CHAPTER 7

DIGITAL INEQUALITY

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INTRODUCTION

HERALDED at first as the great potential equalizer (Barlow 1996; Compaine 2001a; Reuters 1997), research on the Internet's unequal spread and uses over the years has suggested a more complicated picture about who is most likely to benefit from the medium's diffusion. As the Internet has become increasingly integrated into people's everyday lives, it is important to consider the implications of differentiated uses for people's social status and mobility. Given the myriad of opportunities they make available, digital media have the potential to alleviate existing societal inequalities. Depending on the pattern of uptake, however, they also have the potential to contribute to increased stratification. In this chapter, we review literature about the relationship of people's background and their digital media uses with particular focus on how demographic and socioeconomic factors relate to Internet use.

Rather than simply thinking about the so-called digital divide in binary terms—a person either has access to the Internet or not, is either a user or not—it is better to recognize that individuals, organizations, and countries may be differentiated by online experiences and abilities beyond core technical access (e.g. Barzilai-Nahon 2006; DiMaggio et al. 2004, 2001; Guillén and Suárez 2005; Hargittai 2002; van Dijk 2005; Warschauer 2003; Zillien and Hargittai 2009). Given the potential implications of digital inequality for people's life chances in particular, we focus primarily on individual-level differences rather than issues concerning digital divides at the level of organizations and institutions, while recognizing that inequalities in those realms exist as well (e.g. Forman 2005; Forman et al. 2005; Guillén and Suárez 2005; Kirschenbaum and Kunamneni 2001). We first review theoretical perspectives on the topic, followed by an examination of the core access divide both within and across nations. Next, we consider how people's background characteristics relate to their web-use skills and what they do online. Then we look at the social implications of differentiated Internet uses. Finally, we offer suggestions for next steps in this domain of inquiry.

Theoretical Approaches to Digital Inequality

Social inequality has long been an important research inquiry for scholars and policymakers alike (e.g. Grusky 2008). The main focus of such scholarship concerns the forms, sources, and structure of social inequality, mechanisms of mobility, consequences of social stratification, and the severe gaps in people's life chances across different societal groups (Grusky and Ku 2008: 3–4.). Linking to this domain of inquiry, scholars of digital inequality have suggested various theoretical approaches for studying the implications of the Internet for social stratification (Bonfadelli 2002; DiMaggio et al. 2004; Halford and Savage 2010; Hargittai 2008; van Dijk 2005). A consistent aspect of these theoretical approaches is that physical access to and ownership of information and communication technologies (ICTs) is only one of several important resource inequalities that need to be considered in the domain of digital inequality. Accordingly, it is problematic to constrain discussions and investigations to whether or not a core digital divide exists—that is, differences between haves and have nots when it comes to basic hardware and connectivity—given that the unequal distribution of other types of Internet-related resources such as digital skills are also very important to understanding the contours of inequality in the digital age (Hargittai 2002; DiMaggio et al. 2004).

DiMaggio and colleagues (2004) were among the first to offer a theoretical framework that accounts for the factors and outcomes related to digital inequality. Their approach highlights five aspects of inequality related to information and communication technologies: (1) the quality of hardware, software, and network connection; (2) autonomy of use; (3) skill; (4) availability of social support; and (5) extent and quality of use. Regarding the underlying mechanisms that explain digital inequality, the authors proposed that demographic and socioeconomic factors influence the level and quality of the first four factors, which in turn influence the types of uses, which then result in differentiated benefits and opportunities, and thus divergent life outcomes. Some of this work (DiMaggio and Hargittai 2001; Hargittai and Hinnant 2008; Zillien and Hargittai 2009) has suggested that certain Internet uses qualify as specifically "capital-enhancing" activities and should be especially of interest to scholars of social stratification. For example, web users who look for jobs online may become more informed jobseekers with respect to job market opportunities, which might in turn help them find a job more quickly, perhaps help identify better employment options, or assist in negotiating better terms or a higher salary (DiMaggio and Bonikowski 2008). Undoubtedly, one may consider such outcomes as opportunities for social mobility, and thus ICT uses may help reduce inequalities. However, given that such opportunities are likely to be unequally distributed along existing stratification lines, differentiated uses may be more prone to reinforcing existing inequalities rather than alleviating them (Bonfadelli 2002; Chen and Wellman 2005; Hargittai 2008).

Another related approach to digital inequality came from van Dijk (2005) who focused on the unequal distribution of four types of digital resources: (1) motivational access; (2) material access; (3) skill access; (4) and usage access. This approach suggests that there is a positive relationship between these resources whereby greater motivation to use ICTs may lead to more possession of technological equipment resulting in better material access that encourages the development of higher-level skills, which in turn leads to more intense and diverse ICT uses. Similar to Hargittai (Hargittai 2002, 2003, 2008), van Dijk (2005) also argues that the relationship between socioeconomic status (SES) and the possession of digital resources is reciprocal, indicating that digital inequality and existing forms of social inequality may reinforce one another.

Although differences in Internet usage rates have only been of concern since that medium's mass diffusion in the 1990s, earlier research had already focused on differences in other media consumption across population segments, finding variation by background characteristics (e.g. Greenberg and Dervin 1970; Tichenor et al. 1970). Greenberg and Dervin (1970), for example, found that low-income adults tended to spend more time watching television and less time reading newspapers regularly. Tichenor and his colleagues (1970) proposed the "knowledge gap" hypothesis, which suggested that people from higher socioeconomic status may become more informed and acquire more knowledge from their media consumption than those from lower SES backgrounds, widening existing inequalities between different population segments. Subsequent research also revealed that knowledge gaps between status groups were due to various factors such as variation in people's motivation to acquire information, prior know-how and selective use, as well as the utility of information for one's daily life (e.g. Ettema and Kline 1977; Gaziano 1983). Cook and colleagues (1975) looked at the viewership of the educational program *Sesame Street* and found that children from households with more educated parents were more likely to watch the show, suggesting that youth already in a more privileged position were more likely to benefit from it.

In the realm of early research on the adoption of personal computers, studies showed that socioeconomic factors such as income, education, and occupation of the head of household were important predictors of having this resource in the home (Attewell 2001; Dutton et al. 1987; Dutton et al. 1989). Overall, research on the relationship between social status and uses of media predating the Internet has found a systematic relationship between the two.

Linking Internet usage to the knowledge gap hypothesis, Bonfadelli (2002) argued that knowledge gaps in the domain of digital media uses may be more severe than gaps in uses of traditional media (a point also made by van Dijk (2005)), given that meaningful Internet use requires new skill sets such as refined searching strategies (e.g. Hargittai 2003; Rothbaum et al. 2008; Van Deursen 2010) and critical approaches to evaluating content credibility (e.g. Hargittai et al. 2010; Menchen-Trevino and Hargittai 2011; Metzger 2007) that are less associated with using traditional media. Bonfadelli (2002) empirically tested these propositions and found that there were clear gaps in computer skills as well as Internet access, usage, and attitudes towards the Internet among different

Swiss population groups, with those in more privileged positions using the Internet more than those from lower SES backgrounds.

Overall, the main contributions of the aforementioned theoretical perspectives are that they call attention to various forms of inequality related to ICT uses and they look at both the causes and consequences of digital inequalities from various research fields and traditions. Next, we discuss in more detail the so-called "first-level digital divide" or differences in access at both the individual as well as the nation-state level. Then, we review the literature on the "second-level digital divide" or differences in usage (Hargittai 2002), followed by an examination of differentiated Internet uses' social implications.

The First-Level Digital Divide: Differences in Access

ICT access divides among different population segments

Differences in Internet access rates started to attract public and scholarly attention beginning with the publication of the US National Telecommunication and Information Administration's (NTIA) "Falling Through the Net" report in the mid-1990s, which documented differential rates of adoption across different population segments (NTIA 1995). In the subsequent decade several other reports showed an increase in adoption rates but a persistent gap across population groups (NTIA 1995, 1998, 1999, 2000, 2002, 2004). Overall, findings from the reports suggested that despite a gradual increase in the proportion of Americans who had access to the Internet at home and who were going online, certain groups were much more likely to be in the "connected" category than others, namely, men, younger people, non-Hispanic white people, urban residents, the higher educated and those with higher income were more likely to use the Internet (e.g. Hoffman and Novak 1998). Using a diverse set of national and regional samples, scholars have also found varying inequalities in ICT access over the years (Bimber 2000; Dutton et al. 2009; Mesch and Talmud 2011; Raban 2007; Wilson et al. 2003; Zhang et al. 2008).

