AL INEQUALITIES/MEDIA AND SOCIETY

Internet and Social Inequalities provides a useful overview of ies relevant to understanding inequality in access to and use of ew digital inequalities. By placing research on the digital divide into ontext of major theoretical traditions, the authors provide a rich ework for understanding this critical form of inequality."

—Paul DiMaggio, Sociology, *Princeton University*

es Witte and Susan Mannon have done a rare and vital thing: they taken the time to measure the ways that internet access matters and have demonstrated why lack of access creates social, political, and omic deficits that are very hard to overcome. Anyone who cares about abric of civic life should take heed."

—Lee Rainie, Director, *Pew Internet & American Life Project*

te and Mannon pull out the sharp points of contrast between what now about social inequalities in the digital age, and what we must ine a future of equalities should look like. Moreover, they make smart f classical social theory and demonstrate the ways it does—and does help us understand contemporary inequities in the distribution of mational resources."

—Philip Howard, Communications, *University of Washington*

es Witte and Susan Mannon did not just write another book about mpirical facts on internet users, but rather innovatively put the bers they provide in an array of sociological perspectives. Moreover, provide a wealth of statistical facts and figures making the book an rtant standard text for students and researchers."

—Gert Wagner, Economics, *Berlin University of Technology*

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The Internet and Social Inequalities

Witte and Mannon

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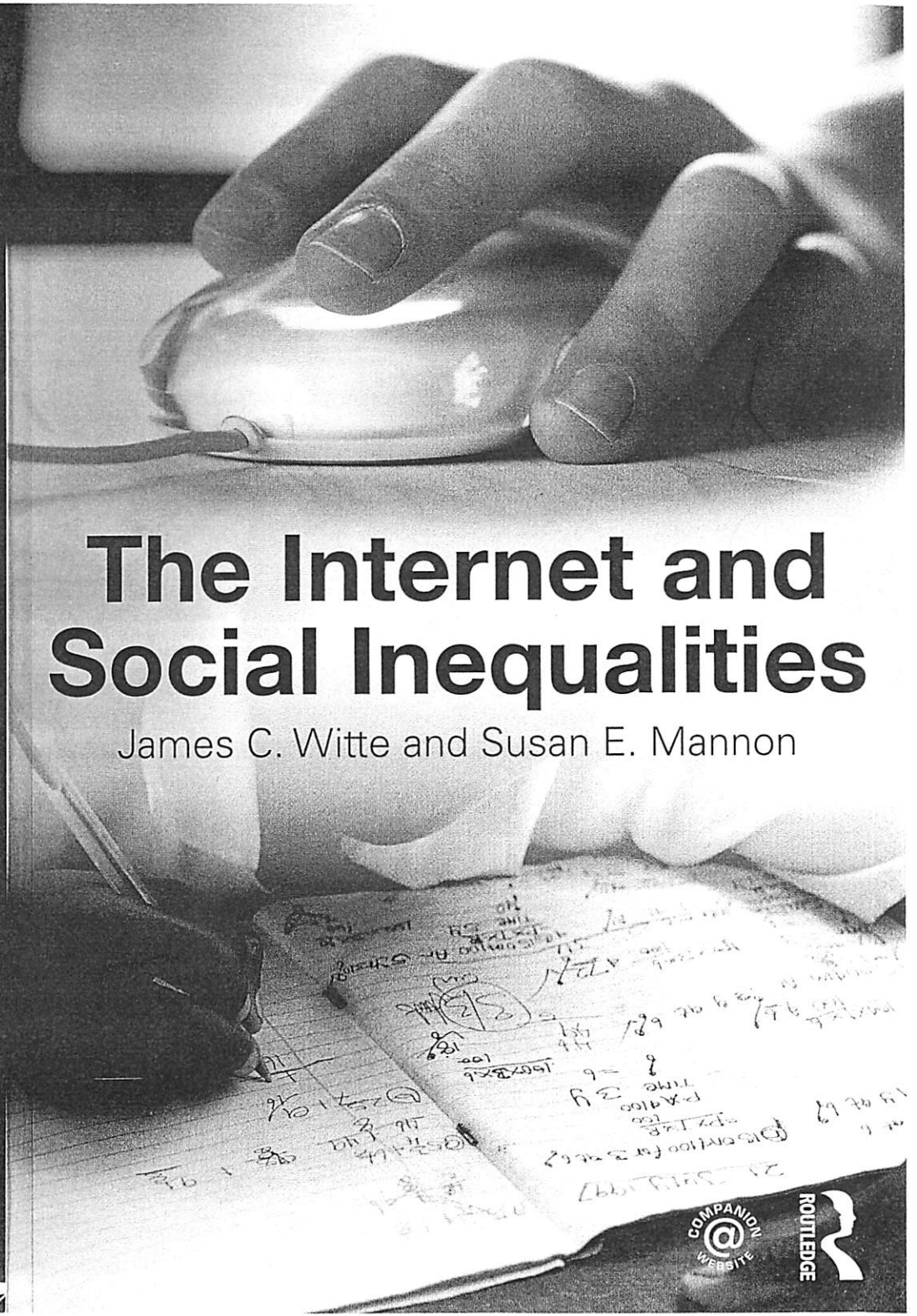

The Internet and Social Inequalities

James C. Witte and Susan E. Mannon

COMPANION @ WEBSITE

ROUTLEDGE

Despite the Internet's global reach, we focus on U.S. society. This focus is not meant to overlook the depth of the international digital divide, but simply to bound the analysis. Similarly, most of the discussion in this book is concentrated on the years between 1995 and 2007, despite the significance of earlier eras of technological change and the importance of future trends in Internet use. It is within these geographical and historical brackets that we engage the theoretical perspectives of sociology to show how they can help us understand the link between the Internet and inequality.

This book is organized as follows. In Chapter 2, we provide a descriptive view of the digital divide in the United States during the time in question. Chapters 3 through 5 are the main empirical chapters of the book and each uses one of the three theoretical approaches to inequality to understand a different aspect of the Internet. In these chapters, we draw primarily on data from the Pew Internet & American Life Project, which conducts an ongoing series of surveys on Internet use of a nationally representative sample of Americans. Chapter 6 takes a view toward the future, knowing that the future comes at us very quickly in the realm of technology. Today's Internet will not be tomorrow's communication and information technology. On the other hand, a communication and information infrastructure of some form is not likely to go away anytime soon.

Advice and encouragement for this project came from many sources. First, we thank Steve Rutter, Social Sciences and Sociology Publisher at Routledge, for his support and for his patience. Research support related to this project was provided by Kevin Foster, Abhijith Holehonnur, Xue Liu, and Jennifer Turchi. Comments on draft chapters of the book were provided by Thomas Allen, Mary Fairbairn, Tracie Gesel, Kelly Linker, Thomas Linneman, Catherine Mobley, Constance Witte, Allison Hurst, Vincent Serravallo, Linda Benbow, Laura Robinson, and Gerhard Fuchs.

1

A Sociology of the Internet

Although it has several other properties that have institutional consequences, on the whole the Internet is loosely coupled to the institutional world around it. It does not inherently promote freedom or oppression, hierarchy or decentralization, privacy or social control, individualist or collectivist values, markets or socialism. Considered narrowly as a technology, it is capable of participating in any combination of social orders. Considered more broadly as a malleable architecture interacting with a complex and contested institutional environment, however, the Internet is a complicated phenomenon indeed.

—*Agre* 2002

Introduction

For many young people today, it's hard to imagine a time before the Internet, harder still to imagine a time when people relied on typewriters and whiteout. But consider these statistics. As late as 1994, only 11 percent of American households had access to the Internet (NTIA 1995). By 2007, that statistic was well over 60 percent.[1] And this was just the figure for *household* Internet access; well over 70 percent of American households had someone who had access to the Internet at some location. In the span of just one decade, the Internet had entered our homes, our schools, and our workplaces—not to mention our libraries, our cafes, and our cell phones—to become a major feature

of daily life. Given the rapid spread of Internet technology, it's easy to see why the Internet might be celebrated for bringing about a social transformation in American life.

But has the Internet really brought about such a profound transformation? Even in the early days of the Internet, many suspected that information technology was mirroring rather than transforming social divides in the United States. Researchers pointed to a racial divide (Hoffman and Novak 1998) for example, and a rural–urban divide (Strover 1999) in Internet access. Policy makers and social scientists even began to speak of a "digital divide," or a divide between those who had access to the Internet and those who, due to lack of opportunity or interest, remained offline (NTIA 1998, 1999). More recent research suggests that new "digital divides" are emerging, as Internet technology evolves and certain groups become more sophisticated at navigating the web (DiMaggio et al. 2001). And some scholars argue that we need to move beyond a singular concern over Internet *access* to tackle differences in Internet skills and behavior as they manifest among Internet users. As DiMaggio et al. (2001, p. 52) argue: "Now that more than half of Americans now go online, we should pursue a more differentiated approach to understanding the Internet's implications for social and economic inequality – one that focuses upon the extent and causes of different returns to Internet use for different kinds of users." Hargittai (2006), for example, points out that spelling mistakes limit the ability of the less educated to take advantage of online search engines, a limitation that is compounded for some by an inability to read and comprehend materials once they find them.

DiMaggio et al. (2001) raise the importance of looking sociologically at these digital divides. Specifically, they point to social inequalities that linger long after the headlines about the Internet's revolutionary potential. These inequalities are no small matter. As political participation moves online, newspapers and books evolve into digital formats, social networking occurs through web applications, and e-commerce expands, participation in public life necessitates some Internet access and competency. Those without an email address or a Facebook profile may become excluded from the larger society. Internet access and use, then, are not simply mapped onto existing inequalities; they may exacerbate them over time as offline groups become marginalized from the Internet and from popular forms of political, social, and economic participation. In its current form, then, the Internet is a paradox of twenty-first century American life, at once an emblem of a free and open society and an active reproducer and possible accelerator of social inequality.

The purpose of this book is to explore this paradox by moving beyond inequalities in Internet access to explore differences in how we use the Internet and how we benefit from being online. Its relevance to you, the reader, is real. Think of all the things you do (or don't do) online every day, the information you have access to, the people you interact with, the products you buy, and the words you share. You're not simply typing and clicking; you're participating in a social world in which patterns of inclusion and exclusion may be observed. These patterns are of interest to sociologists, who study how individuals interact in the context of larger social structures. The norms and rules that govern social interaction do not stop when we go online, although they might be transformed. The Internet can and *should* be studied from a sociological perspective because it is fundamentally a social institution. Who has enjoyed access to the Internet? And how does this access combine with variables like income and education to turn a profit, consolidate power, and mark status? Finally, how do these patterns exclude segments of the population from the social, political, and economic potential of the Internet? These are the questions that we'll explore throughout this book. First, however, let's explore further the research on the "digital divide" and the history of this divide.

The Digital Divide

No one denies that the Internet and related forms of communication and information technology have had a profound effect on American society and beyond. Yet, as we've mentioned, an increasing number of people now acknowledge a "digital divide." By the late 1990s, policy makers and researchers noticed that the digital revolution was leaving many groups behind. The 1999 United Nations *Human Development*

Report, for example, observed the following about Internet use worldwide:

> The typical Internet user worldwide is male, under 35 years old, with a college education and high income, urban-based and English-speaking—a member of a very elite minority worldwide. The consequence? The network society is creating parallel communications systems: one for those with income, education and—literally—connections, giving plentiful information at low cost and high speed; the other for those without connections, blocked by high barriers of time, cost and uncertainty and dependent on outdated information. With people in these two systems living and competing side by side, the advantages of connection are overpowering. The voices and concerns of people already living in human poverty—lacking incomes, education and access to public institutions—are being increasingly marginalized. (UN 1999, p. 63)

This observation gets to the heart of what social scientists call the "digital divide," or the gap between those with access to the Internet and those without.

Because inequalities in Internet access have such far-reaching consequences, working toward universal access has been a major concern of policy makers. In the United States, for example, the National Telecommunications and Information Administration (NTIA) has tracked Internet access and developed policy recommendations to close gaps in such access (NTIA 1995, 1998, 1999, 2000, 2002). Among the "digital divides" noted by the NTIA is a divide between urban and rural areas, between whites and non-whites, between the young and old, and between the economically active and inactive (see DiMaggio et al. 2001 for a review). The NTIA and the literature more generally tends to frame this discussion in terms of haves and have nots. Either you have Internet access at home, work, or school or you do *not* have Internet access. Although it is certainly important to study differences in Internet access, there are also important differences in Internet use among those who enjoy some form of access. Perhaps an individual has Internet access at home, but their dial-up speed is slow and hence their Internet usage is limited. Perhaps an individual has high-speed Internet, but little knowledge of search engines and how to "surf" the Internet, narrowing the scope of what they can get out of being online. The research and policy agenda must be broad enough to tackle these differences and the inequalities they produce.

