ARTICLE

Second thoughts: toward a critique of the digital divide

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Abstract

This article introduces critical perspective into the discussion of the digital divide, which is commonly defined as the gap separating those individuals who have access to new forms of information technology from those who do not. The analysis is distinguished from other undertakings addressing this matter, insofar as it does not document the empirical problems of unequal access but considers the terminology, logical structure, and form that define and direct work on this important social and ethical issue. The investigation employs the tools of critical theory and targets extant texts, reports, and studies. In this way, the analysis does not dispute the basic facts gathered in recent empirical studies of computer usage and internet access. On the contrary, its purpose is to assist these and other endeavors by making evident their common starting point, stakes, and consequences.

Key words

computers • computers–social aspects • ethics • internet • technology • theory

The term 'digital divide' has come to occupy a privileged position in recent debates about the internet, computer technology, and access to information systems. It has surfaced, in one way or another, in scholarly studies and

investigations, professional meetings and conferences, political speeches and policy analysis, and the popular press and media.[1] This attention to disparity of access to, and use of, information technology (IT) appears to be an obvious advance over the euphoric 'cyberbole' that characterized much of the rhetoric of computer technology since the mid–1980s. In these initial explanations and investigations, IT was routinely celebrated for creating a new world of limitless opportunity that was liberated from problematic sociocultural determinants, such as race, gender, age, and geography.[2] The digital divide supplies a much-needed critique of these often unquestioned presumptions, showing that this utopian rhetoric remains oblivious to the fact that access to technology is limited by specific circumstances, and should not be assumed to be automatic or universally applicable.

But the critical standpoint introduced by the digital divide, no matter how informative, is not simply insulated from critique. It also has a perspective, and this has been defined by various decisions that delimit its focus and scope. However, critical examinations of the digital divide appear to be in short supply. The few commentaries that have been published are little more than reactions and editorials which argue, mainly through anecdotal evidence and personal opinion, that the divide is a myth (Brady, 2000; Cohen, 2000), political hyperbole (Horvath, 2000), bunk (Somerson, 2000), non-existent (Thierer, 2000), or rubbish (Crabtree, 2001). What is needed, therefore, is neither uncritical adherence to, nor simple reaction against, the digital divide but a *critique* that exposes and investigates the problems inherent in both. However, 'critique' is a word that is not without significant ambiguity. In colloquial usage, it has a negative definition, indicating a form of judgmental evaluation or rudimentary fault-finding. It is only under this denotation that the current commentaries and editorials may be called 'critiques'. But there is a more precise definition that is rooted in the tradition of critical philosophy. As Barbara Johnson characterizes it:

> A critique of any theoretical system is not an examination of its flaws and imperfections. It is not a set of criticisms designed to make the system better. It is an analysis that focuses on the grounds of that system's possibility. The critique reads backwards from what seems natural, obvious, self-evident, or universal, in order to show that these things have their history, their reasons for being the way they are, their effects on what follows from them, and that the starting point is not a given but a construct, usually blind to itself. (1981: xv)

The following investigation comprises this kind of operation. As such, the analysis does not target flaws and imperfections. It does not attempt to point out problems and difficulties. And it does not aim to provide solutions. Instead, it examines the terminology, structure, and form that make articulation of the problem of the digital divide possible. Such an investigation will attend to the necessary, but often unexpressed,

preconditions of the digital divide, trace their history and rationale, and project the direction of their future examination.

TERMINOLOGY

> The 'digital divide' is one of the most discussed social phenomena of our era. It is also one of the most unclear and confusing. (Warschauer, 2001: 1)

The origin of the term 'digital divide' remains uncertain and ambiguous. Recent publications and studies routinely reference 'Falling Through the Net: Defining the Digital Divide', the third in a series of reports published by the US Department of Commerce's National Telecommunications and Information Administration (NTIA, 1999). However, NTIA did not originate this expression. Larry Irving, who was the Department of Commerce's Assistant Secretary for Communications and Information at the time of the report's composition and publication, provided a candid explanation of this in a post to the Benton Foundation's digital divide discussion list:

> I am certain I stole the term, but I am not certain who I stole it from. Jonathan Webber of the *Industry Standard* makes a compelling case that somewhere back around 1995 he and Amy Harmon (when both were with the *LA Times*) invented the term to describe the social division between those who were very involved in technology and those who were not. I believe I first heard the term in the late '95/early '96 timeframe at a conference in a western state, Montana, North Dakota or South Dakota. We did not formally use the term at NTIA until months later, and the term did not gain the ubiquity it enjoys today until the release of the third 'Falling Through the Net' report in July '99. I hope that helps. The fairest thing to say is that no one at NTIA invented the term, digital divide. NTIA's reports were, however, the catalysts for the popularity, ubiquity and redefinition (from the *LA Times* original usage) of the term. (Digitaldivide, 2001: 2)

According to Irving, the 'digital divide' was appropriated from an unknown source and redefined by the NTIA in the process of preparing the third 'Falling Through the Net' report. The best guess Irving has for the word's origin is Jonathan Webber and Amy Harmon of the *LA Times*, who began using it in 1996 to name differences in opinion about new technology. But this assignment is not without complication. Andy Carvin, of the Benton Foundation, agrees that Harmon may have been one of the first journalists to use the term publicly, but argues, in a response to Irving's comment, that 1996 is 'a little too recent for her to have actually coined it' (Digitaldivide, 2001: 2). Carvin's research indicates that the expression was already being used to name a gap in educational opportunities by the Clinton–Gore administration, Massachusetts congressman Ed Markey, and *New York Times* reporter Gary Andrew Poole. He also cites Dinty Moore's

The Emperor's Virtual Clothes (1995) as containing one of the earliest occurrences of the phrase.

