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Chapter 8

The Analog History of the “Digital Divide”

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Introduction

The digital divide has been part of the public agenda for over a decade. Although not necessarily the most prominent issue, compared to political drama, military conflicts, or financial crises, the “digital divide” has demonstrated substantial stamina in the public discourse. For years, this term brought together academics, policy makers, industry players, and members of the civil society to advocate, debate, and question its relevance and potential role in impacting socioeconomic and cultural development both on the global and the local scales.

Despite its prevalence in public and scholarly discourses, the question of conceptualization of the digital divide remains an open and continuously challenged topic. Jan van Dijk argues that alongside the need to develop theoretical frameworks for studying the “digital divide,” addressing “the lack of conceptual elaboration and definition” is “the most urgent task.”¹ Although van Dijk is primarily concerned with operationalizable definitions, his discussion opens up questions raised in earlier writings about the conceptualization of “digital divide” as a social phenomenon, scholarly subject, and object for policy making.² From that point of view, the digital divide discourse leads us to conceptualize and understand (and in some cases regulate) the role of media

information and communication technologies in the context of societal change with a particular focus on socioeconomic development. As such, we can view the concept of the “digital divide” as emerging from an interaction between three distinctive, but deeply interrelated, domains: the substantive domain, the discursive domain, and the meta-discourse, or theory, domain.

The *substantive domain* refers to the changing technological, political, and social “realities” and the prevailing socioeconomic developmental issues. On the one hand, the media, information, and communication technologies have demonstrated an impressive growth in the past two decades, offering new platforms for communication and continuously opening up new questions about their social role. On the other hand, questions of poverty, dispersion, and socioeconomic underdevelopment remain today as relevant as they were two decades ago. The changes and the challenges imposed by the substantive domain are at the basis of the debate surrounding the “digital divide” and are the driving force behind the attempts to conceptualize it.

The discussion about the role of information and communication technologies (ICTs) in development that is generated primarily by policy makers and practitioners, but also by academics, constitutes the *discursive domain*. This is the domain where power structures in the media, information, and development realms are defined and are continuously negotiated. It produces agendas for the information and communication technologies industry, for public policy, and for perceptions of the social role of communication. As such, the discourse reacts to and feeds back into the substantive domain, as it has the potential to affect the material facts on the ground.

Each of these domains, and the interactions between them, are under continuous scrutiny by their participants and particularly by the members of the research community. These efforts to understand, analyze, and constructively criticize the discourse, and its substance, constitute a meta-discourse or attempts systematically to explain the phenomenon. However, this *theoretical domain* does not exist in vacuum, as it is in constant conversation with the discursive domain and is tied always to the substantive domain. The resulting picture is that of an interrelated progression of the three domains, as they impact each other, which brings further complexity into attempts to make sense of the “digital divide.”

This chapter tracks the evolution of the “digital divide” in recent history. It reviews each one of the domains around the time when first references to the “digital divide” appear in the U.S. public discourse. Although it distinguishes between the domains, it is important to view them as parts of a whole. Discursive, theoretical, and substantive developments did not take place independently and the mutual influences of each are deeply embedded in the others. Following this retrospective, I will discuss the more recent developments in the efforts to conceptualize the “digital divide.” I will then highlight how these developments can be understood through the lens of the same three domains. I will conclude with thoughts for further conceptualizing efforts that could incorporate the classic notion of the “digital divide” with contemporary knowledge on media, communication, and socioeconomic development.

