What Planning Crisis? Reflections on the "Digital Divide" and the Persistence of Unequal Opportunity

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Abstract

This article examines the "digital divide" problem in relation to social and economic development. The digital divide refers to the difference between those who are able to and have the opportunity to participate, compete, and prosper in knowledge-based economies and in a society organized around social networks and those who do not. The thesis is that ownership and the ability to use and manipulate the productive function of technology is becoming an important component in the process of production, consumption, and exchange in society. The negative result for those who are unable to create through the process of technology is digital destitution. The alienation suffered may be a result of deprivation and unequal opportunity to experiment and learn how to create and relate to people through the use of technology. The author proposes public policy intervention in the way of creating valuable opportunity to experience and develop the social technical skills necessary to attain and retain gainful employment. The proposal is provision of new Community Technology Development (CTD) programs that support the process of social and economic development at the community level. Giving people the opportunity to experiment the process of production is key to addressing the ongoing process of poverty and inequality.

Introduction

By and large, under transformation and social crisis we neglect to plan and prepare for the interest and needs of low-income communities. In particular, we fail to provide and make available chance to enter organized and new forms of structural opportunity for ethnic social groups residing in poor places. This ongoing crisis is revealed in our failure to prepare young Americans to participate and prosper in knowledge economies that are increasingly based upon electronically connected social networks. This social problem reflects a failure of planning to overcome a lack of access to valuable resources that could further social and economic development.

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While planners create our transformation into knowledge economies and network society, we fail to develop institutional social strategies and infrastructures that could empower the poor through the productive use of technology. Without considering the impact of our plans underway, change in rules, and new systems of operation on the poor and at the table of influence, we may systematically neglect the interest and needs of these populations in the ongoing process of planned institutional decision-making. Further, without a well structured and related plan (that serves the interest demand need of people) for intervention at the community level, our social value to include the interest and needs of social ethnic groups residing in poor places could continue to be undermined.

In this paper, I critically examine the simplistic notion of the digital divide and propose an alternative frame of the problem and solutions underway. I argue that we are faced with a social problem of continued inequality of valuable resources, one of which is training in the *net process* underway. Technology use, institutional regulation, and governance structures are relevant to understanding pertinent issues and ways in which development is determined. In the second section of this paper, I maintain that we are witnessing a new form of poverty. This is *digital destitution*, deprivation and alienation from the productive functions of technology and therefore society. In the third section, I introduce the *opportunity divide* that sustains this evolution of poverty. I end with a brief discussion of *community technology development programs*. I propose that Community Technology Centers may be one form of public intervention that could deliver positive results.

From Digital Divide to Digital Destitution

There is still debate about whether the "digital divide" is a relevant issue worthy of public attention and support and whether anything could or should be done about it among policymakers and scholars.[2] This question is in part fueled by the Department of Commerce's fourth annual release report, "A Nation Online: How Americans are Expanding their Use of the Internet" and resulting funding cuts of the Technology Opportunities Program and the Community Technology Center Project by the Bush Administration (NTIA, 2002). The general assertion is that "digital opportunity" and "inclusion," specified by Internet use, is increasing for people regardless of income, education, age, races, ethnicity, or gender. Digital divide populations (the intersection of poor, Latino and or Black, women, and central city and rural dwellers) have increased Internet use by a 30 percent

rate (NTIA, 2002). The formal claim is that access to the Internet is balancing out. The presumption is that Internet use translates into participant use of computers for development. The implication is that redistributive actions are unnecessary. As a result, funding cuts are underway for community technology efforts that seek to provide access training for the disadvantaged. The empirical record proves this conclusion to be less reliable in its frame and evaluation of the problem. The proposed resolution to the digital divide problem mis-specifies the problem of the 'digital divide' and consequently presents an overly simplistic assessment.

The general definition of the "digital divide" is division between those individuals and places that have a connection to the Internet and those who do not. The popular solution is to simply provide the hardware, software, and sometimes the wired infrastructure to those who do not have it. The presumption is clear: having a computer and online connection will provide opportunity and solve the problems of the poor. However, the problem of the digital divide is greater than mere connection to technology.