Given the complexities in Internet inequality, this study approaches the digital divide differently from bodies like the NTIA. It shows how Internet inequalities are manifesting among the online population and the overall population. In doing so, it builds on recent research suggesting that there is something more to the "digital divide" than simply access. Scholars have discovered differences in Internet use that include variations in connection speed (Kling 1998), where individuals access the Internet (Bimber 2000), what technical and cognitive skills they bring to bear in navigating the Internet (Hargittai 2002), the length of time they spend online (Bonfadelli 2002), and the purpose for which they use the Internet (Spooner and Rainey 2000). In this book, we'll consider differences in how frequently people go online, what activities they do online, and what they get out of their online experience. We hypothesize that these differences map onto existing inequalities in American society, with historically disadvantaged groups going online with less frequency, for less productive purposes, and for a smaller social and financial return. We also suggest that these differences could exacerbate existing inequalities, such that privileged social groups consolidate their power and heighten their privileged status through the use of the Internet.

In addition to building on a critical area of research, we'll tell this story through the lens of some classic sociological perspectives: the conflict perspective, the cultural perspective, and the functionalist perspective. Each perspective provides a provocative explanation for how and why Internet inequalities exist. Using recent data on Internet use in American society, we'll test some of these ideas empirically to determine their explanatory power. After reading this book, you'll have a sense of the variety of ways that sociologists can examine the Internet

as a social institution and social structure, not to mention a greater appreciation for what differences in Internet use might mean for social inequality.

DiMaggio et al. (2001) contend that inequalities embedded in Internet technology are not due to the technology itself, but to the ways in which that technology has developed over time. Thus, before we embark on this theoretical and empirical treatment of the Internet, a brief history of the Internet is in order. We'll use a novel source of data to explore this history. Internationally, two groups are largely responsible for developing and coordinating Internet standards and protocols: the Internet Engineering Task Force (IETF) and the Internet Architecture Board (IAB). Both groups are part of the international non-profit organization known as the Internet Society and both have published a series of "Requests for Comment" (RFCs).[2] Numbered 1 through 5242, the RFC series documents the development of the principles of network computing, including the TCP/IP communication protocols that are the technical backbone of today's Internet.[3] In addition to their technical content, the RFCs offer unique insights into how individuals and groups contested and negotiated the principles of the Internet, its organizational structure, and its major design features.[4] This discussion will provide some context and background for the analytic chapters that follow.

The Advent of Network Computing

The purpose of the early Internet was to provide a means of communication for U.S. political and military leaders in the event of nuclear war. Baffled by the task of securing a central network facility against enemy missiles, staff researchers at the RAND Corporation proposed a novel solution in the early 1960s: create a communications network that could bypass a central command structure. The idea was to put in place a communications infrastructure that had no central authority, such that it could operate and remain intact even after command structures were destroyed during wartime. At first glance an elegant and creative solution, such a network required enormous technical development. Beginning in the fall of 1969, the U.S. Defense Advanced Research Projects Agency (DARPA) funded a team to build computer network nodes.

While one group of young Americans was fighting in the jungles of Vietnam and another was marching in the streets, a third group was preparing to build a computer network that would transform American society. In August of 1969, the first node was created at the University of California-Los Angeles (UCLA). Three additional nodes were added later that fall at Stanford, the University of California-Santa Barbara and the University of Utah. A core group of network developers, primarily graduate students in computer science, operated out of the Network Measurement Center at UCLA. This group shared an intellectual outlook that closely mirrored the network that they would build—a decentralized, iconoclastic, can-do sensibility that did not take itself too seriously. Writing 30 years later, Steve Crocker, a pioneer of network computing, explains:

> We were frankly too scared to imagine that we could define an all-inclusive set of protocols that would serve indefinitely. We envisioned a continual process of evolution and addition, and obviously this is what's happened. The RFCs themselves also represented a certain sense of fear . . . . Mindful that our group was informal, junior and unchartered, I wanted to emphasize these notes were the beginning of a dialog and not an assertion of control. (RFC #255)

Despite the hesitancy and humility with which this group of junior scholars approached the development of the Internet, the technical skeleton that they would construct would serve as the foundation upon which our online world was built.

Though the Internet was born in a loosely organized environment, it did not take long for an organizational structure to emerge. For example, RFC#140, issued in 1971, sets out to organize and manage a growing group of scientists and research centers involved in the Internet's construction. The need for some structure was understandable; between 1969 and 1971, the number of participating scientists

grew from nine to 60 (RFC#10; RFC#155).[5] An organizational structure emerged, but a strong emphasis on the ethos of science remained. RFC#1025, for instance, describes procedures for a series of "bake-offs," which were venues for scientists to present and advocate different designs and communications protocols. At these venues, most of which occurred in the 1970s and 1980s, competing designs were evaluated and discussed in collaborative fashion. As these two examples suggest, there was an ongoing tension between an ethos of science, which stressed open collaboration, and a bureaucratic personality, which stressed formal hierarchy, throughout the early years of the Internet.

In 1981, the BITNET (or the "Because It's Time NETwork," also known as the "Because It's There NETwork") was started as a cooperative network at the City University of New York. The BITNET provided electronic mail and listserv servers to distribute information, as well as file transfer technology. Within just one year, this network spanned the United States and the Atlantic, connecting to its European counterpart EARN (European Academic and Research Network). BITNET was an academic network and it facilitated communication in the name of research and education. As a cooperative network, participating organizations and universities contributed communication lines, temporary data storage, and the processing power necessary for the network to function. At its peak in 1992, the BITNET consisted of approximately 1,400 organizations in 49 countries.

Developing at the same time as BITNET, the Internet offered a network architecture that was considerably more open. The Internet was also well suited to the introduction of the personal computer and local area networks (LANs), or networks of computers in relative proximity to one another, which became popularized in the second half of the 1980s. In many ways, the pivotal event in the Internet's ascendancy over BITNET came in 1991, with the introduction of the "Gopher" Internet search engine at the University of Minnesota. RFC#1436 introduced "Gopher" to the Internet community:

> **gopher** n. 1. Any of various short tailed, burrowing mammals of the family *Geomyidae*, of North America. 2. (Amer. colloq.) Native or inhabitant of Minnesota: the Gopher State. 3. (Amer. colloq.) One who runs errands, does odd-jobs, fetches or delivers documents for office staff. 4. (computer tech.) Software following a simple protocol for tunneling through a TCP/IP Internet.

The introduction of Gopher and other Internet search engines significantly altered the way that the user community—still primarily scientists and researchers—began to use the Internet. A rapidly growing Internet made available online not simply text files, but program codes and other forms of information. Search engines provided the means to catalogue and explore the growing volume of information. Programs to transfer information (e.g., FTP) put information on the desktops of scholars almost instantly.

In late 1990, a computer scientist at the European Organization for Nuclear Research (CERN) invented the World Wide Web (WWW), which transformed the Internet into the user-friendly graphic user interface that most people are familiar with today. CERN is an international organization that builds and operates research facilities for particle physicists. Most researchers spend some time at the CERN site, but typically they work at universities and laboratories in their home countries. Given this environment, the WWW served not only as a vehicle for exchanging information, but also as a tool to encourage active collaboration within the CERN community. The WWW used "hyperlinks," which provided point-and-click access rather than typed and complex commands. Hyperlinking adhered to the foundational characteristics of network computing—democratic, decentralized, and decidedly nonlinear. There was no hierarchy, with any site capable of referencing any other site. There was no central command, with responsibility for content and access resting with owners of the site. And there was no single path from point A to point B, with various pathways through the Internet available.

Another critical event in Internet technology occurred in 1993, when Marc Andreessen and a team of students and staff at the University of Illinois developed Mosaic, one of the first web browsers. As a web browser, Mosaic opened access to the WWW by making web pages

available to anyone with a personal computer, not just scientists at supercomputing centers or research labs with serious computational power. A year later, Andreessen founded Netscape Communications Corporation, and the company began to develop the Netscape Navigator web browser, which brought the Internet into homes and businesses around the world.

Evolution of the Internet

Within a short period of time, then, the public enjoyed access to this growing web of information known as the Internet. Ed Krol, who would later write the first popular guide to the Internet, *The Whole Internet: User's Guide and Catalog* (1992), authored RFC#1118 in 1989. Entitled "The Hitchhiker's Guide to the Internet," this memo noted and attended to the growing number of new users. And beginning with RFC#1150, issued in March of 1990, the network working group initiated a new sub-series of RFCs called FYIs (For Your Information), which were intended for a wide audience. By November of the same year, the Internet development community began speaking of the commercialization of the Internet (RFC#1192), making it abundantly clear that a new day was dawning. In a 1993 FYI, Krol observed:

> Businesses are now discovering that running multiple networks is expensive. Some are beginning to look to the Internet for "one-stop" network shopping. They were scared away in the past by policies which excluded or restricted commercial use. Many of these policies are under review and will change. As these restrictions drop, commercial use of the Internet will become progressively more common. (RFC#1462)

By the early 1990s, developers were considering ways to deliver new Internet services, "including teleconferencing, remote seminars, telescience, and distributed simulation" (RFC#1633). And by 1996, an Internet standard for the encoding of audio and video data had been released (RFC#1890) and work was beginning on GPS-based addressing and routing (RFC#2009).

An interesting marker of the changing character of the Internet came in 1993, when RFC#1550 solicited white papers on design requirements for the next generation of Internet protocols (IPng). For our purposes, who responded to the solicitation and the topics they addressed are of interest. Responses included developing protocols for determining market viability (RFC#1669), developing a cellular industry (RFC#1674), constructing large corporate networks (RFC#1678), and nurturing other commercial ventures (RFC#1672; RFC#1686). Clearly the Internet was no longer just about science. If we were to designate one moment as emblematic of the commercial transformation of the Internet, it would have to be February 1996, which saw the publication of RFC#1898, "CyberCash Credit Card Protocol Version 0.8." In this document, Crocker explained:

> CyberCash, Inc. of Reston, Virginia was founded in August of 1994 to partner with financial institutions and providers of goods and services to deliver a safe, convenient and inexpensive system for making payments on the Internet . . . . CyberCash serves as a conduit through which payments can be transported quickly, easily and safely between buyers, sellers and their banks. Significantly—much as it is the real world of commerce—the buyer and seller need not have any prior existing relationship. As a neutral third party whose sole concern is ensuring the delivery of payments from one party to another, CyberCash is the linchpin in delivering spontaneous consumer electronic commerce on the Internet.[6]

In 1999, RFC #2706 provided a set of guidelines for web merchants to use, which facilitated web-based shopping for consumers. The era of e-commerce had arrived.

As commercial aspects to the Internet evolved in the 1990s, Internet applications were also evolving. To many observers, the Internet was reinvented with the development of so-called Web2.0 sites. Tim O'Reilly, a prominent publisher of computer books, first coined the term "Web2.0." In a 2005 article called "What is Web2.0," he compares

Netscape and Google to help distinguish Web2.0 from its predecessor, Web1.0. Whereas Netscape (representing Web1.0) acted as a web browser, with a "webtop" replacing a desktop, Google (representing Web2.0) is neither a server nor a browser. As O'Reilly explains: "Much like a phone call, which happens not just on the phones at either end of the call, but on the network in between, Google happens in the space between browser and search engine and destination content server, as an enabler or middleman between the user and his or her online experience." Google, according to O'Reilly, had "none of the trappings of the old software industry." Indeed, there was no software packaged and sold. It was simply "delivered as a service" to Internet users.

Web2.0, according to O'Reilly, is a platform not an application. It brings an end to the software release cycle through web services that are being continually updated on the server side. Thus, none of the emblematic Web2.0 sites requires the user to download software. Instead, they offer users the chance to be members of the site. Site members provide information directly through user profiles or indirectly through logs of online behavior that allow continual updating and customization of the site. Although Web2.0 sites do not require a software download, many of them offer desktop tools as free downloads. These tools typically enhance the site's performance or enable a "mashup" with another Web2.0 site. The idea is to share selected data across sites in ways that add value to the originating application. Looking at Web2.0 applications, and increasingly across the web, all but the smallest of sites are moving from static pages to dynamic designs. This shift in design allows web content to be easily added, edited, and maintained by "content managers" rather than "html programmers."

Most readers will know Google, Wikipedia, eBay, and Amazon as the icons of Web2.0. (For a list of specific Web2.0 sites and their Web1.0 equivalents, see Figure 1.1.) To capture the defining features of Web2.0, though, let's review a less universally known site: Digg.com. To get a full sense of this Web2.0 example, you should go online and click through the site, although a sample page is provided in Figure 1.2.