Discursive Origins

The exact origins of the term “digital divide” are still being debated, but existing literature allows us to draw a relatively detailed picture. David Gunkel traces the origins of the term to public and political discourse, where it was assigned different meanings by different stakeholders. In 1995, the term “digital divide” was used by *Los Angeles Times* journalists to describe opposing views regarding the potential of information technology to solve the world’s problems. Just one year later, the term was utilized by the Clinton-Gore administration to describe the information “haves” and “have-nots” in K-12 education. To make things even more semantically complex, some references during that time used the term “digital divide” to describe differences in technical capabilities, such as interoperability between analog and digital cell phone networks. Other sources used the term to address the lack of racial diversity in the emerging high-tech industry.³ Nevertheless, there is broad agreement that the term was publicized through a series of reports initiated during the Clinton administration.⁴

The first officially published use of the term “digital divide” can be traced back to a 1999 report by the U.S. Department of Commerce’s National Telecommunications and Information Administration (NTIA), titled “Falling through the Net: Defining the Digital Divide.”⁵ In this report, the “digital divide” is defined as “the divide between those with access to new technologies and those without.”⁶ This generic and broad definition, focused on access to physical infrastructure and on the dichotomy between the “haves” and the “have-nots,” became one of the main frames of reference to the digital divide, especially in relation to placing this issue in the context of socioeconomic development.

Over time, this policy-based understanding of the “digital divide” as a term that referred to disparity in physical access to infrastructure became a discursive token in both the national and international arenas. In the United States, for example, the Clinton administration praised itself for “bridging the digital divide.”⁷ Among its achievements, the administration listed tripling funding for Community Technology Centers, which at their peak in 2001 had a budget of almost \$65 million and provided access to computers and the Internet in low-income communities across the country.⁸ When revising the Telecommunication Act, the Clinton administration also included public schools and libraries within the expanded “universal service” mandate, granting them significant “E-rate” discounts on the costs of building computing and telecommunication infrastructure; the total worth of the benefit was estimated at over \$2 billion.⁹

In the international arena, the period of late 1990s early 2000s was marked by the creation of a series of global efforts aimed to spur greater ICT use in the developing world. For example, in 1996 the World Bank launched its InfoDev program to help finance small-scale projects designed to implement ICTs as part of broader development efforts. In 2000 the UN General Assembly resolved “to ensure that the benefits of new technologies, especially information and communication technologies, . . . are available to all” as part of its development agenda known as the “Millennium Goals.”¹⁰ Finally, in 2003 and 2006 the International Telecommunication Union (ITU) sponsored the World Summit on the Information Society (WSIS), which aimed to discuss how to bridge the “global digital divide” and to more broadly consider the future of ICTs and development on an international scale.

Some formal analysis of the discourse emerging during that time helps to draw a more detailed picture of the discursive origins of the term. Mark Thompson studied the discourse of the leadership of the World Bank as it carved out a role for ICTs in the arena of development. He viewed the World Bank's incorporation of the debate about information technology as a "developmental land grab," or means for the bank to maintain its authority in the developmental arena. In other words, to remain relevant, the bank could not afford not to incorporate the "digital divide" in its official discourse.¹¹ In his analysis, Thompson reveals that:

ICT is represented as a neutral tool of the Bank's experts, the province of "young people," the "new millennium, and the future," and we are repeatedly told that, far from offering alternatives to the existing developmental order, ICT is seen by the Bank as key to its future expansion. Along the way, we have seen examples of the conception of ICT projects within a markedly North American worldview and the use of ICT to export, unchallenged, such cultural assumptions.¹²

In other words the discourse merging ICTs and development is characterized by a belief in the transformative power of technology. In this case, technology is thought to be capable of bringing Western development to the developing world. Moreover, technology is associated with progress and viewed as an essential component of the future.

Siobhan Stevenson found that the framing of the issue as it emerged from the NTIA reports captured the "digital divide" in neo-liberal terms, which placed the burden of catching up on the individual and the market, but nevertheless linked socioeconomic development with technology adoption.¹³ Her findings highlight a dichotomous division between information "haves" and those who "fell through the net." In their analysis of the

U.S. discourse relating to the “digital divide” and economic development, Leslie Tu and Lynette Kvasny have also criticized the notion of a single desired developmental state and the implicit solution in the form of the information “have-nots” having to “catch up.”¹⁴ David Gunkel summarized his critique of the “digital divide” as follows:

The distinction between “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.¹⁵

