CHAPTER 9

Media Technology

In previous chapters, we have explored the industries and organizations that produce our mass media, the content of the media images that circulate widely, and the meaning of these media images for both audiences and the broader political system. In this chapter, we pay closer attention to the specific communication medium on which the various media industries rely. Because we cannot have newspapers without printing presses, television programming without equipment to transmit and receive visual images, or an Internet without the computer networks on which data travel, we need to examine media technologies themselves if we are to understand how media work. What kinds of information do the different forms of media communicate? What makes "new" media new? How do different media forms influence the ways we think or help shape the character of our social relationships? These questions focus specifically on media's technological apparatus—the medium itself.

The importance of media technology is widely recognized. In fact, a body of work has focused almost exclusively on technology as a driving force of social change. While technology certainly has consequences for society, a more sociological perspective examines the broader context in which technology exists. Thus, in this chapter, we consider the different properties of the various media. Then we go further and examine how the development and application of media technology are socially constructed. This discussion takes into account the dynamic tension between media technologies and the various social forces that have shaped their evolution and use. Finally, we survey some of the ways that technology matters, helping to shape aspects of social life and conclude by focusing on select new media issues.

THE NATURE OF MEDIA TECHNOLOGY

If we stop and think about them, the technologies that form the basis of our media can seem remarkable to those of us who are not engineers. How, exactly, is a book composed and printed? How do radio and television really work? How does a text message get from here to there? Most of us will not be able to answer such questions, at least not in technical terms. We know very little about the technological aspects of printing presses, broadcast

technology, computers, and mobile devices. And, in many ways, it doesn't matter. We are still able to read a book, watch TV, surf the Internet, and use our smartphones. One important characteristic of media technology, then, is that it is so user-friendly that we often take it for granted. And by taking it for granted, we often overlook how technology helps shape our media experience.

Differing Technological Capabilities

Each medium has its own technological capabilities that affect the delivery of text, sound, and visual images (see Exhibit 9.1). For example, a music concert performed by one of your favorite artists could be broadcast live by a radio station; you would hear the sound but not be able to see the performers. A magazine could print a story about the concert and provide photographs to show you what the event looked like, but only after the fact and without sound. A television program could deliver live sound and video, but any text delivery would be awkward, perhaps limited to a scrolling "crawl" at the bottom of the screen. A DVD would also have sound and video, but it would be available only well after the original concert date. The Internet is unique in its ability to serve as a digital platform that enables all of these features—print, sound, still photos, and video—and do it live. In addition, those watching the streamed concert online could communicate with other music fans through instant messaging or tweets, introducing a form of interactivity that is not possible with radio, magazine, television, or DVD versions of the concert.

Exhibit 9.1 Select Characteristics of Different Media

	Live?	*Text?*	*Sound?*	*Picture?*	*Video?*	*Interactive?*[a]
Print	No	Yes	No	Yes	No	No
Radio	Yes	No	Yes	No	No	No
Film	No	No[b]	Yes	Yes	Yes	No
Television	Yes	No[b]	Yes	Yes	Yes	No
Sound recording	No	No	Yes	No	No	No
DVD	No	No[b]	Yes	Yes	Yes	No
Internet	Yes	Yes	Yes	Yes	Yes	Yes

The technological limitations of each medium set the parameters for their use. With digitization, though, different media converge toward a single digital multimedia, making some distinctions less clear. The Internet—whether accessed via computer, mobile device, or game console—is, in effect, a generic platform of computer networks that allows for the delivery of all forms of media.

Notes: [a] We are using *interactive* here to mean a medium that enables two-way communication between producer and receiver.

[b] While film, television, and DVDs can show text on the screen, they are not primarily textual media.

Because of their capacities and limitations, the various media technologies provide different ways of communicating the concert experience, both in the kinds of information they present and in the ways we access and experience it. So technology clearly matters; it places limitations on what a medium can be used for and makes some types of media more suitable for some purposes than others. As media technologies evolve, they provide opportunities for different forms of communication.

Mediating Communication: Traditional Versus "New" Media

Media technologies are structural constraints. Like all structures, they have been developed by humans and, subsequently, both enable and limit human action. How they do this is at the center of a sociological understanding of media technology.

As we noted in Chapter 1, *media* is derived from the Latin word for *middle.* This signifies that the media are in the middle of a communication process, specifically, in between the sender and the receiver of a message. The early use of the term *media* was as part of the phrase *mass media of communication*. We long ago dropped the explicit reference to communication in everyday language and talked of the *mass media*—and in some cases simply the *media*. But it is useful to remember that media technologies of all sorts have social significance because they enable and affect forms of human communication. As a result, they raise unique sociological issues.

Beyond their common role as a mechanism of communication, however, media technologies vary. Two important phases of media development are what we might call traditional mass media versus "new" media.

Traditional Mass Media

Media, before the rise of the Internet, can be thought of as belonging to the era of traditional mass media, which typically involved:

- one-to-many communication
- with anonymous receivers
- through one-way communication channels
- with a clear distinction between producers and receivers.

Let's consider these features more closely.

Some forms of media, such as the traditional landline telephone, connect one individual with another single individual; they have a one-to-one orientation. *Mass media,* however, enable communication to be sent from one source and be received by a large audience elsewhere; they have a one-to-many orientation. A newspaper, for example, is produced by a particular news organization and is sold to a large group of readers. There is one sender, the news organization, and there are many receivers, all of the readers. Films, television, and music are similarly centrally produced, and they are distributed through various channels to often large audiences.

Another property of mass communication is that it involves a known sender and generally anonymous receivers. Readers typically know the author of the book they are reading,

but authors clearly cannot know who, exactly, is reading their books. When we watch a television program or go to the movies, the names of the producer, director, and actors are prominently displayed, while the moviegoers and television audiences are anonymous and often spread around the world.

Third, traditional forms of mass media typically enable one-way communication that does not allow direct feedback from receivers of the messages. That is, these media are not interactive. When we read a book or a magazine, listen to the new CD we just bought, or turn on the television, there is no way to use those media to directly respond to the messages we have received. We could, if we wanted, take the time to write or call the distributor, producer, or author to let them know how much we liked or disliked their book, music, or television program, but that would be using another media form.

Finally, these one-way communication channels create a clear distinction between producers and receivers of media content. With traditional mass media, the producers of nearly all content are commercial companies, nonprofit media organizations, and governments, while ordinary people are limited to being audience members.

Digitization and the rise of the Internet have blurred the boundaries between types of media and changed the broad parameters that used to be associated with all mass media. As a result, it makes more sense to speak of "new" media as breaking significantly with many of the features that characterize traditional mass media. We place the term *new* in double quotes because the "new" media, of course, are no longer new; the Internet is well into its third decade. However, no other single umbrella term has yet emerged to encompass the variety of media that now exist and to flag their distinctiveness from traditional mass media. For now, we're stuck with the awkward term: "new" media.

"New" Media: Digitization, the Internet, and Mobile Devices

Any media content that is digital can be stored as the 1s and 0s of computer code, including text, audio, pictures, and video. This digital content can be delivered via different media, such as a compact disk (CD), digital video disk (DVD), or digital radio or television broadcast signal. By itself, the shift from analog (nondigital) to digital media content was significant. A music CD, for example, has different properties than a phonograph record; CDs typically have lower audio quality, but they are immune from the accumulation of scratches and pops that eventually plague vinyl records. And identical copies of a CD's content can be made easily on a computer. However, much more significant changes developed when digital media content was united with the Internet.

The Internet is the communications platform on which digital media content can be delivered to a wide variety of devices, including desktop computers, wireless laptops, smartphones, and other mobile devices. Over the past few decades, the growth of digital media, the rise of the Internet, and the proliferation of mobile devices have combined to burst open the very meaning of mass media in several ways (Bolter and Grusin 2000; Lister et al. 2009).

First, the Internet blurs the distinction between individual and mass audiences, and replaces the one-to-many model of traditional mass media with the possibility of a many-to-many web of communication. This can be seen as people use the Internet and digital content for individual communication with single known recipients (e-mail, instant messaging), small group communication with a limited number of recipients (forums, social

networking sites, microblogging like Twitter), and mass communication with an unlimited number of unknown recipients (websites, blogs, streaming video). This blurring of the boundaries between communication to individuals and communication to a large audience has led observers to often replace the language of *mass media* with that simply of *media* (though we will see later that there is still good reason to pay attention to distinctions in audience size).

Second, the notion of known senders and anonymous receivers becomes problematic on the Internet. The producer of media content may remain anonymous to the typical reader, listener, or viewer, such as when no identifying information is provided on a website or blog. This opens the door to mischief, as with spam e-mail and false information or rumormongering through blogs or anonymous websites. On the other hand, with the Internet, the audience is sometimes known by the producer, as when registration is required to access a website, join an online community, post comments on a site, or receive an electronic mailing. Even when we do not supply personal information to websites—or use fictitious identities—we still leave our digital footprint (in the form of our computers' IP addresses). This changes the relationship between users and producers because, as we will see, advertisers on the Internet can know a good deal more about the identities and behaviors of those they seek to reach than they ever could with traditional mass media.

Third, with "new" media, communication is often potentially interactive, rather than being one way. For example, readers of newspaper websites can provide instant feedback on a story, shoppers can post their own product reviews at online retail sites such as Amazon.com, and viewers can comment or vote to "like" or "dislike" a video on YouTube. Interactivity can also mean that users are able to employ these media to communicate with each other.

Finally, the interactive capacities of "new" media blur the distinction between producers and receivers. Not only can audiences comment on or respond to media content created by others, but the widespread availability of digital media tools means that people with relatively modest financial resources and basic technological literacy can create their own media content and contribute to or alter content on other media platforms. The requirements for such a task are still insurmountable hurdles for the world's impoverished and illiterate—and indeed the majority of the world's population—but the creation of media content is within the grasp of more people than ever, especially in more affluent countries. People can create blogs and websites, upload videos, post their photographs, and engage in a host of other activities. They can also contribute content to existing sites by, for example, using a television station's website to submit photos and video that might be broadcast. In some cases, the traditional terms *audience* and even *readers* no longer accurately reflect the active role of what can be called more appropriately *users* of the "new" media.

TECHNOLOGICAL DETERMINISM AND ITS LIMITS

Given the technological sophistication of our media, its importance in communications, and its widespread utilization by broad segments of the population, we should not be surprised that discussions of media technology often emphasize the awesome power of the newest media to affect society. But it is easy to overstate the influence of media technologies by

claiming that they dictate processes of social change; this is referred to as *technological determinism.* As we will see below, the arguments of technological determinists can raise important questions about the social impact of new technologies, but they fail to recognize that technology is only one element of the media process in the social world.

Technological Determinism

We can think of technological determinism as an approach that identifies technology, or technological developments, as the central causal element in processes of social change. In other words, technological determinists emphasize the "overwhelming and inevitable" effects of technologies on users, organizations, and societies (Lievrouw and Livingstone 2006: 21).