Web1.0		Web2.0
DoubleClick	→	Google AdSense
Ofoto	→	Flickr
Akamai	→	BitTorrent
mp3.com	→	Napster
Britannica Online	→	Wikipedia
personal websites	→	blogging
evite	→	upcoming.org and EVDB
domain name speculation	→	search engine optimization
page views	→	cost per click
screen scraping	→	web services
publishing	→	participation
content management systems	→	Wikis
directories (taxonomy)	→	tagging ("folksonomy")
stickiness	→	syndication

Figure 1.1 Differences in Web1.0 and Web2.0 (source: O'Reilly, Tim, "What is Web2.0," www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/03/what-is-web-20.htm).

As you do this and as you read the following discussion of Digg.com, keep in mind O'Reilly's list of defining characteristics of Web2.0:

1 it is a platform not an application;
2 it harnesses collective intelligence;
3 it is data-driven and database management is the requisite core competency;
4 it brings an end to the software release cycle through web services that are continually updated on the server side;
5 its goal is simple, lightweight programming;
6 it creates software for multiple devices with a move from the PC as the default platform; and
7 it strives for a dynamic, multi-media user experience.

Digg.com is a site that allows individuals to share information from elsewhere on the web. Individuals provide links to images, articles, videos, and so on, and the Digg community vote on, or Digg, what pieces they like best. The items with the most popular votes, or Diggs, are showcased front and center at the Digg.com site. On a random

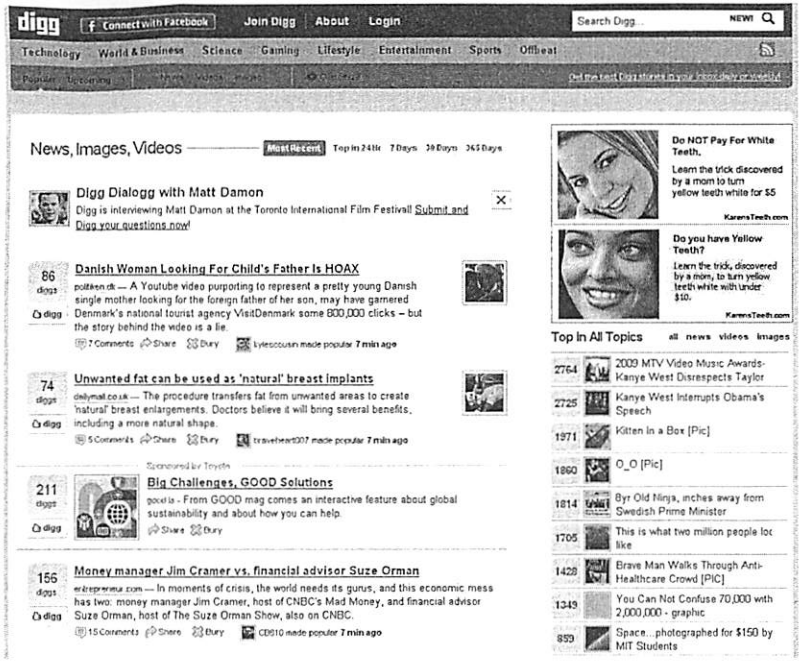

Figure 1.2 The Digg.com home page (reprinted by permission of Digg).

winter day in 2009, the top items on Digg.com included a story about how the religious right views stem cell research and a video of someone using a fart machine at a city council meeting! Many other websites even offer "Digg it" buttons at the end of their articles to encourage readers to share the information with the Digg community. Desktop widgets—virtual tools placed on desktops that provide services such as showing the current time and weather—allow users to vote for an item on Digg without actually going to Digg. Web applications and "mashups" provide a similar service. For example, an application can be loaded onto a Facebook profile that enables friends to see stories that an individual most recently Dugg.

Digg.com embodies collective intelligence, a defining feature of Web2.0, in that it acts as a clearinghouse for what Digg users find of

interest. As for the ownership of "contributed content" the terms of use agreement for Digg is very clear and typical:

> By uploading, submitting or otherwise disclosing or distributing Content for display or inclusion on the Site, you represent and warrant that you own all rights in the Content and you agree that the Content will be dedicated to the public domain under the Creative Commons Public Domain Dedication, available at http://creativecommons.org/licenses/publicdomain.

In other words, by posting a comment you give up ownership of the comment as intellectual property. The actual stories, however, are a different matter. Digg does not host any of the content that is featured on the site. Rather, for each story, the Digg database holds a link to the location where the story is available. When a story attracts considerable attention, the original host may crash due to an increase in traffic sent to that site from Digg, known as the "Digg effect" or being "Dugg to death."

As is typical of Web2.0 applications, Digg.com has frequently tested out new features and enhanced its site. Digg started as a website with only text and no graphics or advertisements. It is now in its third major iteration. There is no software release cycle. Instead, new features are added when needed. For example, when a large number of pictures began to be posted on the site, Digg implemented a picture section to make it easier to search and sort posts by media type. Due to the increasing number of mobile Internet users, Digg also launched m.digg.com, a version of Digg designed for Blackberries, iPhones, and other technology appliances. Figure 1.3 showcases an m.digg page, illustrating the way in which Web2.0 moves beyond the desktop computer platform and the traditional web page experience. Light on graphics, the mobile page retrieves the same data as the standard site but does it in a leaner format, adapted to slower mobile transmission speeds and scaled to a smaller screen. Finally, as this book goes to press, Digg is announcing yet another new feature, namely "a new advertising platform—Digg Ads." As Digg explains, "The more an ad is Dugg, the

Figure 1.3 The m.digg.com home page.

less the advertiser will have to pay. Conversely the more an ad is buried, the more the advertiser is charged, pricing it out of the system."

Web2.0 applications like Digg.com are making available untold amounts of information to Internet users. And they do so in ways that allow users to identify and focus on relevant information without getting lost in a sea of digital data. With so much information and with such rapidly changing technological means to navigate this information, it stands to reason that individuals without Internet access and without Internet competencies will get left out in the cold. When scholars and policy makers first began speaking of a "digital divide," the information and tools on the Internet were rather limited. One could

take or leave Internet technology without being culturally, politically, or economically marginalized. This may be less true today as Web2.0 engages Internet users in more intense and interactive ways. What are the consequences for those who can't keep up with the rapid pace of Internet technology? And what are the consequences for those who aren't even on the Internet to begin with?

Inequality on the Web

In its early days, the Internet reflected the values of a relatively small group of users, primarily scientists, who emphasized collaboration and open access. As the Internet has evolved and gained in popularity, however, it has taken on the values of the larger society, which emphasize competition, status, and hierarchy. In this way, it has reproduced rather than challenged existing forms of inequality. Specifically, it has produced a new and quite powerful means by which social groups either gain or lose competitive advantage, in much the same way that schools facilitate our system of social stratification. One of the primary forms of inequality that we see is a lack of basic Internet access. Without some form of Internet access, the information and communication "revolution" that many associate with the Internet is meaningless. This lack of access is dangerous to the extent that it creates a new means of social exclusion.

With the majority of the U.S. adult population now enjoying some form of Internet access, however, this type of exclusion is becoming less problematic. We argue, therefore, that researchers and policy makers should be equally if not more concerned with inequalities that manifest among the population of Internet users. Among U.S. adults who enjoy some Internet access, there are significant differences in who enjoys consistent and continuous Internet access, in who possesses various Internet competencies, and in who finds relevant information on the Internet. As a result, individuals may have more or less access to valuable information, more or less ability to manage that information, and more or less use for that information.

The sheer volume of information available through the Internet has been a major issue at least since the mid-1990s. At that time, standards

to facilitate the search and retrieval of Web documents were raised (RFC#1630) and the Uniform Resource Locator (URL) was introduced to standardize the web address system. RFC#1290, some 20 pages long, catalogued online libraries, bulletin boards, and directories, articulating the fundamental information issue:

> Attempting to make this wealth of information available to those who would find it useful poses some problems. First, we need to know of its existence . . . Second, even if you know of a document's existence, you may not know if it is important or relevant . . . Finally, once the existence and importance are known, the information needs to be indexed so that researchers can find it.

In short, the unanticipated growth in Internet content had the unforeseen consequence of information overload. Questions of navigation techniques, content relevancy, and organizational structure came to the fore as a result.

Web2.0 was designed to accommodate these issues. The collective intelligence of an ever expanding user base, for example, provides a means to organize and master the volume and magnitude of data. "Tagging," or the categorizing of Internet content using keywords, is another way that Internet users manage online data. Indeed, the value of many Web2.0 applications comes from the way in which they are able to focus a user's attention on relevant information, where relevance is defined by a user's stated interests and preferences, a user's past preferences and behavior, and the interests, preferences, and behavior of like-minded individuals. But in seeking to resolve the information processing dilemma, Web2.0 created new problems. Although Web2.0 has become a repository of collective intelligence, a platform for information-sharing, and a vehicle for collective interaction and expression, it has the potential to alienate anyone without consistent Internet access, anyone without a certain level of Internet savvy, and anyone without an interest in the kinds of information brought to the Internet.

Examples from the Internet may help illustrate this point. Google "replace Volvo XC70 headlight" and you get http://helpfulvideo.com/video/show/760/how-to-remove-headlight-in-volvo-s70-v70-xc70.html, a very helpful step-by-step, how-to-do video demonstration. But this information is only relevant if your Internet connection is consistent and your Internet speed is sufficient to watch a video. Interested in finding an assessment of your child's school, you may stumble upon www.greatschools.net, which hosts parents' discussions on school-related issues and parents' reviews of schools. But if your child attends a school in which the majority of students lack Internet access at home, you're unlikely to find parents of students at that school actively discussing the strengths and weaknesses of the school online. In need of medical information, you can go to the webMD site (www.webmd.com), a repository of articles on medical topics and discussion boards frequented by patients and caregivers. But featured topics that get the most traffic are likely to be those that resonate with the middle-class users who frequent the Internet, not topics like "lead poisoning," which would be of greater concern to low-income users.

In the end, Web2.0 works best for the Internet everyman or everywoman, who tends to be educated and well-off. Thus, in addition to restricting information to those who have access to the Internet, Web2.0 restricts relevant information to those who are most similar to that typical Internet user. As you read about some of the major sociological perspectives of the Internet and consider empirical data on Internet use, think carefully about what kind of information is available on the web, how users actually access that information, and what skills they need to access and sift through that information. In doing so, you'll be better able to understand inequalities in information access, information processing, and information relevance.

Organization of the Book

In the next chapter, we'll take a closer look at differences in Internet use among the U.S. adult population. Specifically, we'll consider how online activity varies with gender, age, race, education, employment, and income. In the chapters that follow, we'll apply three different sociological perspectives to explore the relevance of these differences. All of these perspectives agree on this point: technology adoption and

adaptation occur in particular socio-historical circumstances, which give shape to the organization and structure of that technology.

Apart from this common understanding, the three perspectives have different explanations for social inequality:

- The conflict perspective, originating with the work of Karl Marx, pinpoints the root of inequality in class relations under capitalism. This perspective holds that ownership of valuable resources, including skill assets, puts certain social classes at a distinct advantage. Thus, individuals with significant Internet competencies might enjoy a privileged position under capitalism. Institutions like the family and educational system reproduce those privileges over time, such that individuals in higher social classes will learn Internet skills and competencies that will give them a competitive advantage.
- The cultural perspective, derived from the work of Max Weber, emphasizes multiple sources of inequality in modern society: notably, class and status. These sources of inequality manifest not simply in terms of differences in economic resources and political power, but in terms of lifestyle and life conduct. Thus, individuals with more prestige and higher social status will enjoy greater access to the Internet and will consolidate their esteemed status through social networking on the Internet. Internet-based interaction constitutes a type of lifestyle that defines high status groups and works to their advantage.
- The functionalist perspective, with its origins in Emile Durkheim's work, accepts social inequality as a legitimate price to pay for the contributions that prestigious individuals make to society. Specifically, complex societies have a division of labor, in which individuals specialize in different tasks according to their abilities and interests. As an incentive for some individuals to specialize in tasks that are functionally important in society, the social structure provides material and social rewards. Thus, savvy Internet users will find Internet information more relevant and more useful in securing some social or economic return. But this inequality will be justified to the extent that these users provide valuable social goods in the form of ideas, products, and services.

Each of these sociological perspectives offers its own insights into the relationship between the Internet and inequality. Thus, for each, we'll present relevant theoretical material, coupled with empirical data to test the explanatory potential of each perspective. In the concluding chapter, we'll tie the three perspectives together indicating how collectively they provide us with a better understanding of the digital divide than any one perspective alone. In this final chapter, we'll also turn to questions of public policy and how policy might be informed by these sociological analyses of the Internet.

