Revolutions in Communication

Media History from Gutenberg to the Digital Age

2nd Edition

Bill Kovarik

Part III

The Electronic Revolution: From "National Neighborhoods" to the Global Village

It would not be long before the whole surface of this country would be channeled for … a knowledge of all that is occurring throughout the land, making, in fact, one neighborhood of the whole country.

Samuel Morse, February 15, 1838

1 The Significance of the Electronic Revolution

Rapid communication over long distances has often been associated with divine forces, for example, in Greek and Roman mythology, with Nike, Hermes, and Mercury. For ordinary mortals, communication has historically been confined to the speed of a running horse or fast ship. History and literature are full of references to the role of messengers bringing the long-delayed news of victory or defeat. The runner from Marathon, the messenger in Shakespeare's *Henry IV*, the signal flags of Trafalgar are among many examples of the problems with communications in pre-industrial history and culture.

Perhaps the classic example of news failing to arrive in time involves the needless loss of life at the Battle of New Orleans. When the armies of the United States and Britain fought the battle on January 8, 1815, the generals could not have known that a peace treaty had been signed before Christmas of 1814. It took seven weeks for the fastest sailboat to carry the message from London to Louisiana.

Yet in about fifty years, the same message would have taken less than an hour to be relayed by electronic telegraph using Morse code. The unique combination of hardware (electric wires) and software (a simple arrangement of dots and dashes) changed the world, brought down the barriers of time and distance, and opened the door to the electronic and

digital mass media revolutions. No other development since printing had so many impacts in so many different walks of life.

This section on the Electronic Revolution organizes the history of three technologies:

- Chapter 7 covers the telegraph and telephone from the 1830s to the present.
- Chapter 8 covers radio from the 1890s to the present.
- Chapter 9 covers television from the 1920s to the present.

2 The Telegraph and Telephone as Mass Media

Historians usually see the telegraph and telephone as one-to-one personal media, entirely separate from mass media—at least until the late twentieth century, when individual and mass media were converged in digital networks.

Yet media can't be so easily separated. Although the telegraph carried private, one-to-one communications in the form of telegrams, it also allowed news agencies and wire services to carry political and economic news between mass media outlets. Between the 1850s and the 1980s, it provided the essential infrastructure in a two-stage mass communications system. Wire services like Reuters, Havas, and the Associated Press served an essential function distributing news via telegraph.

The telephone system, although originally designed for private one-to-one communications, also served as the essential infrastructure of national radio networks when they emerged in the 1920s. News, drama, comedy, and other programs originating in one place would usually be carried to the rest of the country by static-free telephone lines and then broadcast by regional radio stations. Like the telegraph, the telephone was indispensable to the two-stage mass communications system until satellites arrived in the 1980s. The business models for the telegraph and telephone also had an impact on the overall shape and diversity of the mass media.

In the United States, a joint Western Union–Associated Press monopoly shaped the economics of publishing, creating barriers to entry and making it difficult for alternative newspapers to compete. The very device that expanded the spatial and temporal reach of communication seemed to weaken its depth and flexibility. Younger journalists like Will Irwin complained that the newspapers spoke in the voice of an older generation, as we have seen in Chapter 3. Meanwhile in Europe, the competitive economics of publishing took different forms since government-owned telegraph and telephone systems did not favor any one particular group of members, and this contributed to a greater diversity of expression.

While the electronic revolution began with the telegraph and telephone, these prototype electronic technologies were the basis from which radio, television, and satellite broadcasting developed. Their scientific origins and business models are intertwined. Industrial print and early radio and television grew up in an interdependent network, around the

telegraph and telephone, from the beginning. The concept of media convergence is not just an artifact of the digital age, but rather, a constant condition of overlapping technological influences in mass media history.

3 Cycles of Open and Closed Technologies

Innovation in communication technology often follows a cycle that can be described in three stages: open, closed, and alternative. The first stage of the cycle involves open experimentation, competition, and development of a new media. It may be followed by a second stage in which stakeholders close the technologies around profit-generating activities protected by patents. If the stakeholders are successful, they may be able to dominate the market. In a third stage, successful monopolies become stagnant, charging more and more money for fewer and fewer services. The downward spiral often spurred the search for circumventing technologies as alternatives to the old monopoly. Once a promising new avenue is found, the open competition starts again.

Although the cycle of open–closed–alternative technologies is a useful generalization, it doesn't fit every media technology exactly. As we've seen in Section II, photography was born as an open source technology, with its exact secrets revealed from the outset. In contrast, the earliest cinema companies attempted to control the industry through patents and industry associations. Although direct industry control failed, indirect content control through the Motion Picture Production Code become the norm.

As we will see in Chapter 7, telegraphy also went through a period of open experimentation, and Samuel Morse, for one, wanted it to stay that way. Like Daguerre, he also hoped that the government would own the hardware. But in the US, as over 500 telegraph companies emerged, fought, and then merged by 1866, telegraphy became a national monopoly under the Western Union company. Operating without regulation, Western Union and its sole partner in the Associated Press exerted an enormous amount of control over which ideas and people would compete in the information system of the nineteenth century.

One response was a US campaign for legislation to transfer the telegraph to the Post Office, which was already taking place in Britain. When that failed, the same campaigners who fought the telegraphic monopoly helped create the telephone system in the 1870s. Through its control of patents and market manipulation, the Bell telephone system also became a monopoly around the turn of the twentieth century. Anxious to avoid problems that had surfaced with Western Union, the US Justice Department forced AT&T to take a neutral "common carrier" position with respect to content and charges for services.

As we will see in Chapters 8 and 9, broadcasting also began with a cycle of open innovation among scientists like Heinrich Hertz and James Clerk Maxwell. Entrepreneur Guglielmo Marconi attempted to control the emerging radio telegraph system, and was initially successful, but the US and UK governments curbed the monopolies in the pre-World War I period. American Marconi eventually became the Radio Corporation of America, which in turn created the National Broadcasting Company.

Meanwhile, inventors like Reginald Fessenden turned to radio telephony, and some of their key patents were purchased by AT&T. By the 1920s, radio technology had more or less closed, and television technology was opening. By the 1950s, television technology was closed, and the search for circumventing technologies would lead to satellite and cable systems by the 1980s and to digital imaging systems in the 1990s and twenty-first century.

4 Re-tribalization and the Global Village

Electronic communication through radio and television arrived relatively quickly, over the course of only a few decades from the late 1920s to the early 1950s. Print oriented societies that had once been organized around slower, linear forms of culture were now facing what seemed like a chaotic set of changes. Many regular people felt utterly swamped by modernity. And even Thomas Edison, George Eastman, Guglielmo Marconi, and other inventors never felt comfortable with the twentieth-century world their own inventions helped to create.

Marshall McLuhan characterized the social changes created by electronic media as a "re-tribalization" into a "global village." Radio and television had created new "tribal" forms of art and entertainment with an emphasis on inclusiveness and nationalism. Winston Churchill's speeches on radio, Franklin Roosevelt's Fireside Chats, and, on the dark side, Adolf Hitler's use of radio in the 1930s and 1940s—all of these were examples of the new tribalism and nationalism. Other examples included the way radio became the medium for rock 'n' roll in the post-World War II era.