The "digital divide" and its solutions is best understood within the context of social and economic problems that low-income and under-served populations already face. In addition to the limited or lack of access to useful technologies, the institutions that are to deliver public service to low-income populations are failing and in crisis. Generally, institutions are unable to prepare and meet the interest and needs of the populations they are to serve. Further, governance structures and institutional rules matter and must be considered in our analytical frames. The few institutions that do serve the poor often curtail access to valuable knowledge. Internet use by itself, without access to structural opportunity and change in institutional regulation does not translate into participation or development for anyone. Lack of access and opportunity to the digital world will continue without public intervention and as long as low-income communities are burdened by massive economic and social problems. Ultimately, the "digital divide" must be seen within this framework and related to development. When we speak of inclusion, we need to push further and ask: inclusion to what, for what, where, how, for whom, when, and why? The question remains, *under which conditions and through which social processes do members of ethnic social groups residing in poor places benefit from the use of network technology?*

social problem complicated by and through the introduction of new technology. Thus, it is important to reframe the digital divide as the difference between those who have the opportunity and skills required to prosper in knowledge-based economies and those who do not (Gordo, 2001).

Ownership and the ability to manipulate the productive functions of technology are critical components of this process. Therefore the essential problem is more appropriately captured by the term "*digital destitution*". Digital destitution reflects a social process by which people and places are alienated from the productive functions of technology and therefore society. My hypothesis is that a lack of ownership and the inability to control technologies productively further enhances poverty and inequality.

With technology increasingly incorporated into our formal processes of production, consumption and exchange, the ability to use the tools productively becomes critical to development. Across industrial sectors, the ability to use technology is a prerequisite to attaining and retaining employment. Additionally, governments, public institutions, and learning structures are also expecting knowledge and technology use abilities. Without the opportunity to practice and participate in the digitally enhanced economy, we can expect the persistence of digital destitution in poor places. The destitute will continue to face unemployment and find themselves at the mercy of informal networks that often take advantage or manipulate them.

In addition to declining political will and societal interest, effective treatment of the issue is undermined by how the problem is constructed by scholars and policy makers. In part, this reflects a limited understanding of technology. Viewing technology as a valueless object or magical key to opportunity for the poor ignores the complex interactions between technology and society. Such perspectives are limited in both their conception and understanding of the underlying issues. They also obscure the complex manner in which social processes shape technology in addition to the recognized impact of technology on society.

Further, a limited view of technology as a development panacea ignores the tragedy and social circumstance of the poor. Processes of transformation and social institutional crises only add to the challenges faced by disadvantaged groups. The institutions that serve such populations are

In studying the connection between economic development and technology, I find that the digital divide frame must expand to consider the context of the social, economic and political changes underway and the challenges facing low-income and traditionally under-served populations and places. In relation to development, the "digital divide" arises out of convergence between social and technical innovations that lead to new rules, and change in the ways institution are organized. Thus, I reframe the digital divide as the difference between those who have and do not have the opportunity and ability to participate and prosper in knowledge-based economies and network society (Gordo, 2001). I argue that ownership (appropriation control) and the ability to use and manipulate the productive function of technology is becoming an important component of this process. Corollary to the digital divide is what I term "*digital destitution*." Digital destitution is the social process by which people and places are deprived and alienated from the productive functions of technology and therefore society. Use of technology is a key to participate within the process of production, consumption and exchange, what I call the *net process* (Figure 1). The Internet, integration of social institutional processes and technological infrastructures, is a new technology that is tied to the net process and the activities of the state and society. It is an arm extension that facilitates transaction of materials and regulates engagement of evolving productive and political processes. The Internet is a *public good* when formal institutions allocate and distribute public resource materials and manages processes of legitimate political participation.

My hypothesis is that lack of ownership and inability to manipulate productive technologies further enhances poverty and inequality. It is precisely because technology is incorporated into the formal social process of production, consumption, and exchange and in our economic, social, and political institutions that it matters if one is able or not to use the tool in a productive manner. Across industrial sectors, the ability to use technology is a prerequisite to attaining and retaining employment. Governments, public and private institutions, and learning structures also expect such skills. Without the opportunity to practice production, consumption and exchange through the net process, we can expect a high percentage of digital destitution in poor places. The destitute will continue to face unemployment and find themselves at the mercy of informal networks that often take advantage or manipulate them.