Questions for Reading, Reflection, and Debate

1. Make a list of everything you have done on the Internet in the last week. How would you have accomplished those tasks without the Internet? What did these tasks provide you in economic, political, and social terms? Had you not accomplished these tasks, what effect would it have on your life in the short and long term?
2. Visit the RFC website at www.rfc-editor.org and look up three RFCs: #3751, #1097, and #1438. What is each of these RFCs about? Looking at the dates on which each RFC was published, can you find a common link? (Here's a hint: it's not a national holiday, but it is a nationally significant day.) What does this information tell us about the architects of the Internet? What kind of group is this and how might their flippant style have affected the Internet's development?
3. Pick one of the following Internet sites to peruse and analyze: www.JamBase.com, www.flickr.com, or www.Instructables.com. Using Figure 1.1, which illustrates differences in Web1.0 and Web2.0, discuss how the site conforms (or does not conform) to the major features of Web2.0. What characteristics might members of these sites have in common? And what kind of return might they enjoy from their use of these sites?

2

Internet Use Among American Adults

The Internet is becoming an increasingly vital tool in our information society. More Americans are going online to conduct such day-to-day activities as education, business transactions, personal correspondence, research and information-gathering, and job searches. Each year, being digitally connected becomes ever more critical to economic and educational advancement and community participation. Now that a large number of Americans regularly use the Internet to conduct daily activities, people who lack access to these tools are at a growing disadvantage. Therefore, raising the level of digital inclusion by increasing the number of Americans using the technology tools of the digital age is a vitally important national goal.

—*NTIA* 2000

Introduction

The picture in the May 30, 2009 online edition of the *Wall Street Journal* was a curious one. In it, a black man wearing baggy, worn pants and an untrimmed beard is sitting in what looks to be a bus terminal, a sleek laptop perched on his lap. While he concentrates on the computer screen, a man sleeps next to him on the wooden bench. We do not see the sleeping man's face; it is buried underneath a dirty coat and sandwiched between two trash bags. It turns out that the terminal is San Francisco's Transbay Terminal and the men are two members of the city's homeless community. Although he is homeless, the man featured

with the laptop has accounts on Facebook, MySpace, and Twitter. He also runs an Internet forum on Yahoo! and communicates regularly with family and friends by email. Even on the streets, the accompanying article proclaims, "the homeless stay wired" (Dvorak 2009).

Could it be that everyone, even San Francisco's homeless population, is online? Is Internet access and use really that ubiquitous? Or are there differences in who has access to the Internet, who uses it regularly, and who uses it for particular activities? These are empirical questions that can not be answered by interviewing a handful of homeless men who happen to be privy to a laptop and some electricity. Rather than relying on exceptional cases to uncover social trends, social scientists analyze large data sets, which are much more representative of social phenomena than are non-randomly selected cases. In this chapter, I will use data from the Pew Internet & American Life Project to examine U.S. Internet use from 2000 to 2007. This project, an initiative of the Pew Research Center, has collected telephone survey data on American Internet use since March of 2000. Survey participants are randomly selected from a list of phone numbers for all U.S. households with a telephone. Beginning in December 2008, cell phone numbers were included in this list. The project makes its data and a variety of reports based on the data publicly available at www.pewinternet.org.

Using this data, we'll analyze who is using the Internet, how often they're using it, and what they're doing online. According to Pew survey data, the percentage of American adults who had ever been on the Internet increased from 46 percent to 71 percent between 2000 and 2007. In addition, those Americans who had used the Internet on the day prior to being interviewed increased from just under one in three adults to just under one in two adults. Although these figures indicate growing Internet use, such growth tends to be concentrated among certain groups. As well, there are differences in what American adults do online. Thus, in the first half of this chapter, we'll describe differences in Internet use by gender, age, race, ethnicity, education, employment status, and income. In the second half of this chapter, we'll take a close look at what people do online and how this varies by the demographic characteristics discussed in the first half of the chapter.

Demographics of Internet Use

Tables 2.1 and 2.2 provide a basic demographic description of the Pew samples in 2000 and 2007. These numbers suggest that these samples are fairly representative of the overall U.S. population. It's important to note, however, that there tend to be gender, race, and educational differences between individuals who agree to participate in surveys and individuals who refuse to participate. This makes these samples less representative of the overall U.S. population than they would otherwise be using random sampling methods. To account for this possible selection bias, we use weighted estimates. Using these techniques, we can be confident that these are representative estimates for the U.S. adult population, with a margin of error in most cases of about ±3 percent.

Table 2.1 Gender, Age, and Race of Pew Internet & American Life Samples, 2000 and 2007

	2000 PEW SAMPLE (%)[1]	2007 PEW SAMPLE (%)[2]
Gender		
Male	47.7	47.8
Female	52.3	52.2
Age		
18–24 years old	12.9	11.1
25–34 years old	19.0	16.5
35–44 years old	22.5	19.5
45–54 years old	17.9	19.8
55–64 years old	11.3	14.5
65 years or older	15.9	16.8
don't know/refused	2.1	1.7
Race		
white	82.3	76.0
black	10.9	12.4
Asian	1.1	3.3
other/mixed	3.2	5.0
don't know/refused	2.4	3.2

Percentages may not equal 100% due to rounding.

Notes:

1 Sample size is 3,533. The reported margin of error is ±2.5% for demographic items from this survey and ±3% for items on specific Internet activities (Pew Internet & American Life Project 2000).

2 Sample size is 2,200. The reported margin of error is ±2.3% for demographic items from this survey and ±2.8% for items on specific Internet activities (Rainie and Tancer 2007).

Table 2.2 Educational Level, Employment Status, and Family Income of Pew Internet & American Life Samples, 2000 and 2007

	2000 PEW SAMPLE (%)[1]	2007 PEW SAMPLE (%)[2]
Educational Level		
Less than high school degree	15.4	13.7
High school graduate	36.9	31.8
Some college	23.4	26.5
Bachelor's degree or higher	23.7	27.0
Don't know/refused	0.9	1.0
Employment Status		
Employed full-time	55.3	49.4
Employed part-time	10.5	11.6
Retired	18.4	20.6
Not employed for pay	11.8	13.7
Other	3.2	4.1
Don't know/refused	0.8	0.7
Family Income		
Less than $10,000	6.2	7.4
$10,000 to under $20,000	10.1	8.0
$20,000 to under $30,000	12.2	9.7
$30,000 to under $40,000	11.7	8.1
$40,000 to under $50,000	9.4	7.9
$50,000 to under $75,000	14.0	13.2
$75,000 to under $100,000	7.0	10.4
$100,000 or more	6.6	11.0
Don't know/refused	22.9	24.3

Percentages may not equal 100% due to rounding.

Notes:

1 Sample size is 3,533. The reported margin of error is ±2.5% for demographic items from this survey and ±3% for items on specific Internet activities (Pew Internet & American Life Project 2000).

2 Sample size is 2,200. The reported margin of error is ±2.3% for demographic items from this survey and ±2.8% for items on specific Internet activities (Rainie and Tancer 2007).

This section considers how Internet use varies among individuals in this sample according to various demographic and socio-economic characteristics. Specifically, we'll look closely at gender, age, race, education, employment, and income to see whether differences in Internet use emerge along these social dimensions.

Figure 2.1 maps the overall increase in American adults who have ever been online (the upper solid line) and the overall increase in adults who

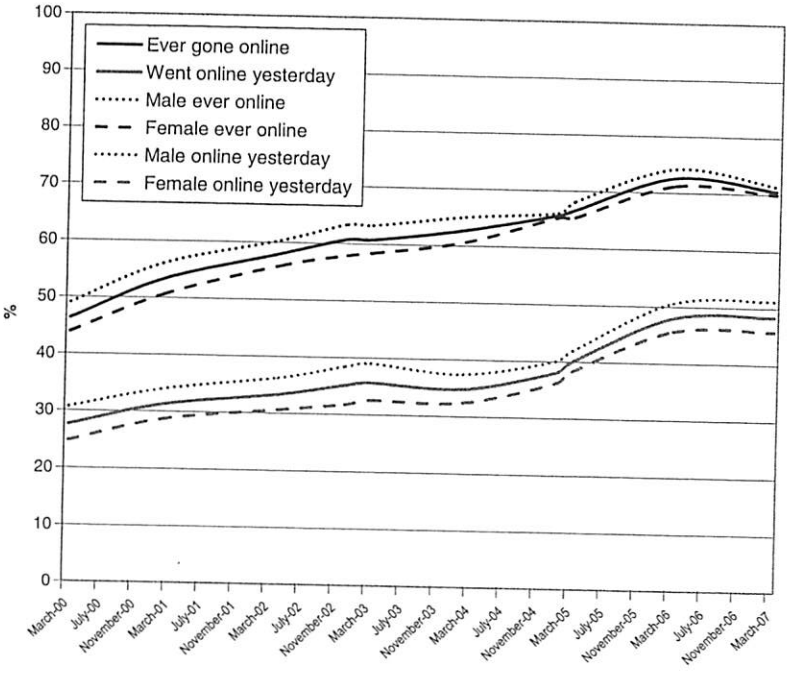

Figure 2.1 Internet use among American adults by gender, 2000–2007.

went online the day before being surveyed (the lower solid line). Although over 70 percent of American adults had used the Internet in 2007, just under half had used it the day prior to being interviewed by the Pew Internet & American Life Project. Thus, although the Internet has undoubtedly become an important part of contemporary American life, it is not yet an important part of *daily* life for roughly half of all American adults. Layered alongside these overall trends, the dashed and dotted lines in Figure 2.1 trace the male and female trends in Internet use, respectively. As these lines indicate, male and female levels of Internet use have converged in recent years. In 2000, for example, the difference in male–female Internet use was statistically significant; by 2007, that difference was statistically indistinguishable. We can say, then, that U.S. adult men and women are using the Internet at more or less equal rates, such that gender is not a major digital divide in terms of Internet use.

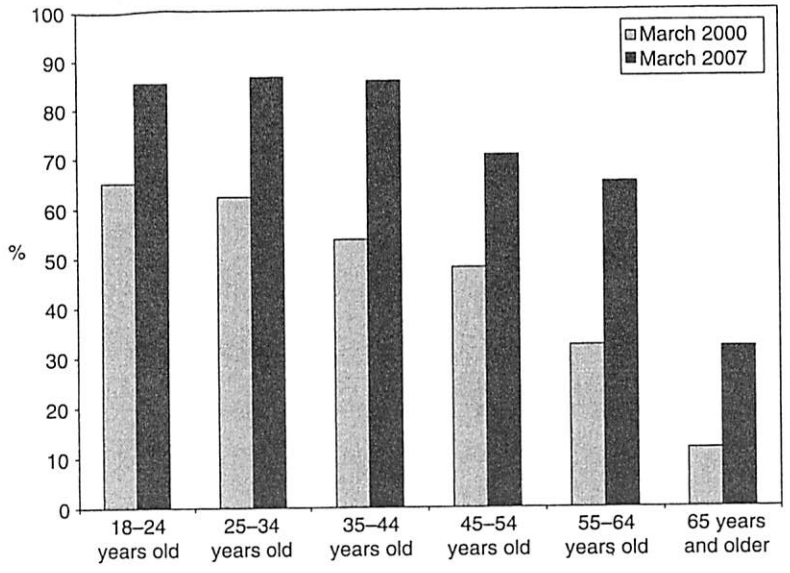

Figure 2.2 American adults who ever used the Internet by age, 2000 and 2007.

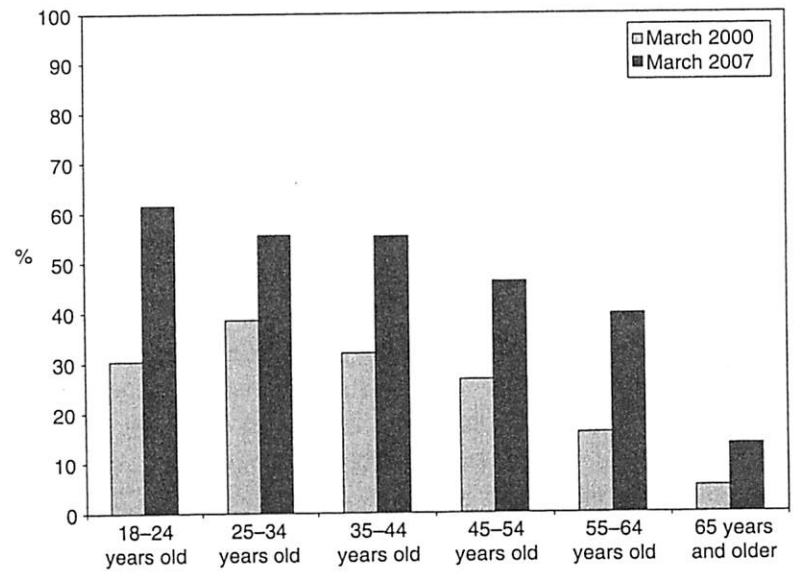

Figure 2.3 American adults who used the Internet on previous day by age, 2000 and 2007.