Meanwhile, the old print culture continued to dominate politics, law, education, and commerce, with its emphasis on individuality and linear thinking. The coexistence of the two contrasting forms of society and experience were, McLuhan thought, "a formula for complete chaos" (McLuhan and Powers 1989).

With society changing so quickly in McLuhan's era, in the 1950s and 1960s, it's easy to see why people would search for explanations. But it turned out that the chaos wasn't so complete. Audiences select media based on their own preferences; cultures can construct their technologies, not just react to them, if they have the freedom to do so.

How they constructed these technologies, and the extent to which they are free, has been a wide-open controversy. In Ray Bradbury's novel, *Fahrenheit 451*, people watched television to be part of a family and cared very little if the state banned their books. There is something of that search for community and tribalism in the way people watch television today. But that's not the whole story. There is the possibility of participating in, and generating, our own media systems. McLuhan's fear of chaos in the coexistence of print and electronic cultures turns out to be conservative, deterministic, and not quite in step with the twenty-first-century experience.

5 Social Responsibility

From the 1920s on, the power of amplified sound and moving images, in the form of cinema, radio, and television, were suddenly available to national leaders, creating new opportunities to both abuse and elevate the human condition.

Certainly the tragedies of the Holocaust, the Rwandan and Bosnian genocides, and countless others, would not have been possible without a mass media to incite hatred. Radio and television may have had a particularly deep role in this, although the print media shows up in the record as well, for example, in the way the *Dur Sturmer* newspaper carried grotesque and virulent anti-Semitism in the 1930s in Germany.

Radio and cinema delivered very strong messages of hatred in Germany in the 1920s and 1930s; radio and newspapers were the vehicles for inciting genocide in Rwanda in 1994; and television was the vector for hatred in Bosnia in the late 1990s.

The consequences for responsible publishers and managers in the German, Bosnian, and Rwandan media included long prison sentences and (in one case in 1945) execution. So the idea that social responsibility is expected of media professionals is certainly bound up in the punishments that have been meted out for criminal behavior.

Like the printing press, however, the new electronic media also provided many opportunities for expanding tolerance, diversity, and freedom. Radio rallied the public and was a key ingredient in elevating sentiment to fight the Nazis in the 1930s and 1940s. Televised news helped crystallize empathetic public opinion around civil rights issues in the 1950s and raise appropriate questions about the Vietnam War in the 1960s.

Still, the international distortions of the mass media have proven difficult to counteract. The imbalance in the media power of developing nations, as compared to the industrialized West, created what is sometimes termed "Hollywood hegemony." And the apparent threat of Western modernity to traditional cultures has created violent reactions in recent decades.

Today, with instant, global, full spectrum communication possible through dozens of media, we are indeed a global village, although not a peaceful one, as McLuhan accurately predicted. We are not yet reconciled to each other's differences, aware of each other's strengths, or tolerant of each other's weaknesses.

As Henry David Thoreau once observed, communication technology can be nothing more than an improved means to an unimproved end. And yet, a larger and more positive vision for the role of mass media technology, not fully cast, is still being articulated.

7

The First Electronic Revolution: Telegraph and Telephone

It is obvious, at the slightest glance, that this mode of instantaneous communication must inevitably become an instrument of immense power, to be wielded for good or for evil …

Samuel Morse, 1838

There are only two forces that can carry light to all corners of the globe—the sun in the heavens and the Associated Press down here. I may seem to be flattering the sun, but I do not mean to do so …

Mark Twain, 1906

1 The Telegraph as the First Electronic Network

The telegraph arrived in the mid-1840s as part of a widespread revolution in communications that included mass production of newspapers, magazines, and books, along with improvements in transportation such as canals, steamships, and railroads. The invention marks the beginning of the electronic revolution, which led to telephones, radios, and televisions. It was also one source of the digital revolution, since Morse code, based on a dot-or-dash signal, is a binary software system.

Socially, the telegraph was the first electronic network, or as historian Tom Standage said, the "Victorian Internet." Telegrams were delivered within hours and responses could be sent right away, with an effect somewhat like an e-mail system (Standage 1998). Politically, the Western Union telegraph system, in tandem with the Associated Press, became the first monopoly in America. In Europe, governments took over the telegraph companies to avoid the abuses of a monopoly system apparent in America. Meanwhile, inventors worked on a way to circumvent the monopoly through a system called the telephone.

1.2 Signals over distance

The problem of signaling over a distance is an ancient one, and some of the most complex systems have been used in military campaigns. Greek historian Thucydides described

naval flag systems in the Peloponnesian War that may have been similar to those still in use today. The Roman army used a complex "box cipher," according to historian Polybius. The cipher used a system of two torches whose positions could be used to indicate twenty-five letters, with 1-1 representing A; 1-5 representing E; and 5-5 representing Z (Kahn 1967).

The term "telegraph" was first coined for a 1792 French invention, also called the Napoleonic semaphore, by Claude Chappe. This original mechanical telegraph was a system of pivoting shutters placed atop signal towers to send coded messages. The system was used extensively by the French and British military during the Napoleonic era to carry signals from Paris and London to the fleets at naval bases along the coast.

Telegraph towers were used only by the government, but they were widely known, and the word "telegraph" quickly entered the popular lexicon. When Admiral Horatio Nelson sent a ship-to-ship message using traditional naval signal flags just before the Battle of Trafalgar in 1805, newspapers at the time said he "addressed his fleet by telegraphic communication" with the famous message: "England expects that every man will do his duty" (*Times*, London, December 2, 1805).

Figure 7.1 First telegraph—The "optical" telegraph was developed by Claude Chappe in France forty years before Samuel Morse began thinking about using electricity for signals over distance. The optical telegraph was too expensive for routine use and could not be used in bad weather. 1805 illustration, Library of Congress.

Businesses were not able to use military systems, so when events were pressing and a few hours' advantage could mean large profits, news would be sent by carrier pigeon. In 1815, a group of London stock speculators learned of Napoleon's defeat at Waterloo by carrier pigeon, allowing them to buy stocks in advance of the rapid rise in value when the news became official. Carrier pigeons remained a useful tool for news agencies like Havas in Paris until the advent of the telegraph in the 1840s. For most people, couriers or the regular mail were the only ways to send messages, and important information could easily be delayed.

2 Samuel Morse and his Code: The Software of Telegraphy

It's often said that Samuel F. B. Morse invented the telegraph. But as we have seen, there were many kinds of "telegraph" in use during the early 1800s. What Morse really invented was the software—the Morse code—that made it easy to use telegraphic devices. It was a key insight, similar to Gutenberg's invention of moveable type, and Tim Berners-Lee's idea for a world wide web. In these and many other cases, a rising technical capacity is held back until inventors arrive at the key insights.