Aside from declining political will for intervention and societal interest, this issue is undermined by the ways in which the problem is constructed

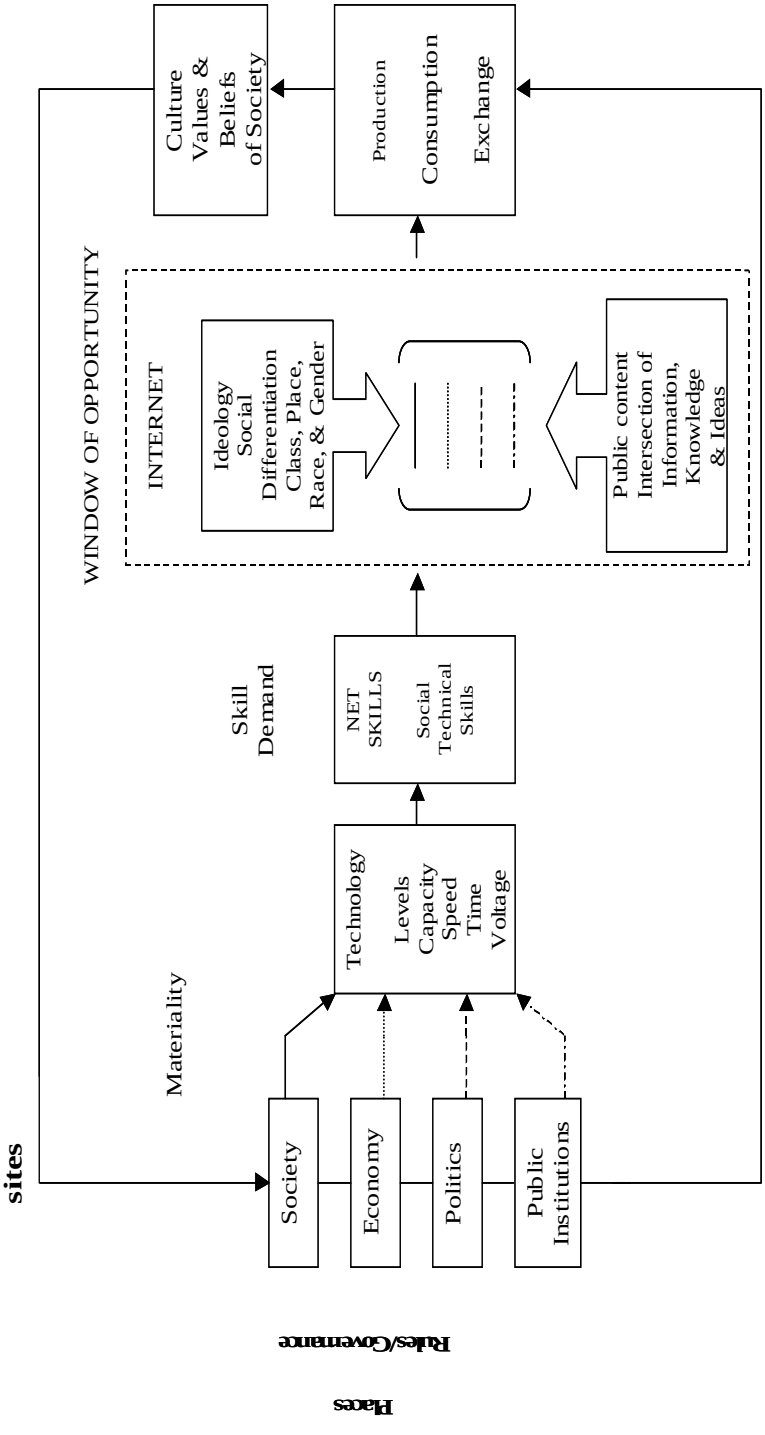
(by scholars and policymakers) and the limited understanding of what technology is. The logic of technology as a valueless object or magical key to including and providing opportunity to the poor within society reduces extremely complex interactions between technology and society to a homogeneous model of technology and its impact on individuals. Institutions, organizations, and people, through technology, creates impact, not technology by itself. Such dichotomous positions are limited in their frame and understanding of technology and obscure the complexities of relationships and convergence between the social and technology. Further, this view ignores the misfortune and social circumstance of the poor in the process of transformation and social institutional crisis: meaning that the institutions are unable to predict and systematically respond to the needs and interest of the society. In this way, we neglect to consider the context, conditions and process of extending technology to low-income communities. Further, such logic misses how technology is integrated and valued in and through social institutions. The manner in which institutions that maintain society adopt, use, and regulate network technologies to connect the public is relevant to this issue. The net process is governed and regulated by the state. Regulation and governance structure by place and cultural values and beliefs could determine how we get to use and participate within this evolving process. Finally, such simplistic notions of technology ignore whether well structured, valuable opportunity exists in poor places. This way of thinking may serve to confuse and oversimplify debates about technology connection for the poor rather than enlighten and reveal *what new obstacles and opportunities are created for the poor through social technical processes.*