Numerous studies looking at the digital divide discourse make similar observations about the characteristics of the debate. Moreover, they demonstrate how institutional adoption of this discourse translates discursive frames into operative policy decision, or, in other words, suggests a close interdependence between the discursive and the substantive domains, which will be further discussed below.¹⁶

Theoretical Origins

Deep conceptual roots support the rhetoric of the “digital divide” as a dichotomous distinction between “haves” and “have-nots” coupled with an underlying belief in the almost revolutionary power of ICTs to bring development. A decade-long tradition of thinking about and practicing socioeconomic development created a notion that there is a

single desired state of development. Moreover, this tradition was based on an idea that knowledge, technology, or democratic values can be easily transferable from the developed to the developing.

The post–WW II period is frequently marked as a starting point for generating formal theories of development.¹⁷ Changes in the sociopolitical landscape, such as the formal end of colonization and the emergence of “new” independent states, highlighted the socioeconomic gaps between the Global North and the Global South. A World Bank study showed that in 1960, per capita income in the world’s richest countries was 38 times greater than in the poorest countries.¹⁸ Moreover, many of the newly established states, lacking adequate institutions for sustainable statehood, found themselves swamped by political turmoil and civil unrest.¹⁹ Out of this reality emerged a body of research and practice aimed at addressing the developmental needs of the underprivileged societies through export of technological and political know-how from the developed parts of the world. This approach was institutionalized through the establishment of organizations such as the World Bank, International Monetary Fund, and later the UN Development Program.²⁰

The dominant developmental paradigm articulated during that time is formally known as the “modernization theory.” Built on ideas of modernity,²¹ and rooted in the view that economic and technological growth can re-shape social, cultural, and political structures, this perspective remains the dominant approach to international socioeconomic development.²² In the developmental context, the modernization theory views the Western world as representing the aspirational model for developing nations, both in terms of economic development and in terms of preferred political and cultural

value systems.²³ Moreover, this approach implies that development is transferable and developing countries can achieve both economic and political progress through the import of technology, management practices, political institutions, as well as a set of values from the developed world.²⁴

The early application of modernization thinking to the information and communication domain can be found in the area of “communication for development,” or “development communication.” Both research and activism in this area originally built on utilization of media for the mobilization of target audiences, whether these were the communities being developed, the hosting governments, or the specific project facilitators.²⁵ Communication theories such as “diffusion of innovations,” and later the “two-step-flow,” constituted the mainstream theoretical frameworks during the early days of development communication. The prevailing approach was that of strong effects and top-down flow of information from the developed to the developing. This was particularly evident in the case of models of innovation diffusion that applied a deterministic perception of how Western technologies should be introduced to the developing world.²⁶ In this context, communication is viewed as a vehicle that delivers progress from the developed to the developing in the form of technology, know-how, ideology, values, and more. For example, one of the approaches applied in this context is that of “extension,” where technological transfer takes place from an expert to the user in a somewhat paternalistic fashion.²⁷ Such practices clearly resonate with the modernization perspective of a dichotomist division, a clear model of the desired state, and patron-patronized relationship between the developing and the developed.

Even though we can find references to communication as an important element in constituting and changing social structure in the literature on society and state building,²⁸ the role of communication has never been clearly defined in the developmental process. At most, the modernization approach to development viewed communication as a vehicle for knowledge transfer, but more frequently as an exogenous factor in a developmental effort.²⁹ The “knowledge gap” hypothesis, which was introduced by Phillip Tichenor, George Donohue, and Clarice Olien in 1970, was one of the few approaches that considered communication as an integral part of the developmental process. Building on Robert Merton’s observation of the “Matthew effect,”³⁰ this hypothesis concluded that those belonging to higher socioeconomic strata are in an advanced position to reap the benefits of media, information, and communication technologies. Tichenor, Donohue, and Olien demonstrated that people of higher socioeconomic status have better abilities to navigate the mass media, and contextualize, retain, and recall information when required.³¹ In other words, in the context of socioeconomic development, bridging the knowledge gap is in fact equal to development.