The definition of the term in these and subsequent places has not been homogeneous or univocal. For example, Moore (1995) employed 'digital divide' to distinguish between advocates and detractors in debates about the value of IT. Harmon used the expression to name a similar concern in her 'Daily Life's Digital Divide', a story published in the 29 July 1996 edition of the *LA Times* (Harmon, 1996). Although Harmon's story makes passing reference to the 'deepening divide between rich and poor' (p. A1), the digital divide in the headline refers not to the gap between information haves and have-nots, but to a 'voluntary partition . . . galvanized by strongly-held views about whether today's technology is a force for progress or destruction' (p. A1). For Harmon, as for Moore, the digital divide names the difference of opinion that exists between those who are 'deeply suspicious of a new generation of engineering solutions to the world's problems', and those who 'insist that, this time around, the enlightenment promise of better living through rationality and science will be realized' (p. A1). At roughly the same time, the term was also employed to name the unequal distribution of IT in American public schools. It appears, for example, on 29 May 1996 in a speech delivered by then Vice-President Al Gore, who used 'digital divide' to name the gap between the information haves and have-nots in K–12 education.[3] Beginning in 1996, the Clinton–Gore administration employed the trope of the digital divide to justify various educational initiatives and policies, and press coverage of these events popularized this particular understanding and use of the term. However, this denotation probably did not originate with the Clinton–Gore White House. Just as it is doubtful that Gore 'invented' the internet or even the term 'information superhighway' (Gunkel, 2001: 63), evidence suggests that the Clinton administration most likely appropriated the 'digital divide' from other sources. In particular, the term had already been used in the context of education by Congressman Markey in a 10 April 1996 press release which addressed the proposed e-Rate; and by two journalists, Howard Wolinsky of the *Chicago Sun Times* and Gary Andrew Poole of the *New York Times*. On 17 March 1996, Wolinsky published 'The Digital Divide', which examined how 'unequal computer access for students is creating tomorrow's haves and have-nots' (Wolinsky, 1996: 6). Two months earlier (29 January 1996), a *New York Times* article considered what Poole termed 'A New Gulf in American Education, the Digital Divide' (Poole, 1996).

Subsequent usage does not conform to either precedent but adds further denotations to the term's already complicated definition. Beginning in 1997, 'digital divide' was used in a number of contexts to describe, not differences of opinion about digital technology or inequalities in educational opportunity, but technical incompatibilities. For example, Shawn Steward

(1997) used the expression to name interoperability problems between analog and digital cellphone networks. For Steward, 'digital divide' indicated differences between the Time Division Multiple Access (TDMA) and Code Division Multiple Access (CDMA) digital technologies and the Advanced Mobile Phone Service (AMPS) analog system. The expression has also been used to name similar incompatibles in analog and digital television (McRae, 1998; Mediaweek, 1997; Roberts, 1997), satellite transmission (Informa, 1997), and film and filmless radiology (Jones, 1999). In 1998, the *San Francisco Chronicle* added yet one more denotation. Between May and August of that year, the *Chronicle* published several stories investigating racial diversity in the high-tech industries of Silicon Valley. The series began with Julia Angwin and Laura Castaneda's study, 'The Digital Divide: High-tech Boom a Bust for Blacks and Latinos' (Angwin and Castaneda, 1998), which concluded that

> employment records for 33 of the leading Silicon Valley firms show that their Bay Area staffs, on average, are about 4 percent black and 7 percent Latino – even though blacks and Latinos make up 8 and 14 percent of the Bay Area labor force respectively. (1998: A1)

For Angwin and Castaneda, 'digital divide' identifies a form of racial discrimination situated in the unequal distribution of employment opportunities. Similar usage occurs in Art Perio's investigation of 'institutionalized racism and employment patterns in the computer industry' (2001: 1).

It is not until 1999 that the term appears in NTIA's 'Falling Through the Net'. In this report, 'digital divide' is defined as 'the divide between those with access to new technologies and those without' (NTIA, 1999: xiii). In this way, 'digital divide' names a form of socioeconomic inequality demarcated by the level of *access* that one has to IT. Therefore, 'digital divide' functions as another name for a problem that had previously been identified by a number of other expressions – information haves and have-nots, the question of access, and universal service. But even within this particular usage of the term there is considerable equivocation. First, the NTIA has not been consistent. The meaning of 'digital divide' has changed from study to study. As Benjamin Compaine points out:

> In the original iteration of the NTIA surveys it meant primarily personal computer ownership. More recently it has come to incorporate internet access. The latest noises [are] that it further delineates those with high speed (broadband) access from slower dial-up modem access. (Compaine, 2001: xiii)

Second, the Benton Foundation's Digital Divide Network, which comprises one of the largest databases concerning digital divide issues, modifies the NTIA's definition. For the Benton Foundation (2001), the

digital divide names the 'gap between those who can effectively *use* new information and communication tools, such as the internet, and those who cannot' (p. 1). According to this characterization, access to technology is not the only, or even the most important, determination. Beyond access to equipment, individuals need to know how to employ it.