Over time, focus has shifted to identifying gaps in broadband access rather than simply looking at basic Internet access (NTIA 2010). Divides persist among population groups with different levels of education and income as well as metropolitan status when it comes to broadband diffusion (Horrigan 2009; LaRose et al. 2007; Smith 2010; Stern et al. 2009). And while gender differences in broadband access no longer exist in the US (Ono and Zavodny 2003; Smith 2010) nor in several other countries (Dutton et al. 2009; Ono and Zavodny 2007), as we note in subsequent sections, this should not be interpreted as a disappearance of all types of gender variation in Internet use (as opposed to basic infrastructural access), given that differences in types of uses persist.

A more nuanced look at the access question considers the number of locations where people can go online. DiMaggio and Hargittai (2001) argued that autonomy of use—or the freedom to use the technology when and where one wants to—is an important aspect of differentiated opportunities regarding digital media. Indeed, research has found that autonomy of use is related to using the Internet for capital-enhancing activities (Hargittai and Hinnant 2008) and is itself dependent on users' socioeconomic status (Hassani 2006) with tangible beneficial outcomes (DiMaggio and Bonikowski 2008).

Global divide in ICT access

While the diffusion of the Internet to increasing segments of the population in certain countries prompted much enthusiasm for its potential globally (e.g. Barlow 1996; Press 1996; Reuters 1997; Rheingold 1993), researchers started noting its unequal international spread already in the 1990s (Goodman et al. 1994; Hargittai 1999), finding that more developed nations were achieving higher rates of diffusion than lesser-developed countries (e.g. Guillén and Suárez 2005; Norris 2001).

The International Telecommunication Union's (ITU) report "Measuring the Information Society" documents worldwide Internet diffusion trends, showing that a global-level digital divide remains significant as the overall magnitude of the gap among countries has continued to persist over time despite increases in connectivity across nations (ITU 2010). According to the report, more than 80 percent of households have computer and Internet access in certain European countries (i.e. Norway, Sweden, Luxembourg, and the Netherlands) and certain Asian countries (i.e. South Korea and Japan). In stark contrast, this figure drops to lower than 5 percent in many African, South Asian, and Latin American nations. The report also shows that, despite the rapid diffusion of broadband in certain countries during the end of the twenty-first century's first decade, this technology's spread also exhibits notable gaps among countries, ranging from 41 broadband subscribers per 100 inhabitants in Sweden to less than 1 broadband subscriber per 100 inhabitants in lesser-developed countries such as Swaziland, Guatemala, and Laos.

An extensive literature has developed trying to explain these persisting inequalities across nations (e.g. Drori and Jang 2003; Guillén and Suárez 2005; Wilson 2004). The above-cited ITU report (2010) points to disparities in the cost of subscriptions as an important impediment to larger levels of uptake in certain countries. While broadband connectivity is affordable in many more-developed nations, in other parts of the world such as many African countries, the monthly broadband subscription fee can amount to large portions of people's earnings (ITU 2010: 74), making the service prohibitive to a considerable segment of the population. Academic scholarship has identified factors such as a country's wealth, its inhabitants' literacy and education levels, its political system, and telecommunications policies as causes of the variations observed (Andrés et al. 2007; Billon et al. 2009; Crenshaw and Robison 2006; Drori and Jang 2003; Drori 2010; Guillén and Suárez 2005; Hargittai 1999; Wilson 2004).

THE SECOND-LEVEL DIGITAL DIVIDE: DIFFERENTIATED SKILLS AND USES

Differentiated ICT skills and uses among different demographic groups

Beyond examining differences in core access to the Internet, a growing body of research has focused on differences in how people use and incorporate digital media into their everyday lives, including their abilities with using them (e.g. Eynon 2009; Hargittai 2010; Howard et al. 2001; Livingstone and Helsper 2007; Mossberger et al. 2003). Applying cluster analysis to data from five European countries (Austria, Norway, Spain, Sweden, UK), Brandtzæg and colleagues (Brandtzæg et al. 2011) defined five user typologies (Non-Users, Sporadic Users, Instrumental Users, Entertainment Users, and Advanced Users), examining how gender, age, household size, and Internet access type related to types of usage, finding that in some cases these factors explain where a user falls on the typology.