Figures 2.2 and 2.3 present age-related trends in Internet use among American adults. Here, too, we note increasing percentages of use across all age categories, both among those who had ever used the Internet and among those who had used the Internet the previous day. Among the three youngest age groups (18–24 years, 25–34 years, and 35–44 years), over half had been online in 2000 and over 85 percent had been online as of 2007. By 2007, we see very little difference in Internet use among these age groups. In contrast, significantly lower percentages of individuals in the older age groups (45–54 years and 55–64 years) reported any online experience, though the gap between the younger and older age groups closed considerably between 2000 and 2007. About one-third of those aged 55 to 64 reported any online experience in 2000, compared to about two-thirds of those aged 18 to 24. By 2007, this disparity had been cut significantly, with about 65 percent of those aged 55 to 64 reporting online experience, compared to about 85 percent of Americans aged 18 to 24. The most striking age-based disparity in Internet use lies with those age 65 and older. In 2000, just over 10 percent of Americans in this age group had been ever been online. By 2007, that number had increased to approximately 30 percent. Even so, older Americans' online participation rates lagged well behind the next youngest cohort and further still behind all other adult Americans in 2007.[1]

Looking at Figure 2.4, we see that the percentage of American adults who had ever used the Internet also varied by race in 2000 and 2007. Comparing black and white adult Internet use in 2000, we find a 13 percent difference between the two groups. In 2007, the reported percentage of black Americans who had ever been online increased to 60 percent, compared to 73 percent of white Americans. Thus, although online experience increased for both blacks and whites, the increase was relatively similar, leaving the gap between blacks and whites unchanged. Figure 2.5 shows a very similar pattern for Internet use on the day prior to interview. An increase in the percentage of adults who used the Internet on the previous day is found for both black and white adults between 2000 and 2007. The percentage of blacks increased from 13 to 33 percent; the percentage of whites

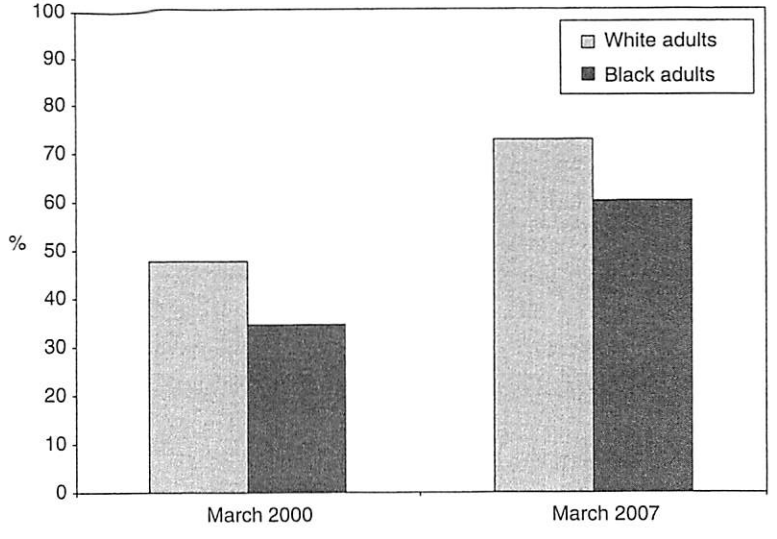

Figure 2.4 American adults who ever used the Internet by race, 2000 and 2007.

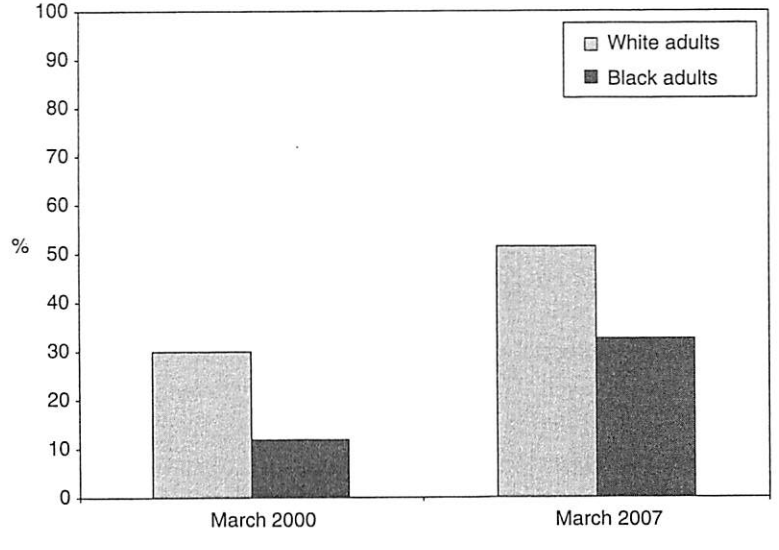

Figure 2.5 American adults who used the Internet on previous day by race, 2000 and 2007.

increased from 30 to just over 50 percent. Since the share of both groups increased by 20 percent, however, the racial gap in Internet use on the previous day remained unchanged during this time period.

As Figures 2.6 and 2.7 indicate, Internet use continues to be correlated with level of education. The proportion of American adults without a high school degree who had ever used the Internet more than doubled between 2000 and 2007. Nevertheless, only 40 percent of those without a high school degree had ever been online in 2007, compared with over 90 percent of those with at least a bachelor's degree. That same year, less than one-quarter of those without a high school degree had used the Internet on the day prior to being surveyed, compared with approximately three-quarters of those with at least a bachelor's degree. The educational disparity in ever using the Internet was greater in 2000 than in 2007, but the gap had narrowed only moderately by 2007. More importantly, the education gap in those who used the Internet on the previous day actually *increased* between 2000 and 2007, suggesting a growing educational divide in consistent or daily Internet use. These results indicate that America's colleges provide important educational and social experiences that promote Internet use.

Figures 2.8 and 2.9 suggest that full-time employment is also associated with Internet use.[2] Between 2000 and 2007, the percentage of employed adults who had ever been online increased from 56 to 82 percent. Among those who were neither employed nor retired, whose Internet use was consistently lower, Internet experience also increased from 43 to 70 percent. The gap in Internet experience between the employed and the neither employed nor retired, however, remained virtually unchanged between 2000 and 2007. Online participation among retired adults increased from 18 percent in 2000 to 42 percent in 2007. In this case, however, the disparity between employed and retired persons who had ever been online actually *increased* from 38 to 40 percent. Looking at those individuals who reported that they had used the Internet on the previous day, we see similar results. In 2007, 60 percent of American adults who were employed full-time used the Internet on the previous day, compared with 44 percent of those who were neither employed nor retired and 24 percent of those who were

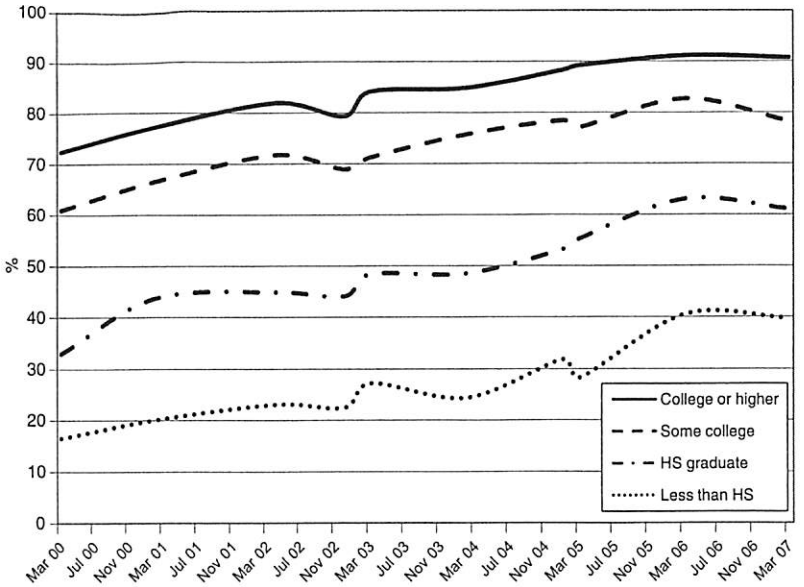

Figure 2.6 American adults who ever used the Internet by education, 2000–2007.

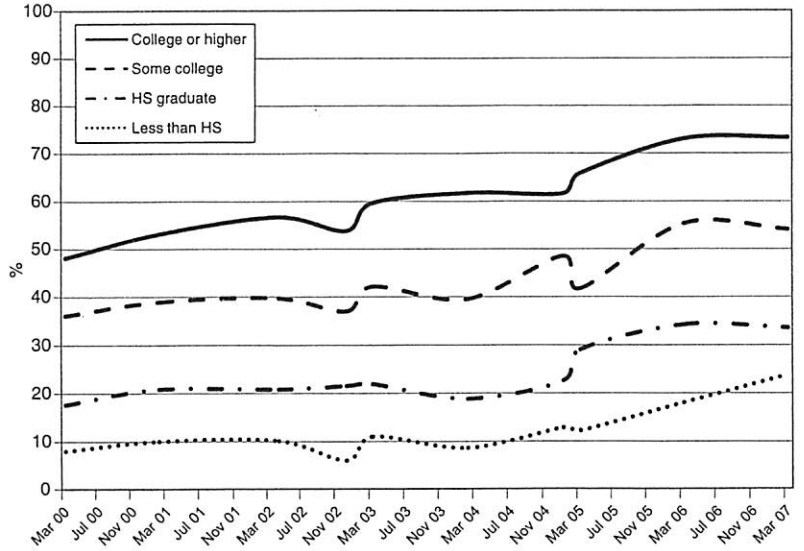

Figure 2.7 American adults who used the Internet on previous day by education, 2000–2007.

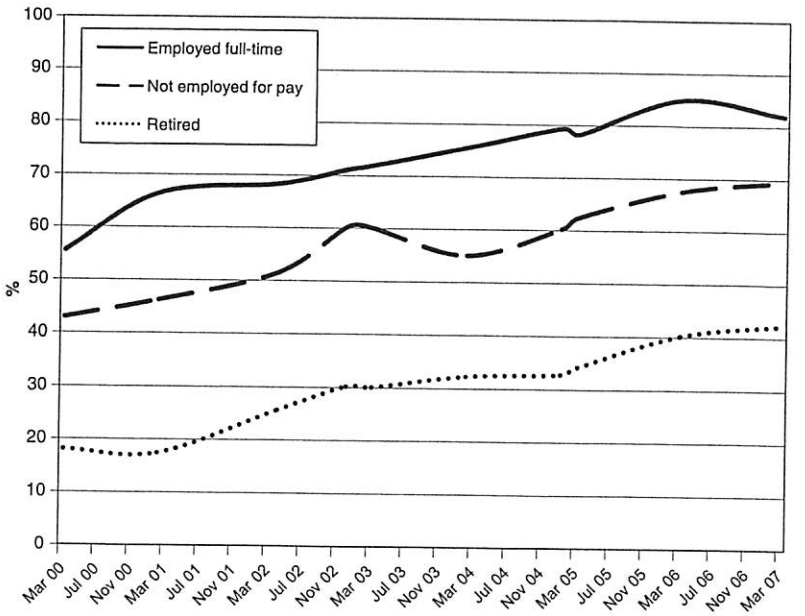

Figure 2.8 American adults who ever used the Internet by employment status, 2000–2007.