Sociologist Claude Fischer (1992) characterizes the most prominent forms of technological determinism as "billiard ball" approaches, in which technology is seen as an external force introduced into a social situation, producing a series of ricochet effects. From this perspective, technology causes things to happen, albeit often through a series of intermediary steps. For example, the invention of the automobile might be said to cause a reduction in food prices because the automobile "reduced the demand for horses, which reduced the demand for feed grain, which increased the land available for planting edible grains," making food less expensive (Fischer 1992: 8). The problem, however, is that there is no human agency in this type of analysis. The technological determinist's view is all structural constraint and no human action. It argues that technological properties demand certain results and that actual people do not use technologies so much as people are used by them. In this view, society is transformed according to a technical, rather than a human, agenda.

The Influence of Social Forces

Contrary to technological determinists' views, many scholars argue that technologies are determined by social forces. These analyses acknowledge that technology matters, but social forces, such as cultural norms, economic pressures, and legal regulations, shape the ways in which technologies develop and are used.

For example, British cultural studies scholar Raymond Williams (1974, 1983) argued that technology cannot determine cultural or social outcomes, as technology is merely the extension of human capacity. In such an approach, human agency takes center stage, and technology is what we do with it. Similarly, in his social history of the telephone, Fischer (1992) argues that we should not even ask what "impact" a technology has had on a particular society, for this question implies from the outset that the technologies do something to us. Instead, Fischer suggests that we focus our attention on the people who use the technologies, sometimes in surprising ways.

Before the creation of broadcasting, for example, early developers envisioned telephone technology as a way to bring news and entertainment into the home, not as a device for personal communication. Many early radio enthusiasts thought that its principal use would be point-to-point communication—a kind of wireless telephone—rather than broadcasting. The early Internet was born as a military communications system, was adapted by a myriad

of academic researchers and computer enthusiasts, and then was commercialized by major telecommunications and media companies. In each of these cases, as we will see in more detail next, social forces determined how a technology developed and was ultimately used.

THE SOCIAL CONSTRUCTION OF MEDIA TECHNOLOGIES

Sociological approaches to technology don't ignore the inherent capacities of different media. As we have seen, the technical properties of each medium place constraints on the ways people can use them by providing parameters within which human agents must operate and by more readily lending themselves to particular applications.

But humans have agency—they can act—and they have a range of options with respect to how they use media technology. As a result, the development and application of new media technologies is neither fixed nor fully predictable (Douglas 1987). Instead, a sociological approach emphasizes that media technologies are embedded in ongoing social processes that affect their evolution. For example, the Internet is subject to social forces that help to shape how it functions and how it is used. These forces include legal regulations, social norms, and market pressures, as well as the medium's inherent technical properties (Lessig 1999, 2006). Together these forces—law, social norms, market pressures, and technological architecture—have shaped the Internet, just as they have shaped every other communications medium. Thus, looking sociologically at the development of media technologies entails thinking simultaneously about the technological and the social (Bijker and Law 1992). To understand the relationship between media and society, the most important question is not, "What does a new technology do to people?" but, instead, "How do people use the new technology?"

Scholars have documented the importance of these forces to the introduction and evolution of various new media technologies. By looking back at studies of earlier technologies, as well as the rise of today's Internet, we can see how human agency shaped the technologies we now take for granted.

The Early Years of Radio

In its earliest years, people knew radio by a different name and understood it as a very different form of communication. What we now take for granted—a model of broadcasting music, news, and entertainment programming—took two decades to evolve (Douglas 1987; McChesney 1994; Schiffer 1991).

For 10 years after its invention by Marconi in 1895, people called radio the *wireless*. Early radio was essentially the same technology we know today; it used the electromagnetic spectrum to transmit audio signals from sender to receiver. However, the social forces that later shaped the direction of radio technology had not yet coalesced, so the meaning of the technology was different. Corporate consolidation of the radio industry had not yet occurred, the government had not yet regulated the use of the electromagnetic spectrum, and investors had not yet recognized the profitability of producing household radio receiving devices. The wireless had not yet become radio.

When Marconi first demonstrated his wireless in 1899 at the America's Cup in New York City, he thought of the technology as a telegraph without wires. In the eyes of its inventor, then, the wireless was an improvement of an existing point-to-point communication technology; it had nothing to do with broadcasting music or other entertainment. Consequently, Marconi's business acumen directed his attention to those institutions that had come to rely on the telegraph in their routine business practices, particularly newspapers and steamships. Perhaps his wireless could serve as a substitute, or an upgrade, providing a less cumbersome means for long-distance communication.

The primary users, in Marconi's vision, would be large commercial interests with a regular need for transmitting information to and receiving information from a distance. There was little sense that individuals would use wireless and, therefore, little reason to produce equipment for individual use. In addition, early developers conceived of wireless as a two-way communication device—wireless users would both send and receive messages. At the beginning of the 20th century, the notion that receive-only devices—what we call radios—would be the core of the technology was still far off. In fact, the uncertainty in the future of wireless can be seen in its eventual name changes. The wireless became *radiotelegraphy,* then when it began to transmit voice instead of Morse code, it became *radiotelephony,* and finally just *radio* (Douglas 1987).

In the early years of the 20th century, a struggle over the control of radio—and over the definition of its proper uses—brought corporate interests, the U.S. military, and amateur operators into conflict. Corporate interests, including the American Marconi Company, sought private control of the airwaves in order to use them for profit. The Navy sought government control of the airwaves in order to use them for official purposes, particularly during wartime. And amateur radio enthusiasts, mostly young men and boys in the years between 1906 and 1920, saw the airwaves as a form of public property to be used by citizens to communicate with one another. As amateurs learned how to use the new technology and how to construct their own transmitters and receivers, a radio subculture emerged in which sending and receiving long-distance communications became an increasingly popular hobby. As listeners tuned in at night, seeking transmissions from sites hundreds of miles away, it was amateurs who planted the seeds of the broadcast model and made the act of listening a leisure activity.

In the years prior to 1920, corporate and government radio operators still saw radio as a form of point-to-point communication, even as the airwaves became increasingly populated by amateurs. Because the airwaves have limited space, it was becoming increasingly clear that the government would have to organize and delimit their use. The Marconi Company complained about the use—and what it saw as abuse—of the airwaves by amateurs. The sinking of the Titanic enhanced public perception of the value of wireless (and made Marconi even more famous) because the survivors were rescued by a ship that had received a wireless distress signal. Both the U.S. Navy and the Marconi Company supported government regulation of the airwaves. In this context, Douglas (1987) explains, "The necessary reforms were now obvious to the press and to Congress. . . . Most importantly, the amateurs had to be purged from the most desirable portion of the broadcast spectrum. They had to be transformed from an active to a passive audience, allowed to listen but not to 'talk'" (p. 233). The result was the Radio Act of 1912, which regulated the

use of the airwaves by requiring all transmitting stations to be licensed by the federal government, thereby curtailing access for amateurs. Even before the notion of broadcasting had taken hold, therefore, the institutional structure of broadcasting was in place: centralized, licensed senders and large numbers of individual listeners.

Despite these restrictions, amateurs continued to operate radios in even larger numbers. Some made use of the shortwave frequencies that the government allocated, others were granted government licenses to use the airwaves, and still others continued to operate without licenses. In 1917, when the United States declared war on Germany, the government ordered all amateur radio operators to shut down and dismantle their equipment. Douglas (1987) reports that the police closed down more than 800 stations in New York alone. In need of skilled radio operators, the Navy recruited amateurs, many of whom served in World War I. They returned home after the war even more skilled in radio technology. By 1920, amateurs were experimenting with playing music and providing information over the air to other amateurs, who were encouraging their families and friends to listen along. Several amateur transmitters built up substantial audiences for their "programming," while the corporate radio industry continued to focus on point-to-point communication.

All of this changed when, in the hope of increasing sales of their radio equipment, a Pittsburgh department store ran a local newspaper advertisement for a musical program broadcast by amateur Frank Conrad. Shortly thereafter, Westinghouse, one of the major manufacturers of radio sets, began financing Conrad's station as a means of selling its radios. Radio manufacturers AT&T and General Electric, along with department stores, quickly jumped into the business of broadcasting by setting up stations to stimulate the sale of radio sets. The market for the broadcast model was much larger than for the point-to-point model, offering the possibility of greater profits. As news coverage of radio programming increased, owning a radio set and being able to listen to the programs became highly popular. In 1922, AT&T began selling access to the airwaves as Marconi had done for private communication, but with a much larger audience. The broadcast model, with programming financed by the sale of advertising, was finally in place.

The route to radio broadcasting of music, news, and serials, all surrounded by ads, was not the straightforward result of some technological imperative. In fact, one of radio's great technological capacities—its ability to both send and receive messages—was not utilized in the final model. By including factors beyond technology in our understanding of radio, we can see that what we often take for granted as radio's natural order of things is in fact the result of a complicated social process involving commercial interests, amateur enthusiasts, and government regulators. Moreover, we can see that things could have turned out differently. Basic wireless technology might have been applied or further developed in a different direction, leading to different social consequences.

What if corporate capital had not been inclined to develop—or had been prevented from developing—a commercial radio industry? What if the government had maintained exclusive control of radio, as some urged in the post-World War I years? What if government had stayed entirely out of radio, enacting no regulations at all to control the use of the airwaves? What if amateur radio enthusiasts had prevailed in spreading the popularity of individual-to-individual radio communications? In each of these cases, the

development and ultimate meaning of radio would likely have taken a distinct path, making some uses more likely than others.

We don't need to rely on pure speculation to imagine these alternatives. In other countries, radio has played a different role than in the United States. In some countries, radio has served as a more distinct form of top-down communication, providing official information (and often propaganda) from the government to its citizens. In others, listeners have much more widespread access to the airwaves, which are not used to sell products with the same zeal as in the United States. In several countries, including England, Australia, Argentina, and Uruguay, a portion of the airwaves has been earmarked for so-called "community radio" (Gordon 2008; c.f. Hintz 2011; Rennie 2006).

The evolution of radio, and the variations in how it has been adopted, illustrates the fact that we cannot understand a new medium simply by looking at its technological component because this ignores the social processes that ultimately shaped its use.

Television Finds a Home

Twenty-five years after the consolidation of the radio industry, television was available as a mass consumer item. Manufacturers marketed it as a new form of entertainment that would bring the family together to enjoy public amusement without ever having to leave home. If sales of television sets are any indication, this pitch worked quite well. Television became a household staple faster than any previous home appliance. The percentage of American households with television sets skyrocketed from just 0.02 % in 1946 to almost 90 % in 1960 (Spigel 1992). In relatively short order, television found a home in American life.

In its remarkable rise to prominence as a central part of American domestic life, the television industry both accommodated already existing family practices and tried to mold these practices (Spigel 1992). In this era, middle-class women were perceived as having a great deal of "free time" during the day for leisure or relaxation while also attending to housework. Therefore, producers directed most early television programming at women viewers, whom they considered to be the largest and most accessible audience. As a purely aural medium, radio could provide entertainment while women worked as listening did not interfere with other activities. However, as a visual medium, it was more difficult to market television as something women could enjoy at the same time as they were doing housework (Spigel 1992). Leaders of the television industry feared that the new medium might not fit into women's lives and therefore might be underused or ignored altogether.

One effort to overcome this hurdle was the 1952 development of a TV-Stove, an appliance that allowed women to watch television while they cooked. By designing an apparatus that accommodated existing cultural practices and traditions, the television industry hoped to attract loyal viewers. The TV-Stove demonstrates that cultural practices can shape the development of media technology. It also shows how cultural practices can be more powerful than technological innovation: The TV-Stove was a market failure.

The television industry was more successful by designing the content of programming to accommodate the practices of 1950s middle-class women. In the formative years of television, producers designed the soap opera and the variety show as programming that

would not interfere with women doing housework. Soap operas contained little action but a great deal of verbal explanation and often repeated the same themes. Viewers could listen from an adjacent room or could miss episodes without losing track of plot developments. Variety shows moved from one act to the next, making it easy for viewers to watch only parts of the program. This, too, was ideal for women working around the house.

For television to be successful, then, it had to make itself fit into the routines and cultural practices of the white, middle-class families that producers saw as the core of the consumer market. But this is only one side of the story. The television industry also tried to reshape family routines to be compatible with television viewing. As Spigel (1992) puts it, "Not merely content to fit its programming into the viewer's rhythms of reception, the network aggressively sought to change those rhythms by making the activity of television viewing into a new daily habit" (p. 85). For example, promoters billed NBC's *Today Show* as the TV equivalent of the morning newspaper; the networks routinized their schedules, previewed upcoming programs, and linked program times to the household activities of women and children, all of which encouraged viewers to adapt their daily routine to the television schedule.

In the end, commercial television became the centerpiece of U.S. consumer culture, influencing and disrupting American traditions, practices, and buying habits. Still, television was not a predetermined entity; cultural practices shaped its early development and uses, just as the medium in turn influenced these practices.

Introducing the Internet

The Internet is yet another example of a medium that has evolved substantially over the years, responding to government influence, commercial pressures, and user habits (Abbate 1999; Hafner and Lyon 1996; Naughton 2000).

In the early 1960s, MIT Professor Joseph Licklider conceived the idea of a network of information-sharing computers (Waldrop 2001). This concept was later financed by the U.S. Defense Advanced Research Projects Agency (DARPA), a body within the Defense Department dedicated to the development of new technologies for military use. The prospective decentralized computer network could allow core U.S. government agencies to communicate during a national emergency, even after a nuclear attack.

ARPANET (Advanced Research Projects Agency Network) went online in 1969, at first linking just four universities. By 1975, over 50 university and government sites were networked, and the control of ARPANET was transferred to the Defense Communication Agency (DCA), which later decided to create a separate subnetwork dedicated to military uses, MILNET. In 1983, the control of civilian sites was shifted to the National Science Foundation, which took over with a mandate to disseminate the new technology among U.S. universities for research purposes; commercial uses of the emerging Internet were forbidden. In 1991, the U.S. Congress passed the High Performance Computing and Communication Act, authored by Al Gore, which provided the funding to substantially expand the infrastructure that was becoming popularly known as the *information superhighway*.

Once the military uses of the Internet were separated from civilian uses, government financial support came with relatively few strings attached in the name of promoting

academic research and information sharing. This enabled early developers to work without the pressures of commercial market forces, while acting on their "technocratic belief in the progress of humans through technology" (Castells 2001: 61; Kahn 2004). Within this context, a subculture of computer enthusiasts (sometimes known as hackers) emerged who promoted principles such as sharing, openness, decentralization, and free access to computers (Jordan 2008; Levy 2010). Their efforts were the foundation for later "open source" and "free software" movements.

Up until this point, however, using the Internet was generally limited to engineers, computer scientists, and others who possessed the necessary specialized computer skills. That changed when Tim Berners-Lee at the European Laboratory for Particle Physics (known as CERN) developed a new protocol for information distribution that created a user-friendly network interface. Launched in 1991, the new protocol was known as the World Wide Web—the familiar "www" at the beginning of web addresses—and was based on hypertext.

As the potential of the Internet to reach the wider general public became increasingly clear, private developers started to create independent network tools that would allow users to bypass the government-funded Internet infrastructure. For example, in 1993, Netscape Corp. developed the early Internet browser, Mosaic. As more private developers invested in the Internet, the National Science Foundation ended its sponsorship of the national Internet infrastructure, and the Internet became an increasingly commercially oriented system.

The excitement over the potential money to be made on the rapidly growing Internet grew frantic in the latter half of the 1990s, contributing to wild investment in new "dot-com" companies that drove the U.S. stock market to unprecedented levels. But consumers at the time were not interested in buying groceries (webvan.com), kitty litter (pets.com), or sporting goods (mvp.com) online. As a result, many much-hyped companies collapsed, and the dot-com "bubble" burst in 2000, sending the stock market plummeting.

As with other media, the Internet did not travel a straight line from introduction to mass adoption. Instead, the Internet is the result of complex social processes, involving government funding, the culture of computer enthusiasts, commercial interests, and user preferences.

Web 2.0 Versus the 1% Rule

In the years before the 2000 dot-com crash, many companies had tried to use the Internet to simply continue the delivery of traditional content (e.g. newspapers) and facilitate traditional activities (e.g. shopping)—often unsuccessfully. But as the Internet gained a greater foothold in society in the 2000s, more emphasis was placed on how this technology enabled users to customize, create, and share content, representing a sharper break from traditional media. Web 2.0, one of the popular labels given to highlight this collection of interactive capacities, suggested a technological change from the original Internet. Web 2.0 enthusiasts pointed to a wide range of examples to highlight these changes. New technologies, they argued, enabled the rise of blogs, social networking sites, content platforms such as YouTube, collaborative wikis such as Wikipedia, virtual game worlds such as *World of Warcraft,* social bookmarking such as Delicious, and virtual worlds such as Second Life.

In fact, Web 2.0 did not reflect any substantial change in the technological capacity of the Internet. Instead, Web 2.0 was a concept coined in 2004 to indicate a shift in how software developers and users utilized the existing medium (Scholz 2010). Part of this was marketing hype; in the wake of the dot-com bust, developers had to convince investors that there was something new and fundamentally different about Web 2.0 that made it a better and safer investment than the failed dot-com era. Just as the uses to which radio and television technology were put evolved over time, Web 2.0 highlighted and developed capabilities of the Internet that had existed since its inception. The basic technology wasn't new, but the uses to which it was now put had evolved. This is another example of how changes that result from social forces have been popularly and erroneously understood as being the result of technological innovations.

With Web 2.0, software developers, commercial content providers, and ordinary citizens took greater advantage of the technological capacities of the Internet. However, while the technology enabled activity, the decision of whether or not such an activity is worth pursuing is ultimately up to users. In this regard, the enthusiasm about interactivity and content creation suggested by Web 2.0 can sometimes be overstated.

In reality, large online communities and social networks are typically made up of a relatively small number of people who generate most of the content and many more lurkers who look but don't contribute. This phenomenon is sometimes referred to as *participation inequality,* and two popular informal rules of thumb have emerged to describe it. The 1 % Rule says that, for every person who creates content, there are 99 who do not (Arthur 2006). A variation, the 90–9–1 Principle, says that participation typically breaks down into 90 % of users who are lurkers, 9 % who occasionally provide content, and 1 % who account for most contributions (Nielsen 2006). These are obviously inexact rules of thumb, and rates of participation vary from site to site. However, the general idea of participation inequality has been confirmed, both anecdotally and through a variety of measurements of participation rates on specific websites (Arthur 2006; McConnell 2006; Wu 2010).

The 1 % Rule and 90–9–1 Principle are geared toward single websites. But what about Internet use more broadly? Perhaps a person reads Wikipedia entries without contributing, but she is active in an online forum on her favorite hobby; in one context, she is a lurker, while in another, she is a contributor. The media research firm Forrester Research surveys adults to assess their degree of participation with new media across websites and has developed overlapping categories of users to describe these various roles, including (Bernoff and Anderson 2010):

1. **Creators** make content that is consumed by others, such as writing blogs, and uploading videos, music, and text.
2. **Conversationalists** share their opinions with consumers, companies, and others, for example, through social networking sites or Twitter.
3. **Critics** respond to the content of others by posting reviews, commenting on blog entries, or editing wiki articles.
4. **Collectors** organize content for themselves or others, using RSS feeds, tags, and voting mechanisms such as Digg.

5. **Joiners** maintain a profile on social networking sites.
6. **Spectators** consume content generated by others.
7. **Inactives** neither create nor consume new media content.

Exhibit 9.2 provides examples of the data Forrester collects on these categories.

Two features stand out from this basic data. First, perhaps not surprisingly, the most common role played by those who use new media is that of spectator, just as it was with traditional mass media. The opportunity to create content afforded by the technological capacities of Web 2.0 is tempered by the reality of dynamics associated with the 1% Rule. Some people are simply not interested in being content creators. In addition, creating any substantial content is time-consuming and still requires a level of technological literacy that is not universally shared. As a result, even in a new media world, most people, most of the time, will be audience members, spectators consuming the creations of others.

Second, Internet use varies considerably by region, even among just the five regions shown here. The rate of creators in 2010, for example, ranges from 14% in the European Union to 41% in China. In fact, you may be surprised to see that, even in the European Union, about one-third of all adults are inactive—they neither produce nor consume new media content. This is a reminder that new media are still a phenomenon largely limited to the world's more affluent population—a topic we will explore in the final chapter.

Exhibit 9.2   A Global Update of Social Technographics® Report

	US		EU*		Metro China†		Japan†		Australia†	
Creators	24%	23%	15%	14%	44%	41%	34%	36%	23%	22%
Conversationalists	N/A	31%	N/A	31%	N/A	N/A	N/A	N/A	N/A	N/A
Critics	37%	33%	20%	21%	46%	44%	30%	42%	31%	35%
Collectors	21%	19%	6%	10%	37%	38%	11%	18%	14%	18%
Joiners	51%	59%	30%	41%	32%	50%	26%	29%	50%	61%
Spectators	73%	68%	50%	54%	79%	73%	69%	75%	64%	67%
Inactives	18%	19%	39%	32%	17%	20%	23%	17%	22%	16%

Base: US online adults, European adults, and Asia Pacific adults

▢ 2009   ▢ 2010

Sources: Forrester Research, Inc.

North American Technographics® Online Benchmark Survey, Q2 2010 (US) and North American Technographics Interactive Marketing Online Survey, Q2 2009 (US)

*European Technographics Benchmark Survey, Q2 2010 and Q2 2009

†Asia Pacific Technographics Survey, Q4 2009 and Q2 2009

In addition, Internet roles vary considerably by age. Forrester data (not shown in Exhibit 9.2) indicate that 46% of U.S. young adults ages 18 to 24 were creators, but only 19% of 45 to 54 year olds were (Forrester Research n.d.). This suggests that the degree of participation in new media will be increasing in the coming years when a larger share of the population will be digital natives, born into a world where new media are a taken-for-granted part of life (Palfrey and Gasser 2008).

In this section, we have illustrated how social forces influence the development and application of media technologies, emphasizing the importance of human agency. We turn now to a variety of topics that illustrate how the use of new media has influenced social life in the past and may influence us today. The developments associated with Web 2.0 reflect the ways people choose to use new media—by developing new software applications, creating content, and the like—as well as how they limit their participation.

HOW MEDIA TECHNOLOGY MATTERS

The term *medium theory* refers to the body of literature that focuses on the technological aspects of media beyond their content (Meyrowitz 1994). Medium theorists see media as more than conduits for the transmission of messages; they argue that the very nature of the medium can be the key to its social impact. From this perspective, media technologies can be powerful social forces, affecting how we perceive and understand the world.