What obsessed Samuel Morse about long-distance communication was not military power or the stock exchange, like other telegraphic inventors. Instead, he was motivated by his wife's sad death in 1825 following childbirth. He was in Washington, DC, painting a portrait of the revolutionary war hero Marquis de Lafayette, and she was dying in Connecticut. The letter informing him of her death took five days to reach him. It was a cruel blow, made worse by the gap in communication (Morse 1914). After his wife's death, Morse spent years studying art in Europe. On a ship homeward bound in October 1832, he began talking with other passengers who were interested in electromagnetic experiments. Pacing the deck after dinner one night, he came up with the idea of sending signals through wires and sketched out his ideas in a notebook.

2.2 Foundations of telegraphy

The idea of an artist like Morse becoming an inventor may seem far-fetched, but Morse was a Yale University chemistry graduate and came from a university tradition that saw "arts and sciences" as parallel and interrelated pursuits. Morse's technical insight was not to overcome the mechanical problems of transmitting bursts of electricity; that had already been accomplished by many others.

Steven Gray first sent electric current 700 feet through a line in London in 1727. Benjamin Franklin in the United States was famous for his experiments with electricity. And in England, William Fothergill Cooke and Charles Wheatstone, unknown to Morse, were working on a complex telegraph sending-and-receiving system that was patented on June 12, 1837. The Cooke and Wheatstone system used five wires and a pattern of letters

that could be selected or read through indicator needles on either end (Munro 1891). And in British India, an inventor named William O'Shaughnessy invented an improvised telegraphic system in the 1840s.

Fortunately, Morse was not well informed about other inventors at the time, and persisted despite many obstacles. He developed a working mechanical system that was an improvement over other electrical telegraphs. And like Cooke, Morse originally tried a system of numbers for individual words and used electric signals to mark a paper tape. Morse patented his device on October 3, 1837.

Working with a collaborator, Alfred Vail, Morse continued to develop the simplified set of dots and dashes known as Morse code. To create the code, Vail and Morse puzzled over the problem of the relative frequency of letters in English. They wanted to match the simplest signals with the most frequent letters. A visit to a nearby printing firm helped solve the problem. In a typical type font, printers stocked 12,000 letter Es and 9,000 Ts, and

Figure 7.2 Franklin's kite—In June of 1752, American printer and scientist Benjamin Franklin raised a kite to test his theory that lightning was similar to the charge that could be generated with chemical batteries. This extremely dangerous experiment was one of many being conducted at the time into the nature of electricity. Henry S. Sadd, c. 1840, Library of Congress.
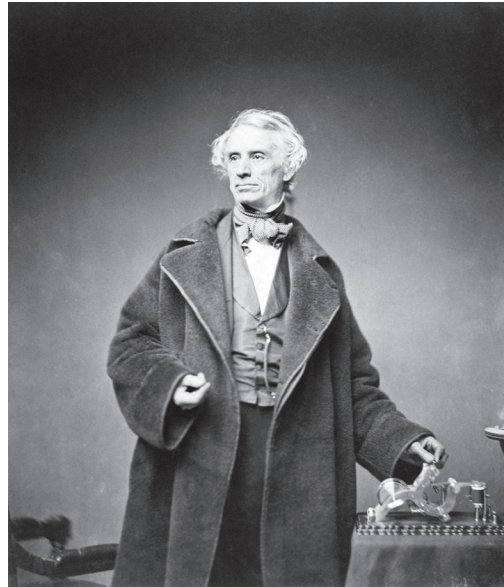
these were assigned the simplest signal: E was one dot and T was one dash. Morse and Vail also found that the letters Q and Z were rarely used, with 400 and 200 letters in the type case, and so Morse gave them the most complex symbols: Q --.- and Z --..

Morse's unique contribution, then, was an extremely simple way to transmit information using bursts of electricity. In effect, it was an elegant software solution to a hardware problem that others like Cooke and Wheatstone had not solved. Morse had a difficult time finding investors, but he clearly understood the significance of his invention. In a remarkably prophetic letter to Congressman Francis Smith in 1838, Morse wrote:

> It is obvious, at the slightest glance, that this mode of instantaneous communication must inevitably become an instrument of immense power, to be wielded for good or for evil, as it shall be properly or improperly directed. In the hands of a company of speculators, who should monopolize it for themselves, it might be the means of enriching the corporation at the expense of the bankruptcy of thousands; and even in the hands of government alone it might become the means of working vast mischief to the Republic.

2.3 Development of telegraphy

Morse suggested that the government buy the patent and license it to private companies, creating "a systems of checks and preventatives of abuse … to permit only the good and neutralize the evil" (Morse 1914). Between 1838 and 1842, Morse approached hundreds of potential investors in the United States and Europe. In the hope of financing more experiments on telegraphy, he attended an 1839 lecture in Paris by Louis Daguerre, and returned with the equipment and know-how to teach photography in New York.

Inventors thought the idea of an electric telegraph to be more like a conjuring trick than a useful invention, let alone a profitable one. But in 1842, Congress surprised Morse when it agreed to fund an experimental line from Washington, DC, to Baltimore, Maryland. On May 1, 1844, news from a Whig party convention

Figure 7.3 Morse code—Samuel F. B. Morse invented not just an electromagnetic telegraph, which was well known, but more importantly, a simplified code that made it easy to use the telegraph. Within a decade the Morse code had been adopted for international use. Photo by Matthew Brady, c. 1850, Library of Congress.

reached Morse's headquarters in the capitol building an hour ahead of the train, and crowds waiting for news were jubilant, praising Morse for his invention. In a formal demonstration later that month, Morse sent the famous message: "What Hath God Wrought" (*New York Times*, May 1, 1894).

Meanwhile in Britain, Cooke and Wheatstone had finally managed to set up an ongoing public demonstration along a section of railway track between London and Windsor. It was a curiosity at first, but the speed with which royal announcements could be made, and the coordination of police forces in catching criminals fleeing by train, eventually convinced conservative Brits that the Cooke–Wheatstone telegraph was useful. The view was reinforced when the Royal Navy contracted a telegraph along the same route between the Admiralty in London and its main base in Portsmouth—a route once noted for the Navy's optical telegraph.

By the fall of 1845, Morse formed the Magnetic Telegraph Co. in Washington with the help of Amos Kendall, an attorney and former press secretary for President Andrew Jackson. Cooke and Wheatstone, meanwhile, formed the Electric Telegraph Co. in London. With regular service, public enthusiasm soon replaced skepticism, and telegraph lines began doubling yearly. By 1850, in the United States, 12,000 miles of line were run

by twenty different companies. At the height of the speculative fever, some 500 telegraph companies were competing.

The telegraph also took off quickly in other countries. By 1852, Britain had over 2,000 miles of line, and Germany had 1,500 miles radiating out from Berlin. France lagged because their early lead with the optical telegraph meant that they were less willing to adopt a new system (Standage 1998). Yet the French also created the first wire service: the Havas Agency.

As continental America and Europe became increasingly connected, links across the ocean were attempted. The first long undersea cable linked Paris and London in 1850, but was then damaged and replaced in 1851. The first dispatches from Britain's war in the Crimea arrived through this system in 1853.

