Revolutions in Communication

2nd Edition

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Media History from Gutenberg to the Digital Age

2nd Edition

Bill Kovarik

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Preface

Working in newsrooms, late into the evening hours, my colleagues and I would sip coffee and sift through stacks of news reports and wire service photos from all over the world. Occasionally, as Atlanta editor Ralph McGill once said, we'd get a sense of the earth wheeling again towards the sun, alive with joys and struggling with sorrows—and all reflected in hundreds of laser photos and wire service stories.

We lived through the last days of hot lead typesetting, chattering Associated Press teletypes, and Western Union telegrams. We fiddled with the first word processors and struggled with the first modems. We saw the media for what it was, and what it was meant to be.

In many ways, we were glad that it was the end of an era. We were all too aware of the media's constraints in the late twentieth century, and we wondered how things would look on the other side of the digital revolution that we knew was coming. We figured that, as with any revolution, we would see both ennobling and corrosive impacts. And that was right.

What we did not expect, and what made the digital revolution so interesting, was that it did not spring from the technology developed by media institutions, big computer companies, and defense industries. Instead, to paraphrase John Adams, we saw the digital revolution first taking place in the hearts and minds of a global community of scientists, engineers, writers, philosophers, artists, and visionaries. The technology emerged from the vision.

Trying to make sense of this, what historians are finding is that a similar sense of community animated most of the great communications revolutions in history. Gutenberg's printing press spread rapidly across Europe in the 1400s thanks to a community of craftsmen; Daguerre literally gave away photographic patents in 1839 and created a world community of photographers almost overnight; and Morse's Code became the first universal software in the 1840s, although his telegraphic patents ended up in the hands of a monopoly. Even so, a community of critics who fought the telegraph monopoly funded Alexander Graham Bell's work to create the telephone, and the global community of scientists investigating electromagnetic phenomena were the ones who created radio, television, and satellite communications.

Studying this pattern, it seems that every communications revolution is circumventing a previous communications bottleneck, and that this sparks social change. Every revolution has its medium, and every new medium creates its own form of revolution.

The benefits of all of these communication revolutions are well known to those of us living in the early twenty-first century. But revolutions come with unexpected costs.

Printing liberated humanity, but also triggered centuries of religious and political struggle; visual communication deepened human empathy but diluted and (some say) degraded public discourse; electronic communication energized the world's nervous system, but in the process, submerged unique cultures and put nationalism on steroids; and now the digital revolution seems to be undermining the literate cultures that were created by the printing press while pulling the world closer together in unpredictable and often uncomfortable ways.

To understand these interesting times, a sense of history is a basic requirement. Without history, we are blind and powerless. With history, at the very least, we are not blind, and occasionally, we may perceive an opening for a real contribution to our common destiny.

Bill Kovarik, Floyd, Virginia

For updates and ongoing information, please see:
http://www.revolutionsincommunication.org.

Introduction

Civilizations rise and fall on the crests of great revolutions in communication, brought on by new technologies and limited only by human imagination.

Well into the first decades of the twenty-first century, we are witnessing these revolutions visibly transforming daily life, not only through new gadgetry but also through shifting modes of communication that shunt aside the older ones. Fortunes are being made and lost, legacies are thrown to the winds, and a new world media is rising in the place of the old, for good and for ill.

To understand and learn from events, and to envision the possibilities of the future, we turn to history. Not just history as a worship of heroes, a cultivation of values, or a defense of tradition. Rather, history in the larger sense: history as investigation; history as a serious search for truth; as Thucydides said, history as a possession for all time.

So, first we'll consider the general issues in history, and then some of the specific issues and patterns in media history and the history of technology.

1 Understanding History

To begin with, history is civilization's memory. Without a sense of the past—without some concept of the lives, triumphs and mistakes of people who have lived before us—we are merely groping blindly into the future.

History is also an active investigation of what happened and what we can learn from the past. The meaning comes from the Greek word, ