Richard Perry/The New York Times/Redux

2

The Internet, Digital Media, and Media Convergence

For at least some of us, the social mediated version of ourselves becomes the predominant way we experience the world. As *Time* magazine has noted, "Experiences don't feel fully real" until we have "tweeted them or tumbled them or YouTubed them—and the world has congratulated you for doing so."[1] Social media is all about us—we are simultaneously the creators and the subjects. But the flip side of promoting our own experiences on social media as *the most awesome happenings ever (and too bad you aren't here)* is the social anxiety associated with reading about other people's experiences and realizing that you are not actually there.

The problem is called Fear of Missing Out (FOMO), and it has been defined as "the uneasy and sometimes all-consuming feeling that you're missing out—that your peers are doing, in the know about or in possession of more or something better than you."[2] There are plenty of platforms for posting

about ourselves and anxiously creeping on others—Facebook, Twitter, Tumblr, LinkedIn, Pinterest, Google+, Instagram, and Vine are just a few of the sites that can feed our FOMO problem.

The fear of missing out has been around long before social media was invented. Bragging, photos, postcards, and those holiday letters have usually put the most positive spin on people's lives. But social media and mobile technology make being exposed to the interactions you missed a 24/7 phenomenon. There is potentially *always* something better you could have/should have been doing, right?

With FOMO, there is a "desire to stay continually connected with what others are doing," so the person suffering from the anxiety continues to be tethered to social media, tracking "friends" and sacrificing time that might be spent having in-person, unmediated experiences.[3] All of this time on social media may not make us happy. For example, a study by University of Michigan researchers found that the use of Facebook (the most popular social media site) makes college students feel worse about themselves. The two-week study found that the more the students used Facebook, the more two components of well-being declined: how people feel moment-to-moment, and how satisfied they are with their lives—regardless of how many Facebook "friends" they had in their network.[4]

Studies about happiness routinely conclude that the best path to subjective well-being (i.e., happiness) and life satisfaction is having a community of close personal relationships. Social psychologists Ed Diener and Robert Biswas-Diener acknowledge that the high use of mobile phones, text messaging, and social media is evidence that people want to connect. But they also explain that "we don't just need relationships: we need close ones." They conclude, "The close relationships that produce the most happiness are those characterized by mutual understanding, caring, and validation of the other person as worthwhile."[5] Thus, frequent contact isn't enough to produce the kinds of relationships that produce the most happiness.

Ironically, there has never been a medium better than the Internet and its social media platforms to bring people together. How many people do you know who met online and went on to have successful friendships or romantic relationships? How often have social media connections enhanced close relationships for you? Still, according to Diener and Biswas-Diener, maintaining close relationships may require a "vacation" from social media from time to time, experiencing something together with a friend or friends. Of course (and we hate to say it), you will still need to text, message, e-mail, or call to arrange that date.

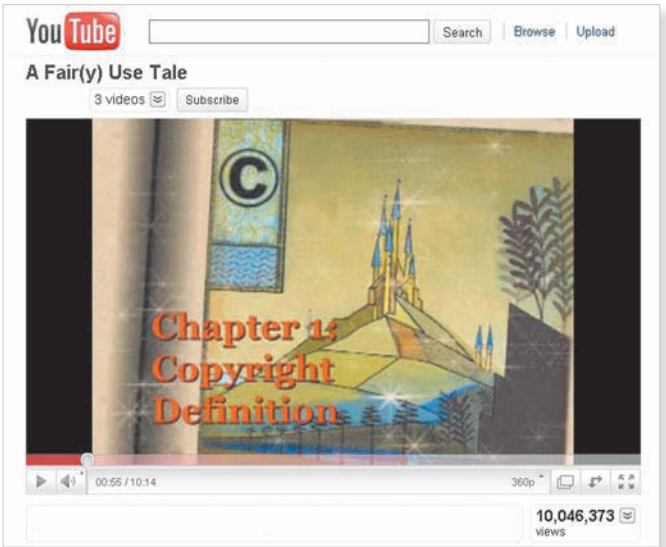
THE INTERNET—the vast network of telephone and cable lines, wireless connections, and satellite systems designed to link and carry digital information worldwide—was initially described as an *information superhighway*. This description implied that the goal of the Internet was to build a new media network—a new superhighway—to replace traditional media (e.g., books, newspapers, television, and radio)—the old highway system. In many ways, the original description of the Internet has turned out to be true. The Internet has expanded dramatically from its initial establishment in the 1960s to an enormous media powerhouse that encompasses—but has not replaced—all other media today.

In this chapter, we examine the many dimensions of the Internet, digital media, and convergence. We will:

- Review the birth of the Internet and the development of the Web
- Provide an overview of the key features of the Internet, including instant messaging, search engines, and social media
- Discuss the convergence of the Internet with mobile media, such as smartphones and tablets, and how the Internet has changed our relationship with media
- Examine the economics of the Internet, including the control of Internet content, ownership issues, and the five leading Internet companies
- Investigate the critical issues of the Internet, such as targeted advertising, free speech, security, net neutrality, and access

As you read through this chapter, think back to your first experiences with the Internet. What was your first encounter like? What were some of the things you remember using the Internet for then? How did it compare with your first encounters with other mass media? How has the Internet changed since your first experiences with it? For more questions to help you think through the role of the Internet in our lives, see "Questioning the Media" in the Chapter Review.

Visit **LaunchPad for *Media & Culture*** and use **LearningCurve** to review concepts from this chapter.



Courtesy Google, Inc.

YOUTUBE is the most popular Web site for watching videos online. Full of amateur and home videos, the site now partners with mainstream television and movie companies to provide professional content as well (a change that occurred after Google bought the site in 2006).

The Development of the Internet and the Web

From its humble origins as a military communications network in the 1960s, the **Internet** became increasingly interactive by the 1990s, allowing immediate two-way communication and one-to-many communication. By 2000, the Internet was a multimedia source for both information and entertainment as it quickly became an integral part of our daily lives. For example, in 2000, about 50 percent of American adults were connected to the Internet; by 2014, about 87 percent of American adults used the Internet.[6]

The Birth of the Internet

The Internet originated as a military-government project, with computer time-sharing as one of its goals. In the 1960s, computers were relatively new, and there were only a few of the expensive, room-sized mainframe computers across the country for researchers to use. The

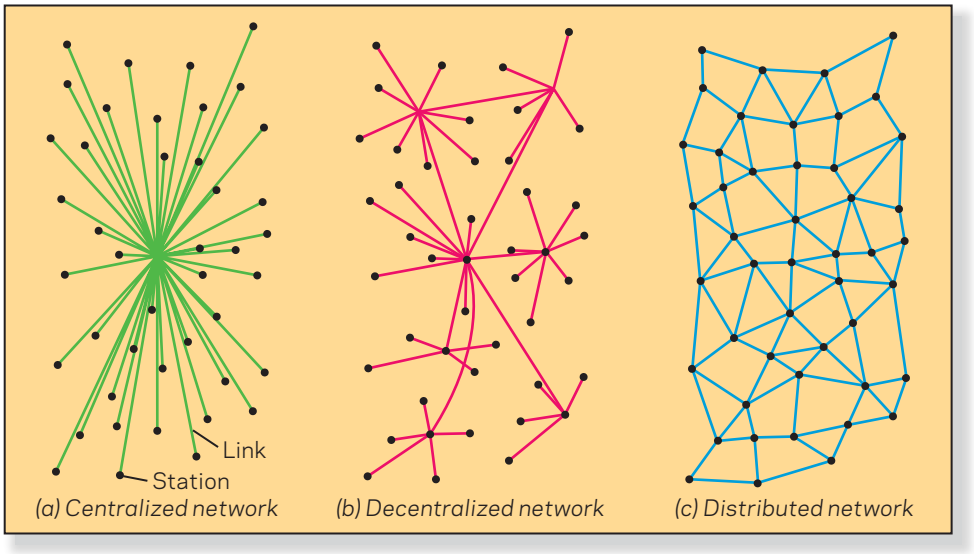


FIGURE 2.1

DISTRIBUTED NETWORKS

In a centralized network (*a*), all the paths lead to a single nerve center. Decentralized networks (*b*) contain several main nerve centers. In a distributed network (*c*), which resembles a net, there are no nerve centers; if any connection is severed, information can be immediately rerouted and delivered to its destination. But is there a downside to distributed networks when it comes to the circulation of network viruses?

Data from: Katie Hafner and Matthew Lyon, Where Wizards Stay Up Late *(New York: Simon & Schuster, 1996).*

Defense Department's Advanced Research Projects Agency (ARPA) developed a solution to enable researchers to share computer processing time starting in the late 1960s. This original Internet—called **ARPAnet** and nicknamed the Net—enabled military and academic researchers to communicate on a distributed network system (see Figure 2.1). First, ARPA created a wired network system in which users from multiple locations could log into a computer whenever they needed it. Second, to prevent logjams in data communication, the network used a system called *packet switching*, which broke down messages into smaller pieces to more easily route them through the multiple paths on the network before reassembling them on the other end.

The Internet, Digital Media, and Media Convergence

Digital Technology
In the late 1940s, images, texts, and sounds are first converted into "binary code"—ones and zeros—vastly improving the rate at which information is stored and reproduced (pp. 45–46).

Microprocessors
These miniature computer circuits, developed in 1971, enable personal computers to be born. PCs become increasingly smaller, cheaper, and more powerful (p. 43).

Fiber-Optic Cable
Thin glass bundles of fiber capable of transmitting thousands of digital messages simultaneously are developed in the mid-1980s, allowing broadcast channels, telephone signals, and other data to go on the Internet (p. 44).

1940 • 1950 • 1960 • 1970 • 1980

ARPAnet
The U.S. Defense Department begins research in the late 1960s on a distributed communication network—the groundwork for the Internet (p. 42).

E-mail
The process by which electronic messages are sent from computer to computer on a network is first developed in the early 1970s, revolutionizing modes of communication (p. 43).

Image courtesy of the Advertising Archives (left); Courtesy of the National Center for Supercomputing Applications and the Board of Trustees of the University of Illinois (right)

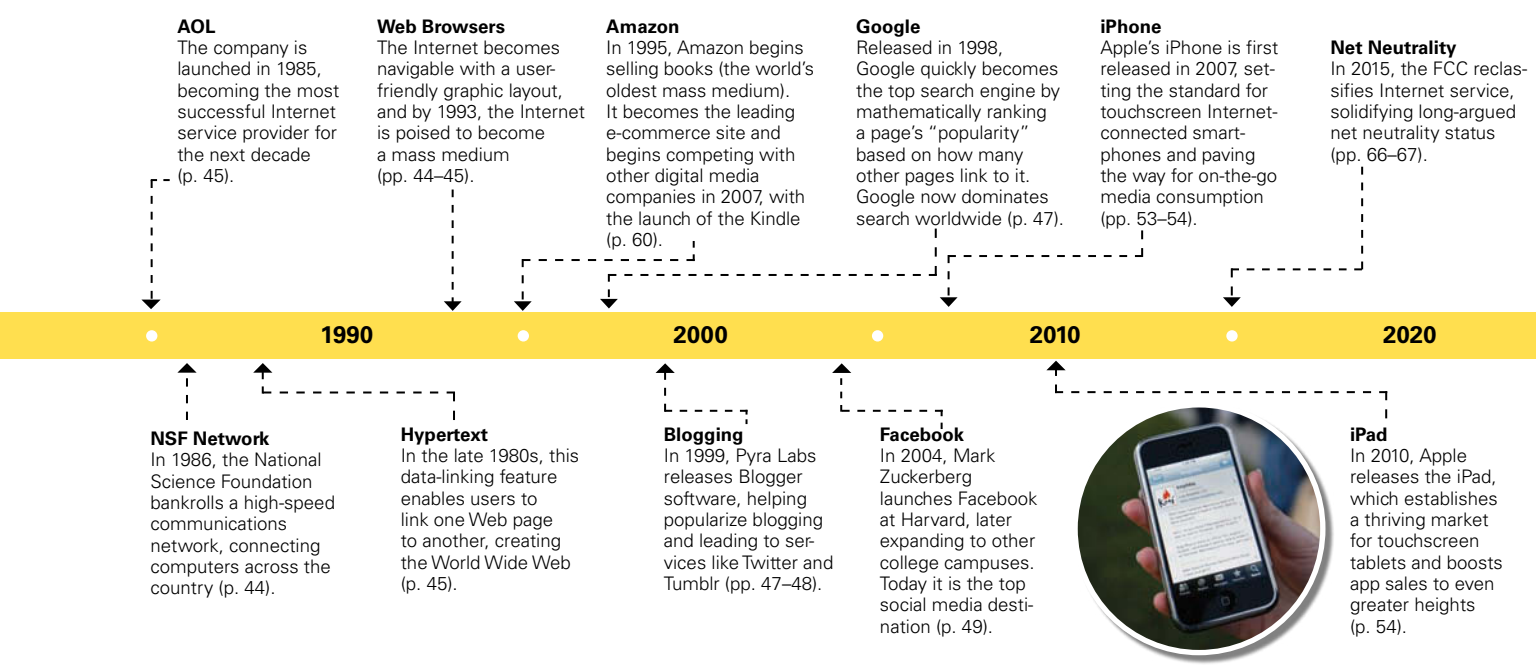
Ironically, one of the most hierarchically structured and centrally organized institutions in our culture—the national defense industry—created the Internet, possibly the least hierarchical and most decentralized social network ever conceived. Each computer hub in the Internet has similar status and power, so nobody can own the system outright, and nobody has the power to kick others off the network. There isn't even a master power switch, so authority figures cannot shut off the Internet—although as we will discuss later, some nations and corporations have attempted to restrict access for political or commercial benefit.