In the end, the digital divide has changing denotations and is, as Compaine advises, 'a moving target' (2001: 5). It not only names different kinds of technological and social differences but, even when it appears to refer to the same object, does so differently at different times and in different contexts. This complexity does not derive from some univocal origin that subtends and anchors the multiplicity. It is not some form of terminological confusion that subsequently has come to afflict what initially had been a pure and homogeneous concept. Instead, the 'digital divide' is originally and persistently plural. This plurality has at least two consequences. First, there is not one digital divide; there is a constellation of different and intersecting social, economic, and technological differences, all of which are properly named 'digital divide'. Although these various inequalities and discrepancies may be related to one another, it would be hasty and inaccurate to conclude that they are identical. This means, on the one hand, that studies of the 'digital divide' need to learn how the various problems marked by this appellation relate to, interact with, and influence each other. For example, employment discrimination in the high-tech industry is certainly related to discrepancies in educational opportunities and access to technology. On the other hand, these different issues should not be conflated. The problem of employment discrimination cannot be reduced to differences in access to technology or adequately addressed by the singular effort to wire all American schools to the internet. The situation is more complex and involves a number of different variables that need to be taken into account.

Second, despite the value placed on consistent and precise use of terminology, lexical multiplicity is not necessarily a deficiency. It is not always a semantic problem to be resolved by prescribing, even provisionally, a univocal and noiseless definition. Because IT has evolved at historically unprecedented rates, the various problems that are associated with it also experience accelerated change. This is one reason for the variability in the NTIA reports. The changing definition of the digital divide is not the result of capriciousness or an inability to be precise. It has varied because the technology in question has changed considerably. For example, the NTIA's first report, 'Falling Through the Net: A Survey of the "Have-Nots" in Rural and Urban America' (NTIA, 1995), was published in July 1995 and relied on data collected by the US Bureau of the Census in 1994. At this time, the internet was still considered the specialized domain of academics, defense contractors, and computer enthusiasts. For this reason, the first

report does not address differences in internet access and usage, but limits its investigation to telephone service and computer and modem ownership. By the time the third report was published in July 1999, however, the internet was recognized as one of the fundamental technologies comprising the nation's information infrastructure. As a result, the third report addresses 'which American households have access to telephones, computers, and the internet and which do not' (1999: xiii). In this way, the locus and object of the 'digital divide' was updated from the time of the first report to adapt to changes in technology. What is necessary in this situation is not the application of some rigid and univocal definition, but a flexible characterization that can respond to, and function in, this protean environment. Because the problems of the digital divide have been, and probably will continue to be, moving targets, the term's definition should be similarly mobile.

STRUCTURE

> Someone once wittily remarked that the world is divided into those who divide people into two types, and those who don't. (Chandler, 1994: 1)

No matter how it is defined, the digital divide organizes things into two, dialectically-opposed types. The NTIA segregates American households into those who have access to IT and those who do not. The Benton Foundation (2001) draws a similar distinction, dividing between those who can use technology and those who cannot. Harmon (1996) and Moore (1995) differentiate between 'techno-utopians', who celebrate the wonders of digital technology, and 'techno-dystopians', who do not. And the Clinton–Gore administration (Gore, 1998), Congressman Markey, and Poole (1996) address the gap that exists between information haves and information have-nots in K–12 education. Consequently, despite apparent variation in its referent, the digital divide is articulated in digital form. It represents its problematic according to a binary logic, dividing things into one of two types, where the one option is nominally defined as the negative or antithesis of the other. This dichotomized structure, although useful for describing the limits of various social and technological inequalities, is not without significant complications and difficulties.

By taking the form of a dichotomy, the digital divide participates in what Daniel Chandler (1994: 1) calls 'great divide theories'. According to Chandler, these theories became prominent during the 1960s with the publication of a number of studies (e.g. Goody, 1968; Havelock, 1963; Lévi-Strauss, 1966; McLuhan, 1962) which addressed the differences between literate and non-literate cultures. As Chandler argues:

> Such theories tend to suggest radical, deep, and basic differences between modes of thinking in non-literate and literate societies. They are often

> associated with attempts to develop grand theories of social organization and
> development. (1994: 1)

Chandler (and others) argue that the difficulty with the 'great literacy divide' rests in the incompatibility between the seemingly rigid and often simplistic binary representation and its referent, which is usually perceived as being a complex continuum. The binary form 'literate/non–literate', for example, has been perceived as an exaggeration and even a false dichotomy. As Warschauer (2001) points out, subsequent studies of literacy have revealed that there is not one, but many types of literacy (Cope and Kalantzis, 2000; Gee, 1996), that the meaning and value of literacy is not homogeneous but varies according to social circumstances (de Castell and Luke, 1986; Street, 1984); and that these different literacies exist on a continuum and do not take the form of a simple binary opposition (Gee, 1996). Consequently, the 'all or nothing' scenario that is presented by great divide theories often does not adequately represent the actual state of affairs. Or as Harvey Graff describes it, 'none of these polar opposites usefully describe actual circumstances; all of them, in fact, preclude contextual understanding' (Graff, 1987: 24).