A much greater effort would be needed to connect the New World and the Old. In 1854, New York paper company owner Cyrus W. Field, working with Samuel Morse and others, completed the first leg of the North American portion of the cable, from New York to Newfoundland. The next 2,000 miles across the Atlantic proved difficult, but was completed in 1858.

The first trans-Atlantic cable carried a transatlantic message on August 16, 1858, and fireworks, parades, speeches, and prayers greeted the news. But twenty days later, the cable burned out and the messages stopped. Field went from national hero to laughing stock

Figure 7.4 Yanks and Brits—John Bull and Johnny Yank shake hands across the Atlantic through the celebrated 1858 telegraphic cable, which only lasted three weeks. It took another eight years to lay a more permanent trans-Atlantic cable. Baker & Godwin, 1858, Library of Congress.

overnight, and a British board of inquiry found that the entire project had been poorly designed. Trial and error technology had led to disaster in 1858. Clearly, a new approach was needed, and the new company turned to a Glasgow mathematician and engineer William Thompson (Lord Kelvin). Similar limits to trial-and-error work would be seen in other areas, particularly radio, in later years. It took until 1866 to lay another working cable, but other submarine cables followed in rapid succession.

3 Telegraph ushers in a New Era of Communication

The advent of the electric telegraph promised "universal interests and the worldwide victory of Christianity," enthusiasts said. "The public mind will be stimulated to greater activity with the rapid circulation of news … The whole nation will be impressed with the same idea at the moment. One feeling and one impulse are thus created from the center of the land to the utmost extremity" (Czitrom 1983).

Enthusiasts outnumbered critics, but naturalist and writer Henry David Thoreau was one of the minority voices. Thoreau considered the telegraph little more than an "improved means to an unimproved end":

> [As] with a hundred "modern improvements"; there is an illusion about them; there is not always a positive advance … Our inventions are wont to be pretty toys, which distract our attention from serious things … We are in great haste to construct a magnetic telegraph from Maine to Texas; but Maine and Texas, it may be, have nothing important to communicate … As if the main object were to talk fast and not to talk sensibly … (Thoreau 1854)

Occasionally, other critics worried that too much had been made of the telegraph. One felt compelled to write that the telegraph "can neither rescue a man from sin nor transport him to heaven" (*New York Times*, August 24, 1858). Another said the telegraph was "superficial, sudden, unsifted, too fast for the truth" (Lafrance 2014).

The telegraph did more than ease the spread of information. Like any communications revolution, it made new *functions* of communication possible. "Telegraphy gave rise to both the modern conception of news and methods of news gathering," said historian Daniel Czitrom. Before the telegraph, colonial newspapers printed news as it arrived in the mail, or by word of mouth, seldom seeking out news. Timeliness was
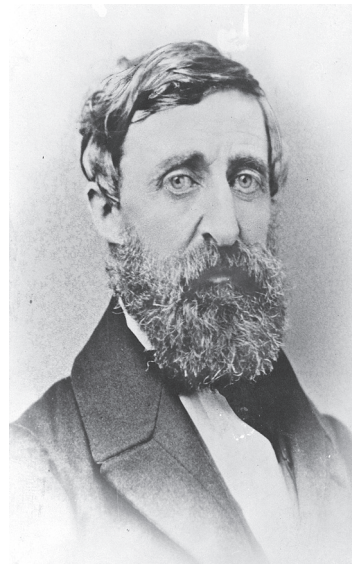
Figure 7.5 Not impressed—Naturalist and author Henry David Thoreau was not impressed when the telegraph arrived in New England, considering it to be merely an "improved means to an unimproved end." Library of Congress.

Telegraph Changes News Writing

The telegraph changed basic styles of news writing as the costs of telegrams forced journalists to condense their facts and fit the most important information into the very first few words of the dispatch, in case it was cut off by accident or censorship. The change illustrates McLuhan's idea that the medium *is* (or at least *has* a major influence on) the message.

For instance, compare these two news reports. The first is from William Howard Russell's famous 1854 dispatch about the Charge of the Light Brigade, a unit of the British army, written from the Crimean Peninsula of Russia before telegraph lines were available. The second is the lead of a wire dispatch from Washington to New York only seven years later:

Before the telegraph
"If the exhibition of the most brilliant valor, of the excess of courage, and of a daring which would have reflected luster on the best days of chivalry can afford full consolation for the disaster of today, we can have no reason to regret the melancholy loss which we sustained in a contest with a savage and barbarian enemy."

William Howard Russell, writing about the Charge of the Light Brigade, *The Times*, London, November 13, 1854

After the telegraph
"Our troops, after taking three batteries and gaining a great victory at Bull Run, were eventually repulsed, and commenced a retreat on Washington."

Henry Villard, writing about an opening battle of the US Civil War, *New York Herald*, July 22, 1861

Figure 7.6 Before the telegraph—Dispatches written by *The Times* correspondent William Howard Russell (above) from the front lines of the Crimean War in 1854 were not limited by the pressing demands of telegraphic systems. Howard's report on the famous Charge of the Light Brigade, delivered by letter, was long, flowery, and patriotic. In contrast, dispatches from the front lines of the American Civil War tended to be factual and terse. Photo by Roger Fenton, 1854, Library of Congress.

secondary to record keeping. For instance, the pre-telegraphic *Niles Weekly Register*'s motto was, "The present and the past, for the future."

After the telegraph, the emphasis tended to be on timeliness and on standardization of information rather that storytelling, especially for news transmitted via telegraph by wire services like the Associated Press (AP). The AP dispatches were "more free from editorial comment than most reporting for single newspapers" (Schudson 1978). The model of AP reporting was, according to the AP's Kent Cooper, "the finest moral concept ever developed in America and given the world … that news must be truthful and unbiased" (Siebert 1963). But the ideal of unbiased news took root slowly among the newspapers that depended on the AP, according to historian Michael Schudson.

While Russell exemplified the finest moments of early English journalism in his letters to *The Times* from the Crimean War, the effect of the telegraph was to reduce the value of the individual war correspondent and their lengthy dispatches sent from the front.

The wire service's condensed style became a journalistic gold standard, emphasizing facts over opinion. But it did not always obscure opinion, as seen, for instance, in the "our troops" comment by Villard. The short, punchy style of writing was lionized by writers such as Ernest Hemingway, for example, who called it "telegraphese" (Baker 1972).

Nor did the new medium guarantee that the news would be truthful and unbiased, as AP often claimed. In fact, the AP's hand-in-hand monopoly with Western Union proved controversial for nearly a century.

3.2 Telegraph changes the news business

Before the advent of the telegraph, newspapers could compete with each other by catering to select audiences, and every city usually had several newspapers. But the telegraph forced newspapers into a new business model.

When the Mexican–American war began in 1846, telegraph lines from New York and Boston only stretched as far south as Richmond, Virginia. Because communication from the front lines of the war was so difficult, five New York newspapers, including the *Times* and the *Herald*, agreed to share an express service to quickly bring home war news.