All medium theorists take seriously the potential impact of technology. But they differ in the degree to which they acknowledge the influence of social factors. Some analysts are technological determinists, while others see the interaction of various social forces with technological developments. They also differ in their assessment of the social changes prompted by new technologies. Some analysts have chronicled the dire effects of new media, while others have optimistically embraced new technologies.

McLuhan's Optimistic Message

One of the most widely read medium theorists is the Canadian literary scholar Marshall McLuhan (1911–1980), who was both a technological determinist and an enthusiast for the new electronic media of his day. McLuhan was mostly interested in the cultural effects introduced into society by electronic media, especially television. McLuhan is best known for his assertion that "the medium is the message" (McLuhan and Fiore 1967). Although McLuhan's technological determinism often led him to overstate his case, his ideas about the relationship between technology and culture still resonate with some contemporary technology enthusiasts.

Briefly, McLuhan (1964) argued that, if the influence of media interests us, then we should focus our attention on the ways each new medium disrupts tradition and reshapes social life. The real message, for McLuhan, was not the formal content of media but the ways the media themselves extend our senses and alter our social world. McLuhan was quite insistent about this position, colorfully arguing that "the 'content' of a medium is like

the juicy piece of meat carried by the burglar to distract the watchdog of the mind" (p. 32). What changes people, he argues, is not the content of media but the experience of the medium itself.

In an early work, *The Gutenberg Galaxy,* McLuhan (1962) focused on the shift from oral to print societies, exploring the social implications of the 15th-century invention of the printing press by Johannes Gutenberg. He argued that new media technologies rework the balance of our senses, isolating and highlighting certain senses at the expense of others. Print, from this perspective, intensified the visual—we use our eyes to read—and separated it from other senses, in particular, sound.

In another work, *Understanding Media: The Extensions of Man,* McLuhan (1964) turned to the shift from print to electronic media, especially television. In it, he argued that, by delivering both images and sound, electronic media could help reconnect the senses that had been fragmented by print's exclusive focus on the visual, thereby bringing us back to a kind of preprint state of harmony. Further, McLuhan argued, by allowing us to see images and hear sounds from distant places instantaneously, electronic media are a global extension of our senses. "[W]e have extended our central nervous system itself in a global embrace, abolishing both space and time," (p. 19) he wrote. This perspective led him to utopian predictions of the development of a new "global village" based on the wonders of communication technology—a claim we explore in the final chapter.

In McLuhan's technological determinism, each medium was seen to shape our senses in such a way that certain social outcomes would be almost inevitable. And as the dominant media of an era are all encompassing, McLuhan argued it is virtually impossible for people to see the ways technology influences them. Because McLuhan was an enthusiast for new technologies, this sort of stealth determinism did not alarm him. Instead, he saw electronic media as opening the door to new and more holistic ways of thinking. In the end, McLuhan's technological determinism may be limited, but it did prompt other scholars to think about the impact of media technology, including his observations about media's effect on our senses of time and space.

Media's Impact on Time and Space

We usually take it for granted, but a live television image of an event that is hundreds or thousands of miles away is an astonishing manipulation of time and space. We can "be there" without being there, and we can experience the events instantaneously, joining in what Tomlinson (2007) calls a "telemediated cultural experience" (p. 74). For example, Major League Baseball's World Series was under way in the San Francisco Bay area when the 1989 Loma Prieta earthquake occurred. Residents of Boston or Dallas who had their televisions turned on to the game received more and faster information about the size and scope of the earthquake than did local San Francisco residents, whose electricity and phone service were knocked out. Through media technology, those further away learned more than those closer to the event, and they learned it almost instantaneously.

This is just one of the ways that medium theorists say electronic media and new communications technologies have changed the way people experience time and space. And this influence extends beyond television.

The Never-Ending News Cycle

A society's dominant media help set the rhythm of social life. For a long time, the daily newspaper—and later the evening news broadcast—created a particular news cycle; essentially, news was updated once a day. The introduction of specialized cable news channels, beginning with CNN in 1980, changed all that. Founder Ted Turner's original vision for CNN was for it to be, in essence, a televised newspaper that offered more serious and in-depth news than was found on television's brief 30-minute evening news (Turner and Burke 2008: 165). However, instead of depth, cable news came to emphasize speed, spotlighting its unique ability to be the first to cover an event—often live. This led to the now-familiar, never-ending news cycle where cable news, websites, and other news sources are constantly updated throughout the day and news outlets compete to be the first to report a story. Critics charge this approach leaves little time for reflection or in-depth analysis, results in chaotic and unreliable news, and makes the news media more susceptible to manipulation by sources (Kovach and Rosenstiel 1999, 2010). So the growth of cable television technology, and cable news in particular, coupled with the more recent addition of web-based news sites, has changed our sense of time in relation to the news. Waiting 24 hours for a news update now seems like an eternity.

Time Shifting

Media technologies have also given users more control over time. To watch or listen to a particular program, traditional broadcast media required audience members to tune in at a time determined by the broadcaster. *Time shifting* refers to the practice of recording or downloading media content to watch or listen at a later time that is more convenient for the audience. The VCR and audio cassette tape player were the first widely available technologies to enable time shifting. Later digital technologies such as the DVR and the MP3 player made time shifting much easier and more popular. Now, viewers can record television programs for later viewing or watch them from a website at times of their choosing. They can also download podcasts for later listening at their convenience. Portable laptops and mobile devices such as smartphones and MP3 players also enable *place shifting*—enabling users to access media content anywhere as well as any time.

Crossing Social Boundaries

Meyrowitz (1985) recognized that television compressed distances and transcended physical boundaries by allowing us to see things that were far away. However, he emphasized that television transcended social boundaries as well. Before the development of electronic media, our social roles and identities were closely tied to the physical places where we performed these roles. Because electronic media enable us to transcend physical distances, they also allow us to overcome boundaries. For example, Meyrowitz (1985) points out that, in earlier eras, children would have to know how to read—and be sophisticated enough to understand—the content of adult-oriented print media to access adult social life. But as a visual medium that does not require literacy, television allows children to see parts of the social world that were previously hidden or difficult to access, thus "blurring" childhood

and adulthood. By showing children the "backstage" behaviors of adults, television permits children to be "present" at "adult interactions"—socially, if not physically. The result is that an important boundary between adults and children, which in the past was reinforced by different levels of reading skill, no longer holds. (This may have a good deal to do with the popular belief that children grow up faster today than they did in the past.) In providing such access, television competes with the socializing role of parents, schools, and other agents and provides children with ideas and images that often contradict the stories and myths handed down in the family and at school.

Localism and Virtual Communities

Media technologies have altered our sense of space and place in other ways as well. For example, traditional media tended to be rooted in a particular physical location. Newspapers were grounded in particular cities, and radio stations produced their programs locally. Today, though, with satellites and the Internet (along with the consolidation of the media industry discussed in Chapter 2), many forms of media are placeless. *USA Today,* ungrounded in any particular city, is the nation's most-read newspaper, while the *New York Times* website is among the most popular sites anywhere in the country. Meanwhile, radio stations that are programmed remotely from corporate headquarters, satellite radio, and Internet radio streaming have largely displaced "local" radio. Rocker Bruce Springsteen bemoaned this loss of place in his aptly named song "Radio Nowhere."

By affecting our sense of place, media technologies have also altered our sense of community. Birkerts (1994) notes that new media technologies created an entirely new social space, cyberspace, which allows for new forms of interaction with little connection to the physical world. People can take on new identities in cyberspace, transcending the limits and the responsibilities of their physical environments—at least temporarily.

The concept of *virtual community* (Rheingold 2000) suggests that communities no longer need to be geographically based. People all over the globe can become "virtual" neighbors through the space-bridging technology of the Internet. By "friending" others on Facebook, joining discussions in chat rooms or online forums, and playing in virtual worlds, users can employ the Internet to connect with others. According to Rheingold (2000), the Internet can constitute a powerful antidote to the loss of traditional community values and can help reestablish social ties. However, a plethora of research suggests that online networks have a more complex relationship to geographic communities. Online networks, for example, sometimes supplement physical communities, providing new means of communication that can facilitate interaction among neighbors, but such online connections are not likely to replace the place-based bonds associated with neighborhood-based communities (Hampton and Wellman 2003; Van Dijk 1998; for an overview, see Jankowski 2006).

Finally, the loss of media rooted in distinct physical places has been accompanied by the loss of media content that is located in distinct social spaces. For example, with the Internet and mobile media, the distinction between public and private has become blurry, and this process is intensified by new forms of mobile media (Ling and Campbell 2009). Issues and topics once thought to be private—belonging to a separate, backstage personal sphere of social life—are increasingly discussed in and displayed on the public front stage of media. This shift of social space ranges from the spectacle of television talk

shows that expose the intimacies of dysfunctional families to Facebook pages, tweets, and Tumblr posts through which individuals reveal the often mundane details of their daily lives.

Network Society

With the rise of the Internet, Manuel Castells (2001) provocatively claimed that "the network is the message." For Castells, the Internet is the technological basis of a new organizational form, the network. In his work, the boundaries between network as a form of social organization and network as a technological infrastructure are blurred. Castells (2000) argues that, in the Internet age, our "network society" is rooted in telecommunications and new media and has been reshaped by the flow of information that is independent of physical proximity. In addition, our perception of time is modified by the immediacy of communication technologies. Time is "dissolved," and this process has been accelerated by wireless and mobile technology (Castells et al. 2006).

But despite his invocation of McLuhan, Castells has a much more sophisticated analysis that recognizes the role of human agency in shaping media technology. In fact, the Internet, says Castells (2001), is "a particularly malleable technology, susceptible of being deeply modified by its social practice" (p. 5). Three independent processes in the last quarter of the 20th century contributed to the rise of the network as a new organizational form and its technological counterpart, the Internet: (1) pressure from the corporate sector to globalize capital, production, and trade; (2) citizen demands for individual freedom and open communication; and (3) unprecedented advances in the telecommunication and computing fields, which paved the way for the microelectronic revolution. Thus, unlike technological determinists, Castells highlights the interaction between technological capacities and human agency. According to Castells, the Internet works as a lever for the transition to a new form of society, one in which the power of information, and therefore the possibilities of participation, are potentially distributed throughout the full range of human activity.

With all these developments that have affected our sense of time and space, media technologies have enabled change to occur, but social forces ultimately have determined the specific form of these changes. Competition and market forces influenced the rise of the never-ending news cycle. Users chose to have more control over when and where they watched and listened to media content—often to the dismay of traditional media companies. A lax regulatory environment that allowed growth in media conglomerates, coupled with cost-conscious commercial media firms, helped produce the consolidation of media ownership that led to the expansion of media without local roots. And many people voluntarily gave up their privacy on Facebook pages and TV talk shows, while developers of social networking sites, television producers, and advertisers encouraged these behaviors. Ultimately, it is how media technologies are used, rather than the technologies themselves, that helps to shape our sense of time and place.

The Rise of Television Images

While McLuhan's vision of new technologies was an optimistic one, other analysts have cast a more skeptical eye on technology, focusing on how change from one medium to another affects what we know and how we think.