Similar criticism has been applied to the various dichotomies that compose the 'digital divide'. The dialectically-opposed perspectives of techno–utopia and techno–dystopia, for example, are not usually experienced as an either/or option. Instead, they delimit a continuum that contains many intervening possibilities for how one understands technology and its social effects. Andrew Shapiro's *The Control Revolution* (1999) contests the extremes that define the current debate about the internet and advocates a more balanced understanding:

> Technology is not like anchovies, which some people can love and others hate,
> nor is it like the right to abortion, which some are for and others are against.
> Rather, it is an indelible feature of our cultural environment – one we must
> strive to understand in all its gray-shaded complexity . . . (p. xvi)

Similarly access to, and use of, IT is not something that is easily encoded in binary form. Although the digital divide is often characterized as the gap between the information haves and have-nots, it is not the case that one either possesses information or does not. Instead, there is significant variability in the forms of information which one possesses and the modes of its access and use. Warschauer provides an instructive illustration:

> Compare, for example, a professor at UCLA with a high-speed 'internet II'
> connection in her office, a student in Seoul who uses a cyber-cafe, and a rural
> activist in Indonesia who has no computer or phone line but whose colleagues
> in her NGO download information for her. The notion of a binary divide is
> thus inaccurate and can be patronizing, as it fails to value the social resources
> that diverse groups bring to the table. (2001: 1)

Although the dichotomies of the digital divide have been expedient for describing sociotechnological differences, the binary form necessarily risks oversimplifying the situation and neglecting the important variations that exist in the object of study. Because of this, it appears that what is necessary is an alternative formulation – one that does not distinguish between two opposed alternatives, but becomes capable of perceiving and articulating fine gradations within complex conglomerates. According to Chandler (1994), the alternatives to great divide theories are sometimes called 'continuity theories'. These theories 'stress a "continuum" rather than a radical discontinuity' and 'an ongoing dynamic interaction between various media' instead of a mutually exclusive, either/or opposition (p. 2). For example, Warschauer suggests that the digital divide be redefined as a 'social stratification', which 'indicates that the "divide" is not really a binary division at all, but rather a continuum based on different degrees of access to information technology' (2001: 1). Some studies, most notably the third, fourth and fifth NTIA reports (1999, 2000, 2002), have attempted to distinguish varying degrees of internet use based on where one accesses the network and the kind of equipment that is employed. Such approaches, which are consistent with the development of alternative strategies in the study of literacy, appear to provide a mode of inquiry that is not limited by the restrictive 'either/or' logic.

However, the problem with binary logic is not simply the inability of a linguistic dichotomy to represent a complex state of affairs. The difficulty resides in its structure. The distinction between the 'information haves' and 'information have-nots', for example, is articulated in such a way that the latter is both segregated from, and defined in opposition to, the former. But these two possibilities are not on an equal footing. The 'information haves' are not only characterized positively but are presumed to be in the desirable position. The 'information have-nots' are defined, quite literally, by what they lack in comparison to the 'information haves'. They comprise the negative counterpart and undesirable version of their positively-defined other. This formulation, although useful for identifying extant technological and social inequalities, has potentially disquieting ethical consequences, especially when applied in a global context. In distinguishing 'information haves' from 'information have-nots', the technologically-privileged situate their experiences with technology as normative, so that those without access to similar systems and capabilities become perceived as deficient and lacking. This evaluation, which establishes an asymmetrical hierarchy, is not substantially modified by including intervening stages in the binary structure, for the other would still be defined negatively by what they lack in comparison to the technologically-privileged. Defining others as existing in various states of deficiency, however, can be interpreted as arrogant and paternalistic. Although the internet is potentially useful in some highly-

specific sociocultural situations, it is not an unqualified and unquestioned human good. Unlike clean water, nutritious food, and adequate shelter, the value of this technology has been determined by unique circumstances that are only applicable to a small fraction of the world's population. In defining others as deficient, one does not simply provide a neutral expression of inequality. The very technique by which the discrepancy is articulated necessarily employs an asymmetrical logic that already warrants the position of a privileged minority, and depreciates and simplifies the situation of others.

Given this structural difficulty, the task of criticism might appear to be to escape binary logic, replacing the dichotomies of the digital divide with something that is less decisive and derisive. This proposal would be fantastic if not impossible. The binary structure that is evident in the concept of the digital divide is neither unique nor voluntary. In fact, such logic organizes and informs the entire event-horizon of the Western episteme, up to and including that by which one would describe and/or criticize this tradition as such. Binary logic, as poststructuralists have demonstrated, underlies, organizes, and animates all possible modes of knowing – scientific, mathematical, critical, and even everyday language. As Mark Dery explains it:

> Western systems of meaning are underwritten by binary oppositions which include, among others: self/other, mind/body, culture/nature, male/female, civilized/primitive, reality/appearance, whole/part, agent/resource, maker/made, active/passive, right/wrong, truth/illusion, totality/partiality. (Dery, 1996: 244)

If all meaningful discourse is generated in and by using binary terms, then there is, strictly speaking, nothing of significance outside this system. In other words, it may not be possible to think, speak, or reason otherwise. What is required, therefore, is a procedure that not only recognizes this requirement but learns how to operate in this curious and complex situation.