Planners interested in and working on digital divide issues and solutions could consider how outcomes are dependent on social logic and practice, i.e. the context and social setting in which technology is used and applied provide strikingly different "impacts." Technology is not a self-governing agent or deterministic force, but is socially constructed and institutionally defined. What matters is how technology is used, for what purpose, under which regulation, and through what governance structure. Even more, technology is more than a tool; it is a process. Technology is an integrated social and institutional process of production, consumption and exchange. In other words, it is a course of action or procedure by which we interact, communicate, produce, consume and exchange raw materials and valued products to satisfy our needs and interest as defined by any given entity. Society has a legitimate method and institutional rules by which we are

allowed to participate and benefit from this practice. Regulation is not new; what is different is perhaps the values of society, changes in rules and the construction of pathways by which we can enter and sustain advantage of opportunity, convenience, efficiency and discounts available on the net. One form of opportunity is access to valuable and legitimate information, knowledge and ideas generated by society and valued in the market place through a network path design of interconnected and integrated social technological systems in the social, economic, political, and institutional sites (Figure 1).

Competitive pressures have driven businesses and public institutions to adopt a wide range of network technology and computer systems to improve- productivity, maintain both internal and external communications, manage production, and to offer customers new services (Castells, 1996). Influential agents have created new ways to make money and deliver service through technology. In the society and economy today, information and network telecommunications technology are the most important enabling tools. The ability to manipulate the productive function of technology is essential in the performance of the new production function. Industry requires *net skills*, social technical abilities, for many more jobs including low wage occupations. Education institutions are using technologies to enhance learning. Governments are integrating technology to provide constituents convenient service. Political processes are adjusting technology to new ways of participation, transfer of voice and election through network technology. In short, the ability to manipulate the productive function of technology is an increasing demand requirement and information-processing skills become a necessary competency. In this way, work force (re) training and preparation through and with technology becomes indispensable though not sufficient component of participating in the productive legitimate sectors of society. The lack of preparation to participate and thrive in the net process is a fundamental problem facing the poor and continues to be ignored in the central influential decision making process of our institutions.

The issue at stake is the reproduction and lock-in-effect mechanism of poverty and exclusion of already disadvantaged populations from the *net process* through deprivation and alienation of the productive function of technology. Populations and places that lack the infrastructure and opportunity to experiment with and develop social-technical skills could be left further behind. For development to be realized access to organized



the net process
technology as a social process
Figure 1

Ethnic social groups residing in poor places lack quality and state of the art technology access everywhere and anytime. Thus, we must not assume that members of ethnic social groups residing in poor places cannot become innovators and producers of new technologies when we have not established opportunity. According to the U.S. Commerce NTIA report, these populations are less likely to have access to technology at home and at work and few have access to the small amount of community technology resources available in their home boundary.

The lack of or limited connection to the Internet limits opportunity. The ability to produce, consume and exchange valued *public content* is a critical aspect of opportunity. Although individuals posses these skills, they are facilitated by legitimate and valued institutions (See Figure 1). Public content is a raw material. It reflects the intersection of relevant information, knowledge and ideas produced and extended by society's formal institutions through the net (See Figure 1). The most essential kind of knowledge related to development is curtailed or not yet widely accessible to the poor. Many are not even exposed to the knowledge resources we enjoy. Yet this knowledge is indispensable and used in competition.

Further, access to public content provides an additional advantage in relation to the productive sectors of the net process. Intellectual traditions and economic development literature widely acknowledge that "knowledge is power" and of value when one seeks to participate and prosper in society. The value of information is constant. What is new are the forms and manner by which we apply, retrieve, and expect to use valuable knowledge resources to produce, consume, and deliver goods.

I contend that that inequality of valued resources such as public content lies in the technology of social and institutional structures. The creation, adoption, and integration of net technologies the processes underlying such structures become the mechanism of exclusion. By design, digital divide populations do not have equal access to valued public content. Therefore, the opportunity to experience and innovate as well as the chance to connect to new social processes shaped by technology is missed. At the same time, society expectation that everyone has equal access to the wide range of relevant valued public content on the net. As time passes and overall use of these technologies increases, populations with access become more literate and basic expectations around what qualifies as basic knowledge will increase.

opportunity, ownership of relevant tools within the net process, and the chance to develop abilities to produce is necessary. To produce consumption and exchange of information, knowledge and ideas is indispensable.