While the gender gap in basic Internet access has disappeared in some countries such as the US, Sweden, Japan, South Korea, Singapore (Ono and Zavodny 2007), and the United Kingdom (Dutton et al. 2009), gender differences in skills and usage have persisted over time (Boneva et al. 2001; Hargittai 2010; Hargittai and Walejko 2008; Helsper 2010; Wasserman and Richmond-Abbott 2005; Weiser 2000). Women tend to engage in communicative ICT uses more (Boneva et al. 2001) and differently than men (Herring 1996), and tend to do more health information seeking online (Helsper 2010), while men are more likely to get financial information (Howard et al. 2001) and engage in leisure activities (Helsper 2010) online than their female counterparts, suggesting that gender differences in ICT uses may be associated with existing gender variation in social activities (Dholakia 2006). Helsper (2010) noted, however, that level of variation was partly dependent on life stage (i.e. marital and employment status). Additionally, men and women differ in their perception of their online abilities (Hargittai and Shafer 2006), which in turn influences the extent to which they contribute to online content (Hargittai and Walejko 2008; Schradie 2011).

Examining differences in Internet use by age has been a topic of inquiry ever since the first reports identified age as an important correlate of ICT diffusion (e.g. Charness and Holley 2004; Livingstone and Helsper 2007; Loges and Jung 2001; NTIA 1995; Selwyn et al. 2003). A survey of UK residents 14 years of age and older found persisting age-group differences in ICT access and use over the years, showing older adults continue to utilize new digital technologies at lower rates than their younger counterparts (Dutton et al. 2009). When it comes to the digital media uses of elderly adults, of particular interest has been a focus on cognitive abilities across generations. One study observed that the negative relationship between age and ICT use is mediated by cognitive abilities as well as computer

self-efficacy and computer anxiety (Czaja et al. 2006). In a similar vein, by analyzing longitudinal data about older adults' Internet uses matched with their adolescent cognitive abilities measured several decades earlier, Freese and colleagues (2006) found that higher cognitive ability in adolescence was associated with higher likelihood of having Internet access and use of the Web (as opposed to email only) later in life. The authors argued that cognitive ability may play an important role in explaining the differences in older adults' Internet uses due to the high literacy demands and text-based informational content of the Internet at the time of data collection (2003–04). As multimedia content has become increasingly common and accessible online, it will be important to track whether such relationships between cognitive ability and usage persist.

While some have argued that young adults who grow up with digital media are inherently better at using the medium (Prensky 2001), there is little empirical evidence to support such a claim (Bennett et al. 2008; Hargittai 2010). Rather, studies looking at youth find considerable variation in ICT uses and skills, indicating that growing up with technology in and of itself does not lead to a uniformly skilled population (Correa 2010; Hargittai 2010; Livingstone and Helsper 2007).

Differentiated ICT skills and uses by socioeconomic status

As noted earlier, socioeconomic status such as educational background and income are strongly related to disparities in ICT access. A similar relationship has also been found with levels of online skill and types of uses to which people put digital media. Additionally, autonomy of use relates to online behavior. One of the most consistent findings in the study mentioned above by Brandtzæg and colleagues (2011) about user typologies was the importance of Internet access type for whether a user was only sporadically or more actively engaged with the Web.

A growing body of work has examined differences in people's skills with using the Internet, finding that online abilities are related to people's socioeconomic status (Gui and Argentin 2011; Hargittai 2002, 2010; Hargittai and Hinnant 2008; Page and Uncles 2004; Van Deursen 2010). This is especially of interest as some scholarship has also found that difference in web-use skills are related to differentiated online behavior, whereby more skilled Internet users are more likely to engage in more types of online activities than those less knowledgeable about and comfortable with the Web (Correa 2010; Hargittai 2010; Hargittai and Hinnant 2008; Hargittai and Walejko 2008; Livingstone and Helsper 2010; Zillien and Hargittai 2009). Relying on face-to-face interviews of 120 American parents representing different socioeconomic backgrounds, researchers found a relationship between SES and web search sophistication as well as the ability to evaluate content credibility (Rothbaum et al. 2008).