Particularly during its early days, the discourse and conceptualization of the “digital divide,” can be viewed as an example of modernization thought applied to one particular domain. First, the notion of “divide” implies a dichotomous view of two distinct and dialectically opposed groups of “haves” vs. “have-nots,” whether that opposition occurs in terms of access, skills, or attitudes towards technology. Second, there is a clear hierarchy, by which the “have-nots” are inferior to the “haves,” who represent the only desired state. In fact, the two states are described in negative, mutually exclusive positions; one cannot belong simultaneously to both groups. Moreover,

belonging to the group of “haves” stands not only for ownership of a technological artifact but for ownership of the modern way of life and progress itself. Those on the privileged side of the “divide” are usually wealthier, more educated, more powerful, and overall more “successful.” Those who do not belong to the privileged group are excluded from the progress or left behind. Finally, the notion of “digital divide” also implies a solution to the socioeconomic disparities; one that is based on access to information technology as a means for development. This point is particularly prominent in the early rhetoric of the digital divide, which focused on physical access to personal computers and later the Internet.

Jan van Dijk draws direct parallels between the “knowledge gap” and the “digital divide” approaches when it comes to unequal “diffusion and development of knowledge and information.”³² The pivotal idea underlying the knowledge gap hypothesis and its link to the digital divide lies in explication of the relationship between communication processes and social inequality. As is the case with mass media, those in the higher socioeconomic strata are in a better position to benefit from ICTs. Moreover, both terms still capture a particular, rather dichotomous, view of the “information haves” vs. “information have-nots,” which resonates with the modernization view of the world even if it introduces a more nuanced explanation.

David Gunkel’s critique of the digital divide discourse quoted above is very much in line with the critique of modernization. He questions the dualism of the “digital divide” framework as incapable of encompassing the complexity of the phenomenon and the multiplicity of the ways it is expressed in practice.³³ He critiques the implicit hierarchy embedded in the terminology and explains that:

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.³⁴

Finally, Gunkel describes the centrality of technology in the paradigm as deterministic and laments that, “The reports, texts, and discussions of the digital divide do not question this prevailing technological determinism, but exploit it.”³⁵ Similar criticism can be found in Mark Thompson’s analysis of the World Bank discourse on ICTs and development.³⁶

In the setting of the mid-to late 1990s, when the rhetoric of the “digital divide” was first used by U.S. politicians, the discourse that emerged embodied concepts from the theoretical domain and the long heritage of the debate about development. The early dichotomous definition of the “digital divide” bears clear traces of modernization thinking in terms of two clearly distinctive states of development: a single desired state, and an implied solution in the form of the transfer of knowledge or technology. Even though the digital divide was a multifaceted issue from the outset, the early political and practical solutions to the “digital divide” were built around the idea of providing access to computer equipment and to the Internet; it was assumed that socioeconomic development would follow.

Substantive Origins

In the discussion of the modernization approach to development, we can already see that conceptual frameworks arise in a particular point of time and in light of a particular set of historic events. It is no coincidence that the question of development became a tangible

topic in the aftermath of World War II and the end of colonialism. It is also no coincidence that the role of media and communication in the developmental processes gained prominence as the importance of communication technologies such as radio and TV grew in the developed and later also in the developing worlds. What were the substantive conditions that helped to facilitate the discourse and conceptualization of the “digital divide”?

The history of computation technology and the Internet clearly predates the term “digital divide.” The first computers date back to the 1940s,³⁷ and the first account of internet protocol dates back to 1974.³⁸ In her extensive analysis of the design documents of the internet infrastructure, Sandra Braman reveals that the designers of the Internet were in fact concerned with a variety of social and political issues, such as spam or privacy, including issues of physical access to the network by people with disabilities.³⁹ Still, it was not until the commercialization of the Internet that we witnessed the emergence of the “digital divide” as a developmental issue.