To enable military personnel and researchers involved in the development of ARPAnet to better communicate with one another from separate locations, an essential innovation during the development stage of the Internet was **e-mail**. It was invented in 1971 by computer engineer Ray Tomlinson, who developed software to send electronic mail messages to any computer on ARPAnet. He decided to use the @ symbol to signify the location of the computer user, thus establishing the "login name@host computer" convention for e-mail addresses.

At this point in the development stage, the Internet was primarily a tool for universities, government research labs, and corporations involved in computer software and other high-tech products to exchange e-mail and to post information. As the use of the Internet continued to proliferate, the entrepreneurial stage quickly came about.

The Net Widens

From the early 1970s until the late 1980s, a number of factors (both technological and historical) brought the Net to the entrepreneurial stage, in which it became a marketable medium. The first signal of the Net's marketability came in 1971 with the introduction of **microprocessors**, miniature circuits that process and store electronic signals. This innovation facilitated the integration of thousands of transistors and related circuitry into thin strands of silicon along which binary codes traveled. Using microprocessors, manufacturers were eventually able to introduce the first *personal computers (PCs)*, which were smaller, cheaper, and



COMMODORE 64
This advertisement for the Commodore 64, one of the first home PCs, touts the features of the computer. Although it was heralded in its time, today's PCs far exceed its abilities.

Image courtesy of the Advertising Archives

more powerful than the bulky computer systems of the 1960s. With personal computers now readily available, a second opportunity for marketing the Net came in 1986, when the National Science Foundation developed a high-speed communications network (NSFNET) designed to link university research computer centers around the country and also encourage private investment in the Net. This innovation led to a dramatic increase in Internet use and further opened the door to the widespread commercial possibilities of the Internet.

In the mid-1980s, **fiber-optic cable** became the standard for transmitting communication data speedily. Featuring thin glass bundles of fiber capable of transmitting thousands of messages simultaneously (via laser light), fiber-optic cables began replacing the older, bulkier copper wire used to transmit computer information. This development made the commercial use of computers even more viable than before. With this increased speed, few limits exist with regard to the amount of information that digital technology can transport.

With the dissolution of the Soviet Union in the late 1980s, the ARPAnet military venture officially ended. By that time, a growing community of researchers, computer programmers, amateur hackers, and commercial interests had already tapped into the Net, creating tens of thousands of points on the network and the initial audience for its emergence as a mass medium.

The Commercialization of the Internet

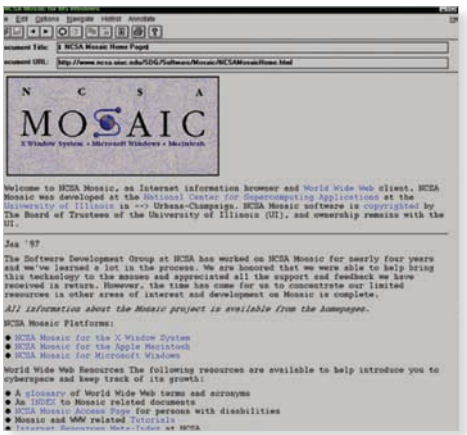
The introduction of the World Wide Web and the first Web browsers, Mosaic and Netscape, in the 1990s helped transform the Internet into a mass medium. Soon after these developments, the Internet quickly became commercialized, leading to battles between corporations vying to attract the most users, and others who wished to preserve the original public, nonprofit nature of the Net.

The World Begins to Browse

Prior to the 1990s, most of the Internet's traffic was for e-mail, file transfers, and remote access of computer databases. The **World Wide Web** (or the Web) changed all that. Developed in the late

1980s by software engineer Tim Berners-Lee at the CERN particle physics lab in Switzerland to help scientists better collaborate, the Web was initially a text data-linking system that allowed computer-accessed information to associate with, or link to, other information no matter where it was on the Internet. Known as *hypertext*, this data-linking feature of the Web was a breakthrough for those attempting to use the Internet. **HTML (hypertext markup language)**, the written code that creates Web pages and links, is a language that all computers can read, so computers with different operating systems, such as Windows or Macintosh, can communicate easily. The Web and HTML allow information to be organized in an easy-to-use nonlinear manner, making way for the next step in using the Internet.

The release of Web **browsers**—the software packages that help users navigate the Web—brought the Web to mass audiences. In 1993, computer programmers led by Marc Andreessen at the National Center for Supercomputing Applications (NCSA) at the University of Illinois in Urbana-Champaign released Mosaic, the first window-based browser to load text and graphics together in a magazine-like layout, with attractive fonts and easy-to-use back, forward, home, and bookmark buttons at the top. In 1994, Andreessen joined investors in California's Silicon Valley to introduce a commercial browser, Netscape. As *USA Today* wrote that year, this "new way to travel the Internet, the World Wide Web," was "the latest rage among Net aficionados."[7] The Web soon became everyone else's rage, too, as universities and businesses, and later home users, got connected.



WEB BROWSERS
The GUI (graphical user interface) of the World Wide Web changed overnight with the release of Mosaic in 1993. As the first popular Web browser, Mosaic unleashed the multimedia potential of the Internet. Mosaic was the inspiration for the commercial browser Netscape, which was released in 1994.

Courtesy of the National Center for Supercomputing Applications and the Board of Trustees of the University of Illinois.

As the Web became the most popular part of the Internet, many thought that the key to commercial success on the Net would be through a Web browser. In 1995, Microsoft released its own Web browser, Internet Explorer, and within a few years, Internet Explorer—strategically bundled with Microsoft operating system software—overtook Netscape as the most popular Web browser. Today, Chrome and Firefox are the top browsers, with Internet Explorer, Safari, and Opera as the leading alternatives.

Users Link in through Telephone and Cable Wires

In the first decades of the Internet, most people connected to "cyberspace" through telephone wires. AOL (formerly America Online) began connecting millions of home users in 1985 to its proprietary Web system through dial-up access, and quickly became the United States' top **Internet service provider (ISP)**. AOL's success was so great that by 2001, the Internet start-up bought the world's largest media company, Time Warner—a deal that shocked the industry and signaled the Internet's economic significance as a vehicle for media content. As **broadband** connections, which can quickly download multimedia content, became more available (about 70 percent of all American households had such connections by 2014), users moved away from the slower telephone dial-up ISP service (AOL's main service) to high-speed service from cable, telephone, or satellite companies.[8] By 2007, both AT&T (offering DSL and cable broadband) and Comcast (cable broadband) surpassed AOL in numbers of customers. Today, other major ISPs include Verizon, Time Warner Cable, Cox, and Charter. These are accompanied by hundreds of local services, many offered by regional telephone and cable companies that compete to provide consumers with access to the Internet. Yet in the United States, there is little competition in the broadband Internet market. Only 9 percent of Americans have access to three or more ISPs. As a result, according to a 2013 study, American consumers "pay more money for lower speeds" compared to Internet customers in countries like Korea, Japan, Canada, Mexico, and most of Europe.[9]

People Embrace Digital Communication

In **digital communication**, an image, a text, or a sound is converted into electronic signals represented as a series of binary numbers—ones and zeros—which are then reassembled as

a precise reproduction of an image, a text, or a sound. Digital signals operate as pieces, or bits (from *BI*nary digi*TS*), of information representing two values, such as yes/no, on/off, or 0/1. For example, a typical compact disc track uses a binary code system in which zeros are microscopic pits in the surface of the disc and ones are represented on the unpitted surface. Used in various combinations, these digital codes can duplicate, store, and play back the most complex kinds of media content.

In the early days of e-mail, the news media constantly marveled at the immediacy of this new form of communication. Describing a man from Long Island e-mailing a colleague on the Galapagos Islands, the *New York Times* wrote in 1994 that his "magical new mailbox is inside his personal computer at his home, and his correspondence with the Galapagos now travels at the speed of electricity over the global computer network known as the Internet."[10]

E-mail was one of the earliest services of the Internet, and people typically used the e-mail services connected to their ISPs before major Web corporations such as Google, Yahoo!, and Microsoft (Hotmail) began to offer free Web-based e-mail accounts to draw users to their sites; each now has millions of users. Today, all the top e-mail services also include advertisements in their users' e-mail messages, one of the costs of the "free" e-mail accounts. Google's Gmail goes one step further by scanning messages to dynamically match a relevant ad to the text each time an e-mail message is opened. Such targeted advertising has become a hallmark feature of the Internet.

SNAPCHAT allows users to send one another photos, videos, and/or text that will disappear after a certain amount of time. Like a lot of popular apps, the program gained a large following from a young audience and expanded out from there. Hundreds of millions of photos are sent through the application every day.

Courtesy of Snapchat

Instant messaging, or IM, remains the easiest way to communicate over the Internet in real time and has become increasingly popular as a smartphone and tablet app, with free IM services supplanting costly text messages. Major IM services—many with voice and video chat capabilities—include Google Chat (through its e-mail service), Facebook Chat, Microsoft's Skype, AOL Instant Messenger (AIM), Yahoo!'s Messenger, and Apple's iChat. IM users fill out detailed profiles when signing up for the service, providing advertisers with multiple ways to target them as they chat with their friends. IM has evolved and expanded with the Internet, embracing multimedia capabilities with apps like Snapchat, a photo messaging service that thrives on the cultural popularity of sending "selfies" and captions to friends. The images erase themselves in one to ten seconds, depending on the user's settings. In 2014 (after reportedly offering $3 billion to buy Snapchat in a failed deal the year before), Facebook paid $19 billion for WhatsApp, a cross-platform IM service that now has more than 800 million users worldwide.

Search Engines Organize the Web

As the number of Web sites on the Internet quickly expanded, companies seized the opportunity to provide ways to navigate this vast amount of information by providing directories and search engines. One of the more popular search engines, Yahoo!, began as a directory. In 1994, Stanford University graduate students Jerry Yang and David Filo created a Web page—"Jerry and David's Guide to the World Wide Web"—to organize their favorite Web sites, first into categories, then into more and more subcategories as the Web grew. At that point, the entire World Wide Web was almost manageable, with only about twenty-two thousand Web sites. (By 2014,

Google announced it had indexed more than sixty trillion Web pages, up from one billion in 2000.) The guide made a lot of sense to other people, and soon enough Yang and Filo renamed it the more memorable Yahoo!

Eventually, though, having employees catalog individual Web sites became impractical. **Search engines** offer a more automated route to finding content by allowing users to enter key words or queries to locate related Web pages. Search engines are built on mathematic algorithms. Google, released in 1998, became a major success because it introduced a new algorithm that mathematically ranked a page's "popularity" on the basis of how many other pages linked to it. Google later moved to maintain its search dominance with its Google Voice Search and Google Goggles apps, which allow smartphone users to conduct searches by voicing search terms or by taking a photo. By 2015, Google's global market share accounted for more than 70 percent of searches, while Microsoft's Bing claimed 9.8 percent, Yahoo! reached 9.6 percent, and China's Baidu claimed 7.5 percent.[11]

The Web Goes Social

Aided by faster microprocessors, high-speed broadband networks, and a proliferation of digital content, the Internet has become more than just an information source in its third decade as a mass medium. The third generation of the Internet is a much more robust and social environment, having moved toward being a fully interactive medium with user-created content like blogs, Tumblrs, YouTube videos, Flickr photostreams, Photobucket albums, social networking, and other collaborative sites. In the words of law professor and media scholar Lawrence Lessig, we have moved from a "Read/Only" culture on the Internet, in which users can only read content, to a "Read/Write" culture, in which users have the power not only to read content but also to develop their own.[12] It's the users who ultimately rule here, sharing the words, sounds, images, and creatively edited music remixes and mash-up videos that make these Web communities worth visiting.