For example, some critics—most notably Neil Postman (1985)—argued that the rise of television was the central cause of the decline in the seriousness of public life. The underlying premise is that what we say is, in large part, the result of the form—or technology—we use to say it. According to this view, the substance of democracy—participation by an informed citizenry—was undermined by the rise of television. The properties of television encouraged, perhaps even dictated, particular ways of talking and thinking that were antithetical to serious debate and discussion. To envision an extreme version of this, we need only think of the rapid-fire sound bites and shouting matches that often characterize television and radio programs about contemporary politics or the many "fluff" pieces that make their way onto "news" programs. In the end, according to the title of Postman's best-known work, as a society infatuated with entertainment television that is no longer able to think seriously about social and political issues, we are *Amusing Ourselves to Death*.

This kind of critique of the television age is often a nostalgic lament for the bygone days when print was the dominant form of media in American society. Following McLuhan, Postman (1985) argued that print-based societies encourage rationality, seriousness, and coherence in both our ways of thinking and the content of public discourse. Reading creates a mind in which analytic thought, based on logic and clarity, is premium. Societies that rely on the printed word as the central means of both private and public communication, therefore, develop rational, serious populations. Postman identified 18th- and 19th-century America, which witnessed the birth and rise of U.S. democracy, as the most thoroughly print-based culture in history. Others have made similar arguments about the connection between print and rationality, suggesting that, for example, the development of the printing press played a key role in the rise of scientific thinking (Eisenstein 1979). Unlike McLuhan, though, Postman was concerned with the ways television challenges the rationality and coherence of print-based modes of thinking by holding up entertaining and trivial images.

Postman's close historical analysis connects the decline of serious substance in the media to the impact of even earlier technologies, in particular, the role of the telegraph and the photograph, in cultural change. By altering our sense of physical place—specifically, by making it possible to communicate with people who were physically distant—the telegraph, according to Postman, challenged the world defined by print in three fundamental ways. First, because they could get information from faraway places, newspapers were full of stories that were largely irrelevant to their readers. News no longer had to have any relationship to its audience, nor did information have to be functional in any way—it just had to be "new." Daily news consisted of new things, and novelty became more important than relevance. Second, because the telegraph made it easy to transmit so much information, little of which was relevant to the lives of readers, news no longer had any connection to action. People could not do anything about the things they read about in the paper. Information may have been abundant, but events were happening so far away and were so disconnected from people's lives that the news encouraged feelings of powerlessness. Third, in privileging speed and abundance of information, the telegraph sacrificed context. No longer did news have to be linked to any broader, historical framework. There was no need to connect one story to the next or one day's headlines to the next day's. The point was to keep the information flowing—to report the new things that happened—rather than to contextualize messages or events by linking them to prior messages or events. Quantity became more important than either quality or depth.

The photograph extended what Postman (1985) saw as a revolution in the ways we understand the world. Photos do not encourage logical argument or contextual knowledge. Instead, as Postman put it, "The point of photography is to isolate images from context, so as to make them visible in a different way" (p. 73). As the saying goes, a picture is worth 1000 words. But Postman argued that, when we trade words for pictures, we lose something in the deal. The very meaning of information, of truth, is altered by a focus on the visual image of the photograph. Truth is no longer knowledge produced from logical thought, the kind of thinking that reading encourages. Instead, seeing is believing.

If seeing is believing, then those who can skillfully manipulate what we see can also influence what we believe. A generation before Postman, historian Daniel Boorstin (1961) argued that the pervasiveness of visual images was changing the very meaning of "reality." Images have become so embedded in our consciousness, in this view, that it is becoming harder to discern the difference between image and reality. It is not that we are losing our ability to think; it is that image-oriented pseudo-events blur the distinction between image and reality. *Pseudo-events* are events planned for the express purpose of producing dramatic images that can be disseminated or reported. In effect, they are events that have no independent existence; they take place only to be publicized. Pseudo-events include press conferences, televised debates between political candidates, and photo opportunities—all staged to produce dramatic images. Pseudo-events, however, are neither true nor false; they actually happen, but only to produce dramatic images. Appearance, not substance, is what matters. Indeed, pseudo-events may be more interesting than spontaneous happenings, a state of affairs that suggests that our definition of reality may be changing.

Postmodernist theorists suggest that contemporary society is increasingly characterized by this kind of "hyperreality," in which the boundary that used to separate reality from its representation has "imploded," leaving images with no real-world referents (Baudrillard 1988). One does not have to be a postmodernist, however, to see the significance of image making. In 1961, in the early years of the television age, Boorstin was exploring the relationship between the medium of communication and our ways of knowing. In a similar vein, Postman (1985) identified an image-dominated world as a "peek-a-boo" world; things come and go with little coherence, but our lives are always chock-full of entertainment. Writing in the age of television—but still relevant today—Postman saw that, in a world dominated by visual media, fast-paced entertainment may have become the model for all of society. As other realms of experience increasingly competed with and even imitated television, pre-television ways of knowing the world were becoming more and more marginal—an argument that, as we will see, has been echoed by analysts of the Internet.

There can be little doubt that critics such as Postman and Boorstin were correct about the significance of images and visual media in American society. However, the causal claims—that inherent properties of media technology are the key determining force—are much more difficult to accept. The problem with such technological determinism is that it ignores people, except perhaps as victims of an all-powerful medium. Even though it is rarely explicit, most critics of television write about *commercial television,* not simply television technology (Hoynes 1994). The claims that television, as a technology, must be about entertainment, attractive images, and rapid movement from one idea to the next are not some technological law of nature. They are the result of a broadcast industry—driven by people and market forces—in which the need to sell products and make profits has dominated.

The commercial organization of broadcasting did not just happen naturally; it was developed—in the face of rarely mentioned opposition—by people who would profit from the commercial organization of the industry (McChesney 1994; Starr 2004). Medium theorists often fail to explore the ways human actors or public policy have shaped the uses of technology. In addition, this perspective has little room for the kind of critical, intellectual activity on the part of active audiences that we saw in Chapter 8 happens all the time.

New Media and the Culture of Distraction

The new media have produced an era of abundance. There are more information, more media outlets, more mobile devices, more media content, and more communication options than ever before. But what has this increase in the quantity of media technologies done to the quality of our thinking and communication? A wide variety of analysts, from different disciplines and perspectives, have addressed this question, and many have concluded that our adoption of new media technologies is producing significantly negative social consequences. Interestingly, critiques of the impact of new media on social life have come mostly from people who are at the center of developing, studying, or using such media themselves. These are not Luddites who resist new technologies; they are mostly people who have experienced the effect of new media firsthand. Their concerns involve an overlapping range of issues that—while far from definitive—suggest an often uncritical embrace of new media may be overlooking some insidious effects.

Early Cautions

One of the early analyses of new media came from Sven Birkerts (1994), who picked up the questions asked by prior medium theorists and applied them to the post-television, digital age. The title of his book, *The Gutenberg Elegies,* suggested that he was working in the tradition of McLuhan. If McLuhan's *Gutenberg Galaxy* was about the transition away from print culture, Birkerts began with the premise that print culture was dead. His elegies were both a celebration of a bygone era and a warning about the future digital age. Bikerts argued that new media sped up processes already begun by electronic media, in particular allowing for a much faster flow of information and breaking the spatial connection between the physical and the social. The result was an increasing commitment to the instantaneous nature of computer-mediated communication.

In this digital age, where data seem almost limitless, Birkerts (1994) argued that our ways of thinking are changing. No longer do we value unhurried deliberation; quick decisiveness rules the day. We do not need to know about the world; instead, we need to know how to access the data that will tell us about the world. The abundance of information now available electronically and the complex ways of storing and manipulating it put a premium on a new set of skills—retrieving and referencing, rather than understanding.

The development of hypertext, in this view, was the strongest signal of a change in our culture. Using hypertext is different from the experience of reading. With hypertext, readers choose from a range of links to follow in an electronic document. Each link leads to another text with even more links. Even though we are using our eyes and looking at words, Birkerts (1994) argues we are engaged in a different sort of activity. Reading involves engaging with

ideas, listening to an author, and considering an argument presented in a linear fashion. In the social space created by reading, authors have a kind of cultural authority, at least while we are reading their work. Hypertext replaces the process of listening to a substantive coherent argument with a process that involves bouncing from text to text, often taking in only short snippets of an argument. Hypertext even challenges the very idea of authorship; the author no longer matters in the same way when readers are moving from one link to the next. In the world of hypertext, the experience of reading and the writer–reader relationship has changed.

Writing at the dawn of the digital age, Birkerts (1994) had the same concern as many other medium theorists before him: that new media would squeeze out prior cultural forms, including reading and rigorous thinking. Birkerts was also concerned that, as we become more and more enmeshed in new media technologies, we will lose any sense of unmediated experience, making the social world of media the only world we know or value. It's hard not to think of this sort of concern today when observing a group of people in a public space, all engrossed with their laptops and smartphones—and all ignoring each other.

Too Busy to Think: The Dangers of 24/7 Connectivity

Some of Birkerts' early concerns are echoed and developed by later analysts. Maggie Jackson (2008), a psychologist, argues that our embrace of new media has produced a sort of attention-deficit culture, expressed through the presence of constant stimulation, interruption, and multitasking. This fleeting culture of distraction, she contends, produces superficial "McThinking" that can be fun and engaging but that provides little intellectual nutritional value. Such a culture undermines our ability to focus, concentrate, and attend to the deeper and more substantive issues in life that are the bedrock of intimate social relationships, wisdom, and advances in culture.

While the ability of the Internet and mobile devices to connect people is typically celebrated as one of its greatest features, William Powers (2010), a journalist who covers technology issues, considers what he calls the "conundrum of connectivity." Yes, argues Powers, technology that allows us to connect to information and people from anyplace 24/7 is an awesome achievement. But history suggests that wisdom, insight, and perspective are gained from being *disconnected;* by creating time and space for solitude and contemplative thought. A healthy and vibrant life in the digital age, he argues, needs to involve a balance between the advantages of connectivity and the benefits of solitude.

Nicholas Carr (2008, 2010) is another critic who argues that the fragmented, transient, and hyperstimulative environment of the Internet and other new media contributes to ways of perceiving and thinking that are similarly fragmented and shallow. To make his case, Carr (2010) turns to experimental evidence from neuroscience showing that surfing the Internet indeed develops different neural pathways in the brain than does reading a book. The constant stimulus, fleeting distractions, frequent interruptions, and pervasive multitasking that characterize the contemporary media environment help produce a decline in people's ability to focus, concentrate, and engage in serious thought, he contends. The ability to concentrate, think seriously, read deeply, and follow an argument are not instinctual; they must be nurtured through training and practice that occurs when

engaging for extended periods of time with complex ideas and arguments, as we do when we read a book. The world of tweets, hyperlinks, Wikipedia summaries, text messages, viral videos, and Tumblr posts, however, do not promote such skills. Such constant stimulus—and, conversely, the lack of prolonged consideration—is literally affecting how our brains develop, Carr argues. And these changes affect how we think. Sustained contemplation is being replaced by fleeting and shallow reactions.

Generation Me?

Some critics suggest that, despite a world of knowledge at their fingertips, the younger generation that has grown up with new media is less informed, less literate, more self-absorbed, and more depressed than any that has preceded it (Bauerlein 2008; Twenge 2006). They point to the popularity of social networking as one source of the problem. The immediacy and personalized nature of social networking, such critics argue, emphasizes the value of newness and facilitates an extreme focus on the self and immediate networks of friends. Information or news that isn't about this narrow world is often of little interest. The result is a worldview that promotes entitlement and self-centeredness, what Jean Twenge (2006) dubbed "Generation Me." (Such entitlement, though, meets reality soon enough, and younger people, Twenge notes, have higher levels of dissatisfaction with their jobs and lives than earlier generations.)