In April of 1995, the National Science Foundation, which had been managing and funding the backbone of the version of the Internet at the time, decommissioned that backbone, thus clearing the way for eventual privatization of the network.⁴⁰ Before that, the NSF had spent nearly a decade struggling to fund the infrastructure, which also included encouraging commercial consumers to exploit the economies of scale offered by the network. The network was open to commercial traffic in 1981 and as this traffic grew, the federal funding decreased, until it was completely eliminated in 1995.⁴¹ These developments signified a certain maturity of the Internet as infrastructure while they also heralded the coming of the “dot.com bubble.”⁴²

The period of the “dot.com bubble,” which started in 1995 or 1996 (accounts vary), was characterized by high levels of technological optimism.⁴³ The years 1995–2000 witnessed a massive flow of investment into the internet market. Between 1998 and 2002 alone, 50,000 new ventures were formed “to exploit the commercialization of the Internet.”⁴⁴ During the same period, 24,000 firms raised \$256 billion from formal and informal investors. At the stock exchange, the earnings from the first day initial public offerings tripled and quadrupled during the dot.com hype,⁴⁵ and between 1998 and 2000 alone, the internet sector earned over 1,000 percent returns on its public equity.⁴⁶ All this was accompanied by enthusiastic media coverage that painted a picture of an emerging “information highway” supported by both the government and the private sector.⁴⁷

Privatization and commercialization of the Internet, combined with the optimism of the dot.com period, contrasted sharply with the actual gaps in adoption, both on the national and the international levels. Even before the term “digital divide” was adopted into the official rhetoric, the first of the NTIA “Falling through the Net” reports in 1995, for example, showed that only 4.5 percent of the rural poor in the United States owned a computer and less than a quarter of those owned a modem.⁴⁸ Similarly, on the international level, the Internet penetration rate in the U.S. was almost 16 percent in 1999, but in India, for example, this rate stood at only 0.08 percent.⁴⁹

The emergence of the digital divide rhetoric happens against the background of conflicting developments. The growing commercialization of the Internet and the emerging dot.com bubble spurred enthusiasm about the transformative power of ICTs, particularly the Internet. This enthusiasm is in line with one of the core tenets of the modernization approach to development, which places great faith in technology and

communication as vehicles for progress. Yet, it seems that not everybody can enjoy the fruits of technology. The striking disparities in ICT adoption, correlated with other social, political, and economic inequalities, led many to believe (and to proselytize on behalf of the ideal) that providing access to ICTs should make the promises of the “dot.com” industry available to those who need them the most.⁵⁰

Recent Developments

The enthusiastic period of ICT industry growth during the dot.com hype coupled with the modernization approach to development can explain the discourse of the digital divide that emerged from the U.S. administration in the mid-to late 1990s. This discourse, and its policy implications, framed the “digital divide” primarily in terms of physical access to technology, with great hopes for socioeconomic development and empowerment once that access is granted. However, since the beginnings of the idea of the digital divide, all three domains that shaped the “digital divide” as a policy and a research topic went through phases of change, review, and adaptation, influencing each other in the process.

The modernization theory came under fire as early as the 1960s. The criticism grew out of the dissonance between theoretical promises of the theory and the results on the ground. Some claimed that modernization brought greater inequality and disparity between the developed and the developing nations.⁵¹ Others criticized modernization for neglecting broader cultural and political processes, while concentrating on the economic mechanisms.⁵² The main contribution of the critical theory, labeled also as “dependency theory,” was problematization of the developmental process through rejection of the dichotomous view, the idea of a single desired ideal for a state, and the idea that

development can be transferred easily from one setting to another. While the modernization theory remains the dominant paradigm, the critical approach expanded the view of development and opened the door for alternative views on the challenges of development and their solutions.