Social media are new digital media platforms that engage users to create content, add comments, and interact with others. Social media have become a new distribution system for media as well, challenging the one-to-many model of traditional mass media with the many-to-many model of social media.

Types of Social Media

In less than a decade, a number of different types of social media have evolved, with multiple platforms for the creation of user-generated content. European researchers Andreas M. Kaplan and Michael Haenlein identify six categories of social media on the Internet: blogs, collaborative projects, content communities, social networking sites, virtual game worlds, and virtual social worlds.[13]

Blogs

Years before there were status updates or Facebook, **blogs** enabled people to easily post their ideas to a Web site. Popularized with the release of Blogger (now owned by Google) in 1999, blogs contain articles or posts in chronological, journal-like form, often with reader

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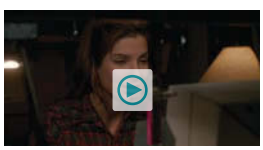
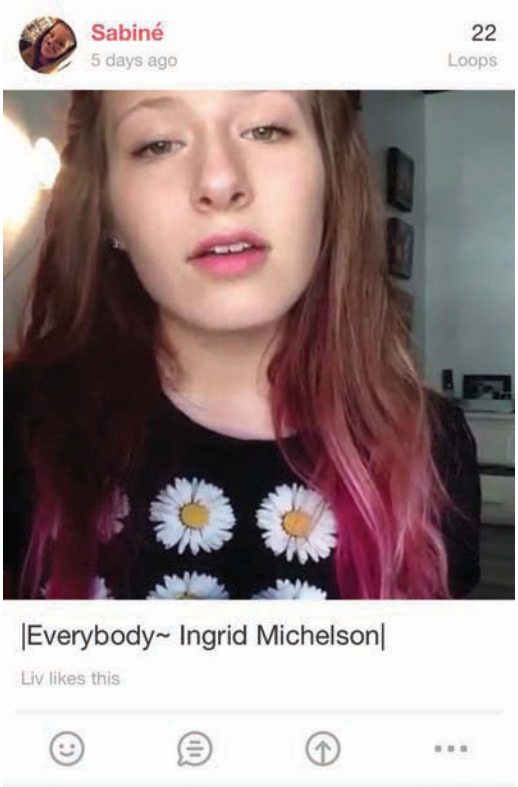
macmillanhighered.com/mediaculture10eupdate



***The Net* (1995)**
Sandra Bullock communicates using her computer in this clip from the 1995 thriller.
Discussion: How does this 1995 movie portray online communication? What does it get right, and what seems silly now?



Courtesy of Vine

VINE, a short video-sharing service founded in 2012, was acquired by Twitter later that year, and officially launched in 2013. The most popular Vine stars have millions of followers, and some of them can make a living through product placements in their six-second videos.

comments and links to other sites. Blogs can be personal or corporate multimedia sites, sometimes with photos, graphics, podcasts, and video. Some blogs have developed into popular news and culture sites, such as the *Huffington Post*, *TechCrunch*, *Mashable*, *Gawker*, *HotAir*, *ThinkProgress*, and *TPM Muckraker*.

Blogs have become part of the information and opinion culture of the Web, giving regular people and citizen reporters a forum for their ideas and views, and providing a place for even professional journalists to informally share ideas before a more formal news story gets published. Some of the leading platforms for blogging include Blogger, WordPress, Tumblr, Weebly, and Wix. But by 2013, the most popular form of blogging was microblogging, with about 241 million active users on Twitter, sending out 500 million tweets (a short message with a 140-character limit) per day.[14] In 2013, Twitter introduced an app called Vine that enabled users to post short video clips. A few months later, Facebook's Instagram responded with its own video-sharing service.

Collaborative Projects

Another Internet development involves collaborative projects in which users build something together, often using *wiki* (which means "quick" in Hawaiian) technology. **Wiki Web sites** enable anyone to edit and contribute to them. There are several large wikis, such as Wikitravel (a global travel guide), Wikimapia (combining Google Maps with wiki comments), and WikiLeaks (an organization publishing sensitive documents leaked by anonymous whistleblowers). WikiLeaks gained notoriety for its release of thousands of United States diplomatic cables and other sensitive documents beginning in 2010 (see page 506 in Chapter 14). But the most notable wiki is Wikipedia, an online encyclopedia launched in 2001 that is constantly updated and revised by interested volunteers. All previous page versions of Wikipedia are stored, allowing users to see how each individual topic developed. The English version of Wikipedia is the largest, containing nearly five million articles, but Wikipedias are also being developed in 289 other languages.

Businesses and other organizations have developed social media platforms for specific collaborative projects. Tools like Basecamp and Podio provide social media interfaces for organizing project and event-planning schedules, messages, to-do lists, and workflows. Kickstarter is a popular fund-raising tool for creative projects like books, recordings, and films. InnoCentive is a crowdsourcing community that offers award payments for people who can solve business and scientific problems. And Change.org has become an effective petition project to push for social change. For example, Chris Izanskey began a campaign to petition the Governor of Missouri to grant clemency to his father, a prison inmate for twenty years on non-violent, marijuana-only offenses, with no possibility of parole. Nearly 400,000 people signed the Change.org petition, and Chris's father walked free in 2015.

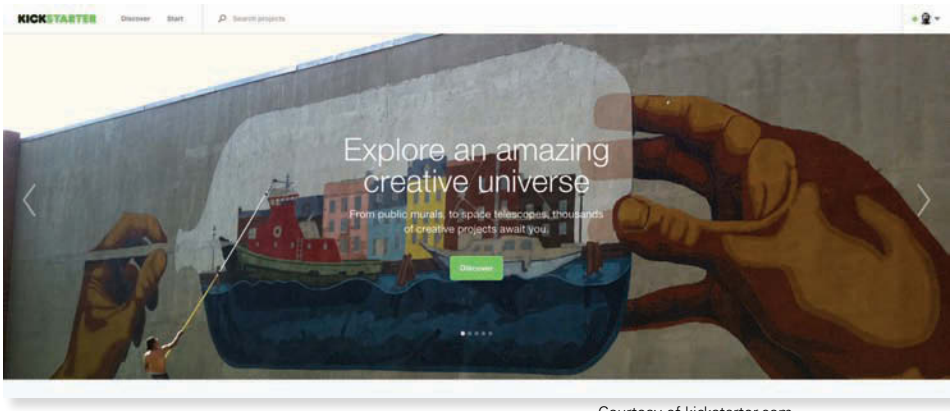
Content Communities

Content communities are the best examples of the many-to-many ethic of social media. **Content communities** exist for the sharing of all types of content, from text (FanFiction.net) to photos (Flickr, Photobucket) and videos (YouTube, Vimeo). YouTube, created in 2005 and bought by Google in 2006, is the most well-known content community, with hundreds of millions of users around the world uploading and watching amateur and professional videos. YouTube gave rise to the viral video—a video that becomes immediately popular by millions sharing it through social media platforms. The most popular video of all time—Psy's 2012

music video "Gangnam Style"—has more than 2.3 billion views. In 2015, YouTube reported that three hundred hours of video are uploaded to the site every minute, and it has more than one billion unique users each month.

Social Networking Sites

Perhaps the most visible examples of social media are **social networking sites** like Facebook, LiveJournal, Pinterest, Orkut, LinkedIn, and Google+. On these sites, users can create content, share ideas, and interact with friends and colleagues.



Courtesy of kickstarter.com

KICKSTARTER has funded 90,000 creative projects since its launch in 2009. According to Kickstarter's data, 9.3 million people have pledged more than $1.9 billion for the projects. Some notable successes from 2013 include the Oculus Rift (9,522 backers pledging $2.4 million), a virtual reality gaming headset bought in 2014 by Facebook for $2 billion; a human-powered helicopter (479 backers pledging $34,424); student-built classrooms made from shipping containers (242 backers pledging $16,567); and the movie *Blue Ruin* (438 backers pledging $37,828), which won an award at the Cannes Film Festival.

Facebook is the most popular social media site on the Internet. Started at Harvard in 2004 as an online substitute to the printed facebooks the school created for incoming first-year students, Facebook was instantly a hit and soon eclipsed MySpace as the leading social media destination. The site enables users to construct personal profiles, upload photos, share music lists, play games, and post messages to connect with old friends and meet new ones. Originally, access was restricted to college students, but in 2006 the site expanded to include anyone. Soon after, Facebook grew at an astonishing rate, and by 2015 it had 1.44 billion active users and was available in more than seventy languages.

In 2011, Google introduced Google+, a social networking interface designed to compete with Facebook. Google+ enables users to develop distinct "circles," by dragging and dropping friends into separate groups, rather than having one long list of friends. In response, Facebook created new settings to enable users to control who sees their posts.

Virtual Game Worlds and Virtual Social Worlds

Virtual game worlds and virtual social worlds invite users to role-play in rich 3-D environments, in real time, with players throughout the world. In virtual game worlds (also known as massively multiplayer online role-playing games, or MMORPGs) such as *World of Warcraft* and *Elder Scrolls Online*, players can customize their online identity, or avatar, and work with others through the game's challenges. Community forums for members extend discussion and shared play outside the game. Virtual social worlds, like *Second Life*, enable players to take their avatars through simulated environments and even make transactions with virtual money. (See Chapter 3 for a closer look at virtual game worlds and virtual social worlds.)

Social Media and Democracy

In just a decade, social media have changed the way we consume and relate to media and the way we communicate with others. Social media tools have put unprecedented power in our hands to produce and distribute our own media. We can share our thoughts and opinions, write or update an encyclopedic entry, start a petition or fund-raising campaign, post a video, and create and explore virtual worlds. But social media have also proven to be an effective tool for democracy and for undermining repressive regimes that thrive on serving up propaganda and hiding their atrocities from view.

The wave of protests in more than a dozen Arab nations in North Africa and the Middle East that began in late 2010 resulted in four rulers being forced from power by mid-2012. The Arab Spring began in Tunisia, with a twenty-six-year-old street vendor named Mohamed

EXAMINING ETHICS

"Anonymous" Hacks Global Terrorism

Since its earliest days, the Internet has been a medium for both good and evil. Among the most evil uses of the Internet are those emerging from the widely condemned terrorism group ISIS, which since 2014 has used the Internet to recruit naïve new members from around the world and to post videos of its massacres and gruesome beheadings of Westerners and other captives.

If you haven't seen Anonymous, you have probably seen the chosen "face" of Anonymous—a Guy Fawkes mask, portraying the most renowned member of the 1605 anarchist plot to assassinate King James I of England. The mask has been a part of Guy Fawkes Day commemorations in England for centuries but was made even more popular by the 2006 film *V for Vendetta*, based on the graphic novel series of the same name. Today, the mask has become a widespread international symbol for groups protesting financial institutions and politicians.

Given that, it was easy to cheer for Anonymous in 2015, when the loosely organized global hacktivist collective known for its politically and socially motivated Internet vigilantism decided to hack ISIS. The group vowed to avenge the January 2015 ISIS-supported attacks on the satirical weekly *Charlie Hebdo* newspaper office in Paris and a Paris kosher supermarket, which killed 17 people in all. In videos posted to YouTube (featuring a red outline of a digital character in a Guy Fawkes mask speaking in a robotic voice), Anonymous explained its goals for its #OpISIS campaign:

> *We are Muslims, Christians, Jews. We are hackers, crackers, hactivists, phishers, agents, spies, or just the guy from next door. . . . We come from all races, countries, religions, and ethnicities. United by one, divided by zero. We are Anonymous. Remember: The terrorists who are calling themselves Islamic State—ISIS—are not Muslims. ISIS, we will hunt you, take down your sites, accounts, emails, and expose you. From now own, no safe place for you online. You will be treated like the virus and we are the cure. We own the Internet. . . . We are Anonymous. We are Legion. We do not forgive. We do not forget. Expect us.*[1]

Vivek Prakash/Reuters/Landov

Although some argued that Anonymous shouldn't involve itself in anti-terrorism issues, a writer in the usually staid *Foreign Policy* magazine argued that the U.S. government should encourage Anonymous to go after ISIS: "If the United States is struggling to counter the Islamic State's dispersed, rapidly regenerative online presence, why not turn to groups native to this digital habitat? Why not embrace the efforts of third-party hackers like Anonymous to dismantle the Islamic State—and even give them the resources to do so?"[2] The U.S. government didn't embrace Anonymous (not that we know of, at least). But within a few months of its campaign, Anonymous reported "233 websites attacked. 85 websites destroyed. 25,000 Twitter accounts terminated."[3]

Anonymous first attracted major public attention in 2008. The issue was a video featuring a fervent Tom Cruise—meant for internal promotional use within the Church of Scientology—that had been leaked to the Web site *Gawker*. When the church tried to suppress the video footage on grounds of copyright,

Anonymous went to work. It launched a DDoS, or Distributed Denial of Service, attack (flooding a server or network with external requests so that it becomes overloaded and slows down or crashes) on the church's Web sites, bombarded the church headquarters with prank phone calls and faxes, and "doxed" the church by publishing sensitive internal documents.