This agreement was the beginning of a permanent news gathering cooperative that also included cooperation through an 1848 Harbor News Association in New York, leading to the formation of the New York Associated Press in 1851 (Pyle 2005). By then, the few hundred miles of wire had turned into a telegraph network of over ten thousand miles (Howe 2007). A second "Associated Press" formed around Chicago and St. Louis in 1862. This western Associated Press cooperated with the New York group and eventually merged with it in 1900.

By the mid-1860s, Western Union and the two AP groups agreed on low rates, exclusive use of AP and Western Union services by all members, and a mandatory refusal to transmit or print any "hostile" information about AP or Western Union. One of the most objectionable features of the monopoly was that existing members could veto the entry of new members. Attempts to start newspapers in San Francisco, Chicago, and other cities failed when AP membership was not granted. The situation generated a continuous storm of controversy through the end of the nineteenth century.

3.3 Monopoly in the US: AP–Western Union

Twenty-five years after Samuel Morse's demonstration, the United States had built over 120,000 miles of telegraph line. Within that same time, nearly all of the independent telegraph companies had been purchased by or consolidated under the Western Union company. Given the power of telegraphy, and the potential for disclosure of private business matters, many people were alarmed.

"By the combination of the Western Union, the Associated Press and the railroad monopolies, almost every daily paper in all our large cities is brought under the dominion of the monopolies and extortionists," said San Francisco Herald editor Charles A. Sumner. It is a "disgrace to our country and a standing menace to freedom." (Sumner 1876).

Sumner went on to serve a term in the US Congress and helped bring some of the 96 bills and resolutions, along with forty-eight committee reports, that concerned the AP–Western Union monopoly over the next forty years.

"The issue of telegraph regulation was very prominent in the public sphere," said legal historian Menahem Blondheim. "It was debated extensively in the press and even consti-tuted a favorite topic for college exercises in rhetoric and debating" (Blondheim 2003–4).

AP argued that it could not be regulated, since the First Amendment guaranteed freedom of the press. Although Western Union could not make a similar argument, its relationship with the press meant that public opinion was constantly tilted in its favor. Gardiner G. Hubbard, the leading lobbyist for a postal telegraph service and father-in-law of Alexander Graham Bell, said the AP–Western Union monopoly was "a power greater than any ever wielded by the French Directory, because, in an era when public opinion is omnipotent, it can give, withhold, or color the information which shapes that opinion. It may impart an irresistible power to the caprice of an individual" (United States Senate 1884).

The complex controversy was never resolved at the congressional level, although an enormous amount of testimony accumulated about the AP–Western Union monopoly's underhand business practices, such as theft of secret

Figure 7.7 Learning Morse code—This Western Union telegraph delivery boy was photographed in 1910 by Lewis Hine learning Morse code between deliveries. Hine criticized Western Union, along with coal mines, newspapers, textile factories, and others, for abusive child labor practices. Library of Congress.

information for stock trading and exclusion of competitors from key newspaper markets (Parsons 1899; United States House, HR 3010 1912).

Among many instances of underhand business practices was the AP role in forming its supposed competitor, the United Press, in 1882, with a secret agreement funneling profits back to AP. When the agreement was exposed in 1891, AP withdrew its support and began enforcing its non-competition clause, forcing newspapers to choose between AP membership and UP service. In some cases, the courts forced AP to back down and permit newspapers to subscribe to more than one wire service. But UP went bankrupt in 1897, in part because at that point, AP had an exclusive deal for European news with Reuters.

Opposition to the monopoly eventually grew to the breaking point. The state of Texas, for example, passed an antitrust law in 1899 specifically "aimed at the Associated Press" with stiff daily penalties for any organization that refused to sell news to competitors (*New York Times*, May 28, 1899). The AP also lost a 1900 antitrust case brought by Inter-Ocean News when it was refused membership in the AP. In ruling against AP, the Illinois courts said:

> No paper could be regarded as a newspaper of the day unless it had access to and published the reports from such an association as [the AP] … For news gathered from all parts of the country, the various newspapers are almost solely dependent on such an association, and if they are prohibited from publishing it or its use is refused to them, their character as newspapers is destroyed and they would soon become practically worthless. (*Illinois/Inter-Ocean v Associated Press*, 1900)

When AP lost the case, the company packed up and moved from Illinois to New York State, where business laws against restraint of trade, barriers to entry, and refusal to deal were far more lenient.

The AP–Western Union news monopoly was a product of the times, but as one of the first major monopolies, it also set the pace for others to follow. Virtually every other industry was consolidating in the late 1800s. Oil, railroads, whiskey, sugar, grain, and other commodities all developed a "trust" in which stock was held by a monopoly combination to control trade and keep prices high. In some cases, the increased efficiency lowered prices for consumers

Figure 7.8 Wire service—This teletype machine, used by the Associated Press for most of the twentieth century, allowed member news organizations to send and receive dispatches. While AP had a strong commitment to quality journalism, the organization's structure helped members hold down competition until an antitrust suit in 1945. Photo by Lin Burton.

and helped widespread adoption of new technologies. But the trusts also ignored customer needs, drove competitors out of business, and raised or lowered prices as they pleased. Antitrust laws, passed first by states and then by the US Congress in 1890, began to force break-ups in the commodity trusts.

Critics of the AP monopoly pointed out that news was far more important than a simple commodity. Americans had a long-standing commitment to a "robust sharing of ideas," long before the telegraph, as seen for example in low postal rates for newspapers and magazines (Starr 2004). For example, labor and public health news could easily be downplayed or suppressed by newspapers owned by the offending industries, and AP would simply pass along their reports. Labor organizers in West Virginia coal regions found it so difficult to get recognition for issues like dangerous working conditions and economic feudalism that *The Masses* published a cartoon showing an AP executive dripping poison into a reservoir of "The News" with the label "poisoned at the source." AP sued for libel, but later dropped the suit in the face of public criticism.

Despite its deserved reputation for high quality journalism, AP's resistance to competition would not end until 1945, when it lost an antitrust suit brought by the US Justice Department. AP argued that it was protected by the First Amendment, but the Supreme Court rejected that argument. "Freedom to publish means freedom for all and not for some," the court said in its decision. "Freedom to publish is guaranteed by the Constitution, but freedom to combine to keep others from publishing is not" (*Associated Press v. United States*, 326 U.S. 1, 1945).