This insight furnishes at least three conclusions which are useful for understanding the digital divide and directing its critical investigation. First, the examination of the divide needs to develop a sense of self-reflexivity. Although empirical studies adequately diagnose and quantify the gap that currently exists, for example, between information haves and have-nots, they do not explicitly recognize how this apparently altruistic endeavor might also entail significant ethical complications. In structuring its problematic in the form of a binary opposition – a structure that is logically necessary and not merely optional – the digital divide does not simply identify a kind of sociotechnological discrimination, but already entails evaluative decisions that encompass potentially disturbing forms of prejudice. Consequently, the

structure of the problem may itself be a problem. Second, the examination of this binary opposition cannot take place except by employing what is investigated. Because binary logic underwrites all possible modes of meaning, it also governs any and all attempts to question and criticize this structure as such. Or as Chandler cleverly demonstrates, one is compelled to employ binary logic even when questioning and describing the limits of such logic (1994: 1). Therefore, the binary structure of the digital divide is not something one can surpass, overcome, or even avoid. It delimits both the articulation of the problem and the parameters of any meaningful critique. Consequently, the task of criticism is not to break out of this logic but to learn how to use it to question its own limits and exigencies. Finally, and as a result of this situation, there neither is, nor can be, finality. As Mark Taylor points out: 'Leading poststructuralists realize that since they remain unavoidably entangled in the systems and structures they resist, the task of criticism is endless' (1997: 269). Criticism of the digital divide, therefore, is not some singular undertaking with definite goals and a conclusive solution. It is, and remains, an ongoing project – one that must continually submit its own findings to the process of criticism.

FORM

> Despite the media's penchant for beating to death anything to do with the Internet, a new phrase has recently entered the public's online lexicon, one that actually carries significant societal ramifications: the 'digital divide'. (Carvin, 2001: 56)

The digital divide is concerned not so much with technology as with its 'significant societal ramifications'. The effect of technology in the social sphere has often been posed in the terms of *technological determinism*. According to Chandler:

> The technological determinist view is a *technology-led* theory of social change: technology is seen as the 'prime mover' in history. According to technological determinists, particular technical developments, communication technologies or media, or, most broadly, technology in general are the sole or prime antecedent cause of change in society, and technology is seen as the fundamental condition underlying the pattern of social organization. (Chandler, 1995: 2)

This particular formulation of a causal connection between technology and society is usually credited to American sociologist Thorstein Veblen (Chandler, 1996: 2; Ellul, 1964: xviii; Jones, 1990: 210). It becomes an influential theory in the sociology of communication through the work of individuals such as Charles Horton Cooley, who argued that 'we understand nothing rightly unless we perceive the manner in which the revolution in

communication has made a new world for us' (1962: 65). And it plays a constitutive role in the fields of technology and media studies (Ellul, 1964; Innis, 1951; McLuhan, 1962). Since its introduction at the turn of the last century, technological determinism has developed into two subsets generally called 'hard' and 'soft determinism'. Hard determinism makes technology the *sufficient* or *necessary* condition for social change, while soft determinism understands technology to be a key factor that *may facilitate* change. Although these two modes are distinguished from one another, the boundary between them is often blurry and flexible. As Ruth Finnegan points out, 'it is easy to slide from one to another without realizing where one is being led' (1975: 105).

Despite several decades of healthy skepticism (Finnegan, 1975; MacKenzie and Wajcman, 1985; Postman, 1993; Smith and Marx, 1994), technological determinism figures prominently in the rhetoric of computers and the internet. For instance, Jay David Bolter's *Turing's Man* (1984) argues that the computer redefines 'man's role in relation to nature' (p. 13), producing 'a change in the way men and women in the electronic age think about themselves and the world around them' (p. 4). In his 1995 bestseller, *Being Digital*, Nicholas Negroponte distinguishes bits from atoms and argues that bits of digital information introduce revolutionary changes in communication, education, politics, entertainment, and human communities. And the work of Alvin Toffler (1980), which figures prominently in the ideology of techno–libertarians, divides history into three distinct 'waves', which are primarily defined by the technological innovations of agriculture, industrial production, and information systems. The reports, texts, and discussions of the digital divide do not question this prevailing technological determinism, but exploit it. First, no matter how the digital divide has been defined, it assumes radical and persistent differences between distinct socioeconomic forms and defines these difference technologically. The discourse of the digital divide employs the distinctions between digital and analog technology, the 'new digital economy' of e-commerce and the 'old economy' of industrialized production, the Information Age and the Industrial Age, and the opportunities enjoyed by those individuals who are able to participate in the 'digital revolution' and the unfortunate experiences of those who cannot. Indicative of this form of technological determinism is the US Department of Commerce's *The Emerging Digital Economy* reports, which complement the NTIA's *Digital Divide* studies (NTIA, 1999: 1). In the introduction to the first *Emerging Digital Economy* publication (April 1998), the authors differentiate between two socioeconomic revolutions, each of which is defined and propelled by technological innovations – the Industrial Revolution, which 'was powered by the steam engine, invented in 1712, and electricity, first harnessed in 1831', and the digital revolution, driven by

information technology and 'the harnessing of light for nearly instantaneous communication' (p. 1). In the discussions and debates concerning the digital divide, the computer and the internet are not just another convenience. They are often assumed to be epoch-defining technologies that determine radically new socioeconomic opportunities for individuals and institutions.

Second, in the rhetoric of the various digital divide studies and reports one finds both hard and soft forms of technological determinism. For example, the gap between the information haves and have-nots is not just another socioeconomic division. As Compaine (2001: 333–4) points out, the question concerning access to IT is approached as a unique disparity that is not on par with other kinds of technological inequalities, such as that existing between individuals who have access to automobile transportation and those who do not. Instead, the digital divide is perceived to be a definitive social issue. It is characterized as such, because the technology in question is assumed to effect socioeconomic opportunity and success. This understanding often takes the form of hard determinism. This is especially evident in political speeches, where digital technology is presented as the sufficient cause of social change. Former Vice-President Al Gore is probably best-known for this kind of rhetoric:

> We meet today to break down walls. At each critical point in our nation's history, we have acted on our duty to give every citizen the chance to live out the American Dream. In the Agricultural Age, we ensured that land went not only to the privileged few, but to the common yeoman farmer. In the Industrial Age, we focused on making sure that all Americans – and not just the industrial barons – had access to capital. Today in the Information Age, connecting all people to a universe of knowledge and learning is the key to ensuring a lifetime of success. (1998: 1)

Other times, the demonstration employs a softer approach, suggesting that information technology may contribute to social transformation. For example, Compaine finds that 'access to the information available from networked devices may be critical in the education process – for both teachers and students. But will the stakes be as high as some prognosticators proclaim?' (2001: xiii). And sometimes the rhetoric of the digital divide drifts, as Finnegan (1975) explains, from one form of determinism to the other. For example, the third NTIA report begins with Irving's proclamation that the digital divide 'is now one of America's leading economic and civil rights issues' (1999: xiii). It ends, however, with a more modest and measured assessment: 'To be connected today increasingly means to have access to telephones, computers, *and* the internet. While these items may not be necessary for survival, arguably in today's emerging digital economy they are necessary for success' (1999: 77).

Discussion of the digital divide regularly employs elements of technological determinism. This is a potential difficulty not only because

technological determinism, as a general theory of social change, remains controversial, but because there are specific problems with the technological determinist perspective as it applies to computer technology. First, the theory of technological determinism is refuted by two other theories concerning the relationship between technology and society – *sociocultural determinism* and *volunteerism*. According to Chandler, the former 'presents technologies and media as entirely subordinate to their development and use in particular sociopolitical, historical, and culturally specific contexts', and the latter 'emphasizes individual control over the tools which they see themselves as "choosing" to use' (1996: 2). Both alternatives complicate the technological determinist perspective. Although the various empirical studies and reports addressing the digital divide (Katz and Aspden, 1997; Novak and Hoffman, 1998; National Public Radio (NPR) et al., 2000; NTIA, 1995, 1998, 1999, 2000, 2002; Walsh, 2000) employ forms of technological determinism in constructing their hypotheses and conclusions, they often support the theory of sociocultural determinism in the course of their investigations. In the diagnostic phase, these different studies find that access to, and use of, IT is dependent on social and economic conditions. For example, the first NTIA report (1995) discovers that geography is an important factor in defining the divide between information haves and have-nots. The third report demonstrates that race is a significant element and argues that the digital divide is actually a 'racial ravine' (NTIA, 1999: 8). And the 2000 Forrester brief, penned by Ekaterina Walsh (Walsh, 2000), discovers that it is personal income that makes up the primary and determining factor. Although there is still significant debate over the exact cause of the digital discrepancy, survey research demonstrates that social, cultural, and economic opportunities play a constitutive role in determining the level of one's access to, and ability to use, IT. In other words access to, and use of, technology appears to be a symptom and not the cause of socioeconomic opportunity. Therefore, what the empirical studies demonstrate is that the theory of technological determinism, although persuasively deployed in the rhetoric of the digital divide, remains an inadequate explanation of the problem and risks oversimplifying a situation that is obviously more complex.

The perspective of volunteerism introduces additional complications. In modern philosophy, volunteerism – which emphasizes an active agent's individual freedom to choose between competing alternatives – is traditionally opposed to determinism, which proposes what is often described as a mechanistic model of causation. For this reason, volunteerism has been employed by humanists, existentialists, and other individuals who 'insist that people are active agents and not helpless automatons' that are determined by sociocultural or technological circumstances (Chandler, 1995: 19). In *The Labyrinths of Literacy*, for example, Graff (1987) counters the

technological determinist perspective in literacy studies by employing a volunteerist argument. According to Graff, 'neither writing nor printing alone is an "agent of change"; their impacts are determined by the manner in which human agency exploits them in a specific setting' (1987: 19). Similar arguments have been made for studies of the digital divide. Compaine argues that the almost undocumented existence of voluntary non-users significantly complicates the statistics:

> In the statistics on nonsubscribers to telephone, cable service, PC ownership or internet connectivity there has been scant attention paid to voluntary nonusers. There is both anecdotal evidence and increasing statistical verification that large numbers of individuals are voluntary non-participants . . . The Cheskin Research study of Hispanic households found that the second most voiced reason for not owning a computer, nearly 40%, was 'don't need.' Another six percent had similar reasons – 'too old' or 'not interested.' This is generally consistent with the NPR/Kaiser Foundation/Kennedy School survey . . . Of those characterizing themselves as being 'left behind' in computers, barely 20% blamed cost. A third were just not interested. (2001: 328)

Studies of the digital divide, therefore, appear to overemphasize sociotechnological factors at the expense of individual volition. Consequently, critics of current digital divide studies point out that the world is not simply divided into information haves and have-nots. There are also information want-nots (Brady, 2000; NTIA, 2000; Van Dijk, 2000) and even internet drop-outs (Katz and Aspden, 1998) – those who had access at one time and decide, for various reasons, against continued use. Accordingly, studies of the digital divide have been denounced for being too deterministic and neglecting these important voluntary aspects affecting access to and use of new technology.