United by its libertarian distrust of government, its commitment to a free and open Internet, its opposition to child pornography, and its distaste for corporate conglomerates, Anonymous has targeted organizations as diverse as the Indian government (to protest the country's plan to block Web sites like The Pirate Bay and Vimeo) and the agricultural conglomerate Monsanto (to protest the company's malicious patent lawsuits and its dominant control of the food industry). While Anonymous agrees on an agenda and coordinates the campaign, the individual hackers all act independently of the group, without expecting recognition.

As with the #OpISIS campaign, it can often be easy to find the good in the activities of hacktivists. For example, Anonymous reportedly hacked the computer network of Tunisian tyrant Zine el-Abidine Ben Ali; his downfall in 2011 was the first victory of the Arab Spring movement. In 2011, Anonymous also hacked the Web site of the Westboro Baptist Church, known for spreading its extremist antigay rhetoric, picketing funerals of soldiers, and desecrating American

flags. In a world of large, impersonal governments and organizations, hackers level the playing field for ordinary people, responding quickly in ways much more powerful than traditional forms of protest, like writing a letter or publicly demonstrating in front of headquarters or embassies. In fact, hacktivism can be seen as an update on the long tradition of peaceful protests.

But sometimes it is harder to tell whether Anonymous is virtuous or not. Because the members of Anonymous are indeed anonymous, there aren't any checks or balances on those who "dox" a corporate site, revealing documents carrying personal credit card or social security numbers and making regular citizens vulnerable to identity theft and fraud, as some hackers have done. For example, prosecutions in 2012 took down at least six international members of Anonymous when one hacker, known online as Sabu, turned out to be a government informant. One of the hackers arrested in Chicago was charged with stealing credit card data and using it to make more than $700,000 in charges.[4] Just a few "bad apples" can undermine the self-managed integrity of groups like Anonymous.

The very existence of Anonymous is a sign that many of our battles now are in the digital domain. We fight for equal access and free speech on the Internet, we are in a perpetual struggle with corporations and other institutions over the privacy of our digital information, and, although our government prosecutes hackers for computer crimes, governments themselves are increasingly using hacking to fight one another. In the case of the Internet and ISIS, perhaps the U.S. government (although it might be loathe to admit it) secretly appreciates the work Anonymous does.

Bouazizi, who had his vegetable cart confiscated by police. Humiliated when he tried to get it back, he set himself on fire. While there had been protests before in Tunisia, the stories were never communicated widely. This time, protesters posted videos on Facebook, and satellite news networks spread the story with reports based on those videos. The protests spread across Tunisia, and in January 2011, Tunisia's dictator of nearly twenty-four years fled the country.

In Egypt, a similar circumstance occurred when twenty-eight-year-old Khaled Said was pulled from a café and beaten to death by police. Said's fate might have made no impact but for the fact that his brother used his mobile phone to snap a photo of Said's disfigured face and released it to the Internet. The success of protesters in Tunisia spurred Egyptians to organize their own protests, using the beating of Said as a rallying point. During the pro-democracy gatherings at Tahrir Square in Cairo, protesters used social media like Facebook, Twitter, and YouTube to stay in touch. Global news organizations tracked the protesters' feeds to stay abreast of what was happening, especially because the state news media ignored the protests and carried pro-Egyptian leader Hosni Mubarak propaganda. Even though Mubarak tried to shut down the Internet in Egypt, word of the protests spread quickly, and he was out eighteen days after the demonstrations started. In 2013, more protests aided by social media led to the ouster of Mohamed Morsi, Mubarak's democratically elected successor. In Yemen and Libya, other dictators were ousted. And although Syria's repressive government was still in power in 2015 after years of protests and fighting, citizens continued to use social media to provide evidence of the government's killing of thousands of civilians.

Even in the United States, social media have helped call attention to issues that might not have received any media attention otherwise. In 2011 and 2012, protesters in the Occupy Wall Street movement in New York and at hundreds of sites across the country took to Twitter, Tumblr, YouTube, and Facebook to point out the inequalities of the economy and the income disparity between the wealthiest 1 percent and the rest of the population—the 99 percent. The physical occupations didn't last, but the movement changed the discourse in the United States about economic inequality.[15]

NEW PROTEST LANGUAGE
It has become more and more commonplace to see protest signs with Twitter hashtags, URLs, information about Facebook groups, and other social media references.

Khaled Desouki/AFP/Getty Images

The flexible and decentralized nature of the Internet and social media is in large part what makes them such powerful tools for subverting control. In China, the Communist Party has tightly controlled mass communication for decades. As more and more Chinese citizens take to the Internet, an estimated thirty thousand government censors monitor or even block Web pages, blogs, chat rooms, and e-mails. Social media sites like Twitter, YouTube, Flickr, WordPress, and Blogger have frequently been blocked, and Google moved its Chinese search engine (Google.cn) to Hong Kong after the Chinese government repeatedly censored it. And for those who persist in practicing "subversive" free speech, there can be severe penalties: Paris-based Reporters without Borders reports that thirty Chinese journalists and seventy-four netizens were in prison in 2014 for writing articles and blogs that criticized the government.[16] Still, Chinese dissenters bravely play cat-and-mouse with Chinese censors, using free services like Hushmail, Freegate, and Ultrasurf (the latter two produced by Chinese immigrants in the United States) to break through the Chinese government's blockade. (For more on using the Internet for political and social statements, see "Examining Ethics: 'Anonymous' Hacks Global Terrorism" on pages 50–51.)

Convergence and Mobile Media

The innovation of digital communication—central to the development of the first computers in the 1940s—enables all media content to be created in the same basic way, which makes *media convergence*, the technological merging of content in different mass media, possible.

In recent years, the Internet has really become the hub for convergence, a place where music, television shows, radio stations, newspapers, magazines, books, games, and movies are created, distributed, and presented. Although convergence initially happened on desktop computers, the popularity of notebook computers and then the introduction of smartphones and tablets have hastened the pace of media convergence and made the idea of accessing any media content, anywhere, a reality.

Media Converges on Our PCs and TVs

First there was the telephone, invented in the 1870s. Then came radio in the 1920s, TV in the 1950s, and eventually the personal computer in the 1970s. Each device had its own unique and distinct function. Aside from a few exceptions, like the clock radio (a hybrid device popular since the 1950s), that was how electronic devices worked.

The rise of the personal computer industry in the mid-1970s first opened the possibility for unprecedented technological convergence. A *New York Times* article on the new "home computers" in 1978 noted that "the long-predicted convergence of such consumer electronic products as television sets, videotape recorders, video games, stereo sound systems and the coming video-disk machines into a computer-based home information-entertainment center is getting closer."[17] However, PC-based convergence didn't truly materialize until a few decades later, when broadband Internet connections improved the multimedia capabilities of computers.

By the early 2000s, computers connected to the Internet allowed an array of digital media to converge in one space and be easily shared. A user can now access television shows, movies, music, books, games, newspapers, magazines, and lots of other Web content on a computer. And with Skype, iChat, and other live voice and video software, PCs can replace landline telephones. Other devices, like iPods, quickly capitalized on the Internet's ability to distribute such content and were adapted to play and exhibit multiple media content forms.

Media are also converging on our television sets, as the electronics industry manufactures Internet-ready TVs. Video game consoles like the Xbox, Wii, and PS4, and set-top devices like Apple TV, Google Chromecast, Roku, and Amazon Fire TV, offer additional entertainment content access via their Internet connections. In the early years of the Web, people would choose only one gateway to the Internet and media content, usually a computer or a television. Today, however, wireless networks and the recent technological developments in various media devices mean that consumers regularly use more than one avenue to access all types of media content.

Mobile Devices Propel Convergence

Mobile telephones have been around for decades (like the giant "brick" mobile phones of the 1970s and 1980s), but the smartphones of the twenty-first century are substantially different creatures. Introduced in 2002, the BlackBerry was the first popular Internet-capable smartphone in the United States. Users' ability to check their e-mail messages at any time created addictive e-mail behavior and earned the phones their "Crackberry" nickname. Convergence on mobile phones took another big leap in 2007 with Apple's introduction of the iPhone, which

combined qualities of its iPod digital music player and telephone and Internet service, all accessed through a sleek touchscreen. The next year, Apple opened its App Store, featuring free and low-cost software applications for the iPhone (and the iPod Touch and, later, the iPad) created by third-party developers, vastly increasing the utility of the iPhone. By 2015, there were about 1.4 million apps available to do thousands of things on Apple devices—from playing interactive games to finding locations with a GPS or using the iPhone like a carpenter's level.

In 2008, the first smartphone to run on Google's competing Android platform was released. By 2015, Android phones (sold by companies such as Samsung, HTC, LG, and Motorola, and supported by the Google Play app market and the Amazon Appstore) held 53.2 percent of the smartphone market share in the United States, while Apple's iPhone had a 41.3 percent share; Microsoft and BlackBerry smartphones constituted the remainder of the market.[18] The precipitous drop of the BlackBerry's market standing in just ten years (the company was late to add touchscreens and apps to its phones) illustrates the tumultuous competition in mobile devices. It also illustrates how apps and the ability to consume all types of media content on the go have surpassed voice call quality to become the most important feature to consumers purchasing a phone today.

In 2010, Apple introduced the iPad, a tablet computer suitable for reading magazines, newspapers, and books; watching video; and using visual applications. The tablets became Apple's fastest-growing product line, selling at a rate of twenty-five million a year. Apple added cameras, faster graphics, and a thinner design to subsequent generations of the iPad, as companies like Samsung (Galaxy), Amazon (Kindle Fire), Microsoft (Surface), and Google (Nexus) rolled out competing tablets.

John MacDougall/AFP/Getty Images

SMARTWATCHES have been a part of pulp- and science-fiction tales since the thirties, and real-life versions were developed in the seventies and eighties before electronics companies shifted their attention to laptops and cell phones. Many top digital conglomerates have begun developing, and in some cases manufacturing, new smartwatches; Apple debuted its Apple watch in early 2015.

The Impact of Media Convergence and Mobile Media

Convergence of media content and technology has forever changed our relationship with media. Today, media consumption is mobile and flexible; we don't have to miss out on media content just because we weren't home in time to catch a show, didn't find the book at the bookstore, or forgot to buy the newspaper yesterday. Increasingly, we demand access to media when we want it, where we want it, and in multiple formats. In order to satisfy those demands and to stay relevant in such a converged world, traditional media companies have had to dramatically change their approach to media content and their business models.

Our Changing Relationship with the Media

The merging of all media onto one device, such as a tablet or smartphone, blurs the distinctions of what used to be separate media. For example, *USA Today* (a newspaper) and CBS News (network television news) used to deliver the news in completely different formats, but today their Web forms look quite similar, with listings of headlines, rankings of the most popular stories, local weather forecasts, photo galleries, and video. With the Amazon Kindle, on which one can read books, newspapers, and magazines, new forms like the Kindle Single challenge old categories. Are the fictional Kindle Singles novellas, or are they more like the stories found in literary magazines? And what about the investigative reports released as Kindle Singles? Should they be considered long-form journalism, or are they closer to nonfiction books? Is listening to an hour-long archived episode of public radio's *This American Life* on an iPod more like experiencing a radio program or more like an audio book? (It turns out you can listen to that show on the radio, as a downloadable podcast, as a Web stream, on mobile apps, or purchased on a USB drive or on a CD.)

Not only are the formats morphing, but we can now also experience the media in more than one manner, simultaneously. Fans of television shows like *The Voice, Empire*, and *Top Chef,* or viewers of live events like NFL football, often multitask, reading live blogs during broadcasts or sharing their own commentary with friends on Facebook and Twitter. For those who miss the initial broadcasts, converged media offer a second life for media content through deep archive access and repurposed content on other platforms. For example, cable shows like *Game of Thrones* and *Mad Men* have found audiences beyond their initial broadcasts through their DVD collections and online video services like Amazon Instant Video and Apple's iTunes. In fact, some fans even prefer to watch these more complex shows this way, enjoying the ability to rewind an episode in order to catch a missed detail, as well as the ability to binge-watch several episodes back-to-back. Similarly, *Arrested Development*, critically acclaimed but canceled by Fox in 2006, garnered new fans through the streaming episodes on Hulu and Netflix. As a result of this renewed interest, it was revived with new episodes produced for Netflix in 2013. Netflix also bought the rejected NBC series *The Unbreakable Kimmy Schmidt* in 2015, airing its first season and ordering a second.