How people spend their time online is also related to their socioeconomic status. Data about German adults' Internet experiences from 2004 showed that social status was very much related to capital-enhancing uses of the Web even after controlling for demographic

characteristics, technical equipment, digital experiences, and topical interest (Zillien and Hargittai 2009). Analysis of a national sample of 18–26-year-old American adults' Internet uses in 2004 also found a similar relationship between socioeconomic status and capital-enhancing uses of the Web, such as seeking out news, information about health, finance, and government services (Hargittai and Hinnant 2008). Other research has also highlighted a relationship between SES and certain types of web uses (Anderson 2008; Buente and Robbin 2008; Eynon 2009; Hale et al. 2010) including the use of social media such as social network sites in particular (boyd 2011; Chou et al. 2009; Hargittai 2011).

Global divide in ICT uses

International examinations of digital inequality have largely focused on access differences, rarely venturing into the domain of differentiated uses among population groups across nations. This may well be due to the dearth of available data sets containing information about people's Internet uses for several countries. A notable exception is a series of reports from the Statistical Office of the European Communities (Eurostat) that is based on data about people's Internet uses among the member states of the European Union (Eurostat 2008, 2009). These reports point out considerable variation in how people in different countries are using the medium. For example, in 2008, Denmark, Finland, Luxembourg, the Netherlands, and Sweden had the highest proportion of individuals engaging in various online activities such as using banking and travel services, as well as seeking health information, while considerably lower proportions of Internet users in countries like Bulgaria, Poland, Portugal, and Romania had done so. Additionally, more than 60 percent of individuals in Denmark, the Netherlands, Sweden, and the United Kingdom had shopped online in 2009, compared to less than 10 percent in Bulgaria, Lithuania, and Romania in that year.

Another source for looking at differentiated Internet uses across countries is the World Internet Project (WIP), a global collaborative survey project. Reports from WIP (2010) show that there are notable differences in web users' online activities and experiences across countries. For example, in 2008 only the United Kingdom (47 percent), the United States (46 percent), New Zealand (40 percent), and Australia (38 percent) had high proportions of Internet users buying products online at least monthly. In sharp contrast, less than 10 percent of users in Colombia, Hungary, Macao, and Singapore reported engaging in online purchasing activities. These patterns have remained consistent over time.

However, when it comes to multimedia consumption on the Web, the findings from WIP suggest a different picture. Results show that, in 2008, more than 30 percent of users in urban China, the Czech Republic, Hungary, Israel, and Macao claimed to have downloaded or watched videos online at least monthly and 40 percent reported going online to download or listen to music and songs at least monthly. By comparison, less than a quarter of users in Sweden (19 percent), Colombia (19 percent), and the United

States (24 percent) had engaged in online video watching and downloading at least monthly in the same period.

While the Internet access divide may be highly consistent with global inequality in economic development, the aforementioned variation in web use across different countries does not always mirror economic circumstances. Findings about differences in multimedia consumption pose interesting questions for future work in this area as it seems that in addition to economic and infrastructural factors, variations in social, cultural, and legal contexts across borders may well account for how users in different countries are incorporating the Internet into their everyday lives (Wu 2008).

Implications of Differentiated ICT Access, Skills, and Uses

Current investigations of digital inequality mainly focus on issues regarding disparities in possessions and uses of various digital resources. An essential next step for the digital inequality research agenda is to figure out what outcomes are associated with differentiated access, skills, and uses. After all, if variations have no implications for people's life chances then such differentiation may not be of much concern to scholars of social stratification. However, if the benefits people can and do reap from their Internet uses vary, and do so systematically by user background and Internet experiences, then the overall social implications of digital media may be an exacerbation of inequalities rather than a leveling of the playing field (Chen and Wellman 2005). Do those who have more and better ICT access, who are more skilled with digital media, and those who engage in certain types and a more diverse set of ICT uses, see higher gains in human, financial, cultural, and social capital? While much remains to be done in this domain, some work has explored such questions in particular. Most initial investigations have tended to look at the implications of basic access and use, with very little work focusing on how specific types of Internet uses link to various outcomes. Undoubtedly, this is likely due to the lack of appropriate data sets that would allow the necessary more nuanced, and ideally longitudinal, analyses (Brynin et al. 2007).