Opportunity Divide

There is an "opportunity divide." The imbalance of benefit and continued disadvantage of social ethnic groups at all levels and in particular ones residing in poor places may lie in the difference of access to structural opportunity in and through the net process. Opportunity is experience with production, consumption and exchange through technology. This requires experience and critical thinking skills. Inequity is revealed in the capacity to develop productive and transferable skills through the process of technology. Creative and embodied innovation does not have a class, gender, or color; the ability to develop valuable embodied talents and innovation lies in the differential pace of access to this type of opportunity. Ethnic social groups residing in poor places lack access to quality training and practice in state of the art technology everywhere and anytime. Thus, we must not assume that members of ethnic social groups residing in poor places cannot become innovators and producers of new technologies when we have not established opportunity. According to the NTIA report, these populations are less likely to have access to technology at home and at work and few have access to the small amount of community technology resources available in their home boundary.

The lack of or limited connection to the Internet limits opportunity. One opportunity missed by these groups is interaction and access or appropriation control of valuable resources through legitimate and valued institutions that facilitate chance to produce, consume and exchange what I term *public conten*t (Figure 1). Public content is a raw material. It is the intersection of relevant information, knowledge and ideas produced and extended by formal institutions to society and through the net (i.e. .gov, .com, .edu, .org, .net, .biz, .info, and .name). Public content includes knowledge about institutions that mediate opportunity for social advancement, what they do and how. The most essential kind of information and knowledge as it relates to development is curtailed or not yet widely accessible to the poor. Many are not even exposed to the knowledge resources we enjoy. Yet this knowledge is indispensable and used in competition.

For the poor to effectively participate in the productive sectors of the net process, I believe more comprehensive approaches are required. The most promising model is what I refer to as *Community Technology Development Programs* (CTD) (See Figure 2). CTD programs offer *enhanced access* by providing continuous training in the production of *enhanced content* and how to create and sustain *enhanced social networks*. Unlike programs that simply aim to provide computer and Internet access, these forms of connection and knowledge support the process of community economic development.

Enhanced access is essentially about the production of knowledge rather than simple consumption of information. It implies: the ability to recognize relevant information, transform it into productive knowledge and communicate in a way that meets the intent and interest of any given agent (Gordo, 2001). Enhanced access also includes a combination of hard technical and soft social skills needed to compete in a flexible and contingent labor force. Thus, such access includes the ability manipulate technology in ways that will help an individual or group meet personal, economic, political, and social objectives.

A prerequisite to assisting the poor through a community technology development program model is training in the production of *enhanced content*. Enhanced content is relevant and useful knowledge produced and revealed through technology. Thus, enhanced content is more than information; it is distinctly about valued and useful productive knowledge. Content is enhanced when the knowledge product best translates the intent and interest of any given agent, what it seeks to provide and receive. What is missing in the net process is enhanced content that is produced by and for the interest of the poor.

However, given the role of the net process as a new economic and social force, the ability to produce enhanced content is not enough. Knowing how to interact and relate to a diverse set of social networks is important. Scholars have established that the poor do, in fact, have social networks and depend upon them for survival and economic opportunity (Chapple, 2001, Ajose, 2002). Thus, what low income populations need is what I term *enhanced social networks*. Enhanced social networks are relations that are socially diverse, stable and provide positive feedback and support. Such relationships are vital to connect people to structural opportunity. They also facilitate the transfer and social engagement, economic

Access to public content provides us an added advantage into the productive sectors of the net process (production, consumption and exchange). Acknowledged in the intellectual traditions and economic development literature is that legitimate knowledge is power and of value when one seeks to participate and prosper in society. The value of information knowledge is constant but quantity could be growing. New is the way and forms by which we interact, communicate, apply, retrieve, and expect to use valuable resources of information and knowledge to produce, consume, and deliver goods through the net. Inequality of valued resources such as public content could lie in the technology of social institutional structures. The creation, adoption, and integration of net technologies into social institutional structural processes become the mechanism of exclusion of opportunity when it is not made equally available to the poor. Unequal by design, digital divide populations do not have equal access to opportunity of valued public content. Even less, a valued opportunity to experience and create new technologies and the social processes that sustain these is missed. At the same time, social expectations that all have equal access to the countless and infinite wide range of relevant valued public content on the net is accessible to all increase. As time passes and use develops, some populations will become more literate and the expectation of knowledge will augment. Those without could be stigmatized and will turn to and depended on others. This could subject them to the will desire of those who know and gamble the possibility of manipulation and control.