Christopher Polk/Getty Images

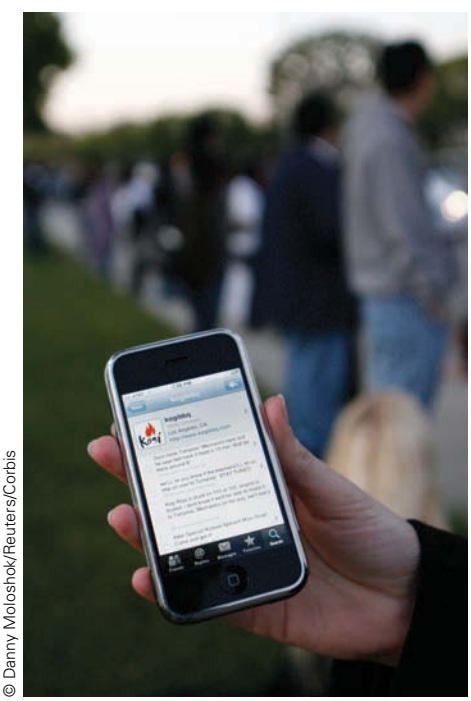
SUPER BOWL XLIX WATCHERS generated 28.4 million tweets, up 14 percent from the previous year. Not all of the tweets were about football; many commented on Katy Perry's halftime show, including a series of jokes about her shark dancers.

Our Changing Relationship with the Internet

Mobile devices and social media have altered our relationship with the Internet. Two trends are noteworthy: (1) Apple now makes more than five times as much money selling iPhones, iPads, and iPods and accessories as it does selling computers, and (2) the number of Facebook users (1.44 billion in 2015) keeps increasing. The significance of these two trends is that through Apple devices and Facebook, we now inhabit a different kind of Internet—what some call a closed Internet, or a walled garden.[19]

In a world where the small screens of smartphones are becoming the preferred medium for linking to the Internet, we typically don't get the full, open Internet, one represented by the vast searches brought to us by Google. Instead we get a more managed Internet, brought to us by apps or platforms that carry out specific functions via the Internet. Are you looking for a nearby restaurant? Don't search on the Internet—use this app especially designed for that purpose. And the distributors of these apps act as gatekeepers. Apple has more than 1.4 million apps in its App Store, and Apple approves every one of them. The competing Android app stores on Google Play and Amazon have a similar number of apps (with many fewer apps in the Windows Store), but Google and Amazon exercise less control over approval of apps than Apple does.

APPS, like those developed for Twitter and Facebook, offer smartphone users direct access to their preferred Web sites.



© Danny Moloshok/Reuters/Corbis

Facebook offers a similar walled garden experience. Facebook began as a highly managed environment, only allowing those with .edu e-mail addresses. Although all are now invited to join Facebook, the interface and the user experience on the site are still highly managed by Facebook CEO Mark Zuckerberg and his staff. For example, if you click on a link to a news article that your friend has shared using a social reader app on Facebook, you will be prompted to add the same app—giving it permission to post your activity to your Wall—before you can access the article. In addition, Facebook has severely restricted what content can be accessed through the open Internet. Facebook has installed measures to stop search engines from indexing users' photos, Wall posts, videos, and other data. The effect of both Apple's devices and the Facebook interface is a clean, orderly, easy-to-use environment but one in which we are "tethered" to the Apple App Store or to Facebook.[20]

The open Internet—best represented by Google (but not its Google+ social networking service, which is more confining, like Facebook) and a Web browser—promised to put the entire World Wide Web at our fingertips. On the one hand, the appeal of the Internet *is* its openness, its free-for-all nature. But of course the trade-off is that the open Internet can be chaotic and unruly, and apps and other walled garden services have streamlined the cacophony of the Internet considerably.

The Changing Economics of Media and the Internet

The digital turn in the mass media has profoundly changed the economics of the Internet. Since the advent of Napster in 1999, which brought (illegal) file sharing to the music industry, each media industry has struggled to rethink how to distribute its content for the digital age. The content itself is still important—people still want quality news, television, movies, music, and games—but they want it in digital formats and for mobile devices.

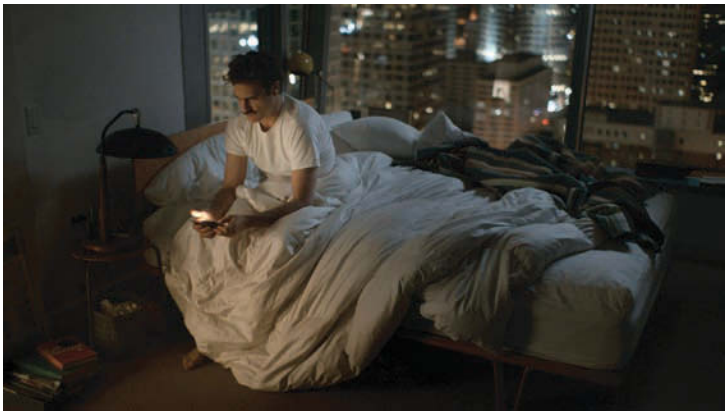
Apple's response to Napster established the new media economics. The late Apple CEO Steve Jobs struck a deal with the music industry. Apple would provide a new market for music on the iTunes store, selling digital music customers could play on their iPods (and later on their iPhones and iPads). In return, Apple got a 30 percent cut of the revenue for all music sales on iTunes, simply for being the "pipes" that delivered the music. As music stores went out of business all across America, Apple sold billions of songs and hundreds of millions of iPods, all without requiring a large chain of retail stores.

Amazon started as a more traditional online retailer, taking orders online and delivering merchandise from its warehouses. As books took the turn into the digital era, Amazon created its own device, the Kindle, and followed Apple's model. Amazon started selling e-books, taking its cut for delivering the content. Along the way, Amazon and Apple (and Google through its Android apps) have become leading media companies. They don't make the content (although Amazon is now publishing books, too, and Amazon CEO Jeff Bezos purchased the *Washington Post* in 2013), but they are among the top digital distributors of books, newspapers, magazines, music, television, movies, and games.

The Next Era: The Semantic Web

Many Internet visionaries talk about the next generation of the Internet as the *Semantic Web*, a term that gained prominence after hypertext inventor Tim Berners-Lee and two coauthors published an influential article in a 2001 issue of *Scientific American*.[21] If "semantics" is the study of meanings, then the Semantic Web is about creating a more meaningful—or more organized—Web. To do that, the future promises a layered, connected database of information that software agents will sift through and process automatically for us. Whereas the search engines of today generate relevant Web pages for us to read, the software of the Semantic Web will make our lives even easier as it places the basic information of the Web into meaningful categories—family, friends, calendars, mutual interests, location—and makes significant connections for us. In the words of Tim Berners-Lee and his colleagues, "The Semantic Web is not a separate Web but an extension of the current one, in which information is given well-defined meaning, better enabling computers and people to work in cooperation."[22]

The best example of the Semantic Web is Apple's voice recognition assistant Siri, first shipped with its iPhone 4S in 2011. Siri uses conversational voice



Warner Bros. Pictures/Everett Collection

THE SPIKE JONZE FILM *HER* (2013), set in the near future, explores the relationship between a human and an operating system. The voice-based operating system brings to mind Apple's Siri, which moves users toward a deeper, more personally relevant Web. Google Now and Microsoft Cortana are similar voice-activated personal digital assistants for mobile devices.

recognition to answer questions, find locations, and interact with various iPhone functionalities, such as the calendar, reminders, the weather app, the music player, the Web browser, and the maps function. Some of its searches get directed to Wolfram Alpha, a computational search engine that provides direct answers to questions, rather than the list of links traditionally given as search results. Other Siri searches draw on the databases of external services, such as Yelp for restaurant locations and reviews, and StubHub for ticket information. Another example of the Semantic Web is the Siemens refrigerator (available in Europe) that takes a photo of the interior every time the door closes. The owner may be away at the supermarket but can call up a photo of the interior to be reminded of what should be on the shopping list.[23]

The Economics and Issues of the Internet

One of the unique things about the Internet is that no one owns it. But that hasn't stopped some corporations from trying to control it. Since the **Telecommunications Act of 1996**, which overhauled the nation's communications regulations, most regional and long-distance phone companies and cable operators have competed against one another to provide connections to the Internet. However, there is more to controlling the Internet than being the service provider for it. Companies have realized the potential of dominating the Internet business through search engines, software, social networking, and providing access to content, all in order to sell the essential devices that display the content, or to amass users who become an audience for advertising.

Ownership and control of the Internet are connected to three Internet issues that command much public attention: the security of personal and private information, the appropriateness of online materials, and the accessibility and openness of the Internet. Important questions have been raised: Should personal or sensitive government information be private, or should the Internet be an enormous public record? Should the Internet be a completely open forum, or should certain types of communications be limited or prohibited? Should all people have equal access to the Internet, or should it be available only to those who can afford it? For each of these issues, there have been heated debates but no easy resolutions.

Ownership: Controlling the Internet

By the end of the 1990s, four companies— AOL, Yahoo!, Microsoft, and Google—had emerged as the leading forces on the Internet, each with a different business angle. AOL attempted to dominate the Internet as the top ISP, connecting millions of home users to its proprietary Web system through dial-up access. Yahoo!'s method has been to make itself an all-purpose entry point—or **portal**—to the Internet. Computer software behemoth Microsoft's approach began by integrating its Windows software with its Internet Explorer Web browser, drawing users to its MSN.com site and other Microsoft applications. Finally, Google made its play to seize the Internet with a more elegant, robust search engine to help users find Web sites.

Since the end of the 1990s, the Internet's digital turn toward convergence has changed the Internet and the fortunes of its original leading companies. While AOL's early success led to the huge AOL–Time Warner corporate merger of 2001, its technological shortcomings in broadband contributed to its devaluation and eventual spin-off from Time Warner in 2009. Yahoo! was eclipsed by Google in the search engine business but tried to regain momentum with its purchase of Tumblr in 2013.

In today's converged world, in which mobile access to digital content prevails, Microsoft and Google still remain powerful. Those two, along with Apple, Amazon, and Facebook, constitute the leading companies of digital media's rapidly changing world. Of the five, all but

ELSEWHERE IN MEDIA & CULTURE

The **cathode-ray tube** was instrumental in the invention of television

p. 190

25%

how much of a $60 video game goes to art and design

p. 103

WHO DECIDES WHAT INFORMATION IS LEGAL FOR CORPORATIONS TO USE?

p. 448

$7.81B

the number of dollars spent in the college textbook market

p. 351

How has the digital turn changed media distribution?

p. 187

THE TRANSITION FROM WIRED TO WIRELESS HAPPENED FIRST IN RADIO

p. 152

Facebook also operate proprietary cloud services and encourage their customers to store all their files in their "walled garden" for easy access across all devices. This ultimately builds brand loyalty and generates customer fees for file storage.[24]

Microsoft

Microsoft, the oldest of the dominant digital firms (established by Bill Gates and Paul Allen in 1975), is an enormously wealthy software company that struggled for years to develop an Internet strategy. Although its software business has been in a gradual decline, its flourishing digital game business (Xbox) helped it to continue to innovate and find a different path to a future in digital media. The company finally found moderate success on the Internet with its search engine Bing in 2009. With the 2012 release of the Windows Phone 8 mobile operating system and the Surface tablet, Microsoft was prepared to offer a formidable challenge in the mobile media business. In 2014, Microsoft brought its venerable office software to mobile devices, with Office for iPad and Office Mobile for iPhones and Android phones, all of which work with OneDrive, Microsoft's cloud service.

Google

Google, established in 1998, had instant success with its algorithmic search engine and now controls over 70 percent of the search market, generating billions of dollars of revenue yearly through the pay-per-click advertisements that accompany key-word searches. Google has also branched out into a number of other Internet offerings, including shopping (Google Shopping), mapping (Google Maps), e-mail (Gmail), blogging (Blogger), browsing (Chrome), books (Google Books), video (YouTube), and television (Chromecast). Google has also challenged Microsoft's Office programs with Google Apps, a cloud-based bundle of word processing, spreadsheet, calendar, IM, and e-mail software. Google competes against Apple's iTunes with Google Play, an online media store, and challenges Facebook with the social networking tool Google+.