The implications of Internet uses for human and financial capital

Digital media have the potential to help people acquire skills and information that may improve their academic achievement and labor market success. However, they also may serve as distractions resulting in decreased productivity and may lead to exposure of information that can jeopardize people's job prospects. While limited research has addressed these questions specifically about the Internet, research on related phenomena

such as computer use in the classroom and at the workplace suggests what trends may emerge in this domain.

Using data from the 1997 National Longitudinal Survey of Youth and the 2000–3 Current Population Survey, Fairlie and his colleagues (2010) identified a positive relationship between students' home computer ownership and their educational outcomes. Analyzing data from the 1988 National Educational Longitudinal Study, Attewell and Battle (1999) also found that home computer use was positively related to adolescents' academic achievement. Moreover, they showed that boys, white people, and those from higher socioeconomic background were more likely than others to reap the benefits.

In contrast, some researchers have challenged the positive link between computer use and educational outcomes (Fuchs and Woessmann 2004), finding that once family background and school characteristics are taken into account, computer use exhibits an inverted U-shaped relationship with students' test scores. These results suggest that students who do not use a computer at all or use it at the extremes may perform lower academically. Additionally, work has also found that introducing computers in less-privileged households to children who would otherwise not have these resources in the home may have negative implications for educational outcomes (Vigdor and Ladd 2010), echoing concerns about the distraction effects of such devices. A serious shortcoming of such studies, however, is that they disregard the important social processes through which the introduction of a computer or Internet access to the home may influence academic outcomes. In particular, they do not consider how social processes of learning and skill development may affect the uses to which new hardware is put. These studies have no measures of students', their peers', their parents', or their teachers' Internet skills, or any training or support that may be available to students either before or after the intervention. As earlier sections of this chapter point out, skills are not randomly distributed across the population, and social context of use matters to how people incorporate digital media into their lives. Accordingly, examining the effects of hardware intervention without contextual variables may miss a crucial part of the puzzle.

While some attempts have been made at linking various types of Internet uses with academic outcomes (Hargittai and Hsieh 2010; Junco and Cotten 2011; Pasek et al. 2009), these studies suffer from the limitations of cross-sectional data. Other studies in this realm look at student perceptions of how Internet use may influence academic outcomes, rather than looking at more objective measures of academic performance (Kubey et al. 2001), making it unclear whether findings are about perceived or actual outcomes.

In education research, scholars have argued that digital media have important implications for learning and the changing nature of literacy in particular (e.g. Barron 2006; Buckingham 2007; Eshet-Alkalai 2004; Eynon and Helsper 2011). Researchers have noted that, as the volume and variety of information and sources accessible online continue to expand, the ability to search, process, and use information critically will become an increasingly important skill (van Dijk 2005; Warschauer 2003). Again, however, lack of longitudinal data makes it difficult to test these propositions empirically.

In the realm of labor-market outcomes, considerable work has examined how computer use may affect the wage structure (Allen 2001; Autor et al. 1998; Krueger 1993; Stevenson 2009). Using nationally representative data from 1984 and 1989, Krueger (1993) found that American workers who used computers on the job earned higher wages than their counterparts. In response, however, other researchers (DiNardo and Pischke 1997; Entorf et al. 1999) cast doubt on this relationship between computer use and wages, arguing that the earnings advantages observed were due to higher worker quality rather than use of computers on the job per se.

Autor (2001) suggested three possible consequences of increasing Internet diffusion for the labor market, arguing that it may change (a) people's job search strategies, (b) how work gets done (i.e. that less work may be done on-site), and (c) dependence on local labor markets; and he warned against possible new inequalities emerging due to these changes. DiMaggio and Bonikowski (2008) empirically examined whether Internet use is related to Americans' earnings, finding that Internet use at work and at home—independent of computer use—was associated with higher earnings when controlling for a host of demographic and socioeconomic factors including prior year earnings. Looking at a similar question, but using a different unit of analysis, Forman and colleagues (2009) found that at the regional level, between 1995 and 2000, only the US counties with the most wealthy, highly educated workforce, and most IT-intensive industry, saw substantial wage growth. Similar analyses of more recent data are not available, leaving questions about what the Internet's effects may be for the wage structure in years when digital media had reached more considerable mass diffusion having been integrated into more people's everyday lives.