3.4 European wire services

Specialized newsletters go back to the Renaissance and the birth of banking and stock markets. No matter how the news of major events is carried—by telegraph or messenger
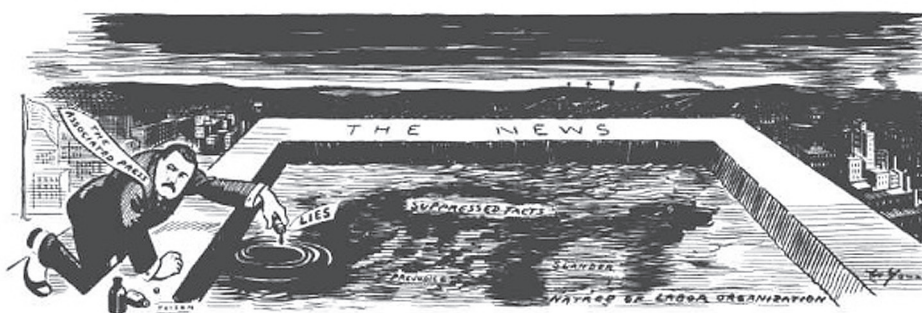
Poisoned at the Source

Figure 7.9 Poisoned—This cartoon depicts the Associated Press pouring lies into "The News." Labor unions in Appalachia objected to the way the AP passed along reports from newspapers owned by the coal industry, with suppressed facts and inaccurate reports about labor organizations. By Art Young, 1913, for *The Masses*. Wikimedia Commons.

or carrier pigeon—even a few hours of advance notice can be profitable on a stock market or in commodities trading. But these news services were meant for an elite audience. For most readers, news from other countries came from newspapers carried in the mail, translated, edited, and then reset into type. The process could take days or sometimes weeks. Charles Louis Havas, Paul Reuter, and Bernhard Wolff changed the world by creating news agencies that used the telegraph to rapidly transmit information.

Charles-Louis Havas (1783–1858) started his working life as a supply officer for the French military, serving in Nantes, France. Later he was a banker, a cotton importer, and a newspaper entrepreneur. Because of his work in both imports and news, he found it easy to view information as an international commodity. In 1830, following the July Revolution, Louis-Philippe succeeded to the French throne. Having strong liberal tendencies, Louise-Philippe proclaimed freedom of the press, and Havas saw the need for better organization of information and news traffic (Havas 2015). His first step was to set up a foreign newspaper translation bureau in Paris. The bureau was also a bookstore and a focal point of international politics and information. Three years later it became Agence Havas, the world's first news agency (Shrivastava 2007).

In the beginning, Havas used carrier pigeons to bring news from the morning's British newspapers to Paris by 3.00 p.m., in time for the evening editions. When the telegraph arrived in France in 1845, Havas was the first to use it. The Havas agency became a publicly traded company after the death of Charles-Louis Havas in 1858, and was the largest of the world's news agencies for almost a century.

Bernhard Wolff and Paul Reuter were two Havas employees who, with the help of Havas, founded two other major telegraphic news agencies.

Wolffs Telegraphisches Bureau started in Berlin a year after the Revolution of 1848 and the liberalization of press laws. Wolff was manager of the National Zeitung, founded that year, which started a policy of carrying news dispatches by telegraph from Paris, London, Amsterdam, and Frankfurt. By 1869, WTB was so closely associated with the government that it had offices in the main postal and telegraph building.

Paul Reuter was a journalist and bookstore owner who married a British banker's daughter. He and his wife left Germany after the collapse of the revolution of 1848 and he began working for Havas in Paris as a translator. Seeing opportunity in the expanding telegraph, Reuter moved to Aachen, Germany, in October of 1849 and opened a news and stock service. Aachen, that year, was the end of the line for the telegraph from Berlin. When the French opened a telegraph line from Paris to Brussels, Reuter was in the middle. He began filling in the 140-kilometer (90 mile) gap across the border by using carrier pigeons and express riders. As the telegraph network expanded, Reuter stayed ahead. He moved to London and opened an office in the heart of the city's financial center one month before the new London–Paris submarine telegraph cable started operating.

Havas was also influential in the creation of other news agencies. Guglielmo Stefani (1819–61) was a journalist from Venice who joined the 1848 revolution and fought for Italian independence from Austria. He was imprisoned by the Austrians but then exiled, and in 1853, with help from Havas, he set up Agenzia Telegrafica Stefani. After his death, Havas acquired half of the agency, which continued as the major Italian news agency until 1945.
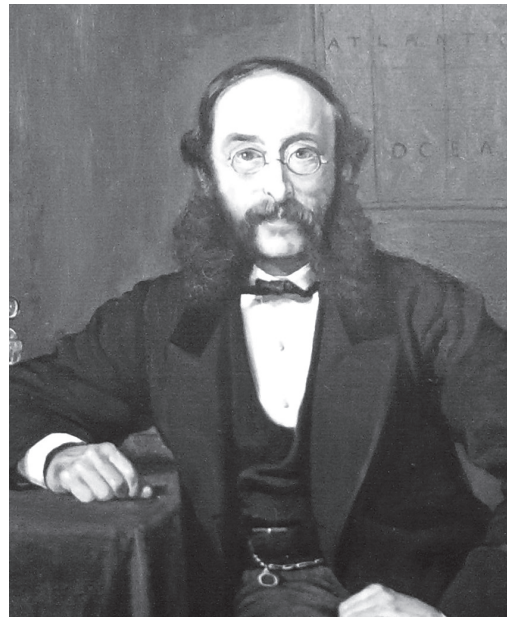
Havas also linked up with a Spanish news agency established by Nilo Maria Fabra, a Barcelona journalist, in 1865. The Agencia de Noticias (news agency) Fabra merged with two other agencies in 1939 to form EFE, the world's largest Spanish-language wire service.

European telegraphy tended to be more diverse than the US, and so international cooperation was necessary. In May 1865, a convention decided to adopt Morse code as the international telegraph alphabet and to protect the right of everyone to use international telegraphy. The group continued to meet regularly, and eventually became the International Telecommunications Union (ITU), the oldest organization incorporated into the United Nations system in the mid-twentieth century (ITU 2010).

The big three European wire services were able to dominate the competition. In

Figure 7.10 Paul Julius Reuter—Founder of Reuters, the world's oldest continuous news and wire service. Rudolph Lehnmann, 1869. Wikimedia Commons.

1870, Havas, Reuters, and Wolff formed a cartel that dividing up territories for exclusive news services. Wolff's Telegraph Bureau (WTB) would serve northern and eastern Europe; Reuters would serve the British Empire; and Havas would serve the Mediterranean and Latin American regions (Storey 1951). The cartel agreement was extended into the US with a deal between Reuters and the AP.

The European wire services were often seen as semi-official agencies of their respective governments. Wolff 's had little choice in 1933 when the Nazis merged the agency with smaller competitors. Havas and Stefani were also left without choices when faced with fascist governments. After the war, Havas was replaced by Agence France Press, Stefani was replaced by Agenzia Nazionale Stampa Associata (ANSA), and Wolff's was replaced by Deutsche Presse-Agentur (DPA).

Today a dozen major news agencies from the era of the telegraph—especially AP, Reuters, AFP, EFE, and DPA—compete in twenty-first-century global news markets.

The World's Major Wire Services and News Agencies.