In a similar fashion, the study of the “digital divide” has matured over more than a decade of research.⁵³ Some scholars suggested the digital divide should be understood as a series of divides⁵⁴ or inequalities,⁵⁵ while others preferred viewing it as a continuum⁵⁶ or spectrum.⁵⁷ Others criticized the access framework as determinist, utopian, and naïve, warning that the evident socioeconomic disparities have to do with more than just the presence or absence of technology, and do not simply disappear as ICTs and Internet connectivity become more ubiquitous.⁵⁸ In other words, we have witnessed a shift from single (divide, access) to plural (divides, accesses) and then the shift from “divide” to “inequality.” In fact it was a parallel shift, so the discourse moved from addressing a singular “divide in access” to “inequalities in access and skills.”⁵⁹ This trajectory of research gives us both a more detailed view of the concept and more sophisticated methods for measuring it.

These developments can be explained through the evolution of theoretical thought, but also through changes in the substantive domain. First, there is new, richer, and more comprehensive data available to study the various aspects and the different conceptualizations of the “digital divide.”⁶⁰ Second, the subject matter has changed substantively. For example, the access gap has narrowed; and Internet penetration grew almost 400 percent between the years 2000 and 2009.⁶¹ Also, the media, whose use is being observed, have evolved. The use of the mobile phones became much more

widespread, especially in developing countries and communities; the penetration of mobile phones is expected to reach 100 percent of the world population by the year 2015.⁶² The industry also went through the burst of the “dot.com bubble,” recovery, and emergence of a new, “Web 2.0” paradigm focused even more on the user and her “empowerment.”⁶³ The high penetration rates of personal computers and other devices for access of the Internet also made the old access paradigm less attractive from the business perspective, which since then has focused on capacity building instead of mere access.

Over the past decade and a half, the policy discourse has also shifted towards focusing on capacity building both in terms of technical capacity of the network and users’ skills. Some of these changes are just a different framing of the same access paradigm. In the United States, the NTIA is currently referring to the “digital divide” as the “broadband divide,” highlighting that the issue now is not just access but the quality of the online experience;⁶⁴ similarly, the FCC has commissioned a report aimed to review policies of advancing broadband deployment and adoption.⁶⁵

Other changes suggest a paradigm shift in conceptualizing the issue behind the “digital divide.” Thus for example, in the 2008 presidential campaign, both candidates referred to the need for investment in the development of skills. In the context of the “digital divide,” Barack Obama referred to these skills as “math and science education” and John McCain referred to them more broadly as education for “the innovation age” with an explicit emphasis of “degrees in math or science, and the number of computer science majors.”⁶⁶ On the international level, one can see abandonment of programs such as USAID’s Leland Initiative, which was created to develop information infrastructure in

Africa.⁶⁷ We can also see the enhancement of initiatives such as the ITU Academy, which focuses on human capacity building, as it comes to rely more extensively over the years on distance learning.⁶⁸

Conclusion: Moving Forward

While the conceptual meaning of the “digital divide” has changed over time, the core question has remained more or less the same. “Digital inclusion,” “digital inequalities,” and “digital divide” are all terms that address the question of the role of media, information, and communication in the formation and transformation of the information society. The question itself is not new, but the variety of forms, particularly the mediated forms, that communication takes in contemporary society, is what distinguishes between the questions asked by classic theory regarding how societies function and the questions we are trying to ask by further developing “digital divide” as a concept. Taking on Jan van Dijk’s call for further elaboration of the conceptual definition of the “digital divide,”⁶⁹ we need to account for the evolution of theoretical thought on society formation, and for the knowledge we have today about the social functioning of media, information, and communication technologies.

For that purpose, I would like to propose the following combination. Considering the evolution of theoretical thought about society formation, the theory of structuration⁷⁰ can offer a valuable building block. It builds on the classical contributions of Max Weber and others, yet accounts for contemporary contributions about human agency and highlights the communicative aspects of social processes. The theory of structuration can be applied to understand trends in the substantive domain toward more grassroots-

oriented processes of development, bottom-up empowerment, and generation of knowledge. In other words, the “reality” suggests changing the structure through agency. In this aspect, communication is particularly important because the duality of structure is essentially a communication process.