The Internet and its ancillary mobile devices make up a medium of interpersonal communication rather than one of wide exploration and learning. A parallel from an earlier era might be that, instead of reading a book, such users are writing notes to their friends; both involve writing and reading, but the nature of those efforts are radically different. Instant messages, chat, and microblogs are primarily insulated communication about self and friends, not broader considerations of larger cultural, social, or political issues. Further, the trend toward briefer instantaneous messages not only threatens thoughtful communication, but it even promotes the erosion of traditional spelling, grammar, and punctuation that have long served as a useful foundation for serious communication (Bauerlein 2008).

This sampling of ideas and analyses raises provocative questions and identifies changes in broad social patterns that are clearly linked to changes in media technology. At their best, they recognize the influence of users of the technologies along with the economic, organizational, and political forces that shape the development of new media.

NEW MEDIA TECHNOLOGY AND SOCIAL FORCES

In his early analysis of new media, W. Russell Neuman (1991) used the metaphor of a tug-of-war to describe the push-and-pull between the technical capabilities of new media and other social forces. We have already seen how various media, including the Internet, were affected by social forces as they were developed and deployed. In this section, we explore more closely how user habits, commercial interests, and government regulation have influenced the tug-of-war shaping the development and application of new media.

Commercial Interests and User Habits

New media give users the opportunity for more control and more choice, which can lead to increased content diversity and a shift of power from media corporations to users. However, other social forces—especially commercial interests and user habits—often pull in the opposite direction, leading to sameness and conformity.

Economic forces such as those examined in Chapter 2 help limit diversity. The earlier shift from broadcast to cable television is a good example of this dynamic. Digital cable offers hundreds of channels, but more programming has not necessarily meant diverse programming. In the days of network broadcast television, viewers could watch the weekly program *Wide World of Sports;* with cable, they can watch a number of sports channels 24/7. With network broadcast television, children's cartoons were largely limited to Saturday morning; with cable television, children can choose from several cartoon networks. In short, as a new technology, cable television typically brought larger quantities of similar content from the same producers.

Though it is touted for its diversity and many producers, the Internet, too, has often served as a channel for more content from the same providers. Most users have deeply ingrained media habits that do not change dramatically simply because of new technological capabilities. In the early years of the Internet, well-known corporations could translate their brand-name recognition into an advantage because users were already familiar and comfortable with them. These media conglomerates also had the extensive investment capital needed to launch risky online ventures and the traditional media venues (newspapers, television, etc.) to advertise and promote them. As the web matured and major media companies developed more online content and focused their marketing strategies on the online audience, people spent more time online but visited fewer websites (Harmon 2001). As a result, instead of being new or different, many of the most popular websites to this day are the online extensions of companies with roots that predate the web.

For example, in early 2011, the top 50 U.S. websites (as measured by the Amazon-owned company, Alexa) included a number owned by traditional media and technology companies, such as Time Warner (CNN.com), NewsCorp (Foxnews.com, MySpace.com), Microsoft (MSN.com, Live.com, Bing.com, Microsoft.com), Disney (ESPN.com, Go.com), Apple, *The New York Times* (nytimes.com, about.com), NBC Universal (weather.com), and Comcast.

Over time, though, new media firms entered the Internet market and became major players themselves, also appearing among the top 50 U.S. websites in 2011. These included Google (Google.com, YouTube.com, Blogger.com), Yahoo (Yahoo.com, Flicker.com), Facebook, and Twitter. Today, the Internet's most popular sites are dominated by this combination of older companies that moved onto the web plus new Internet-based corporate giants. A miniscule number of these sites dominate web traffic. For example, despite more than a quarter of a billion websites available to users (Netcraft 2010), the 50 most popular U.S. websites account for about 40% of all pages viewed by Americans (Angwin 2010).

Thus, even with new technologies that enable a wider range of producers, major corporate players are the ones who continue to make the biggest splash in the new media environment. However, their route to dominance has not necessarily been an easy one, with companies searching for effective business models to use in a new technological environment.

The Business Models of New Media Companies

The most important force shaping the development and application of new media has been economic; major media players—old and new—have sought ways to profit from the capacities of the new media. This is never a simple proposition because another social force—users—have their own ideas about what they want or don't want from new media. The result has been an ongoing tug-of-war as media companies try to develop a business model that generates profits, while users often prove to be independent minded.

Managing Access: Portals and Search Engines

In the first phase of commercialization of the Internet in the 1990s, many firms looking for a successful business model focused their resources on developing *portals*—gatekeeping sites such as today's Yahoo! and MSN.com, where users start their explorations of the web—and search engines, most notably Google—which help users find what they want amidst the overwhelming material on the web. In many cases, these two functions were combined on a single site.

Portals are a good example of how the Internet's technological capabilities were steered toward traditional commercial goals, as well as how complex it was for the major media companies to assert control over the new media world. Portals are, in essence, doorways to the world of online media: they classify sites, provide key word searching of Internet pages, and even give short reviews of a variety of sites. Some of these portals have been among the most widely visited pages on the Internet. Over time, these sites were transformed from simple filing systems to an advertiser's dream.

One of the earliest portal sites, Yahoo!, began as a simple catalog of Internet sites organized by topics such as computers, sports, news, and health (Robischon 1998). Yahoo! helped users find information on the rapidly growing and chaotic Internet and thus quickly became popular. As a result of its initial popularity, Yahoo! was transformed into Yahoo!, Inc., a commercial site with advertising sponsors. What began as a practical solution to a user problem—navigating the Internet—was now driven by commercial concerns.

Soon, websites could track how long a user stayed on a page, something referred to as a page's *stickiness*. This was a key factor online advertisers considered when buying ad space as sticky sites could hold the attention of users long enough for them to notice the banner ads that ran across the top of the page. (At the same time, advertisers also began employing more intrusive techniques to attract users' attention, such as pop-up window ads that were impossible to ignore and ads with eye-catching motion and video.) To increase its stickiness, Yahoo! began adding features to its pages that eventually included a search function, news, e-mail, chat groups, and Yahoo! Clubs—bulletin boards devoted to everything from sports and science to politics and hobbies. With these new features, Yahoo! visitors lingered longer and explored more linked pages, allowing Yahoo! to charge higher rates for advertising. Advertisements could also be customized for specific users. For example, if you navigated to Yahoo!'s recipe listings, a banner ad related to cooking was likely to appear.

The success of Yahoo! led to many imitators developing similar sites with more or less the same features. By the late 1990s, the handful of search engines and portal sites were

generating more than a third of all advertising revenue on the Internet (Robischon 1998), and major media companies devoted substantial resources to developing and promoting these portal sites.

However, the portal strategy of the major media companies met with mixed results. The web portals employed a broadcast-oriented business model, based on attracting large audiences that could be sold for advertising revenue. But the downturn in the online advertising market in 2000—a result, in part, of the collapse of so many dot-com companies that were leading online advertisers—led to significant financial problems for many of the portals. In 2001, NBC announced that it was closing its NBCi web portal less than two years after it launched this would-be rival of Yahoo! and MSN. This followed a previous announcement by Disney that it intended to close its portal Infoseek. And AT&T's effort to build a powerful broadband Internet network was undermined by the financial problems of Excite@Home, whose Excite portal was another victim of the 2000 dot-com bust.

In contrast to Yahoo!'s strategy of promoting stickiness to its portal by adding more and more channels for content, Google maintained a simple main page design that highlighted its exclusive role as a search engine. Founded in 1998 by two Stanford students, Google today is the most successful search engine and has used this success to expand into a multifaceted media company. Google now offers a wide range of Internet-based services, such as e-mail (Gmail), a picture sharing platform (Picasa), a scheduling app (Google Calendar), a social networking tool (Google Buzz), an online maps service (maps.google.com) and Google Earth, a 3-D graphic design program (SketchUp), a web browser (Google Chrome), virtual tours of art museums (Google Art Project), news, various newsgroups, Google Books. In 2010, Google was the world's most visited website and was used as the primary search engine by 65 % of U.S. users. Google's software provides the search engine built into many websites, making Google one of the foundations of the Internet. Google became so popular that the verb *to google* became synonymous with *searching the Internet* (not only in English but, similarly, in German, Italian, and other languages).

Google's success is due, in part, to its unique approach. Early search engines ranked pages mostly based on how often the search terms appeared on a page. Google based its page rankings on the principle that the highest ranked pages should be those to which the greatest number of other sites link; if others found a site valuable enough to link to, then Google search engine users would likely find it useful as well. In doing this, Google highlighted better-known sites—giving an advantage to mainstream sources. It also achieved success by piggybacking on the efforts of large numbers of Internet users, who created the page links on which Google rankings were based. As we will see, this was an important step toward harnessing the free labor of Internet users that has become a central business model for Internet companies.

Instead of attracting a mass audience to a main site, Google also pioneered the strategy of selling much smaller, targeted audiences to advertisers. It did so by focusing on advertisements tied to search results that appeared only after results were generated. A search for "Boston Red Sox" would generate both page rankings and ads related to Red Sox tickets and products, for example. Advertisers liked the fact that their messages appeared directly to users who had already expressed interest in a related topic. Google later used the same strategy with Gmail, its popular free e-mail service. Gmail software monitors the content

of your mail and inserts subject-specific ads. If you write an e-mail to your friend about traveling to Argentina, your friend might receive an e-mail that includes a few "sponsored links" to websites offering flights, hotels, restaurants, and perhaps even tango lessons. Today, virtually all commercial websites use some form of targeted advertising, including Facebook's delivering of ads based on what you have listed as your hobbies, your hometown, and other personal information.

Yahoo! had long steered users to paid sponsors by listing their sites higher up on its "channels," which organized sites by topic. Google adopted the strategy by blending its search engine results with pay-for-placement features. Advertisers pay for prominent display in Google's key word search results, but—due to concerns that it might undermine the credibility of their results—the number of sponsored links are usually limited, at the top of the page, and clearly marked as such to be recognizable by users. Still, critics worry that commercial interests will make it more and more difficult for independent, non-sponsored sites to make themselves known to the average Internet user and for users to be steered toward sponsors' sites, with or without their knowledge.

The Limits of Selling Content

As we saw in Chapter 2, there were two basic revenue streams for traditional media. Media companies generated income by selling content to audiences, as with movie tickets or the price of a book, or by selling audiences to advertisers, as with radio and television commercials. Some media forms used a combination of the two revenue streams, as with newspapers and magazines. New media technology, however, upset this traditional media revenue world.

From their earliest years, new media technologies have made it very difficult for companies to sell content to users. Digitization made it simple for content to be copied, while the Internet made it easy for copied content to be shared. This combination was a disaster for traditional media companies. Users quickly developed a culture of sharing that undercut the ability of companies to charge for content. Newspapers had hoped users would pay to access their websites, but this rarely happened. When papers tried to charge, many users simply went elsewhere to find free equivalents.