Name	Dates	Country	Founder	Modern Name
Havas	1835–1945	France	Charles-Louis Havas	Agence France Press, **AFP**
Associated Press	1846–present	US	Moses Beach	**AP**.
Wolff's	1849–1933	Germany	Bernhard Wolff	Deutsche Presse-Agentur, **DPA.**
Reuters	1851–present	Britain	Paul Reuter	**Reuters**.
Stefani	1853–1945	Italy	Guglielmo Stafani	Agenzia Nazionale Stampa Associata, **ANSA**.
Fabra	1865–1939	Spain	Nilo Maria Fabra	**EFE**.
Itar-Tass	1925–present	Russia	From St. Petersburg Tel. Agency (1904)	**ITAR-TASS**.
Press Trust of India	1947–present	India	From AP India (1909)	**PTI**.
Xinhua	1937–present	China	Red China News Agency (1931)	**Xinhua.**
Kyodo	1947–present	Japan	Domei News Agency (1936)	**Kyodo.**
United Press Int'l	1958–2000	US	From United Press (1907) and Int'l Press (1909) **UPI.**	
Inter-Press Service	1964–present	International	Roberto Savio	**IPS**.

3.5 United Press and International Press begin competition

Publishers who were not included in the Associated Press monopoly in the US were in a difficult position, and in the early twentieth century, two of them decided to create separate news agencies. E. W. Scripps, publisher of the first US newspaper chain, created a competing news service called United Press Association in June 1907. (UPA was unrelated to the United Press that had been driven into bankruptcy ten years earlier.) Then in 1909, William Randolph Hearst created the International News Association for his newspaper chain.

"One result of these successive changes was to encourage new papers by making it easy for them to secure a comprehensive news service," said diplomat and former *New York Tribune*

editor Whitelaw Reid in an *Encyclopedia Britannica* article in 1911. "The almost official authority with which the public formerly attributed to an Associated Press dispatch declined."

Congressional hearings in 1912 established that a long history of attempts to regulate telegraphy had failed, and that prices in Europe were less than half of the same prices for telegraphic messages in the United States. While this was only one of many congressional investigations into monopolies at the time, it represented a changing legal climate. In 1913, Western Union's parent company AT&T agreed to an out-of-court settlement with the US government called the Kingsbury Commitment (discussed later in this chapter). One result was that UPA and IP wire services were able to use the telegraph at the same cost as AP from that point forward.

Newspaper publisher E. W. Scripps later said, "I do not believe in monopolies … I do not believe it would be good for journalism in this country that there should be one big news trust such as the founders of the Associated Press fully expected to build up" (Shrivastava 2007). He also said, "I regard my life's greatest service to the people of this country to be the creation of the United Press."

Lucian Carr, a beat generation writer who served as a UPI editor in the 1950s, once said, "UP's great virtue was that we were the little guy [that] could screw the AP." United Press and International Press merged in 1958 to become United Press International. At its peak in 1978, the organization served more than 7,000 news clients. UPI fell on hard times by the 1990s, and in 1999 its news service contracts were sold to the AP. The organization itself then went through a series of owners, including a cult church, and vanished as a news organization.

The US telegraph system, in the end, did not develop as a widely distributed system of small independent providers, as Morse envisioned, nor as a branch of government, following the European business model. Instead, the telegraph became a commercial monopoly. Later, Guglielmo Marconi and Thomas Edison attempted to take the same route using patent rights to monopolize radio and film. But they would be thwarted by antitrust laws that were, in part, a reaction to the AP–Western Union situation.

5 The Telephone as a Circumventing Technology

The invention of the telephone in 1876 was a direct reaction to the monopoly power of Western Union. Angered at the control over financial and political information, Boston lawyer Gardiner Hubbard—called the "national nemesis" of Western Union—first tried to have the telegraph system nationalized as part of the Post Office through an act of Congress. When that attempt failed, he financed a set of promising experiments by Alexander Graham Bell, who was working on systems to amplify sound for people with hearing loss.

When Bell secured patent rights to the new telephone in 1876, it was Hubbard who organized the financing to create the Bell Telephone Company. Bell married Hubbard's daughter Mabel, who had been one of his hearing-impaired students, in 1877.

The telephone would have been invented without Bell and Hubbard—Elisha Gray of Chicago filed a similar patent only a few hours later on the same day as Bell at the US Patent Office, and controversy still remains concerning details of their patent applications. But the courts decided that Bell had the best claim.

As Hubbard organized the company, Bell launched a series of lectures to popularize the new invention, starting with a description of the telephone and then pointing out a telegraph line that he had leased. A few miles away, Thomas A. Watson, Bell's assistant, would be waiting. "I had at my end one of our loudest telephones specially adapted for the purpose," Watson said in his autobiography. On Bell's signal, he would have to tell a brass band to start playing. But that was just the warm-up, because the audience really wanted to know whether the telephone could talk.

> I shouted such sentences such as "How do you do?" and "What do you think of the telephone?" which the audience could hear … [Also] I had to do something of importance for Bell's audiences, called by courtesy, singing … I sang Yankee Doodle and Auld Lang Syne … My singing was always a hit … [and] I was usually encored to the limit of my repertory. (Watson 1926)

At one point in 1876, Hubbard and Bell attempted to sell the Bell patents to Western Union. Skeptical Western Union businessmen were aghast:

> Hubbard and Bell want to install one of their "telephone devices" in every city. The idea is idiotic on the face of it … Why would any person want to use this ungainly and impractical device when he can send a messenger to the telegraph office and have a clear written message sent to any large city in the United States? (Pershing 2010)

After Western Union rejected the phone proposal, Hubbard focused on the organization and Bell focused on showmanship. The work paid off, and the Bell telephone system began stringing wires in 1877. Within ten years, 150,000 people owned telephones. While Bell continued working on improvements, such as Thomas Edison's carbon microphone, some of his patents expired in the mid-1890s, and some 6,000 phone companies created their own phone systems. Research into telegraph and

Figure 7.11 Inventor and his family— Alexander Graham Bell, Mabel Hubbard Bell, and two daughters c. 1885, the year he patented the telephone system. Bell's father-in-law, Gardiner Green Hubbard, was one of the country's chief opponents of the Western Union telegraph monopoly. He originally financed Bell's experiments with the telephone. Grosvenor collection, c. 1885, Library of Congress.

telephone electronics paved the way for other developments to the point where some historians have seen the telephone as the "father of broadcasting" (White 2010).

While the telephone was intended for one-to-one conversations, home entertainment was an option before radio. In 1893 a Hungarian system called Telefon Hirmond began operation in Budapest. A similar system, the United States Telephone Herald Company, was a failure (White 2010).

5.1 Antitrust law and AT&T

American Telephone and Telegraph, created by the Bell Company in 1885 to build long-distance lines, became Bell's parent company in 1899. At that point, only about half of the nation's telephones were part of the Bell system (Starr 2004). In order to control the market, AT&T waged a ruthless campaign to undercut competition. AT&T denied access to long-distance lines and undermined competitors credit (Marchand 1998). For example, in 1907, the Bell system secretly bought a company that built switching equipment and used components that were claimed under Bell system patents. Once the "infringing" equipment was purchased, Bell would seize the equipment and force the independents out of business (Telephony, 1907).