As the Internet goes wireless, Google has acquired other companies in its quest to replicate its online success in the wireless world. Beginning in 2005, Google bought the Android operating system (now the leading mobile phone platform and also a tablet computer platform) and mobile phone ad placement company AdMob. Google continues to experiment with new devices, such as Google Glass, which layers virtual information over one's real view of the world through eyeglasses, and Android Wear, its new line of wearable technology (the first product is a smartwatch). Google's biggest challenge is the "closed Web": companies like Facebook and Apple that steer users to online experiences that are walled off from search engines and threaten Google's reign as the Internet's biggest advertising conglomerate.

Apple

Apple, Inc., was founded by Steve Jobs and Steve Wozniak in 1976 as a home computer company and is today the most valuable company in the world (by 2015, ExxonMobil was the second most valuable company, Google was third, and Microsoft was fourth).[25] Apple was only moderately successful until 2001, when Jobs, having been forced out of the company for a decade, returned. Apple introduced the iPod and iTunes in 2003, two innovations that led the company to become the No. 1 music retailer in the United States. Then in 2007, Jobs introduced the iPhone, transforming the mobile phone industry. With Apple's release of the intensely anticipated iPad in 2010, the company further redefined portable computing.

With the iPhone and iPad now at the core of Apple's business, the company expanded to include providing content—music, television shows, movies, games, newspapers, magazines—to sell its media devices. The next wave of Apple's innovations was the iCloud, a new storage and syncing service that enables users to access media content anywhere (with a wireless connection) on its mobile devices. The iCloud also helps ensure that customers purchase their media content through Apple's iTunes store, further tethering users to its media systems. (For more on Apple devices and how they are made, see "Global Village: Designed in California, Assembled in China" on page 61.)

© Amazon Studios/PhotoFest

AFTER YEARS IN THE RETAIL BUSINESS, Amazon has been experimenting with content creation, commissioning groups of series, making the pilots available on its Amazon Prime streaming service, and taking both viewer and critical feedback into account when deciding which pilot episodes to expand into series. *Transparent*, about a family adjusting to a parent coming out as transgendered, became a hit for Amazon in 2014. Its first season received eleven Emmy nominations and a second season premiered in 2015, with another order for a third season already placed. Amazon is continuing to develop more shows, recruiting high-profile filmmakers like Woody Allen (*Blue Jasmine*) and David Gordon Green (*Pineapple Express*).

Amazon

Amazon started its business in 1995 in Seattle, selling the world's oldest mass medium (books) online. Since that time, Amazon has developed into the world's largest e-commerce store, selling not only books but also electronics, garden tools, clothing, appliances, and toys. To keep its lead in e-commerce, Amazon also acquired Zappos, the popular online shoe seller. Yet by 2007, with the introduction of its Kindle e-reader, Amazon was following Apple's model of using content to sell devices. The Kindle became the first widely successful e-reader, and by 2010, e-books were outselling hardcovers and paperbacks at Amazon. In 2011, in response to Apple's iPad, Amazon released its own color touchscreen tablet, the Kindle Fire, giving Amazon a device that can play all the media—including music, TV, movies, and games—it sells online and in its Appstore. Like Apple, Amazon has a Cloud Player for making media content portable and offers an additional 5 gigabytes of free Cloud Drive space to all users, to use however they like. Amazon is now also competing with television, cable networks, and Netflix by producing at least ten Amazon Original television series for its streaming service.

Facebook

Facebook's immense, socially dynamic audience (about two-thirds of the U.S. population and around 1.44 billion users across the globe) is its biggest resource, and Facebook, like Google, has become a data processor as much as a social media service, collecting every tidbit of information about its users—what we "like," where we live, what we read, and what we want—and selling this information to advertisers. Because Facebook users reveal so much about themselves in their profiles and the messages they share with others, Facebook can offer advertisers exceptionally tailored ads: A user who recently got engaged gets ads like "Impress Your Valentine," "Vacation in Hawaii," and "Are You Pregnant?" while a teenage girl sees ads for prom dresses, sweet-sixteen party venues, and "Chat with Other Teens" Web sites.

As a young company, Facebook has suffered growing pains while trying to balance its corporate interests (capitalizing on its millions of users) with its users' interest in controlling the privacy of their own information. In 2012, Facebook had the third-largest public offering in U.S. history, behind General Motors and Visa, with the company valued at $104 billion. Facebook's valuation is a reflection of investors' hopes of what the company can do with more than one billion users rather than evidence of the company's financial success so far. In recent years, Facebook has focused on moving its main interface from the computer screen to mobile phones. Its purchase of Instagram, the photo-sharing app, in 2012 for $1 billion was part of that strategy. Facebook's approach appears to be successful: "Americans spend about one-fifth of their time on mobile phones checking Facebook," the *New York Times* reported.[26] Facebook continues to make investments to expand beyond its core service, with purchases in 2014 of WhatsApp, an instant messaging service, and Oculus VR, a virtual reality technology company.

Targeted Advertising and Data Mining

In the early years of the Web, advertising took the form of traditional display ads placed on pages. The display ads were no more effective than newspaper or magazine advertisements, and because they reached small, general audiences, they weren't very profitable. But in the late 1990s, Web advertising began to shift to search engines. Paid links appeared as "sponsored links" at the top, bottom, and side of a search engine result list and even, depending on the search engine, within the "objective" result list itself. Every time a user clicks on a sponsored link, the advertiser pays the search engine for the click-through. For online shopping, having paid placement in searches can be a good thing. But search engines doubling as ad brokers may undermine the utility of search engines as neutral locators of Web sites (see "Media

GLOBAL VILLAGE

Designed in California, Assembled in China

There is a now-famous story involving the release of the iPhone in 2007. The late Apple CEO Steve Jobs was carrying the prototype in his pocket about one month prior to its release and discovered that his keys, also in his pocket, were scratching the plastic screen. Known as a stickler for design perfection, Jobs reportedly gathered his fellow executives in a room and told them (angrily), "I want a glass screen, and I want it perfect in six weeks."[1] This demand would have implications for a factory complex in China, called Foxconn, where iPhones are assembled. When the order trickled down to a Foxconn foreman, he woke up eight thousand workers in the middle of the night, gave them a biscuit and a cup of tea, and then started them on twelve-hour shifts fitting glass screens into the iPhone frames. Within four days, Foxconn workers were churning out ten thousand iPhones daily.

On its sleek packaging, Apple proudly proclaims that its products are "Designed by Apple in California," a slogan that evokes beaches, sunshine, and Silicon Valley—where the best and brightest in American engineering ingenuity reside. The products also say, usually in a less visible location, "Assembled in China," which suggests little, except that the components of the iPhone, iPad, iPod, or Apple computer were put together in a factory in the world's most populous country.

© Qilai Shen/In Pictures/Corbis

It wasn't until 2012 that most Apple customers learned that China's Foxconn was the company where their devices are assembled. Investigative reports by the *New York Times* revealed a company with ongoing problems with labor conditions and worker safety, including fatal explosions and a spate of worker suicides.[2] (Foxconn responded in part by erecting nets around its buildings to prevent fatal jumps.)

Foxconn (also known as Hon Hai Precision Industry Co., Ltd., with headquarters in Taiwan) is China's largest and most prominent private employer, with 1.2 million employees—more than any American company except Walmart. Foxconn assembles an incredible 40 percent of the world's electronics and earns more revenue than ten of its competitors combined.[3] And Foxconn is not just Apple's favorite place to outsource production; nearly every global electronics company is connected to the manufacturing giant: Amazon (Kindle), Microsoft (Xbox), Sony (PlayStation), Dell, Hewlett-Packard, IBM, Motorola, and Toshiba all feed their products to the vast Foxconn factory network.

Behind this manufacturing might is a network of factories now legendary for its enormity. Foxconn's largest factory compound is in Shenzhen. Dubbed "Factory City," it employs roughly 300,000 people—all squeezed into one square mile, many of whom live in the dormitories (dorms sleep seven to a room) on the Foxconn campus.[4] Workers, many of whom come from rural areas in China, often start a shift at 4 A.M. and work until late at night, performing monotonous, routinized work—for example, filing the aluminum shavings from iPad casings six thousand times a day. Thousands of these full-time workers are under the age of eighteen.

Conditions at Foxconn might, in some ways, be better than the conditions in the poverty-stricken small villages from which most of its workers come. But the low pay, long hours, dangerous work conditions, and suicide nets are likely *not* what the young workers had hoped for when they left their families behind.

In light of the news reports about the problems at Foxconn, Apple joined the Fair Labor Association (FLA), an international nonprofit that monitors labor conditions. The FLA inspected factories and surveyed more than thirty-five thousand Foxconn workers. Its 2012 study verified a range of serious issues. Workers regularly labored more than sixty hours per week, with some employees working more than seven days in a row. Other workers weren't compensated for overtime. More than 43 percent of the workers reported they had witnessed or experienced an accident, and 64 percent of the employees surveyed said that the compensation does not meet their basic needs. In addition, the FLA found the labor union at Foxconn an unsatisfactory channel for addressing worker concerns, as representatives from management dominated the union's membership.[5]

In 2014, Apple reported that its supplier responsibility program had resulted in improved labor conditions at supplier factories. But Apple might not have taken any steps had it not been for the *New York Times* investigative reports and the intense public scrutiny that followed. What is our role as consumers in ensuring that Apple and other companies are ethical and transparent in the treatment of the workers who make our electronic devices?

Victor Idrogo/El Comercio de Peru/Newscom

WHATSAPP
Facebook's acquisition of Instagram in 2012 aided the social networking site's future as a provider of mobile interfaces. Yet Facebook is preparing for the possibility that its social network's popularity may fade. In 2014, Facebook paid $19 billion for WhatsApp, a cross-platform instant messaging service with more than 480 million users worldwide. The price was steep, but Facebook wanted a stake in the global IM business to complement its social media business. Prior to WhatsApp's purchase by Facebook, the service's owners had vowed to keep advertising off its platform. Facebook said it would honor that pledge.

Literacy and the Critical Process: Tracking and Recording Your Every Move" on page 63).

Advertising has since spread to other parts of the Internet, including social networking sites, e-mail, and mobile apps. For advertisers—who for years struggled with how to measure people's attention to ads—these activities make advertising easy to track, effective in reaching the desired niche audience, and relatively inexpensive, because ads get wasted less often on the uninterested. For example, Yahoo! gleans information from search terms; Google scans the contents of Gmail messages; and Facebook uses profile information, status updates, and "likes" to deliver individualized, real-time ads to users' screens. Similarly, Foursquare—a mobile social networking application for smartphones—encourages users to earn points and "badges" by checking in at business locations, such as museums, restaurants, and airports (or other user-added locations), and to share that information via Twitter, Facebook, and text message. Other companies, like Poynt and Yelp, are also part of the location-based ad market. The rise in smartphone use has contributed to extraordinary growth in mobile advertising, which jumped from $3.4 billion in 2012 to $12.5 billion in 2014, accounting for 25 percent of the $49.5 billion in total Internet advertising that year.[27]

Gathering users' location and purchasing habits has been a boon for advertising, but these data-collecting systems also function as consumer surveillance and **data mining** operations. The practice of data mining also raises issues of Internet security and privacy. Millions of people, despite knowing that transmitting personal information online can make them vulnerable to online fraud, have embraced the ease of **e-commerce**: the buying and selling of products and services on the Internet, which took off in 1995 with the launch of Amazon. What many people don't know is that their personal information may be used without their knowledge for commercial purposes, such as targeted advertising. For example, in 2011, the Federal Trade Commission charged Facebook with a list of eight violations in which Facebook told consumers their information would be private but made it public to advertisers and third-party applications. Facebook CEO Mark Zuckerberg admitted the company had made "a bunch of mistakes" and settled with the FTC by fixing the problems and agreeing to submit to privacy audits for twenty years.[28]

One common method that commercial interests use to track the browsing habits of computer users is **cookies**, or information profiles that are automatically collected and transferred between computer servers whenever users access Web sites.[29] The legitimate purpose of a cookie is to verify that a user has been cleared for access to a particular Web site, such as a library database that is open only to university faculty and students. However, cookies can also be used to create marketing profiles of Web users to target them for advertising. Many Web sites require the user to accept cookies in order to gain access to the site.

Even more unethical and intrusive is **spyware**, information-gathering software that is often secretly bundled with free downloaded software. Spyware can be used to send pop-up ads to users' computer screens, to enable unauthorized parties to collect personal or account information of users, or even to plant a malicious click-fraud program on a computer, which generates phony clicks on Web ads that force an advertiser to pay for each click.