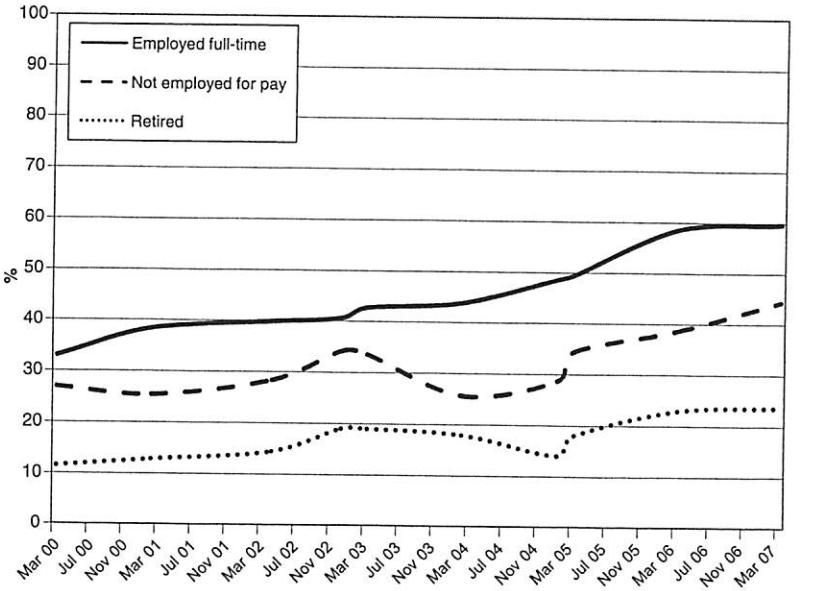

Figure 2.9 American adults who used the Internet on previous day by employment status, 2000–2007.

retired. Reported Internet use on the previous day grew most rapidly for those who were employed, suggesting that employment status is becoming a major factor in determining Internet use.

The role that employment plays in Internet use can be seen by looking in more detail at individual responses regarding use of the Internet on the previous day. In April of 2000, 791 of the 2,503 individuals interviewed by the Pew Project were surveyed on a Sunday or a Monday, that is, on days when they were unlikely to have been at work the previous day. In March of 2007, 620 of the 2,200 individuals interviewed were surveyed on a Sunday or Monday. Considering that Internet use might be higher for employed adults on days when they are at work, interviewing adults on a Sunday or Monday might skew the results and the effect of employment status since the previous day would have been a Saturday or Sunday (i.e., non-work days). Here, we want to separate those adults interviewed on a Sunday or Monday from those adults interviewed on other days so that we can get a better sense of differences in Internet use on the previous day.

Table 2.3 summarizes Internet use in 2000 and in 2007 by employment status and day of the week. In both years, regardless of employment status, we find that reported Internet use was more common during the week than on weekends. At both time points, however, this difference is only statistically significant for employed individuals. These differences are slightly less pronounced in 2007 than in 2000. Regardless of the day of the week, Internet use the previous day remains far more common among the employed than those not employed in both years. Thus, it is not simply greater access to the Internet that the employed enjoy at work; if it were, we would find differences in Internet use during the week and not during the weekend among the employed. Instead, we find that the employed are far more likely to be online the day prior to being interviewed regardless of whether that previous day was during the week or weekend. The employed, therefore, are more likely to use the Internet consistently for other reasons.

As Figures 2.10 and 2.11 show, the relationship between income and Internet use is significant. Consistently between 2000 and 2007,

Table 2.3 Internet Use on Previous Day by Employment Status and Day of the Week, 2000 and 2007

DID YOU GO ONLINE YESTERDAY...	EMPLOYED, YESTERDAY WAS...[1]		NOT EMPLOYED, YESTERDAY WAS...[2]	
2000	weekday	weekend	weekday	weekend
Yes	37.0%	26.3%	17.5%	17.2%
No	63.0%	73.7%	82.5%	82.8%
	100.0%	100.0%	100.0%	100.0%
	EMPLOYED, YESTERDAY WAS...[3]		NOT EMPLOYED, YESTERDAY WAS...[4]	
2007	weekday	weekend	weekday	weekend
Yes	61.9%	51.6%	32.6%	29.4%
No	38.1%	48.4%	67.4%	70.6%
	100.0%	100.0%	100.0%	100.0%

Source: April 2000 Tracking Survey, March 2007 Tracking Survey.
Notes:
1 Number of surveys = 1,686, $\chi^2 = 21.00$, $p < 0.01$.
2 Number of surveys = 797, $\chi^2 = 0.08$ $p = 0.78$.
3 Number of surveys = 1,214, $\chi^2 = 11.18$, $p > 0.01$.
4 Number of surveys = 970, $\chi^2 = 1.83$, $p = 0.176$.

reported levels of Internet use increase in proportion to reported household income. And in each successively higher income group, we find higher reported levels of Internet use. Looking a bit more closely, however, the relationship between Internet use and income becomes more complex. In Figure 2.10, we see that between 2000 and 2007, the gap between the percentage of the poorest Americans and the wealthiest Americans who had ever been online remained large, but had narrowed. In 2000, 81 percent of those in households with incomes of $100,000 or more had ever been online, compared to 26 percent of those in households with incomes under $10,000. In 2007, 93 percent of those in the wealthiest households had ever been online, compared with 45 percent of those in the poorest households. The difference in percentage points went from 55 in 2000 to 48 in 2007, indicating a slightly narrower but still significant income divide.

Figure 2.11, which traces the relationship between income and use of the Internet on the day prior to interview, shows an *increasing* gap between the poorest and the wealthiest Americans between 2000 and 2007. The percentage of respondents in the poorest households who

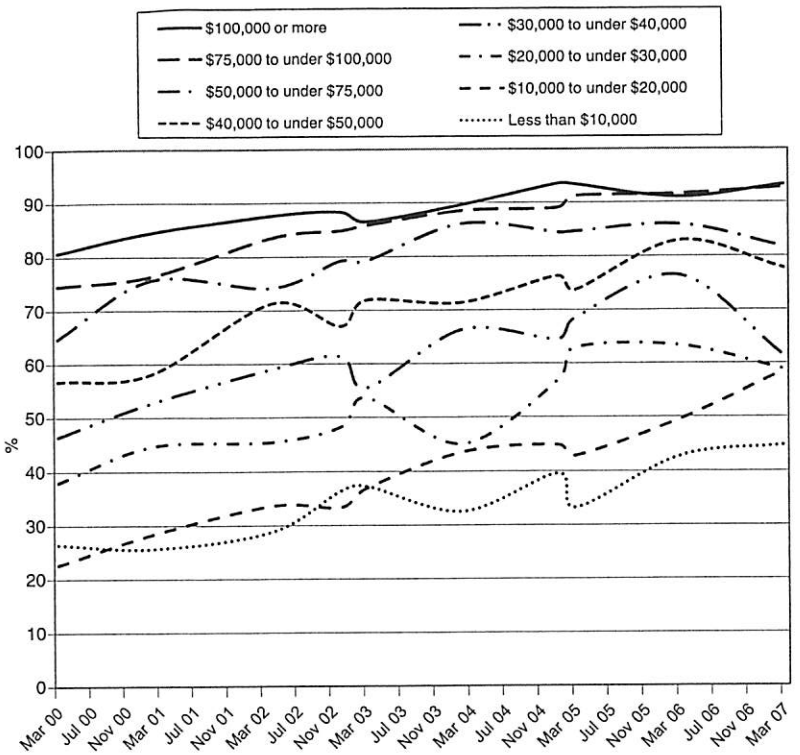

Figure 2.10 American adults who ever used the Internet by income, 2000–2007.

reported Internet use on the prior day increased from 15 to 25 percent during this time frame. The percentage of respondents from the wealthiest households, however, increased at a faster rate, from 53 percent in 2000 to 77 percent in 2007. In this case, then, the difference in percentage points increased from 38 in 2000 to 52 in 2007, indicating a growing divide between the wealthiest and poorest in terms of consistent Internet use.

As we consider these demographic characteristics, it is important to remember that these characteristics can not be understood in isolation. There are no "men" or "women" in the real world, but rather men or women of a particular age, race, class, and so on. Looking at particular

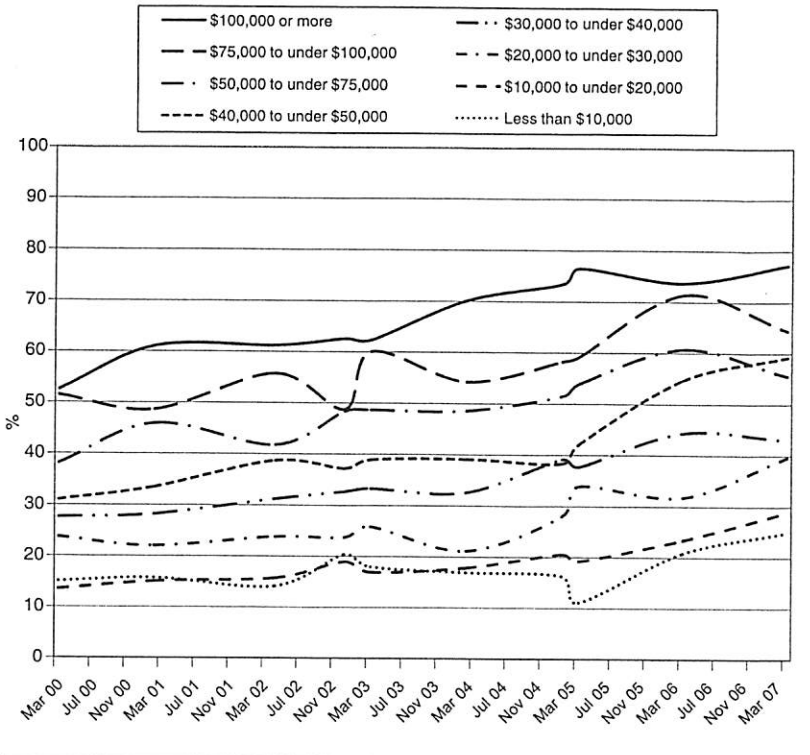

Figure 2.11 American adults who used the Internet on previous day by income, 2000–2007.

combinations of these characteristics allows us to capture differences in Internet use in a manner that is closer to how we experience them in the real world. We might compare, for example, black adults age 65 or older with a high school degree or less to white adults age 25 to 34 with a bachelor's degree or higher to examine the intersection of these variables and their relation to digital inequality. Were we to make such a comparison, we would find that only 2 percent of the first group had ever used the Internet in 2000, compared with 85 percent of the second group. By 2006, an estimated 13 percent of blacks in the first group had used the Internet, compared with 96 percent of whites in the comparison group (Fox and Livingston 2007). For both groups, Internet use has

become more prevalent. But a gap in Internet use between the two groups remains.

Further examples of the combined impact of demographic variables may be seen in Figure 2.12. This figure suggests that education trumps race and ethnicity to some extent in conferring digital advantage and disadvantage. Roughly 90 percent of all college graduates used the Internet in 2006, regardless of race or ethnicity. In fact, a greater percentage of black college graduates (93 percent) used the Internet in 2006 than white college graduates (91 percent). (Hispanic college graduates had the lowest percentage of Internet use at 89 percent.) At the other extreme, only about 30 percent of those without a high school

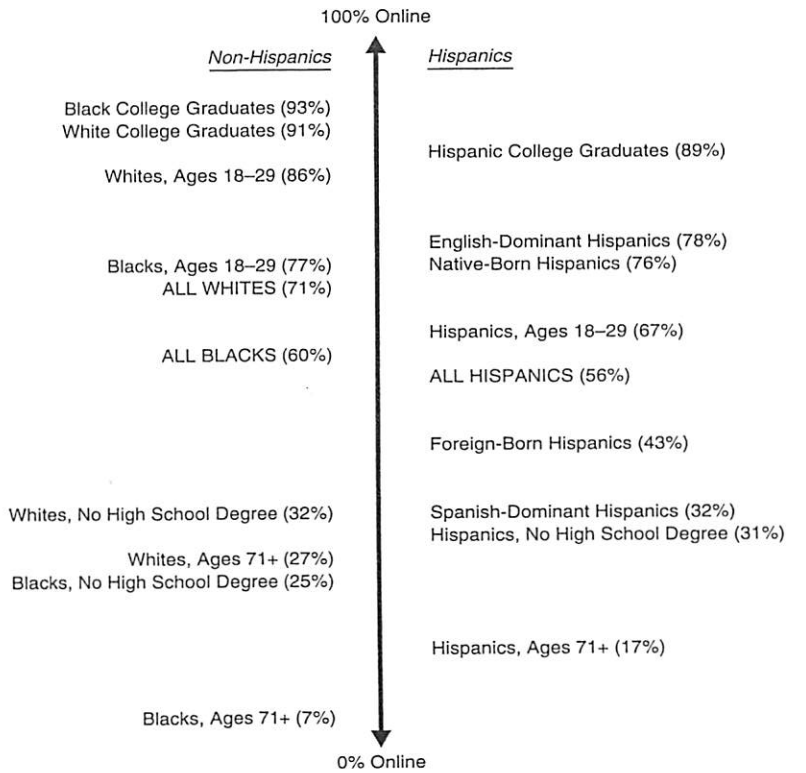

Figure 2.12 Internet use by demographic group, 2006 (source: Fox and Livingston 2007).

degree use the Internet, again regardless of race or ethnicity. To some extent, age also trumps race and ethnicity, with less than 30 percent of adults aged 71 years and older using the Internet in 2006, regardless of race and ethnicity. Here, the effects of race are stronger, with 27 percent of whites aged 71 and older using the Internet in 2006, compared with 17 and 7 percent of Hispanics and blacks in this age group, respectively. Conversely, over two-thirds of all racial-ethnic groups age 18 to 29 used the Internet in 2006. A greater percentage of whites in this age group used the Internet (86 percent) compared with blacks (77 percent) and Hispanics (67 percent). Figure 2.12 also shows that, among Hispanics, Internet use was more prevalent in 2006 among those whose primary language was English and those who were born in the United States. In this sense, Internet use appears to be tied to assimilation.