The U.S. Department of Commerce National Telecommunications and Information Administration (NTIA) 2002 Data, an abstract of the Current Population Survey of the U.S. Department of Commerce Census Bureau, provides a stark picture to my hypothesis of unequal access to public content. Adopting Internet use anywhere as a conservative indicator of who has access to valuable institutional public content, we can conclude that wealthy suburban white and Asian American households are almost twice as likely as their counterparts in attaining resources of knowledge. According to the NTIA 2002 report, approximately 60.4 percent of Asian American and 59.9 percent of Whites use the Internet in September 2001. On the other hand, 39.8 percent of blacks and 31.6 percent of Latinos claim to use the Internet (NTIA, 2002). Direct measurement of these intangible assets is new. The field study of digital divide metrics is still in the early infant stages, the terms are new and many under construction. For instance, Internet use may not absolutely predetermine retrieval of

production, political participation, and involvement in institutional processes. In this way, technology is viewed as an information resource and a vehicle for communication. The intent is to provide training, as well as develop the skills and creativity within the community. Technology is used as a tool to expose and fuel curiosity to learn more. Further, it is a medium by which people are motivated to participate in the growing and prosperous sectors of society. More specifically, assisting and training people to produce, consume and exchange enhanced content while creating and maintaining valuable enhanced social networks.

In general, Plugged In and CIOF are the community production studio, copy center, cyber-library, self-paced learning studio, and telecommunication booth for the low-income communities they serve. These CTACs offer work force training- both structured and informal-critical skills and hands on experience in the productive use of technology. This service also serves to give individuals credential they can carry into the labor market, the school, and community at large. They give low-income populations an opportunity to be part of a CTAC-where people gain skills and acquire valued labor market experience. They also provide a space to meet people with a trajectory of personal development and will for advancement, as well as a place to interact with expert professionals, and where their symbolic value, prestige, and status associated with being part of a formal organization increases. These CTACs provide more than affordable connections. They also provide the technological expertise - how to use technology- relevance - how the tool can be used to meet economic, social, political, professional, and personal goals - socialization of expertise - how to relate to and be a professional - and certification - experience in production through new technologies.

Fundamentally, Plugged In and CIOF use technology to help community members of all ages do far more than simply access the Internet. They provide access to information that can help them find jobs, start small businesses, get information on health resources, receive homework assistance in a safe place, and train them how to create and improve relevant content. Most importantly, they engage participants in the process of crafting and creating knowledge products that can be exchanged.

The creation of these safe learning spaces also spills over to building and sustaining social networks within and outside the community. This process

valued public content, but it does facilitate it. More research work needs to be done in this area.

Without quality service for the poor, we can expect the continuation and recreation of ideology of differentiation, social stigmas, marginalization, exclusion, exploitation, and destitution that we now see in our central cities. In this way, poor places are faced with a social and institutional crisis. They lack the funds to create, sustain and develop the necessary social and physical technical infrastructure that could facilitate opportunity of experience in and through the net process and access to public content through technology for its residents. This issue continues to hold the lowest common denominator in public finance assistance and the public policy agenda of intervention.

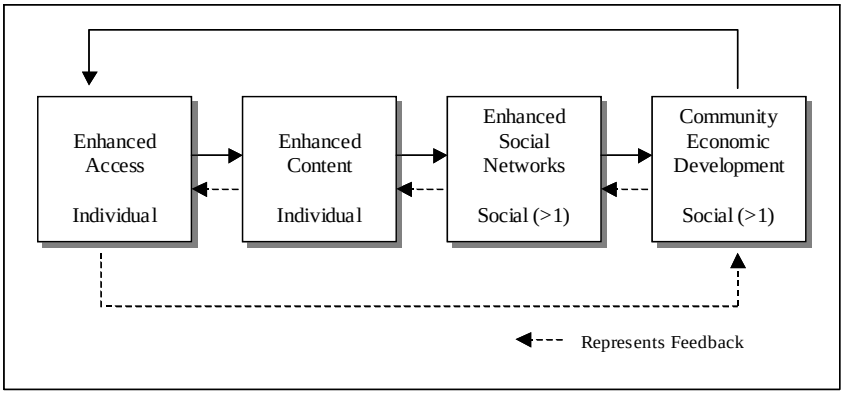
More rigorous study of the *net process* impact on the disconnected poor is needed. Further, to discern the severity of our social problem we need to figure sophisticated metrics that consider and include time, space, voltage, institutional regulation, and governance structures. Even more, we need metrics that identify the different levels and degrees of capacity, speed and volts of technological connection and the social technical skills needed. For access, we may consider that some populations have what I call access anytime everywhere, others sometimes somewhere, and a good number no connection anywhere. By knowing the benefits and advantage that the net offers the fabric of society, in relation to production, consumption and exchange of public and valuable content relevant to all, we can unveil the missed opportunities and polar disadvantage that the poor face. In this time, the Internet is a window of opportunity lost to the poor.