In 1998, the FTC developed fair information practice principles for online privacy to address the unauthorized collection of personal data. These principles require Web sites to (1) disclose their data-collection practices, (2) give consumers the option to choose whether their data may be collected and to provide information on how that data is collected, (3) permit individuals access to their records to ensure data accuracy, and (4) secure personal data from unauthorized use. Unfortunately, the FTC has no power to enforce these principles, and most Web sites either do not self-enforce them or deceptively appear to enforce them when they in fact do not.[30] As a

Media Literacy and the Critical Process

Tracking and Recording Your Every Move

Imagine if you went into a department store and someone followed you the whole time, noting every place you stopped to look at something and recording every item you purchased. Then imagine that the same person followed you the same way on every return visit. It's likely that you would be outraged by such surveillance. Now imagine that the same thing happens when you search the Web—except in this case, it really happens.

1 DESCRIPTION. Do an audit of your Web browser's data collection—the cookie files deposited on your computer, and your recorded search histories. (For this critical process, use either Chrome or Firefox, the two most popular browsers.) On Google's Chrome browser, go to Chrome at the left of the top menu, and select Preferences, Settings, Advanced Settings (at the bottom of the Settings page), Privacy, Content Settings, and then All Cookies and Site Data. You can then click on each individual cookie file (some Web sites establish multiple cookies on your computer) to discover when the cookie was set and when it is scheduled to expire. Chrome also saves your search history forever: Go to History in the top menu, then Show Full History. On Firefox, go to Firefox, Preferences, Privacy, and Remove Individual Cookies. Here, you can again click on each cookie and find when the cookie is set to expire. To see your browsing history in Firefox, go to History in the top menu, then Show All History. For either browser, try to count how many cookies are on your computer and determine how far back in time your browser history is recorded. Finally, delete all cookies and search history, and then start fresh with the browser and spend just five minutes browsing five different Web sites.

2 ANALYSIS. From your five minutes of browsing five Web sites, look for patterns in the cookies you collected. How many were there? Which types of sites had multiple cookies? Sample ten to twenty cookies for a close-up look: What is the planned life span of the cookies? (That is, when are they set to expire?) What kinds of companies are the cookies from?

3 INTERPRETATION. Why are our searches tracked with cookies and our search histories recorded? Is this done solely for the convenience of advertisers, marketers, and Google, which mine our search data for commercial purposes, or is there value to you in this? (Firefox is owned by a nonprofit, the Mozilla Foundation.)[1]

4 EVALUATION. Web sites don't tell you they are installing cookies on your computer. Cookies and search histories can be found and deleted, but do the browsers make this easy or difficult for you? Did you know this information was being collected? Should you have more say in the data being collected on your searches? Overall, should Web sites be more transparent and honest about what they do in placing cookies and their purpose? Should Web browsers be more transparent and honest about the cookies and histories they save and whether they are used for data mining?

5 ENGAGEMENT. What can you do to preserve your privacy? On a personal level, start by clearing out your cookies and search history after every session. On Firefox (under Privacy), you can check "Tell sites that I do not want to be tracked." On Chrome, you can select Clear Browsing Data in the main menu. Alternatively, Chrome offers "incognito mode" for browsing, with the following warning: "You've gone incognito. Pages you view in incognito tabs won't stick around in your browser's history, cookie store, or search history after you've closed *all* of your incognito tabs. Any files you download or bookmarks you create will be kept. *Going incognito doesn't hide your browsing from your employer, your internet service provider, or the websites you visit.*" For greater privacy, you can use the search engine DuckDuckGo (launched in 2008), which doesn't track your searches or put them in a "filter bubble" (that is, it doesn't filter search results based on what the search engine knows about your previous searches, which is what Google does). On a social level, you can file a complaint with the Federal Trade Commission. Go to www.ftccomplaintassistant.gov, but be aware that even the FTC may use cookies to process your complaint.

result, consumer and privacy advocates are calling for stronger regulations, such as requiring Web sites to adopt **opt-in** or **opt-out policies**. Opt-in policies, favored by consumer and privacy advocates, require Web sites to obtain explicit permission from consumers before the sites can collect browsing history data. Opt-out policies, favored by data-mining corporations, allow for the automatic collection of browsing history data unless the consumer requests to "opt out" of the practice. In 2012, the Federal Trade Commission approved a report recommending that Congress adopt "Do Not Track" legislation to limit tracking of user information on Web sites and mobile

THIS *NEW YORKER* CARTOON illustrates an increasingly rare phenomenon.

devices and to enable users to easily opt out of data collection. Several Web browsers now offer "Do Not Track" options, while other Web tools, like Ghostery, detect Web tags, bugs, and other trackers, generating a list of all the sites following your moves.

Security: The Challenge to Keep Personal Information Private

When you watch television, listen to the radio, read a book, or go to the movies, you do not need to provide personal information to others. However, when you use the Internet, whether you are signing up for an e-mail account, shopping online, or even just surfing the Web, you give away personal information—voluntarily or not. As a result, government surveillance, online fraud, and unethical data-gathering methods have become common, making the Internet a potentially treacherous place.

Government Surveillance

Since the inception of the Internet, government agencies worldwide have obtained communication logs, Web browser histories, and the online records of individual users who thought their online activities were private. In the United States, for example, the USA PATRIOT Act (which became law about a month after the September 11 attacks in 2001 and was renewed in 2006) grants sweeping powers to law-enforcement agencies to intercept individuals' online communications, including e-mail messages and browsing records. The act was intended to allow the government to more easily uncover and track potential terrorists and terrorist organizations, but many now argue that it is too vaguely worded, allowing the government to unconstitutionally probe the personal records of citizens without probable cause and for reasons other than preventing terrorism. Moreover, searches of the Internet permit law-enforcement agencies to gather huge amounts of data, including the communications of people who are not the targets of an investigation. Documents leaked to the news media in 2013 by former CIA employee and former National Security Agency (NSA) contractor Edward Snowden revealed that the NSA has continued its domestic spying program, collecting bulk Internet and mobile phone data on millions of Americans for more than a decade.

Online Fraud

In addition to being an avenue for surveillance, the Internet is increasingly a conduit for online robbery and *identity theft*, the illegal obtaining of personal credit and identity information in order to fraudulently spend other people's money. Computer hackers have the ability to infiltrate Internet databases (from banks to hospitals to even the Pentagon) to obtain personal information and to steal credit card numbers from online retailers. Identity theft victimizes hundreds of thousands of people a year, and clearing one's name can take a very long time and cost a lot of money. According to the U.S. Department of Justice, about 7 percent of Americans were victims of identity theft in 2012, totaling about $24.7 billion in losses.[31] One particularly costly form of Internet identity theft is known as **phishing**. This scam involves phony e-mail messages that appear to be from official Web sites—such as eBay, PayPal, or the user's university or bank—asking customers to update their credit card numbers, account passwords, and other personal information.

Appropriateness: What Should Be Online?

The question of what constitutes appropriate content has been part of the story of most mass media, from debates over the morality of lurid pulp-fiction books in the nineteenth century

to arguments over the appropriateness of racist, sexist, and homophobic content in films and music. Although it is not the only material to come under intense scrutiny, most of the debate about appropriate media content, despite the medium, has centered on sexually explicit imagery.

As has always been the case, eliminating some forms of sexual content from books, films, television, and other media remains a top priority for many politicians and public interest groups. So it should not be surprising that public objection to indecent and obscene Internet content has led to various legislative efforts to tame the Web. Although the Communications Decency Act of 1996 and the Child Online Protection Act of 1998 were both judged unconstitutional, the Children's Internet Protection Act of 2000 was passed and upheld in 2003. This act requires schools and libraries that receive federal funding for Internet access to use software that filters out any visual content deemed obscene, pornographic, or harmful to minors, unless disabled at the request of adult users. Regardless of new laws, pornography continues to flourish on commercial sites, individuals' blogs, and social networking pages. As the American Library Association notes, there is "no filtering technology that will block out all illegal content, but allow access to constitutionally protected materials."[32]

Although the "back alleys of sex" on the Internet have caused considerable public concern, Internet sites that carry potentially dangerous information (bomb-building instructions, hate speech) have also incited calls for Internet censorship, particularly after the terrorist attacks of September 11, 2001, and several tragic school shootings. Nevertheless, many people—fearing that government regulation of speech would inhibit freedom of expression in a democratic society—want the Web to be completely unregulated.

Access: The Fight to Prevent a Digital Divide

A key economic issue related to the Internet is whether the cost of purchasing a personal computer and paying for Internet services will undermine equal access. Coined to echo the term *economic divide* (the disparity of wealth between the rich and the poor), the term **digital divide** refers to the growing contrast between the "information haves"—those who can afford to purchase computers and pay for Internet services—and the "information have-nots"—those who may not be able to afford a computer or pay for Internet services.

Although about 87 percent of U.S. households are connected to the Internet, there are big gaps in access. For example, a 2014 study found that only 57 percent of Americans age sixty-five and up go online, compared with 88 percent of Americans ages fifty to sixty-four, 93 percent of Americans ages thirty to forty-nine, and 98 percent of Americans ages eighteen to twenty-nine. Education has an even more pronounced effect: Only 76 percent of people with a high school education or less have Internet access, compared with 91 percent of people with some college and 97 percent of college graduates.[33]

The rising use of smartphones is helping to narrow the digital divide, particularly along racial lines. In the United States, African American and Hispanic families have generally lagged behind whites in home access to the Internet, which requires a computer and broadband access. However, the Pew Internet & American Life Project reported that African Americans and Hispanics are active users of mobile Internet devices. The report concluded, "While blacks and Latinos are less likely to have access to home broadband than whites, their use of smartphones nearly eliminates that difference."[34]

Globally, though, the have-nots face an even greater obstacle to crossing the digital divide. Although the Web claims to be worldwide, the most economically powerful countries—the United States, Sweden, Japan, South Korea, Australia, the United Kingdom—account for most of its international flavor. In nations such as Jordan, Saudi Arabia, Syria, and Myanmar (Burma), the governments permit limited or no access to the Web. In other countries, an inadequate telecommunications infrastructure hampers access to the Internet. And in underdeveloped countries, phone lines and computers are almost nonexistent. For example, in

Brad Fleet/Newspix/Getty Images

NICHOLAS NEGROPONTE, founder of the Media Lab at MIT, began a project to provide $100 laptops to children in developing countries (shown). These laptops, the first supply of which was funded by Negroponte, were designed to survive in rural environments where challenges include adverse weather conditions (dust and high heat), access to reliable power, and Internet connectivity.

Sierra Leone—a West African nation of about six million people, with poor public utilities and intermittent electrical service—less than a hundred thousand people, or about 1.7 percent of the population, are Internet users.[35] However, as mobile phones become more popular in the developing world, they can provide one remedy for the global digital divide.

Even as the Internet matures and becomes more accessible, wealthy users are still able to buy higher levels of privacy and faster speeds of Internet access than are other users. Whereas traditional media made the same information available to everyone who owned a radio or a TV set, the Internet creates economic tiers and classes of service. Policy groups, media critics, and concerned citizens continue to debate the implications of the digital divide, valuing the equal opportunity to acquire knowledge.

Net Neutrality: Maintaining an Open Internet

For more than a decade, the debate over net neutrality has framed the shape of the Internet's future. **Net neutrality** refers to the principle that every Web site and every user—whether a multinational corporation or you—has the right to the same Internet network speed and access. The idea of an open and neutral network has existed since the origins of the Internet, but there had never been a legal formal policy until 2015, when the Federal Communications Commission reclassified broadband Internet service and approved net neutrality rules. Still, the debate forges on.

The dispute over net neutrality and the future of the Internet is dominated by some of the biggest communications corporations. These major telephone and cable companies—including Verizon, Comcast, AT&T, Time Warner Cable, and Charter—control 98 percent of broadband access in the United States through DSL and cable modem service. They want to offer faster connections and priority to clients willing to pay higher rates, and provide preferential service for their own content or for content providers who make special deals with them—effectively eliminating net neutrality. For example, tiered Internet access might mean that

LaunchPad
macmillanhighered.com/mediaculture10eupdate

Net Neutrality
Experts discuss net neutrality and privatization of the Internet.
Discussion: Do you support net neutrality? Why or why not?

these companies would charge customers more for data-heavy services like Netflix, YouTube, Hulu, and iTunes. These companies argue that the profits they could make from tiered Internet access would allow them to build expensive new networks, benefiting everyone.