Demographics of Online Activities

Tracking Internet use across different demographic groups indicates important differences in who uses the Internet and how often. But there may also be 'digital divides' in online activities. Among American Internet users, who does what online? The Pew Internet & American Life Project collects ongoing data about the online activities of American Internet users. Table 2.4 lists the ten most common activities reported by Internet users in surveys conducted between 2000 and 2005.[3] Topping the list in 2000 and 2005 is sending or receiving email (91 percent of all Internet users). Looking at the remainder of the list, email stands out as the only online activity related to communication. With the exception of going online "for no particular reason, just for fun or to pass the time" and going online to purchase a product, all other items on the list in Table 2.4 relate to obtaining information. Indeed, in 2005, "searching for information" was as common an activity as sending or receiving email (again, 91 percent of all Internet users).

In 2000 and 2005, two consumer-oriented activities appear among the top ten online activities. In 2000, 74 percent of Internet users reported doing online research on products and services and 64 percent reporting using the Internet to get information about ticket and hotel prices. Both consumer activities increased through 2005. By 2005,

Table 2.4 Most Common Online Activities, 2000–2005

1	Send or read email	91%	3/2000	Send or read email	91%	3/2005
2	Do an internet search to find the answer to a specific question	79%	10/2000	Use an online search engine to help find information on the Web	91%	12/2005
3	Search for a map or driving directions	78%	8/2001	Search for a map or driving directions	84%	2/2004
4	Look for information about a hobby or interest	76%	3/2000	Research a product or service online	78%	3/2005
5	Research a product or service online	74%	3/2000	Check weather reports and forecasts	78%	11/2004
6	Get information about travel (e.g., airline ticket prices or hotel rates)	64%	3/2000	Look for information about a hobby or interest	77%	11/2004
7	Go online for no particular reason, just for fun or to pass the time	63%	3/2000	Get information about travel (e.g., airline ticket prices or hotel rates)	73%	6/2004
8	Check weather reports and forecasts	62%	3/2000	Get news online	68%	3/2005
9	Look for information about movies, music, books, or other leisure activities	62%	3/2000	Buy a product online	67%	6/2005
10	Get news online	60%	3/2000	Go online for no particular reason, just for fun or to pass the time	66%	12/2005

Source: Pew Internet & American Life Tracking Surveys.

online purchasing also appears on the top ten Internet activities. During that year, two-thirds of the Pew survey respondents reported that they had used the Internet to purchase products such as books, music, toys, or clothing. Rounding out the list of most common online activities in 2005, we also see that over two-thirds of Internet users used the Internet as a source of news. Because of the way that news is typically presented to online readers, with advertisements for products and services, we can assume that this particular activity also has a consumer component.

Table 2.5 lists those online activities with rapid rates of growth in recent years.[4] These data suggest that Internet users are increasingly

Table 2.5 Online Activities with Recent Growth, 2000–2006

	PERCENT OF USERS AT FIRST TIME MEASURED		PERCENT OF USERS AT TIME LAST MEASURED		YEARLY RATE OF INCREASE
Read someone else's web log or blog	17%	2/2004	39%	1/2006	11.5%
Use a wireless device to go online	17%	2/2004	25%	11/2004	10.7%
Use online social or professional networking sites like LinkedIn	7%	3/2005	11%	9/2005	8.0%
Get information or support from sites for medical condition or personal situations	47%	9/2002	58%	11/2004	5.1%
Look for news or information about politics and the campaign	35%	3/2000	58%	11/2004	4.9%
Buy or make a reservation for travel	36%	3/2000	63%	9/2005	4.9%
Bank online	17%	3/2000	43%	12/2005	4.5%
Buy a product online	48%	3/2000	67%	6/2005	3.6%
Check weather reports and forecasts	62%	3/2000	78%	11/2004	3.4%
Get photos developed/store or display photos	20%	8/2001	34%	9/2005	3.4%
Rate a product, service or person using an online rating system	26%	6/2004	30%	9/2005	3.2%
Make a donation to a charity online	7%	11/2001	18%	9/2005	2.9%
Download video files onto your computer	13%	11/2003	18%	12/2005	2.4%
Search for a map or driving directions	78%	8/2001	84%	2/2004	2.4%
Get information about travel	64%	3/2000	73%	6/2004	2.1%
Take a class online just for personal enjoyment or enrichment	5%	2/2001	13%	1/2005	2.0%

Source: Pew Internet & American Life Surveys, 2000 through 2006.

taking advantage of the Internet's communications capabilities beyond email. The proportion of Pew respondents who said they read blogs more than doubled between 2004 and 2006. Blogs are geared toward communicating with family, friends, and acquaintances in an open-diary format. Some blogs reach a larger readership and may be more news-oriented, although the style typically remains informal and familiar. Social networking sites are also growing in popularity, with 11 percent of all Internet users reporting in September of 2005 that they had visited such sites, an 8 percent increase from just six months prior.

Many of the types of growing Internet use revolve around web sites that are explicitly commercial. As noted above, online purchasing is now among the most commonly reported uses of the Internet. In 2004, 67 percent of adult American Internet users used the Internet to purchase a product or service, up from under 50 percent in 2000. Similar rates of increased use are found in online banking, travel purchases and reservations, and photo services. A relatively rapid increase in the use of product ratings was also reported during this time. And nearly all of the other activities listed in Table 2.5 contain some form of advertising. Thus, even when users are not seeking product information or making an actual purchase, advertising infuses non-commercial sites with a commercial component. For example, Internet users who search for driving directions at Mapquest.com will find travel-related advertising and offers.

In another example of the ubiquity of advertising on the web, the leading source for video downloading, YouTube, not only places advertising on its pages, but features advertisements in its video offerings. Indeed, some of the most obvious examples of advertising are found in the "Community" section of YouTube, where many of the "Groups" are fans and promoters of particular entertainers. Further, and as Figure 2.13 illustrates, many of the featured "Contests" are thinly veiled advertisements. The "Moms Can Do Anything" video contest, for example, is organized by WalMart. The "Save Money, Save Energy, Win Big" video contest, which depicts a smiling woman in an orange apron, is sponsored by Home Depot. The "Kraft Cooking Video Challenge" asks viewers to submit videos of themselves preparing

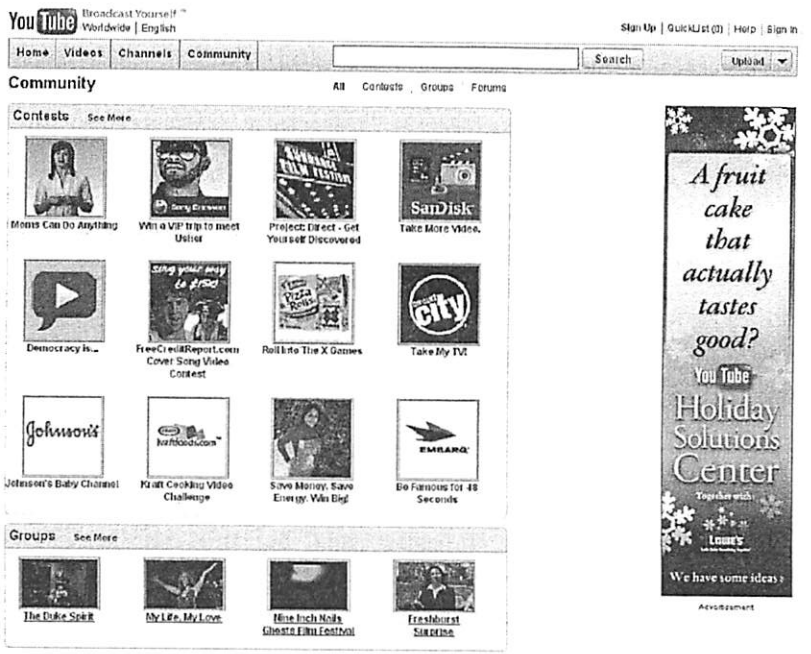

Figure 2.13 Sample of YouTube community page, 2008.

particular dishes that use Kraft ingredients. These online contests, innocuous on the surface, allow WalMart, Home Depot, Kraft, and many other companies to advertise at little or no cost.

In the list of rapidly increasing uses of the Internet, advertising is least prominent on charitable organization websites. Online charitable donating has experienced a 3 percent rate of growth between 2001 and 2005. Yet even on charitable sites, advertising is often just a click away. For example, in the summer of 2007, the Kidney Foundation's website included a prominent story of an upcoming charity golf event at the Pebble Beach Country Club. A user who clicked on the banner for the event was then sent to the golfing event page, which contained logos of the event's sponsors, including *Golf Digest*, the Pebble Beach Company, and Cingular wireless. Clicking on another upcoming event, the U.S. Transplant Games, led to a page that included information on event

advertisers and exhibitors. Thus, even non-profit web sites are steeped in commercial content.

If we think about communication and information as the two primary dimensions of online activities, and juxtapose these with production and consumption as two primary dimensions of economic activity,[5] we come up with four combinations:

1 Online communication oriented toward production.
2 Online communication oriented toward consumption.
3 Online information-seeking oriented toward consumption.
4 Online information-seeking oriented toward production.

Figure 2.14 takes these four combinations and identifies specific online activities associated with each. Along the communication-information axis, email is at the communication end, but this communication may concern production or consumption. Online searching is at the information end of the axis, but may also be related to production or consumption. Using the Internet at work is on the production end of the axis, but this activity may be related to communication or information-seeking. Buying a product is at the consumption end of the axis, but buying a product may involve online information-seeking and online communication.

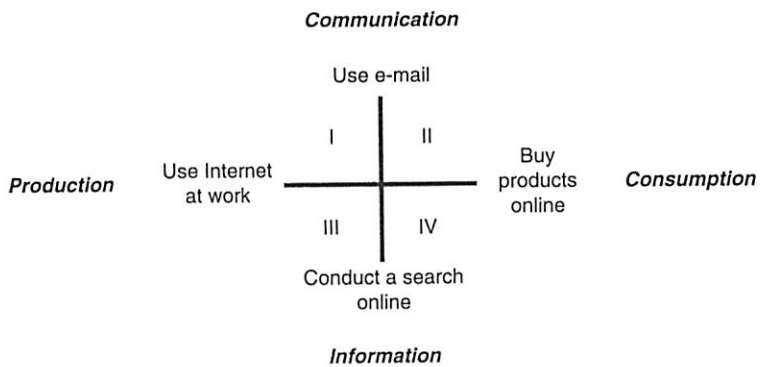

Figure 2.14 Dimensions of Internet activity.

Looking at Table 2.6, we see how these online activities varied by gender, age, race, education, and household income in 2005. Overall participation rates are greatest for email (over 90 percent) and least for using the Internet at work (just over 50 percent). Significant gender differences are found only in the activity most closely associated with production, namely using the Internet at work, with women less likely

Table 2.6 Demographic and Socio-economic Differences in Internet Activities, 2005

PERCENTAGE OF INTERNET USERS WHO . . .	SEND OR READ EMAIL (%)	ONLINE SEARCH (%)	BUY PRODUCTS ONLINE (%)	WORK OTHER THAN EMAIL (%)
Total	91.2	90.5	67.0	50.3
Gender				
Male	90.5	91.1	67.6	53.8*
Female	91.9	90.0	66.4	46.9
Age				
18–24 years old	86.9	88.8*	65.5*	37.3
25–34 years old	92.8	93.8	71.9	55.4
35–44 years old	94.4	92.2	68.5	57.3
45–54 years old	90.0	92.0	66.5	58.8
55–64 years old	90.5	88.0	68.3	46.1
65 years or older	93.0	82.0	48.1	21.9
Race				
White	92.4*	91.5	69.0*	51.3*
Black	83.8	84.1	55.8	39.8
Asian	100.0	100.0	59.1	65.2
Other/mixed	86.2	85.8	63.6	42.3
Educational Achievement				
Less than high school degree	78.9*	74.9*	36.7*	23.9*
High school graduate	85.7	84.8	59.1	34.3
Some college	93.2	91.9	67.8	47.4
Bachelor's degree or higher	96.3	96.3	78.0	70.6
Household Income				
Less than $20,000	80.9*	86.2*	59.2*	32.6*
$20,000 to under $30,000	84.9	89.5	48.8	36.6
$30,000 to under $40,000	90.3	89.6	63.2	42.2
$40,000 to under $75,000	95.2	90.5	69.7	52.1
$75,000 or more	94.9	95.6	80.0	67.7
Sample size	1,927	1,931	1,335	1,923

Source: Pew Internet & American Life Project survey December 2005.
Note:
* $p < 0.001$.

than men to use the Internet for this purpose.[6] The most significant age-related differences are primarily found for online searches and buying products online, with those over 65 years of age least likely to do each compared with other age groups. With the exception of online searching, there are also significant differences in online activities according to race. Blacks are least likely to use the Internet in all four respects; whites are most likely to use the Internet to buy products online; and Asians are most likely to use the Internet at work and to email. Finally, better educated and more affluent Internet users are more likely to participate in all four online activities when compared with less educated and less affluent users. Along the production/consumption axis, but also across the communication/information axis, we see that online activity is tied most to education and income.