The music industry's struggle against piracy is the best-known example of this tug-of-war between commercial forces and user habits. The music recording industry did not have an advertising revenue stream. The prices consumers had paid for records, cassettes, and CDs was their primary source of income; concerts were largely promotional tours to sell more recorded music. Consequently, when new media emerged, music companies wanted users to pay for music, as they had always done in the pre-Internet world. Users, though, quickly learned it was easy to copy and share music for free. Even users with qualms about violating copyright laws could be lured into a culture of sharing that made file swapping simple and easy. In such an environment, paying for what you can get for free doesn't make obvious sense—especially to young people who had never experienced the pre-Internet media business model.

Napster was the best-known site driving this trend. The Napster site enabled users to find and share music with other users, bypassing the need to purchase music. Many music listeners rejoiced at the development of music-sharing sites, celebrating Napster and its

imitators as a challenge to the highly concentrated corporate music industry. As music sharing developed, its freewheeling, collective spirit was, for some, a sign of the potentially democratizing and decentralizing tendencies of the Internet. At the same time, major music companies feared the devastating economic impact of the free distribution of songs over the Internet. And some musicians feared that online music sharing, which bypassed royalty payments, would threaten their livelihoods.

The industry turned to the legal system to limit the use of new technology, eventually winning its battle with Napster but, arguably, losing the larger war. The music industry aggressively pursued music "pirates," targeting Napster as the facilitator of millions of copyright violations. By 2001, as part of a settlement of the case, the original Napster site was shut down to reemerge later as a subscription pay site. But Napster proved to be the tip of the iceberg as a new generation of peer-to-peer (P2P) software emerged that enabled users to share files without the need for a central Napster-like site. Without a central site to target legally, it became extremely difficult to limit P2P file sharing, and such services expanded rapidly.

In addition to its legal strategy, the music industry also turned to technology itself to limit piracy, by installing various types of digital rights management (DRM) software on its products. Some DRM code limited the number of times a song could be copied, others limited the devices on which a song could be played, and some made it impossible to use a computer to rip music from a CD. DRM was wildly unpopular with users who complained of limitations on legitimate use of music they had paid for and were appalled when it was revealed that some DRM code installed itself on computers without notice and left users with major security vulnerabilities. A popular backlash against such restrictions led most music companies and music sellers to drop the effort. In a turnaround, sellers like Apple's iTunes even advertised the fact that their products were DRM free.

New media technologies and their utilization by consumers have led to significant changes in how the music industry operates. As the industry faced the reality of the file-sharing world, it lowered its prices, hoping to lure consumers back to paying for music by offering individual songs for less than a dollar. The industry hoped users would be willing to pay such a modest price for the convenience, reliability, and safety of legal music in contrast to risking virus infections and dealing with corrupted or poor-quality files that are sometimes part of file sharing. This approach found some success, with sites such as iTunes and Amazon's music download sites. However, the easy accessibility of downloading has meant a shift away from the longer album format to a renewed emphasis on singles as the standard unit of purchase for music fans, reducing revenue. As users grew accustomed to buying online, though, companies began to increase prices again, experimenting with charging more for new releases from best-selling artists. The industry also raised concert ticket prices, seeing such events as genuine revenue streams rather than just promotional vehicles to sell recorded music, and tried to license more music for use in commercials and films. Meanwhile, more musicians used the capabilities of new media to offer their music directly to listeners, setting up independent labels and websites or joining collectives of independent music artists who sold their music online.

The film industry faced many similar issues with file sharing, especially after the invention of BitTorrent software enabled faster sharing of much larger files. It, too, has turned to

legal efforts and invoked DRM and other technologies to limit such sharing. It has also tried to highlight the unique experience of theatergoing by promoting new 3-D films as a way to draw audiences to the theater and charge higher ticket prices.

The Wisdom of Crowds and the Use (and Abuse?) of Free Labor

Because commercial media companies have had difficulty selling media content to new media users, they have had to rely increasingly on selling users to advertisers. We have already seen how early portals and search engines depended on attracting audiences to generate revenue from advertisers. As such sites developed, they sought to entice users to stay longer on their sites (making them more valuable for advertisers) and began to target advertising more narrowly to specific users. But in more recent years, rather than giving users content that draws them to a site, many sites harness the talents of users to create content that, in turn, makes the site worth visiting.

Some observers have praised "smart mobs" (Rheingold 2002) and the "wisdom of crowds" (Surowiecki 2005) when connected via the Internet and mobile devices, especially in relation to Web 2.0 capabilities. If large groups have members with diverse opinions and experiences, who are independent of each other, decentralized, and able to collect their ideas, then large crowds can generate "wisdom" unavailable to any individual member (Surowiecki 2005). Perhaps the best known example of this approach in practice is Wikipedia, the wiki-based online encyclopedia supported by a nonprofit foundation. Wikipedia's millions of entries are written by volunteer users who also police each other's entries for accuracy and verifiability. Collectively, the group of writers and editors produce content that is consulted by millions of other users.

But what if the voluntary efforts of many users could be harnessed for private profit? Many media companies adopted exactly this approach in creating some of the Internet's most popular websites. Instead of focusing on producing content, social networking sites (Facebook, MySpace), photo- and video-hosting sites (Flickr, Photobucket, YouTube), blog publishing and microblogging services (Blogger, Twitter, Tumblr), and others (LinkedIn, Craigslist, eBay) depend upon users to post content that draws visitors. (This even includes popular porn sites that feature live sex chat and video submissions from "amateurs.") By creating content that draws more visitors, users help make the sites attractive to advertisers and thus profitable for site owners.

Such trends concern some observers. Jaron Lanier (2010)—an early developer of virtual reality—argues that many of the applications of Web 2.0 that celebrate sharing information, collaborative efforts, and collective wisdom have come to actually facilitate something quite different. Such media applications, he contends, undermine the integrity of the individual by emphasizing a "hive" mentality in which independent thought and achievement is neglected and undervalued in favor of the faceless—and easily replaceable—micro-contributions of many. In this context, commercial firms have discovered that they can harness and harvest the free labor of others to generate profits for themselves. YouTube, Facebook, Twitter, and others make money off of the fact that so many people are willing to fill its sites with content without compensation.

The harnessing of user-generated content—some of which is personal—to meet the needs of advertisers has, in turn, raised serious concerns about online privacy more generally.

THE THREAT TO PRIVACY: THE EXPANSION OF BEHAVIORAL TARGETING

In 2010, the *Wall Street Journal* published a series of articles on what it called "one of the fastest-growing businesses on the Internet . . . the business of spying on Internet users" (Angwin 2010). The extensive investigative report concluded that "the tracking of consumers has grown both far more pervasive and far more intrusive than is realized by all but a handful of people in the vanguard of the industry" (Angwin 2010). While privacy advocates had long tried to warn the public and the government of the intrusive nature of online spying and the inadequacies of current regulations (Solove 2006), the alarming report from a conservative pillar of the business community helped to spark renewed interest in the topic.

The investigative series found that the nation's top 50 websites each installed, on average, 64 different pieces of tracking technology on a visitor's computer—almost always without warning. Sites aimed at children were even more aggressive in tracking users than those aimed at adults (Stecklow 2010). This tracking technology is the foundation for *behavioral targeting,* advertising that is triggered by a user's actions.

The best-known form of online spying involves cookies. When you visit a website, many of them assign you an identifying number stored on your computer as a bit of code, known as a *cookie*. Cookies were first created in 1994 for the early web browser, Netscape Navigator, to enable online shopping by allowing a consumer to place different items in a virtual shopping cart. As a consumer browsed through a site's various pages, the cookies kept track of the items placed in the cart and remembered them when the customer was ready to check out.

The online retailer Amazon.com was a pioneer in expanding the use of cookies to connect all of your actions on its site, including the pages you visit, the products you buy, and the user information you provide. If you browse the page for a book on, say, Latino history, the site remembers this and recommends related books and DVDs. When you later return to Amazon, the site reads the cookie it installed earlier and continues to recommend items related to your interests. It also remembers personal information you might have provided on your last visit, such as your name, address, and credit card information. These features of cookies can be quite useful in learning about related products and speeding up the checkout process.

But the use of cookies soon extended beyond single-site applications. Now, cookies are mostly planted by *trackers*—companies whose business is based on spying on and recording the actions of users on the web—who plant what are known as "third-party cookies" (Angwin 2010). Trackers can get their files on your computer by paying a website to let them do it. They can also hide these files in banner ads or in free downloads, such as games, apps, ringtones, screen savers, and desktop images. For example, when you visit a site (the first party) with a banner ad for a company (the second party), you are likely to also get a cookie from the advertising firm that actually placed the banner ad—the "third-party" tracker.

Because the ad networks that place these cookies can contract with thousands of different websites, they are in the position to accumulate an enormous amount of information about you, your interests, and your online habits across the Internet. Stream videos from

Netflix, post a hobby on your Facebook page, browse the stories on a conservative political website, book a flight and hotel for your Colorado vacation, check the weather forecast for your hometown, click on dozens of "like" or "don't like" buttons at many different sites, visit an Internet dating site, look at Thai restaurants in your city, buy tickets to a professional sporting event, consult a health site for information on your hyperactivity or weight loss—and all of this can become part of your data file. From this information, the tracker firm uses sophisticated statistical analyses and algorithms to develop an exhaustive profile of you that identifies—or predicts—your sex, age, income, residence, marital status, whether you have children or own a home, your likes and dislikes, your probable health issues, and a host of other characteristics. This profile is used to advertise products you are more likely to buy. Visit a bank or insurance site, and the site might steer you to a particular set of products based on an estimate of your income; visitors from different income brackets would see totally different offers.

Advertisers used to buy space on specific websites; now they mostly deal with these third-party trackers who can deliver access across many different sites to a specific group of people who fit a certain profile. One 17-year-old woman featured in a *Wall Street Journal* story had been concerned that she might be overweight and had consulted websites for advice. Later, she was inundated with weight-loss advertising whenever she went online. "I'm self-conscious about my weight," she said. "I try not to think about it. . . . Then [the ads] make me start thinking about it" (Angwin 2010). That's exactly what advertisers want: to reach audiences already predisposed to respond to their messages.

The technological capacities of the Internet are used for other privacy-invading practices, too. Often operating in a legal gray area, *scraping* involves copying online conversations and personal information from social networking sites, résumé and job seeking sites like Monster.com and LinkedIn, and online forums where people might discuss a wide range of aspects of their lives including hobbies, health concerns, exercise regimens, relationships, politics, and school (Angwin and Stecklow 2010). Sometimes scrapers sift through this information to assemble profiles of individuals that are sold to employers, advertisers, and other websites; this can include linking people's real names to the various "screen names"—or pseudonyms—they might use on some sites. Other times, scrapers sell "listening services" to clients, reporting what people are saying about a particular product or topic. Social networking sites, such as Facebook and MySpace, have been especially fruitful sources for information scrapers as they often include a great deal of personal information that users have voluntarily posted online. A company might pay a data scraper to assemble both snail mail and e-mail addresses of people who have discussed their products—along with similar information about their online friends.

Developers and users concerned about privacy have tried to limit the amount of information advertisers can gather. Cookies were originally designed to prevent the collection of data across more than one site, but advertisers found ways to work around these restrictions. Many users learned to reduce the invasion of privacy by regularly deleting cookies from their computers, but trackers created new types of cookies—known as *flash cookies*—that can regenerate themselves even after they have been deleted by a user. Trackers have also developed *beacons* that provide real-time data on a user's actions,

including tracking what they are typing and where their mouse pointer is moving. All of these data are compiled and auctioned off with lightning speed via data exchanges to potential advertisers—often within seconds.