Second, the social impact of computer technology is debated and inconclusive. Citing a study conducted by Carnegie-Mellon University, Hubert Dreyfus (2001) concludes that the internet has not provided the kind of social improvement that is espoused in the technical, academic, and popular presses:

> We are told that, given its new way of linking and accessing information, the Internet will bring a new era of economic prosperity, lead to the development of intelligent search engines that will deliver to us just the information we desire, solve the problems of mass education, put us in touch with all of reality, allow us to have even more flexible identities than we already have and thereby add new dimensions of meaning to our lives. But, compared with the relative success of e-commerce, the other areas where a new and more fulfilling form of life has been promised have produced a great deal of talk but few happy results. (2001: 2)

Similar disappointments with the social promise of computer technology have been registered by Neil Postman (1993), Zillah Eisenstein (1998),

Gordon Graham (1999), and Kevin Robins and Frank Webster (1999). Although the digital divide studies situate computer technology as a force for positive social change, this assumption is neither universally accepted nor without considerable debate. In fact, one must remember that the determinist perspective can be, and has been, employed to explain both positive and negative social transformation. Jacques Ellul (1964), for example, argues that technology is not necessarily a progressive force, but also produces new sociocultural conflicts and uncertainties.

Complicating this insight is the fact that technology is often employed in ways that deviate from its intended or projected use. As William Gibson points out: 'The street finds its own use for things – uses the manufacturers never imagined' (1993: 29). This is especially true for the internet, which was initially developed by the US Department of Defense for the purposes of telecomputing and research but was actually utilized by participants as a medium of communication (Gunkel, 2001; Hafner and Lyon, 1996). The digital divide reports position the internet as a tool for lifelong learning, job improvement, and democratic participation (NTIA, 1999). However, data concerning actual use contest this. Both the 1998 and 1999 NTIA surveys and the Forrester brief (Walsh, 2000), find that users employ the internet for purposes other than the projected social and political improvements. As Compaine points out:

> The surveys have found that services such as chat rooms (sex is popular), sports, and game playing top the list of activities. It is wonderful having access to news and finance and diverse opinions from providers who would never have a world wide audience pre-Internet. But as the research presented in this volume and elsewhere repeatedly confirms, once digitally enabled, all groups – by income, ethnicity, gender and education – fall into almost identical patterns of usage. (2001: 332)

Despite assurance to the contrary, IT is not necessarily experienced as 'a leading civil rights issue'. Although the internet may provide some minor improvements in education, career development, and retail shopping, there remains significant dissonance between the socioeconomic liberation promised in the rhetoric of the internet and the actual patterns of use discovered in the empirical surveys.

Finally, history is against us here. The sociocultural opportunities promoted in the technological determinist rhetoric of the internet is nothing new. Similar promises have been made for other forms of IT. Electric telegraphy, for example, was introduced with a kind of messianic narrative. According to James Carey,

> this new technology entered American discussions not as a mundane fact but as divinely inspired for the purposes of spreading the Christian message farther

and faster, eclipsing time and transcending space, saving the heathen, bringing closer and making more probable the day of salvation. (1989: 17)

Similar assurances were associated with radio during the first three decades of its development and commercial expansion. As Martin Spinelli demonstrates in his 1996 article 'Radio Lessons for the Internet', wireless technology was 'instilled with the hopes of initiating utopian democracy, providing for universal and equal education, and bringing a sense of belonging and community' (1996: 1). These promises, which bear an uncanny resemblance to the rhetoric of the internet, were espoused by industry leaders such as David Sarnoff, government officials and agencies such as Herbert Hoover[4] and the Federal Communications Commission, and cultural critics such as Hans Magnus Enzensberger, Rudolf Arnheim, and Bertolt Brecht. However, the history of telegraphy and radio demonstrate that both forms of IT were unable to effect these fantastic social promises. The evolving telegraphic network did not hasten the coming of the kingdom of heaven but supported nationalist aggression and empire-building (De Landa, 1991; Mattelart, 1994, 1996). As Steven Lubar notes: 'The messages that passed through these far-flung communications links were messages not of peace and unity but of unprecedented technological warfare' (1993: 89). Radio also failed to deliver on its projected social transformations. The technology of wireless communication evolved to serve military purposes (De Landa, 1991; Lubar, 1993) and the profit motives of corporations (Spinelli, 1996). There is, therefore, significant dissonance between the projected social impact attributed to a particular technology and the actual effects that are observed to follow from its development and proliferation. If telegraph and radio failed to fulfill the promises of participatory democracy, new economic opportunities, and social improvement, one should be skeptical of similar technological determinist rhetoric when applied to the internet. In stating this, one is not arguing that the internet will necessarily follow the historical precedent established by other forms of media, especially broadcast communication. Such a position amounts to a kind of naive 'historical determinism' and would not be attentive to the important qualitative differences that exist between these technologies. Instead, the issue is the theory of technological determinism and the way that it has functioned in the history of communication technology. As with the internet, telegraph and radio were at one time new technologies that were introduced and associated with the promise of sociocultural liberation. Unfortunately, neither technology delivered on what was promised. Therefore, the history of telegraphy and radio do not prescribe some fated destiny for the internet, but merely indicate that there are good reasons to be skeptical of technological determinism whenever it is deployed.