Table 2.7 considers participation in four secondary online activities: taking an online class for credit, sending instant messages, playing games online, and going online "just for fun." As before, these data were collected in 2005. That year, women were more likely than men to take a class online. Younger Internet users (18–34 years) were more likely to take part in each activity compared with older users. With respect to race, Asians and blacks were more likely to send instant messages and play games than whites and other races. The more educated were more likely than the less educated to take a class online. Interestingly, the inverse is true for playing games online: as education increases, participation in online gaming declines. A similar relationship may be found between income and online gaming, with online gaming declining as income increases.

As we consider these variations in Internet activities, we need to keep in mind the differences in Internet use that we found in the first half of this chapter. If you don't have access to the Internet or otherwise don't use the Internet, you don't email, you don't search online for information, and you certainly don't take online classes for credit. The data presented in Tables 2.6 and 2.7 are based on responses to questions asked *only of Internet users*. To get a more accurate assessment of the degree of Internet inequality in America today, we need to bring those individuals who don't use the Internet back into the equation

Table 2.7 Demographic and Socio-economic Differences in Other Internet Activities, 2005

PERCENTAGE OF INTERNET USERS WHO . . .	TAKE A CLASS ONLINE (%)	SEND INSTANT MESSAGES (%)	PLAY GAMES ONLINE (%)	GO ONLINE FOR FUN (%)
Total	11.5	36.9	30.9	66.4
Gender				
Male	10.0*	37.0	31.4	68.5
Female	13.0	36.8	30.4	64.4
Age				
18–24 years old	16.0*	59.8*	43.9*	80.6*
25–34 years old	16.9	41.3	35.8	79.2
35–44 years old	10.8	32.2	30.4	65.3
45–54 years old	10.2	31.1	24.2	59.9
55–64 years old	4.2	27.3	21.9	54.6
65 years or older	4.0	27.5	30.1	49.6
Race				
White	10.9	35.3*	29.1*	66.5
Black	16.9	49.0	47.6	65.4
Asian	13.5	64.0	34.8	78.7
Other/mixed	10.3	35.2	30.0	71.1
Educational Achievement				
Less than high school degree	3.6*	42.9	46.2*	66.4*
High school graduate	5.9	34.6	34.8	72.1
Some college	14.4	41.5	32.0	68.1
Bachelor's degree or higher	14.7	33.9	24.1	60.4
Household Income				
Less than $20,000	12.4	43.1	51.6*	71.6
$20,000 to under $30,000	12.3	37.0	47.5	67.3
$30,000 to under $40,000	8.9	42.5	33.4	74.0
$40,000 to under $75,000	13.1	33.7	28.4	65.2
$75,000 or more	12.1	39.0	25.3	67.5
Sample size	1,931	1,928	1,929	1,927

Source: Pew Internet & American Life Project survey December 2005.
Note:
* $p < 0.001$.

or, more precisely, back into the denominator. Instead of calculating percentages as:

$$\%\text{ participating in online activity } a = \frac{\text{Number of members of group } j \text{ who do activity } a}{\text{Number of Internet users in group } j}$$

we will calculate percentages as follows:

$$\%\ \text{participating in online activity } a = \frac{\text{Number of members of group } j \text{ who do activity } a}{\text{Number of members in group } j}$$

In the second equation, we include Internet users and non-users to get a sense of the percentage of the overall population that participates in each Internet activity.

When we consider Internet non-users in the equation, we find even more startling results. For example, comparing participation rates across the highest levels and lowest levels of education in Table 2.8, we see that those with a bachelor's degree or higher were more than three times as likely to use email than those without a high school degree. They were more than five times as likely to use the Internet at work and nearly eight times more likely to bank online. Looking at the relationship between income and online activities in Table 2.9, we find that individuals in households with incomes above $75,000 a year were two times more likely to use email than individuals in households with incomes

Table 2.8 Participation* in Selected Internet Activities by Education, 2005

	ALL ADULTS (%)	SOME HIGH SCHOOL (%)	HIGH SCHOOL (%)	SOME COLLEGE (%)	BA OR HIGHER (%)
Email	64.9	28.3	53.1	75.1	87.2
Read blog	28.3	16.3	17.6	34.1	40.6
Download music/video	18.5	8.8	13.6	21.5	26.3
Buy product	45.8	10.6	36.0	52.3	69.6
Online banking	28.7	5.9	18.2	35.4	46.7
Product research	52.4	16.6	39.8	60.5	77.7
Online search	60.1	25.0	46.8	71.8	82.7
Product rating	16.4	5.4	9.7	21.2	25.9
Take class online	13.3	6.3	8.3	18.3	18.4
Use Internet at work	43.6	12.3	31.3	48.5	69.0
Share files	18.2	8.1	16.4	21.2	22.4
Write blog	9.8	11.3	5.5	12.4	11.6

Source: Pew Internet & American Life Project surveys, March/September, and December 2005.
Note: * $p < 0.05$.

Table 2.9 Participation* in Selected Internet Activities by Household Income, 2005

	LESS THAN $20,000 (%)	$20,000–$30,000 (%)	$30,000–$40,000 (%)	$40,000–$75,000 (%)	$75,000 OR MORE (%)
Email	36.7	51.1	66.6	76.1	87.7
Read blog	18.6	28.9	20.7	31.3	39.9
Download music/video	9.3	11.2	13.0	23.1	30.1
Buy product	23.3	30.3	47.1	56.9	74.4
Online banking	10.0	18.6	26.5	38.7	49.4
Product research	25.6	42.0	50.4	66.2	82.1
Online search	34.7	49.7	61.7	72.7	85.3
Product rating	9.5	9.9	15.5	20.5	29.5
Take class online	10.6	10.7	19.3	13.6	23.0
Use Internet at work	19.5	29.3	46.1	51.3	67.5
Share files	10.0	18.9	20.4	23.7	22.3
Write blog	5.8	13.4	9.0	9.1	13.4

Source: Pew Internet & American Life Project surveys, March/September, and December 2005.
Note: * $p < 0.05$.

under $20,000. They were more than three times as likely to use the Internet at work and nearly five times more likely to bank online.

Inequality and the Internet

In this chapter, we considered patterns in Internet use from 2000 to 2007. We analyzed such variables as gender, age, race, education, employment, and income, which have typically been associated with the "digital divide." In our analysis, we discovered that education and income explain much of the variation in Internet use, although age and race are also important factors. We also learned that as the Internet matures, a primary divide emerging is between those who use the Internet consistently and those who use the Internet intermittently, which we measured by assessing whether the respondent used the Internet the previous day. Simply asking individuals if they have ever gone online does not get at whether individuals are going online regularly, if not daily. This kind of inequality can not be captured by thinking of the issue in terms of "haves" and "have nots." In general, more affluent, college educated, younger, white Americans are more likely to go online regularly than the less well-off, less educated, older,

non-white Americans. Although this gap has narrowed in some respects (e.g., age), it has stayed the same (e.g., race) and increased (e.g., education and income) in others.

In this chapter, we also moved beyond the issue of overall Internet use to examine *types* of Internet use, or variations in online activity. Using data from the Pew Internet & American Life Project, we identified ten online activities participated in by more than two-thirds of American Internet users. These activities included using the Internet to email, to search for driving directions, and to buy products. As we found, participation in many, if not most, of these activities is not uniformly distributed across the population of Internet users and not at all uniformly distributed across the population at large. The most consistent and striking sources of variation were, again, along the lines of education and income and, to a lesser but still significant extent, along the lines of age and race. Generally speaking, the less educated and less well-off were less likely to do most of the major online activities compared with the well-educated and well-off. The exception here were some of the secondary Internet activities, like going online for fun and to play games, in which the less educated and less well-off were more likely to participate.

How do we explain these differences in Internet use? And what might the ramifications be for participation and achievement in an information economy? To answer these questions, we turn to classic sociological thinkers, who offer us competing, and at times complementary, explanations for social inequality. Beginning with the conflict perspective, moving on to the cultural perspective, and finishing with the functionalist perspective, we'll explore how three sociological lenses might account for variations in Internet use. Each of these explanations has a particular understanding of the nature of inequality, as it manifests in technology and as it manifests in society at large. We'll use these understandings to situate these digital divides in a larger conversation about American inequality. According to the conflict perspective, which we'll explore in the next chapter, Internet use may be considered part of a middle class and professional skill set. That is, it is something that well-educated and affluent members of society can use

to leverage higher wages and more economic power in the capitalist market. The cultural perspective turns our attention to questions of status and lifestyle, framing Internet use as a kind of status marker that sets apart a high status, professional class from a low status, common class. Here, daily Internet use across a broad spectrum of activities constitutes a middle-class lifestyle. Finally, from a functionalist perspective, we might think of the Internet as a mirror of social structure, in which Internet users are rewarded with information and resources. Although this produces inequality, it nurtures a professional class that uses the Internet to advance the needs of society.

In presenting these classic sociological perspectives, we want to suggest that fixing these "digital divides" is not simply a matter of introducing technology and improving Internet access. Rather, it is a question of confronting enduring inequalities in U.S. society. To level the playing field, we can not simply rely on the Internet's potential to increase social interaction, political participation, educational access, and economic activity. We need to understand how the Internet is mapped onto existing inequalities and, in some cases, exacerbates those inequalities. From here, we need to reconfigure the social context in which Internet use takes place. The chapters that follow will not lay out a broad agenda for reconfiguring society along participatory, equal, and inclusive lines, but they will improve our understanding of the ways in which digital technology feeds off a social structure wherein inequality plays a starring role.

Questions for Reading, Reflection, and Debate

1 We began this chapter with an anecdote about a few wired homeless individuals in San Francisco. What is there in the survey data presented in this chapter that would indicate that these individuals are the exception rather than the rule? What are the advantages and disadvantages of relying on anecdotes to explore questions of Internet access and use? If you were to write a more statistically accurate portrayal of Internet use, who would you focus on and why?

2 Revisit the sampling methods used by the Pew Internet & American Life Project, which we discussed in the introduction to this chapter and which can be found on the Pew website at www.pewinternet.org. What population exactly did the project sample from? Given that this project sought to explore differences in Internet access and use, do you think it is problematic that it limited the sample to households with telephones? Why or why not? What other sampling techniques might the project explore?

3 The survey data analyzed in this chapter cover a number of years using a snapshot, or cross-sectional, approach. That is, with each survey, a different group of individuals is interviewed. An alternative approach would be to watch the same group of people over time, what social scientists call a longitudinal approach. What do you think we could learn differently using a longitudinal approach? Why do you think the Pew project does not use a longitudinal approach? If you were to design a longitudinal study of Internet access and use, what variables or outcomes would you focus on?

4 The Pew project takes a survey approach to explore Internet use in American society. Consider more qualitative approaches to explore this phenomenon. What are the qualitative designs that you would find most interesting in the study of Internet access and use? And what kinds of questions would such studies answer? How would these questions differ from the questions explored in the survey by Pew?

5 As we saw in this chapter, there are large differences in Internet use according to education and income. Since education and income are themselves related—people with higher levels of education tend to earn more than those with lower levels of education—some of the effects of income might be due to education and some of the effects of education might be due to income. In subsequent chapters, we'll try to disentangle these effects. For now, think through how education and income might affect Internet use independently. Concretely, how might higher levels of education translate into more Internet use? And how might Internet use lead to higher levels of education? Conversely, how might higher levels of income translate into more Internet use? And how might Internet use lead to higher levels of income?