Considering the body of knowledge about the social functioning of media, information, and communication technologies, science and technology studies offer a strong body of scholarship on the social construction of technology and the agency of technological artifacts.⁷¹ Combining these contributions allows us to consider media, information, and communication technologies within the structuration paradigm. This combination may in fact allow us to formulate more concrete questions about the role of media and information technologies in the mutually constituted processes of social structures and human agency.

Understanding the mechanisms that have shaped thought about the digital divide from a historical perspective, including developments that preceded the “digital,” is important in continuing the conceptual development of this issue. The primary goal in developing the next generation of conceptual successors of the “digital divide” should be engagement of the multidisciplinary theoretical ideas with empirical work. So far, empirical work has been considered in terms of the currently dominant trajectory in the “digital divide” research. However, strengthening the conceptual trajectory through accounting for the evolution of theoretical thought on society formation and the knowledge about the social functioning of media, information, and communication technologies can open new avenues for inquiry and open doors for additional methodological options.

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Notes

¹ van Dijk, "Digital Divide Research," 233.

² Gunkel, "Second Thoughts"; Warschauer, "Reconceptualizing the Digital Divide"; Carvin, "More Than Just Access."

³ Gunkel, "Second Thoughts."

⁴ van Dijk, "Digital Divide Research"; Gunkel, "Second Thoughts."

⁵ Klegar Levy et al., *Falling through the Net*.

⁶ Ibid.

⁷ See National Archives for the 2000 version of the White House website:

<http://clinton5.nara.gov/WH/Accomplishments/eightyears-09.html> (accessed October 23, 2010).

⁸ For more up-to-date budget figures, see

<http://www2.ed.gov/programs/comtechcenters/funding.html> (accessed October 23, 2010).

⁹ See National Archives for the 2000 version of the White House website:

<http://clinton5.nara.gov/WH/Accomplishments/eightyears-09.html> (accessed October 23, 2010).

¹⁰ A complete resolution can be found at

<http://www.un.org/millennium/declaration/ares552e.htm> (accessed October 23, 2010).

¹¹ Thompson, “‘Discourse,’ ‘Development’ & the ‘Digital Divide.’”

¹² *Ibid.*, 114.

¹³ Stevenson, “Digital Divide.”

¹⁴ Tu and Kvasny, “American Discourses of the Digital Divide.”

¹⁵ Gunkel, “Second Thoughts,” 507.

¹⁶ Kvasny and Truex, “Defining away the Digital Divide”; Stevenson, “Digital Divide.”

¹⁷ Acemoglu, Johnson, and Robinson, “Economic History and Political Science”; Servaes and Malikhao, “Development Communication Approaches”; Przeworski and Limongi, “Modernization.”

¹⁸ Subbotina, *Beyond Economics Growth*.

¹⁹ Przeworski, “Economic History and Political Science.”

²⁰ Cooper and Packard, “Introduction.”

²¹ Emirbayer, *Émile Durkheim*; Kalberg, *Max Weber*; Antonio, *Marx and Modernity*.

²² Servaes and Malikhao, “Development Communication Approaches”; Przeworski, “Economic History and Political Science.”

²³ Huesca, “Tracing History of Participatory Communication Approaches”; Servaes and Malikhao, “Development Communication Approaches.”

²⁴ Servaes, *Communication for Development and Social Change*; Colle, “Threads of Development Communication.”

²⁵ Fraser and Restrepo-Estrada, *Communicating for Development*.

²⁶ Fraser and Restrepo-Estrada, *Communicating for Development*; Huesca, “Tracing History of Participatory Communication Approaches”; Servaes and Malikhao, “Development Communication Approaches.”

²⁷ Colle, “Threads of Development Communication.”

²⁸ Braman, *Change of State*.

²⁹ Acemoglu, Johnson, and Robinson, “Economic History and Political Science.”

³⁰ Merton, “The Matthew Effect in Science.”

³¹ Tichenor, Donohue, and Olien, “Mass Media Flow and Differential Growth in Knowledge.”