CONCLUSION

> Anyone who practices the art of cultural criticism must endure being asked,
> What is the solution to the problems you describe? (Postman, 1993: 181)

Critique of the digital divide does not identify difficulties in order to correct them but aims to articulate the necessary and often unexamined preconditions that organize and underlie its discussions, debates, reports, and examinations. This form of investigation does not contest the data that has been collected, dispute the analyses that have been published, or undermine the work that has been and continues to be done. On the contrary, the purpose of critique is to assist these and future endeavors by making evident their starting points, stakes, and consequences. To have second thoughts about the digital divide is not to question the validity or importance of the different social and technological issues that are identified by this term. 'Second thoughts' means rethinking the problematic of the digital divide, exposing its assumptions, and explicating how such preconditions authorize and regulate its examination and proposed reparation.

At the end, then, what we have are not conclusive solutions to specific problems but guidelines for understanding and questioning the issues of the digital divide. First, the term 'digital divide' is originally equivocal, irreducibly plural, and constantly flexible. It names not one problem, but a changing constellation of different and not always related concerns. Unfortunately, 'digital divide' is something that has been used far too casually in industry, government, and the academy. The goal of criticism is not to formalize a rigid and univocal definition. The fact is, the phrase will probably continue to be plural and multifaceted. Instead, the task is to help delimit the range of possible denotations and to assist digital divide discourse in understanding the complexity and nuances of the various problems that have been collected under this appellation. What is needed, therefore, is not a precise and exclusive definition, but an understanding of the essential polysemia that already characterizes the term 'digital divide'. Such understanding will not only help to abate terminological equivocation, but will foster a more discerning conceptualization of the digital divide's fundamental plurality.

Second, no matter what socioeconomic or technological differences the term 'digital divide' identifies, it projects a binary structure. It describes its various concerns by differentiating between two variables, where one comprises the negation or antithesis of the other. This binary opposition not only is unable to represent something that essentially resists division into a simple either/or dichotomy, but also institutes an asymmetrical hierarchy. The issue, then, is not just the inability of language to describe a complex state of affairs but the implicit value judgements that are already encoded in the structure of a dichotomy where the two terms are not on equal footing.

The task of criticism is not to break out of this binary logic, which would be nonsense, but to learn to use it to develop self-reflection. Therefore, the task is to question the terms and conditions by which studies of the digital divide define their own mode of questioning. Doing so will help to ensure that examinations of the digital divide do not proceed blindly, but understand the structure and consequences necessarily imposed by their own problematic.

Third, the examinations and discussions of the digital divide, whether executed in government reports, popular media, or academic analyses, rely on and deploy elements of technological determinism. In fact, it is through the common and often unacknowledged assumption of this perspective that the problem of the 'digital divide' becomes something worth studying, discussing, and debating. Technological determinism is a persuasive position – socioeconomic problems are reduced to technological issues so that investment in technology is directly associated with social and economic improvement. But the issues are more complex. The purpose of critique is not to overturn or repair technological determinism, but to expose and make explicit the way this particular theory organizes the definition of the problem of the digital divide and the range of its possible reparations. In formulating this position, other theories of social change, such as sociocultural determinism and volunteerism, although no less controversial, can provide critical foils for questioning and investigating digital divide rhetoric. It is, then, not a matter of finding the 'right' theory and applying it consistently, but of using theory dynamically to open the 'digital divide' to critical reflection. Understanding how the theory of technological determinism participates in shaping the problematic of the digital divide is indispensable for anyone interested in evaluating the studies, reports, and proposals addressing this important sociotechnological issue.

Acknowledgements

Notes

1 For examples, see the following:

  (1) academic studies – Bolt and Crawford (2000); Bucy (2000); Compaine (2001); Ebo (1998); Hoffman et al. (2000); Katz and Aspden (1997); Lenhart (2000); Novak and Hoffman (1998); Walsh (2000); Wilhelm (2001); Wresch (1996);
  (2) professional meetings and conferences – Digital Nations Summit (2000); Harvard/MIT eDevelopment conference (2000); National Communication Association annual conference (2000, 2001, 2002); The Technology Alliance conference on Seeking Solutions to the Digital Divide (1999);

(3) political speeches and policy studies – Benton Foundation (2001); Gore (1998); House of Representatives (1999, 2000); National Telecommunications and Information Administration (NTIA) (1998, 1999, 2000, 2002);

(4) popular press and media – American Broadcasting Companies (ABC), Inc. (1999); Burkeman (1998); Michel (2001); National Public Radio (NPR) (2000); Public Broadcasting System (PBS) (2001); Schrader (2000); Taylor (2000).

2 For examples, see Barlow (1994, 1997); Benedikt (1993); Dery (1994); Dyson et al. (1996); Gans and Sirius (1991); Negroponte (1995); Rheingold (1993); Schuman (1988).

3 'K-12' is a term that is specific to the American system of education. It denotes 'kindergarten through 12th grade', which means that it functions as a generic term indicating both primary and secondary education.

4 David Sarnoff (1891–1971), a pioneer in the development of radio and television broadcasting, became president of the Radio Corporation of America (RCA) in 1930. Herbert Hoover (1874–1964), who was US Secretary of Commerce under Presidents Harding and Coolidge, was instrumental in shaping public policy in the early days of radio broadcasting. In 1929, he became the 31st President of the United States.

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