Community Technology Development Theory

The uneven representation of ethnic social groups in the prosperous sectors of our society may be due to the lack of experience in the net process. It is my theory that in order for the poor to participate in the productive sectors of the net process, they need what I term *Community Technology Development Programs* (CTD) (See Figure 2). In a feedback loop, CTD programs offer training in what I term "enhanced access," production of "enhanced content, " and how to create and sustain "enhanced social networks" all of which support the process of community economic development. *Enhanced access* is about the production of knowledge rather than simple consumption of information. It is the ability to recognize relevant information, transfer information into productive knowledge, and

the capacity to apply and communicate this knowledge in a way that meets the intent and interest of any given agent (Gordo, 2001). It includes a combination of technical and soft social skills needed to communicate online and compete in a flexible and contingent labor force. Thus, enhanced access includes the ability manipulate technology in ways that will help the agent meet personal, economic, political, and social needs and goals as defined by the individual.

Figure 2. Community Technology Development Programs



Another important component to assisting the poor and part of the community technology development program model is training in the production of *enhanced content*. Enhanced content is relevant and useful knowledge produced and revealed through technology. Thus, enhanced content is more than information; it is distinctly about valued and useful productive knowledge that can be exchanged. Content is enhanced when the knowledge product best translates the intent and interest of any given agent, what it seeks to provide and receive. What is missing in the *net process* is enhanced content that is produced by and for the interest of the poor. But even the ability to produce enhanced content is not enough in this time. In this time, knowing how to interact and relate to valued and diverse social networks is important. Scholars have established that the poor do have and depend on social networks for survival and to attain economic job opportunity (Chapple, 2001, Ajose, 2002). Thus, what low income populations need is what I term *enhanced social networks*. Enhanced social networks are relations that are diverse (socially), stable (long-lasting) and reciprocal (provide positive feedback, encouragement and support). These social relations are distinct in their ability to connect

people to structural opportunity, transfer of skills, and sharing of valued information and knowledge that could lead to development. This takes time and a socialization process of building trust and communication. In a feedback loop these three components support and may sustain the process of community economic development in the network society.

Community Technology Development Programs

I have been examining the community technology movement (organized collective of people who believe that technology is a valuable resource that could and should be made available to the poor) that has emerged throughout the United States as a response to the growing digital divide in our society (see www.ctcnet.org). In general, Community Technology Access Centers (CTACs) are embarking on an ambitious plan to bring information technology to traditionally under served and low-income communities for the purpose of development. My study focuses on new agents, CTACs that provide technology access to support community economic development goals. These initiatives work to introduce information technology to poor communities for the purpose of improving their socio-economic status. In particular, these centers are attempting to address the social and economic problems they view as harming the possibilities of opportunity for independence, education, employment, electoral participation, community involvement, social engagement and other strategies that support necessary people and place based development.

In my in depth study of CTACs throughout California, I have found that for the most part, CTACs are organized around and are advancing community technology programs to increase the availability of network technology and training for the purpose of supporting social and economic development goals at the community level. For these agents, the inability to manipulate the productive function of technology in knowledge economies and network society can only cement the process of underdevelopment of the physical space and the continued underemployment and unemployment of populations, increasing the possibilities for more concentrated poverty.

In particular, Plugged In in East Palo Alto and the statewide California network of Community Technology Access Centers, Computers in Our Future (CIOF) are places that are employing community technology development programs. These CTACs are part of or work with other local organizations to complement their services with literacy, job training,

business development and other social programs. For these community-based social organizations the power of the Internet offers an opportunity for social engagement, economic production, political participation, and involvement in institutional processes. In this way, technology is viewed as an enabling and productive tool, an information resource, and a vehicle for communication. The intent is to provide training and develop the existing skills and creativity of the community. Technologies then are tools to expose, fuel curiosity, know and learn more. Further, it is a medium by which people are motivated to participate in the growing and prosperous sectors of society. More specifically, to assist and train people to produce, consume and exchange enhanced content while creating and maintaining valuable enhanced social networks.

