort for a better world through technology, and has hopefully laid the foundations for an IT revolution that will be more inclusive than previous social movements.

Bibliography

Aitchison, Thomas, "Convio's Updated, Free Guide Helps Nonprofits Launch and Accelerate Online Advocacy Programs," *AScribe Newswire*, April 18, 2005 2005, .

Barlow, John P. "A Cyberspace Declaration of Independence." (February 1996).

Brookshire, . "Information Technology Certification: Is this Your Mission?" *Information Technology, Learning, and Performance Journal* 18 (2000): 1.

Brynjolfsson, . "Frictionless Commerce? A Comparison of Internet and Conventional Retailers." *Management Science* 46, no. 4 (2000): 563.

Castells, Manuel. "The Information City as A Dual City: Can it be Reversed?" In *High Technology in Low Income Communities*. Cambridge, MA: MIT Press, 1999.

"Community Technology Foundation of California." [cited 2006]. Available from <http://www.zerodivide.org/about/>.

Compaine, Benjamin M. *The Digital Divide : Facing a Crisis Or Creating a Myth?* Cambridge, Mass.: MIT Press, 2001.

Cuban, Larry, Heather Kirkpatrick, and Craig Peck. "Techno-Promoter Dreams, Student Realities." *Phi Delta Kappan* 83, no. 6 (2002): 472.

Gordo, Blanca. "Overcoming Digital Deprivation." *IT&Society* 1, no. 5 (2003): 160.

Gordo, Blanca. "The Digital Divide and the Persistence of Urban Poverty." *Planner's Network*, no. 141 (2000).

"About HTHSD." Available from <http://www.hightechhigh.org/hth/about/FAQ.php>.

"ITAA Newsroom." [cited 2006]. Available from <http://www.ita.org/newsroom/posting.cfm?ID=1745>.

"M/Cyclopedia of New Media." Available from http://wiki.media-culture.org.au/index.php/Digital_Divide.

Kennard, William. "Bridging the Digital Divide." (May 1998).

Lenhart, . "Re-Visualizing the Digital Divide as a Digital Spectrum." *Society* 1, no. 5 (2003): 23.

Lessig, Lawrence. *Code and Other Laws of Cyberspace*. New York: Basic Books, 1999.

Lynem, Julie N., "Making a Move from Low-Income to High-Tech: GlideTech Program a Starting Point for New Life," *SFGate.Com*, April 29, 2001 2001, .

Marshall, Stewart, Wallace Taylor, and Xing Huo Yu. *Closing the Digital Divide : Transforming Regional Economies and Communities with Information Technology*. Westport, Conn.: Praeger, 2003.

McGinn, Robert E. *Science, Technology, and Society*. Englewood Cliffs, N.J.: Prentice Hall, 1991.

Mezzacappa, Dale, "Education Infused with Technology," *Domestic News*, January 8, 2006 2006, .

"MoveOn.Org - about." Available from <http://www.moveon.org>.

Nguyen, HongDao, "Club Lets Kids Create their Own Video Games," *Mercury News*, December 25, 2005 2005, .

Norris, Pippa. *Digital Divide : Civic Engagement, Information Poverty, and the Internet Worldwide*. New York: Cambridge University Press, 2001.

Rhine, Sherrie L. W., William H. Greene, and Maude Toussaint-Comeau. "The Importance of Check-Cashing Businesses to the Unbanked: Racial/Ethnic Differences." (2002).

Robinson, . "New Social Survey Perspectives on the Digital Divide." *Society* 1, no. 5 (2003): 1.

Servon, Lisa J. *Bridging the Digital Divide : Technology, Community, and Public Policy*. Oxford ; Malden, MA: Blackwell Pub., 2002.

Sifry, Micah. "The Rise of Open Source Politics." *The Nation*, November 22, 2004 2004, .

U.S. Department of Commerce - NTIA. *A Nation Online: Entering the Broadband Age*. September 2004.

U.S. Department of Commerce - NTIA. *Falling through the Net: Defining the Digital Divide*. 1999.

U.S. Department of Education. *E-Learning: Putting a World-Class Education at the Fingertips of all Children*. December 2000.

U.S. Department of Labor. *Futurework - Trends and Challenges for Work in the 21st Century*. 1999.

Weissbourd, Robert. *Banking on Technology: Expanding Financial Markets and Economic Opportunity*. June 2002.

Wolfenbarger, . "Shopping Online for Freedom, Control, and Fun." *California Management Review* 43, no. 2 (2001): 34.

"Youth Uprising Programs." Available from <http://youthuprising.org/programs.htm>.