As the accumulation of information about Internet users becomes more and more sophisticated and detailed, consumer advocates have called for new regulations to limit the amount and type of data that can be compiled, while allowing consumers to find out what information is known about them. In 2008, Microsoft's product planners wanted its Internet Explorer browser to automatically prevent online tracking unless users opted to switch settings reducing their privacy. Company executives overruled the plan, fearing it would undermine their ability to make money from selling online advertising (Wingfield 2010). In 2010, the Federal Trade Commission (FTC) called for a "do not track" option that would allow users to opt out of tracking cookies entirely, a move advertisers vehemently oppose. In a development that echoes the film and video game industry's efforts to preempt regulation in an earlier era, in 2011, a group of online tracking companies launched a service called the Open Data Partnership to let consumers see and edit the information that has been collected on them. However, this effort does not allow users to opt out of data tracking as privacy advocates want (Steel 2010).

As alarming as such practices by advertisers are to many observers, they likely pale in comparison to what government intelligence agencies can do. An advertiser can collect a detailed profile that includes what products you like or dislike and what online activities you engage in. A government seeking to identify potential threats—or simply political dissidents—could use similar techniques to create political profiles of users. However, shrouded behind the veil of "national security," the extent and range of such data gathering capacities in the U.S. and other countries are largely unknown. The little information that is available suggests that the degree of data gathering on citizens by governments around the world is vast and growing at an exponential rate. This capacity for government surveillance, too, is a major concern of privacy advocates.

The debates about privacy in the digital age will certainly continue and will ultimately be determined by social forces—market interests, user concerns, and government regulations—rather than technological ones.

IN SEARCH OF AN AUDIENCE: THE LONG TAIL AND THE FRAGMENTATION OF MEDIA

The online subscription movie company, Netflix, offers more than 100,000 DVD titles for rent (and some for streaming) to its more than 10 million subscribers. That gives subscribers a vastly wider array of film content to choose from than is traditionally available either in theaters or in video rental stores. Out of these 100,000 titles, a large number of Netflix members rent (or stream) a relatively small number of well-known new Hollywood films, the kinds of films that might have recently played at a local first-run movie theater. But Netflix also rents a huge number of different DVDs to relatively small numbers of subscribers, such as fans of classic film noir movies, nature documentaries, Japanese anime, or other niche fields. These latter titles make up a "long tail"—a large number of items sold

(or in this case rented) in relatively small quantities (Anderson 2008). While the vast majority of media products—such as books, DVDs, and songs—sell in relatively small numbers, the combined total of all these small-audience media products equals a large, and potentially highly profitable, consumer market. At Netflix, for example, few subscribers are likely to rent, say*, Godzilla: King of the Monsters* or *Simply Ballet: A Master Class for Beginners,* but collectively, the availability of such eclectic titles draws a large number of subscribers and forms the company's business model. Netflix has found a substantial audience of subscribers by assembling a wide variety of content. With a huge and diverse product line, some title will be hugely popular and will be in high demand among subscribers. Most of the available titles, however, will be of interest to a relatively small segment of Netflix customers; still, a small number of rentals for each item in this vast film library provides a steady revenue stream.

The Internet similarly offers users a vast array of possible sites to visit. That's because technological change has allowed the number of media "producers" to expand dramatically. Though major websites with sophisticated original content can cost millions of dollars to develop and maintain, a simple blog, for example, can be created inexpensively and with almost no specialized technical knowledge. Consequently, there is a huge range of websites and blogs providing information and diversion that would not have found a home in the world of "old media."

However, as we have seen, most of the time, most users will gravitate to a relatively small number of major websites, mostly operated by major media corporations. These are the equivalent of the Hollywood hits that a large number of Netflix users will watch. In fact, while producers, such as blog writers, find online material easier and cheaper to produce, they still face the difficult task of finding an audience. They do not have the sorts of resources and staff that enable major sites to constantly generate new content. Even if a small site does offer unique content, it still faces an uphill battle in becoming known. Internet memes—such as viral videos that circulate broadly by being forwarded to friends—are rare (and fleeting) phenomena compared to the amount of content that is generated on the web. The overwhelming majority of Internet sites have a modest or miniscule number of visitors—if any. Most blogs, for example, are rarely read; the vast majority are unknown, and many don't survive very long. In fact, between 60% and 80% of blogs are abandoned within one month (Caslon Analytics 2009).

In this regard, new online media are the quintessential niche media, often reaching small fragmented and specialized audiences. The niche orientation of mass media, driven in large measure by advertisers who sought to reach specific audience segments, was already well under way before the Internet's arrival. But the specific organization and technological capabilities of the Internet sped up the pace of audience segmentation. This is an example of how the technological properties of new media—especially their flexibility and relatively low cost—work in concert with both social developments, such as multiculturalism, and economic forces, such as the search for new consumer markets, to produce new patterns of social communication.

The implications of niche, rather than mass, media are far from clear. Some have long seen niche advertising and media as contributing to a fragmentation of American society, a breaking of the common cultural bonds—which were once reinforced and reproduced

by mass media—that formed the basis for a national identity in the United States (Turow 1997). Others see the seeds of a new cultural democracy in which alternative meanings circulate and communication patterns are as much people to people as they are top down, creating spaces for new forms of public communication and participation.

USING NEW TECHNOLOGIES

Whether or not they are concerned about privacy, finding an audience, or the Internet's impact on their ability to think, hundreds of millions of people use the Internet and other new media. Some will make use of the full range of capabilities offered by the new media, for example, to express their creativity, have fun, connect with others, and produce diverse content. Others will use new technologies for political purposes.

Creativity and Diversity

The Internet and other new media technologies have become a source of pleasure for many users. The specific technological properties of new media, interactivity above all, address some human desires that older forms of mass media did not engage. These desires include participation, identity building, socializing and networking, and self-representation. Social networking sites, for example, allow people to maintain (and perhaps even create) a network of friends, colleagues, or schoolmates. By posting pictures and disclosing their social ties, tastes, feelings, and relationship statuses, users make themselves "visible," affirming their identities and their right to exist in cyberspace. Leaving a message on the "wall" of a friend on Facebook or providing regular Twitter updates from your vacation travels, but also contributing to Wikipedia and participating in a blog (by writing or reading), contribute to building community: People gather around specific interests, recognize each other as part of the same group, often have fun, and develop a sense of belonging and loyalty toward the group.

To some extent, some of these new media platforms simulate daily face-to-face interaction, most notably virtual worlds (online simulated environments inhabited by three-dimensional avatars as virtual embodiments of physical persons) and online games (Kaplan and Haenlein 2010). Users can replicate in virtual space many of the actions of real life. Conversely, avatars in virtual worlds can do things that their human counterparts cannot do in life: They can have political power, travel the globe, or virtually experience whatever their fantasies suggest. In this way, virtual worlds allow users to escape their real lives and use their imaginations to create parallel existences for themselves.

Most users, though, take advantage of the Internet for more mundane tasks, such as sharing photos with family, e-mailing or using Skype to stay in touch with friends and loved ones, making travel reservations, and using the convenience of online banking. They consult the Internet for medical information, weather forecasts, sports scores, and movie reviews. They have fun, laugh, learn a little, and stay in touch with friends, all of which are enabled by new media technology.

Political Engagement

Do these new technologies also have more serious implication for political life? As with other aspects of social life, it depends on how people choose to use the technology. For example, writing a blog or participating in a Facebook political group about environmental issues can be seen as a way for citizens to communicate their ideas, exercise their rights of free expression, and engage in forms of democratic participation. However, posting such support online requires little effort and may be detached from any real commitment. This kind of political activity bears little resemblance to off-line political activity in support of environmental protection, such as educating others about issues, participating in a demonstration, or changing your lifestyle by riding a bike instead of using your car. In addition, much online activism is individual rather than collective; you just have to click a few buttons to sign an electronic petition, send a prefabricated letter to your Congressperson, or make a donation—but this often involves little, if any, commitment to ongoing political participation.

On the other hand, citizens, grassroots organizations, and groups working for social change have used media technologies—old and new—to distribute alternative information, organize and call people to action, raise awareness, and build communities. In some cases, people have used media technologies such as radio and television for different (noncommercial) purposes. Miners' radio stations in Bolivia, for example, have been active for more than 60 years, an example of "community radio," small-scale, nonprofit media projects, typically owned and operated by local organizations, that emphasize local participation, collective ownership, and self-governance (Howley 2009; O'Connor 2004). Community radio is perhaps most significant in the rural areas of developing countries. For example, in 2006, there were 150 radio stations broadcasting with community radio licenses in South Africa (Bosch 2010). In Haiti, where about half of the population is illiterate, community radio performs a crucial educational and informative role. Following the 2010 earthquake, community radio stations, often operating solar-powered "community addressing systems," kept citizens informed about emergency response and public health matters (Milan 2010a).

Though less accessible than radio, television has also been used for community purposes through community access stations and other vehicles. For example, Paper Tiger Television began televising alternative news and commentary in New York as early as 1981, and in 1986, Deep Dish TV became the first network for national distribution of local independent video production.

Independent media projects existed long before new media such as blogs emerged. However, new media have made it easier to produce and distribute independent content. For example, technology activists have established alternative, noncommercial Internet service providers, which offer users secure e-mail and web-hosting services (Milan 2009). Such groups developed out of the idea that "the way these networks were created, run and developed, mirrored as much as possible, the direct, participatory, collective and autonomous nature of the emerging social movement(s) themselves" (Milan 2010b: 88–89). These servers are run by a small collective of experts; they operate independently from commercial infrastructures, and they do not charge for the services they offer. On the software front, grassroots developers have designed several open source tools from

scratch and released them for free in order to counteract the proprietary software politics of most multinational computer firms. Mobile devices, too, have proven to be useful to political activists and have been used to call people to action at demonstrations around the world and communicate with a broader support network (Milan 2004). Facebook, YouTube, and other new media were used extensively by the young activists who were central to the 2011 Egyptian revolution.

For many people, new media technology can offer a significantly different way of accessing, manipulating, and using information. But any communication advantage provided by new media is distributed unevenly, replicating existing informational inequalities. Those who are already better educated, more familiar with emerging technologies, and better able to afford communications devices will be precisely the people who benefit most from new media.

CONCLUSION

We have traveled a long way in this chapter, from the differing capacities of media technologies to the intervention of social forces in shaping the development, application, and influence of such technologies. We have seen the pitfalls of a technologically deterministic view that neglects the role of human agency while also considering how media technologies contribute to the social environment in which we live.

This overview reminds us that media technologies are always embedded in specific social, economic, and political contexts. Social change is not linear; it involves the various "tugs-of-war" described in this chapter that can sometimes lead to unexpected developments. Citizens don't always use media technologies as they are initially packaged. User habits change; Internet sites and platforms that are tremendously popular today may well fall out of favor to be replaced by new favorites. Corporate players will continue to try to shape the new technologies in ways that benefit their search for profits. And, by their action or inaction, governments will continue to influence the development and use of new media. The direction of such change is uncertain, but we know that the future of new media will be determined by the actions of people, not by any quality inherent in the technology.