In general, Plugged In and CIOF are the community learning school, production studio, copy center, cyber-library, self-paced learning studio, and telecommunication booth for the low-income communities they serve. These CTACs offer work force training (structured and informal), accompanying critical skills, and hands-on experience in production, consumption, and exchange of raw materials through the use of technology. This service serves to credential individuals in the labor market, the school, and the community at large. They give low-income populations an opportunity to be part of a CTAC-where people gain skills and acquire valued labor market experience, a space to meet people with a trajectory of self development and will for advancement, a place to interact with expert professionals, and where their symbolic value, prestige, and status associated with being part of a formal organization increases. These CTACs provide more than affordable connections; they provide the know-how (how to use technology), relevance (how the tool can be used to meet economic, social, political, professional, and personal goals), socialization of expertise (how to relate to and be a professional) and certification (experience in production through new technologies).

Plugged In and CIOF use technology to help community members of all ages to access the Internet, and information that can help them find jobs, start small businesses, get information on health resources, receive homework assistance in a safe place, and how to create and improve relevant content. Most important, they engage participants in the process of crafting and creating information and knowledge products that can be exchanged and deliver benefits. The creation of safe learning spaces spills over to building and sustaining social networks within and outside the community.

This process requires the time, space, assistance, guidance, and hands-on experience. Through external connections with influential actors, these agencies connect their populations to enhanced social networks of opportunity. It is my hypothesis that these CTACs may represent a new agency of a new strategy of community economic development. New are the network organization of the agency and the use of technology to structure and deliver social service to the community. In this way community technology represents the evolution of community economic development agents that employ a new form and strategy that combats the ongoing but evolutionary process of poverty and unequal opportunity through technology.

Conclusion

Much can be learned about the places and conditions under which low-income communities benefit or not from community technology development programs. These initiatives show potential but without additional resources, institutional restructuring, and public policy intervention it can only be a band-aid experiment that covers the wounds of poverty. The challenge and opportunity is to recognize the critical importance of how the problem of technology is framed and constructed, for this determines the solutions envisaged. Just as well, it is imperative to be critical of the conditions in which technology is being provided and the ways in which governance structures and institutional rules affect use and curtail access to information resources. Even more, we must be careful not to quickly presume that adoption of technology, without a change in governing rules that balance structural opportunity, is meaningful in the way of advancing social development for any of us and specifically for the poor. Also, it is important for us to learn from the past so that we not recreate imbalance of social opportunity in the ongoing process of planned decision-making. At stake are institutional legitimacy, economic benefit, social inclusion and political representation for ethnic social groups residing in our pockets of poverty. Without opportunity we leave no reasonable meaning for people.

In the age of technological innovation and social advancement, we are faced with a planning crisis. There is no question that the poor need social and technical infrastructures of opportunity to participate in the net process. The question is *how can we best develop social strategies and supportive governance structures that facilitate access to the productive function of society and in a way that leads to development for the poor?* The answer is

urgent. The results for some individuals and places can be harmful and irreversible.

References

Ajose, Lande U. (2002) No Ties That Bind: Low Skill Workers, Social Networks and Job Search In the Silicon Valley's New Economy. PhD dissertation, MIT, Department of Urban Studies and Planning, Boston, Massachusetts.

Castells, Manuel. (199) The Rise of the Network Society. Malden, MA: Blackwell.

Chapple, Karen Diane. (2000) Paths to Employment: the Role of Social Networks in the Job Search for Women on Welfare in San Francisco. PhD dissertation, University of California, Department of City and Regional Planning, Berkeley, California.

Computers In Our Future. www.ciof.org

Gordo, Blanca E. (2001) The "Digital Divide" and the Persistence of Poverty in Planners Network. http://www.plannersnetwork.org/htm/pub/archives/141/gordo.html

Plugged In. www.pluggedin.org

U.S. Department of Commerce. A Nation Online. Washington DC: US Department of Commerce, 2002. Available at: http://www.ntia.doc.gov/ntiahome.dn/anationonline2.pdf.

U.S. Department of Commerce. Falling through the Net: Toward Digital Inclusion. Washington, DC: U.S. Department of Commerce, 2000. Available at: http://www.ntia.doc.gov/ntiahome/digitaldivide/.

Endnotes

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[2] See The Digital Divide: Facing a Crisis or a Myth? (2001) Cambridge, Massachusetts: MIT Press for discussion.