Some studies have focused on how Internet use may influence the job search process (Fountain 2005; Stevenson 2009). Using longitudinal panel data of unemployed job-seekers constructed from the 1998 and 2000 Current Population Survey (CPS), Fountain (2005) showed that people who searched for jobs online were more likely to get a job sooner than those who did not perform such searches. Another study looked at longitudinal panel data matched from the 2001 and 2002 CPS data sets, finding a positive relationship between Internet access and jobseekers' engagement in online job search and their job turnover rate (Stevenson 2009). The author argued that the positive relationship was likely due to the fact that employees who are better informed about their options (i.e. through accessing the Internet and looking for job information online) are more likely to assess and match their labor market opportunities better.

The implications of Internet uses for social capital and civic engagement

The potential of using ICTs for maintaining one's social relationships and engaging in political processes is enormous, as people not only connect with others in social networks but also in online networks (Wellman et al. 1996). The implications of ICT

uses for social capital as measured by social connectivity or civic participation have seen numerous investigations with sometimes conflicting results (see Haythornthwaite and Rice 2006 for a further review of this literature). Some have suggested that online social interactions and ICT uses are likely to undermine social bonds as well as decrease people's social capital at both individual and societal levels, arguing that the more time one spends online, the less one can spend socializing with others (e.g. Kraut et al. 1998; McPherson et al. 2006; Nie et al. 2002; Putnam 2001). In contrast, others have found that digital media uses are associated with an increase in interpersonal communication and community participation, and in turn may provide both bridging and bonding social capital (e.g. Ellison et al. 2007; Katz and Rice 2002; Kraut et al. 2002; Norris 2004).

Several other scholars have also suggested that the Internet mostly enhances users' existing social relationships and their social engagement with communities and society at large (Boase et al. 2006; Hampton et al. 2009; Hampton and Wellman 2003; Quan-Haase et al. 2002; Rainie and Wellman 2012). For example, in the study of a high-speed wired neighborhood near Toronto, Canada, researchers (Hampton and Wellman 2003) found some evidence of a positive relationship between web use and social connectivity. Internet use was associated with having larger neighborhood networks, being able to recognize more neighbors, as well as having greater frequency of both on- and off-line communication and participation in the public and private realms. Supporting such claims, a more recent analysis of a representative US adult sample (Hampton et al. 2009) suggested that the ownership of a mobile phone and engagement in various online activities were associated with larger and more diverse core discussion networks, and that Internet use facilitated communication with both local and distant social contacts.

A growing body of research has also investigated whether certain types of ICT uses may link to increases in social connectivity and civic participation. For example, an analysis of college students at a large US public university showed that more intense Facebook users are more likely to experience an increase in their bridging social capital over time, and such an increase is greater for students with lower self-esteem than those with higher self-esteem (Steinfield et al. 2008). Another study of a nationally representative sample of US youth showed that individuals who seek information online more frequently are more likely to engage in civic activities and possess more political knowledge (Pasek et al. 2009). This study also found that while frequency of young people's use of online social network sites is positively related to their offline civic engagement (e.g. participating in a club or other extra-curricular activities), it is negatively related to their trust in others, suggesting that online activities may have different implications for different aspects of social capital. Analyzing data about Americans' Internet uses and civic engagement in 1999 and 2000, Shah and his colleagues (2005) found a relationship between seeking news and politics-related information online as well as engaging in civic discussion online and general civic participation (e.g. doing volunteer work, participating in community meetings). Such findings suggest that the Internet may have somewhat distinct affordances regarding

civic and political participation: it may serve as a source of political information while also offering a venue for actively engaging in civic and political activities.