³² van Dijk, *The Deepening Divide*, 126.

³³ Gunkel, “Second Thoughts.”

³⁴ *Ibid.*, 508.

³⁵ *Ibid.*, 510.

³⁶ Thompson, “ICT, Power, and Developmental Discourse”; Thompson, “‘Discourse,’ ‘Development’ & the ‘Digital Divide.’”

³⁷ Winston, *Media Technology and Society*.

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- ³⁸ Dalal, Sunshine, and Cerf, “RFC 675: Specification of Internet Transmission Control Program.”
- ³⁹ Braman, “The Interpenetration of Technical and Legal Decision-Making for the Internet.”
- ⁴⁰ Leiner et al., “A Brief History of the Internet.”
- ⁴¹ Bickerstaff, “Shackles on the Giant”; Frischmann, “Privatization and Commercialization of the Internet Infrastructure.”
- ⁴² Frischmann, “Privatization and Commercialization of the Internet Infrastructure.”
- ⁴³ DeLong and Magin, “A Short Note on the Size of the Dot.com Bubble.”
- ⁴⁴ Goldfarb, Pfarrer, and Kirsch, *Searching for Ghosts*.
- ⁴⁵ Ljungqvist and Wilhelm, “IPO Pricing in the Dot.com Bubble.”
- ⁴⁶ Ofek and Richardson, “Dot.com Mania.”
- ⁴⁷ Cukier, Ryan, and Fornssler, “The Rhetoric of the ‘Information Highway’ in the Media 1992–2008.”
- ⁴⁸ McConnaughey, Sloan, and Nila, *Falling through the Net*.
- ⁴⁹ See ITU Eye for historical statistics of the Internet and other ICT adoption rates at <http://www.itu.int/ITU-D/icteye/Indicators/Indicators.aspx> (accessed October 23, 2010).
- ⁵⁰ Guillen and Suarez, “Explaining the Global Digital Divide.”
- ⁵¹ Servaes, *Communication for Development*.
- ⁵² Adjibolosoo, *Rethinking Development Theory and Policy*; Hamilton, *Growth Fetish*.
- ⁵³ For a comprehensive review, see van Dijk, “Digital Divide Research.”
- ⁵⁴ Barzilai-Nahon, “Gaps and Bits”; Meredyth and Thomas, “Digital Divides.”
- ⁵⁵ DiMaggio et al., “Digital Inequality.”

⁵⁶ Warschauer, “Reconceptualizing the Digital Divide”; Warschauer, *Technology and Social Inclusion*.

⁵⁷ Lenhart and Horrigan, “Re-visualizing the Digital Divide as a Digital Spectrum.”

⁵⁸ van Dijk, “Digital Divide Research”; Gunkel, “Second Thoughts.”

⁵⁹ Epstein, Nisbet, and Gillespie, “Who’s Responsible for the Digital Divide?”

⁶⁰ Barzilai-Nahon, “Gaps and Bits.”

⁶¹ See Internet World Stats at <http://www.internetworldstats.com/stats.htm> (accessed October 31, 2010).

⁶² *World Telecommunication/ICT Development Report 2010*.

⁶³ See, for example, Scholz, “Market Ideology and the Myths of Web 2.0”; and Treese, “Web 2.0.”

⁶⁴ Strickling et al., *Digital Nation*.

⁶⁵ FCC, *Connecting America*.

⁶⁶ The quotations are taken from the candidates’ platforms, which were published on their campaign websites. The websites are no longer available.

⁶⁷ See <http://www.usaid.gov/regions/afr/leland/> (accessed October 20, 2010).

⁶⁸ See <http://academy.itu.int/> (accessed October 20, 2010).

⁶⁹ van Dijk, “Digital Divide Research.”

⁷⁰ Giddens, *The Constitution of Society*.

⁷¹ Bijker, Hughes, and Pinch, *The Social Construction of Technological Systems*; Pinch, “The Sociology of Science and Technology.”