But supporters of net neutrality—mostly bloggers, video gamers, educators, religious groups, unions, and small businesses—argue that the cable and telephone giants have incentive to rig their services and cause net congestion in order to force customers to pay a premium for higher speed connections. They claim that an Internet without net neutrality would hurt small businesses, nonprofits, and Internet innovators, who might be stuck in the "slow lane," not being able to afford the same connection speeds that large corporations can afford. Large Internet corporations like Google, Yahoo!, Amazon, eBay, Microsoft, Skype, and Facebook also support net neutrality because their businesses depend on their millions of customers having equal access to the Web.

In late 2010, the FCC adopted rules on net neutrality, noting that "the Internet's openness promotes innovation, investment, competition, free expression, and other national broadband goals."[36] But the FCC's rules were twice rejected by federal courts, most recently in 2014. The courts argued that because broadband Internet service had been defined by the FCC as an information service in 2002, rather than a telecommunications service (like telephones or cable TV service), the FCC did not have the authority to impose net neutrality regulations. Of course, a lot had changed with the Internet since 2002, when its main content consisted of e-mail and Web pages. The FCC finally made net neutrality stick in 2015, when it reclassified broadband Internet service as a telecommunications service and put net neutrality rules into place.[37] The nonpartisan organization Free Press, one of the main advocacy groups for net neutrality, said, "This is a watershed victory for activists who have fought for a decade to protect the open Internet." Yet it cautioned that the new FCC rules for net neutrality might not permanently settle the matter. "The cable and phone companies—and their allies in Congress—will do everything they can to dismantle this win."[38]

Alternative Voices

Independent programmers continue to invent new ways to use the Internet and communicate over it. While some of their innovations have remained free of corporate control, others have been taken over by commercial interests. Despite commercial buyouts, however, the pioneering spirit of the Internet's independent early days endures; the Internet continues to be a participatory medium in which anyone can be involved. Two of the most prominent areas in which alternative voices continue to flourish relate to open-source software and digital archiving.

Open-Source Software

In the early days of computer code writing, amateur programmers were developing **open-source software** on the principle that it was a collective effort. Programmers openly shared program source codes and their ideas to upgrade and improve programs. Beginning in the 1970s, Microsoft put an end to much of this activity by transforming software development into a business in which programs were developed privately and users were required to pay for both the software and its periodic upgrades.

However, programmers are still developing noncommercial, open-source software, if on a more limited scale. One open-source operating system, Linux, was established in 1991 by Linus Torvalds, a twenty-one-year-old student at the University of Helsinki in Finland. Since the establishment of Linux, professional computer programmers and hobbyists around the world have participated in improving it, creating a sophisticated software system that even Microsoft has acknowledged is a credible alternative to expensive commercial programs. Linux can operate across disparate platforms, and companies such as IBM, Dell, and Oracle, as well as other corporations and governmental organizations, have developed applications and systems that

run on it. Still, the greatest impact of Linux is evident not on the desktop screens of everyday computer users but in the operation of behind-the-scenes computer servers.

Digital Archiving

Librarians have worked tirelessly to build nonprofit digital archives that exist outside of any commercial system in order to preserve libraries' tradition of open access to information. One of the biggest and most impressive digital preservation initiatives is the Internet Archive, established in 1996. The Internet Archive aims to ensure that researchers, historians, scholars, and all citizens have universal access to human knowledge—that is, everything that's digital: text, moving images, audio, software, and more than 150 billion archived Web pages reaching back to the earliest days of the Internet. The archive is growing at staggering rates as the general public and partners such as the Smithsonian and the Library of Congress upload cultural artifacts. For example, the Internet Archive stores more than 134,000 live music concerts, including performances by Jack Johnson, the Grateful Dead, and the Smashing Pumpkins.

Media activist David Bollier has likened open-access initiatives to an information "commons," underscoring the idea that the public collectively owns (or should own) certain public resources, like airwaves, the Internet, and public spaces (such as parks). "Libraries are one of the few, if not the key, public institutions defending popular access and sharing of information as a right of all citizens, not just those who can afford access," Bollier says.[39]

The Internet and Democracy

Throughout the twentieth century, Americans closely examined emerging mass media for their potential contributions to democracy. As radio became more affordable in the 1920s and 1930s, we hailed the medium for its ability to reach and entertain even the poorest Americans caught in the Great Depression. When television developed in the 1950s and 1960s, it also held promise as a medium that could reach everyone, including those who were illiterate or cut off from printed information. Despite continuing concerns over the digital divide, many have praised the Internet for its democratic possibilities. Some advocates even tout the Internet as the most democratic social network ever conceived.

The biggest threat to the Internet's democratic potential may well be its increasing commercialization. As happened with radio and television, the growth of commercial "channels" on the Internet has far outpaced the emergence of viable nonprofit channels, as fewer and fewer corporations have gained more and more control. The passage of the 1996 Telecommunications Act cleared the way for cable TV systems, computer firms, and telephone companies to merge their interests and become even larger commercial powers. Although there was a great deal of buzz about lucrative Internet start-ups in the 1990s and 2000s, it has been large corporations—such as Microsoft, Apple, Amazon, Google, and Facebook—that have weathered the low points of the dot-com economy and maintained a controlling hand.

About three-quarters of households in the United States are now linked to the Internet, thus greatly increasing its democratic possibilities but also tempting commercial interests to gain even greater control over it and intensifying problems for agencies trying to regulate it. If the histories of other media are any predictor, it seems realistic to expect that the Internet's potential for widespread use by all could be partially preempted by narrower commercial interests. As media economist Douglas Gomery warns, "Technology alone does not a communication revolution make. Economics trumps technology every time."[40]

DIGITAL JOB OUTLOOK

Media Professionals Speak about Internet Jobs

Eric Bonzer, Web Designer, Spinutech

You'll want to learn HTML and know how to write it from scratch, not using Dreamweaver. And then the CSS—also learn how to write that from scratch. Certainly the Adobe Creative Suite is great, but for the most part it's really knowing how to write that stuff from scratch.

Gina Bianchini, CEO, Mightybell

If Zuckerberg, the Google guys, and Bill Gates are the pattern creators, Steve Jobs may be the best counterevidence to the creation myth. He didn't study computer science during his brief time at Reed College. He didn't need to be an ace at coding. Instead, he relentlessly and passionately focused on products. He marketed. He sold. He inspired. He challenged. He succeeded. He failed. He kept going. Then, he succeeded again. These are the true characteristics of a successful entrepreneur in the consumer Internet space. And there is nothing stopping women from performing just as well as men.

Alexa Andrzejewski, Ux Designer and Founding CEO of Foodspotting

Share your idea with anyone who will listen. There is a temptation to keep it to yourself so no one will steal it. The truth is, finding someone with the time and money to do it better and faster than you is so rare, and the value of sharing your idea is so much more. I shared the idea when I first had it, and I felt validated and motivated to pursue it.

Visual Designer Ad for Uber, New York Office

You are . . .

- A utility player. You're willing to find resolutions to customer issues early, late, and often.
- Cool and calm under pressure. You have superior organizational skills, integrity, and great follow-through on tasks. You don't get overwhelmed easily . . . tons of design requests from the Community and Operations teams? No prob!
- Graceful. You are self-aware, well-spoken on the phone, and eloquent in e-mails.
- Fun. You're a charismatic people person who can talk to anyone; you're flexible, fearless, and excited to help build something awesome and share it with the world.
- Motivated. You're ready to hit the ground running; you are slightly obsessive-compulsive about grinding away at projects for the team.

However, defenders of the digital age argue that inexpensive digital production and social media distribution allow greater participation than does any traditional medium. In response to these new media forms, older media are using Internet technology to increase their access to and feedback from varied audiences. Skeptics raise doubts about the participatory nature of discussions on the Internet. For instance, they warn that Internet users may be communicating with people whose beliefs and values are similar to their own—in other words, just their Facebook friends and Google+ circles. Although it is important to be able to communicate across vast distances with people who have similar viewpoints, these kinds of discussions may not serve to extend the diversity and tolerance that are central to democratic ideals. There is also the threat that we may not be interacting with anyone at all. In the wide world of the Web, we are in a shared environment of billions of people. In the emerging ecosystem of apps, we live in an efficient but gated community, walled off from the rest of the Internet. However, we are still in the early years of the Internet. The democratic possibilities of the Internet's future are endless.

CHAPTER REVIEW

COMMON THREADS

One of the Common Threads discussed in Chapter 1 is the commercial nature of mass media. The Internet is no exception, as advertisers have capitalized on its ability to be customized. How might this affect other media industries?

People love the simplicity of Pinterest, the visual social media site where users "pin" images and videos to their "board," creating a customized site that reflects their own personal style on topics like home décor, apparel, food, crafts, or travel. To sign up for an account, users provide their name, e-mail address, and gender (male or female). The final choice is already prechecked by Pinterest and says, "Let Pinterest personalize your experience based on other sites you visit."

Pinterest is just one example of the mass customization the Internet offers—something no other mass medium has been able to provide. (When is the last time a television, radio, newspaper, or movie spoke directly to you, or let you be the content producer?) This is one of the Web's greatest strengths—it can connect us to the world in a personally meaningful way. But a casualty of the Internet may be our shared common culture. A generation ago, students and coworkers across the country gathered on Friday mornings to discuss what happened the previous night on NBC's "must-see" TV shows, like *Roseanne, Seinfeld, Friends,* and *Will & Grace*. Today it's more likely that they watched vastly different media the night before. And if they did view the same thing—say, a funny YouTube video—it's likely they all laughed alone, because they watched it individually, although they may have later shared it with their friends on a social media site.

We have become a society divided by the media, often split into our basic entity: the individual. One would think that advertisers dislike this, since it is easier to reach a mass audience by showing commercials during *The Voice.* But mass customization gives advertisers the kind of personal information they once only dreamed about: your e-mail address, hometown, zip code, and birthday, and a record of your interests—what Web pages you visit and what you buy online. If you have a Facebook profile or a Gmail account, they may know even more about you—what you did last night or what you are doing right now. What will advertisers have the best chance of selling to you with all this information? With the mass-customized Internet, you may have already told them.

KEY TERMS

The definitions for the terms listed below can be found in the glossary at the end of the book. The page numbers listed with the terms indicate where the term is highlighted in the chapter.

Internet, 41
ARPAnet, 42
e-mail, 43
microprocessors, 43
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World Wide Web, 44
HTML (hypertext markup language), 45
browsers, 45
Internet service provider (ISP), 45
broadband, 45
digital communication, 45
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open-source software, 67

For review quizzes, chapter summaries, links to media-related Web sites, and more, go to macmillanhighered.com/mediaculture10eupdate.

REVIEW QUESTIONS

The Development of the Internet and the Web

1. When did the Internet reach the novelty (development), entrepreneurial, and mass medium stages?
2. How did the Internet originate? What role did the government play?
3. How does the World Wide Web work? What is its significance in the development of the Internet?
4. Why did Google become such a force in Web searching?

The Web Goes Social

5. What is the difference between a "Read/Only" culture and a "Read/Write" culture on the Internet?
6. What are the six main types of social media?
7. What are the democratic possibilities of social media? How can social media aid political repression?

Convergence and Mobile Media

8. What conditions enabled media convergence?
9. What role do mobile devices play in media convergence, and what significant mobile milestones can you think of?
10. How has convergence changed our relationship with media and with the Internet?
11. What elements of today's digital world are part of the Semantic Web?

The Economics and Issues of the Internet

12. Which of the five major digital companies are most aligned with the "open Internet," and which are most aligned with the "closed Internet"?
13. What is the role of data mining in the digital economy? What are the ethical concerns?
14. What is the digital divide, and what is being done to close the gap?
15. Why is net neutrality such an important issue?
16. What are the major alternative voices on the Internet?

The Internet and Democracy

17. How can the Internet make democracy work better?
18. What are the key challenges to making the Internet itself more democratic?

QUESTIONING THE MEDIA

1. What possibilities for the Internet's future are you most excited about? Why? What possibilities are most troubling? Why?
2. What advantages of media convergence enable all types of media content to be accessed on a single device?
3. Google's corporate motto is "Don't be evil." Which of the five major digital corporations (Microsoft, Google, Apple, Amazon, and Facebook) seems to have the greatest tendency for evil? Which seems to do the most good? Why?
4. As we move from a print-oriented Industrial Age to a digitally based Information Age, how do you think individuals, communities, and nations have been affected positively? How have they been affected negatively?

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- VIDEO: USER-GENERATED CONTENT
  Editors, producers, and advertisers discuss the varieties of user-generated content and how they can contribute to the democratization of media.