As suggested by the above-cited literature, there is no consensus on whether digital media usage enhances or decreases people's social capital. One possible source of conflicting results may be the ambiguity and complexity of the definition of social capital (Kadushin 2004). As reviewed above, from personal network size and perceptions of interpersonal trust to levels of civic engagement and political participation, work in this area has relied on a wide variety of measures. Also, given that the mechanisms connecting ICT uses and social capital are likely multidimensional, different types of online activities may have divergent implications for varying aspects of social capital.

An additional challenge to work in this area concerns the direction of causality between ICT usage and social capital. Traditionally, research in this domain has tended to treat social capital as a result of ICT uses, overlooking the possibility that level of social capital may be an important predictor of how people use ICTs in the first place. Hsieh and Hargittai (2010) proposed a complementary framework for examining whether people's social capital is related to their digital skills and subsequently how individuals' social capital and digital skills may explain variations in how they stay in touch with those in their networks using multiple media. Such an attempt at rethinking the causal link between digital media and social capital highlights a continued need for thinking carefully and critically about the reinforcing relationship between ICT uses and various types of capital.

Conclusion

As demonstrated by the literature reviewed above, digital inequality can refer both to how existing social inequalities influence the adoption and use of digital technologies as well as how differential uses of the Internet itself may influence social stratification. While considerable research exists to address the first question, much less evidence is available to interrogate the second. Part of the reason for the lack of evidence is the continued challenge of appropriate data and measurement. The field of Internet research requires the ongoing development of refined measures that capture the nuances of long-time existing services and activities as well as measures of newly emerging opportunities and options.

Overall, there are three possible outcomes of widespread digital media uses when it comes to social inequality. Even if we assume that everybody will benefit to some extent from digital media uses—itself an assumption that has yet to see the kind of empirical investigation necessary to be warranted—the implications are divergent depending on the relative level of benefit by different groups across society. If those in already more privileged positions are more likely to use ICTs in ways that enhance their human, financial, social, and cultural capital than those from less privileged backgrounds then

the Internet will have exacerbated rather than alleviated social inequality. If people from all backgrounds are benefiting from digital media at similar levels then we will see little change in social status and thus would conclude that the Internet has no implications for social inequality. The third possibility is that those in less privileged positions are taking advantage of digital media more than those of higher socioeconomic status, resulting in decreased inequality. Given that ample research has now shown how Internet access, skills, and uses are in many ways related to people's demographic background and socioeconomic status, there is a good chance that these inequalities will be perpetuated when it comes to outcomes of digital media uses rather than resulting in an ameliorating effect.

Making matters more complicated, it may not be correct to assume universally positive outcomes from digital media uses. That is, it may be that some people not only do not benefit from using digital media, but may even be harmed by their uses. Considerably less scholarly work has focused on the negative implications of ICT uses than on the positive ones, but such potential outcomes do exist. From the possible negative psychological effects of cyberbullying to negative consequences for people's labor market success due to problematic uses of social media, and to the loss of financial resources due to online scams, there are many instances that may lead to a decrease in various forms of capital as a result of online behavior. Examining whether such consequences are systematically related to user background has yet to be addressed in detail by scholarly investigations.

As information and communication technologies diffuse to an increasing portion of the population, some have argued that digital inequality ceases to be a concern (Compaine 2001b). However, while older technologies do diffuse to more and more people, new technologies, tools, and services continue to emerge consistently, privileging those in already more advantageous positions. For example, socioeconomic status predicts ownership of smart phones, just as it predicted basic Internet connectivity, broadband connectivity, and access to other resources (Smith 2011). Similarly, while people may learn more about how to use digital media over time, as new tools emerge with new features, the additional know-how required to navigate these services likely will not be randomly distributed either, again privileging those in already advantageous positions.

While we have learned much about the contours of digital inequality since the mid-1990s, much work remains. We know especially little about the consequences of differentiated Internet uses for people's social status. Longitudinal data would go especially far in addressing questions of how use of digital media may shape people's life chances (Anderson 2005; Brynin et al. 2007). Also, having established that inequality exists in the realm of Internet skills and usage, developing and testing interventions that may improve people's web-use skills and thereby expand their online activities could be especially beneficial for ensuring that the many opportunities of digital media are within the reach of people from across the societal spectrum and not just those already in advantageous positions.

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