The tactics led to an antitrust investigation by the US Justice Department, and the possibility emerged that AT&T could be broken up or that the United States would follow the European model and nationalize telephone and telegraph services under the Postal Service.

In response, AT&T launched one of the strongest public relations campaigns in history, placing thousands of newspaper and magazine ads with the slogan "One System, One Policy, Universal Service." The claim was that telephony was a "natural" monopoly that would work better than a patchwork system to provide service to everyone. As noted in Chapter 6, the campaign succeeded, and in 1913 the Justice Department negotiated a deal with AT&T called the Kingsbury Commitment that allowed AT&T to continue as a regulated monopoly. The deal, named for AT&T vice president Nathan Kingsbury, also forced Western Union to carry competing wire services such as United Press and International Press at the same rate, allowing them to compete with the Associated Press.

The Kingsbury Commitment also meant that AT&T had to stop the trade war and guarantee system access for all independent phone companies. However, the government allowed AT&T to keep buying up independent companies and manufacturing telephone equipment through Western Electric, which had been Western Union's manufacturing arm. In effect, the regulations slowed but did not stop AT&T's quest for monopoly. By the mid-twentieth century, Bell owned 80 percent of the US phone market.

5.2 Breaking up "Ma Bell"

In 1974, the Justice Department sued AT&T under antitrust laws, and in 1982, courts ordered the company to break up into regional carriers, opening the door to more competition and lower long-distance rates for individual consumers. The company that

was semi-affectionately known as "Ma" (mother) Bell would no longer be permitted an exclusive monopoly on telecommunications.

The decision came as part of a double blow to the telephone business, because AT&T was also losing the radio and television broadcast networks that were switching to cheaper, higher quality satellite service—a circumventing technology they developed to replace AT&T's costly long-distance lines.

The AT&T break-up also led to the decline of Bell Labs, once a leading international research center, with seven Nobel Prizes to its credit and vital work on radar in World War II and photovoltaic solar cells for satellite systems.

Perhaps the most significant of the Bell Labs inventions was the transistor, which changed radio from a complex household item using radio tubes to a far more portable device. The transistor was also a milestone in the digital age, changing the computer from an expensive military system to an affordable information processing system for banks, insurance companies, and telecommunications systems. Bell Labs also developed communications satellites, the Unix computer operating system, digital switching, and cell phones. But there were also commercial flops, such as the 1964 picture phone that debuted at the Seattle World's Fair. Despite its achievements and the public relations campaigns, not everyone was fond of "Ma Bell." During the heyday of its monopoly, phone "freaks" developed ways to avoid paying for expensive long-distance phone calls.

It was the challenge of beating this system that helped draw Steve Wozniak, a co-founder of Apple computers, into electronics. In 1975, just as a prank, Wozniak and friends used the circumventing technology to make a free call to Rome, Italy. Wozniak called the Vatican and, with a thick German accent, claimed to be then-Secretary of State Henry Kissinger wanting to speak with the pope. The Vatican asked him to call back, and an hour later, refused to connect him with the pope. "So I guess they checked up on my story," Wozniak told a documentary filmmaker (Cambeau 2006; Wozniak 2006).

Conclusion

The peak year for the telegraph was 1930, when 211 million were exchanged in the United States. The very last telegraph was sent in 2009, and by then, Western Union changed its business model to become an international financial service.

The impacts of the instant electronic communication, according to media theorist James W. Carey, included new forms of writing, new concepts of standard time, new spatial boundaries, new forms of language, new structures in social relations, and new futures markets for agriculture that led to a break-up of patterns of city-state capitalism. It meant the end of the tall tale and the hoax as newspaper staples, but the beginning of a new concept of rapid-fire political debate that reverberates in the twenty-first century (Carey 1992).

With the introduction of cell phones in the 1990s, and the addition of text, photos, and video on demand, the telephone also changed from a one-to-one medium to a mass

medium virtually overnight. Old-fashioned landline phones went from a necessity, with 97 percent market penetration in 2001, to something of a luxury, with 60 percent market share in 2013. Exclusive cell-phone use was at 40 percent of the population and rising rapidly (Blumberg 2013).

Controversy over the roles of AT&T's spin-off companies, such as Verizon Corp., and the uniformity and neutrality of access to telecommunications services, remain permanent fixtures of the regulatory environment, as we will see in Section IV.

The Western Union–Associated Press monopoly was the first controversial and highly contested monopoly, but it was also the first to begin linking the world together. Along with AT&T, the communications technologies of the nineteenth and twentieth centuries served important social purposes, albeit imperfectly.

"We need a good network to pull together the community of humans," said Robert Miller, Director of Communication Technology Research at AT&T. "I think in the end, it [communication] will probably keep us from blowing ourselves up" (Cambeau 2006).

For additional reading, discussion questions, links to video, and other suggestions, see www.revolutionsincommunications.com.
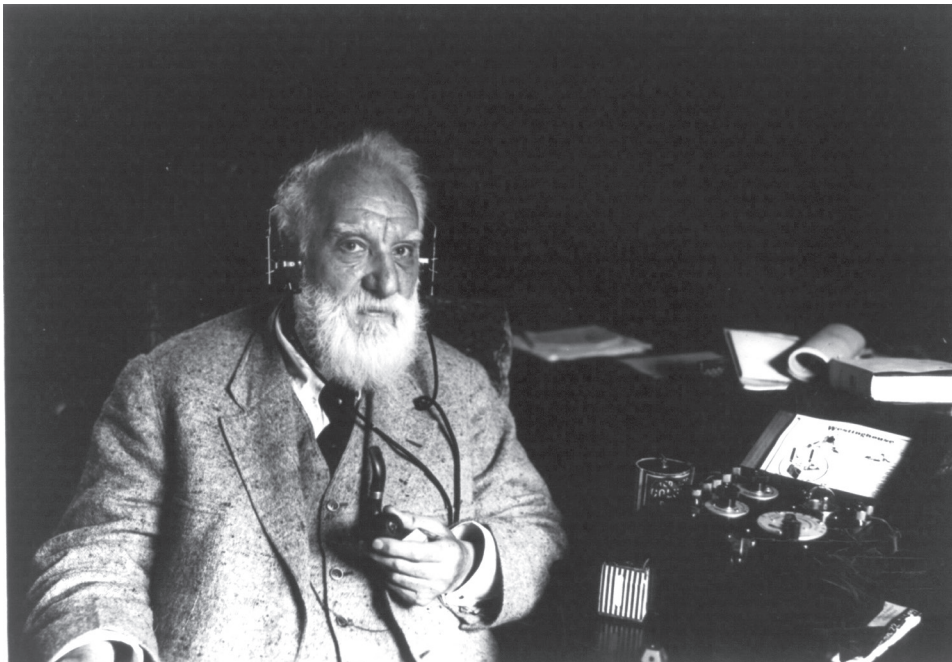
Figure 7.12 New media—Alexander Graham Bell is wearing headphones in order to listen to the radio, which at the time was the latest development in new media. The photo was probably taken in 1922, the year Bell died. Underwood & Underwood, Library of Congress.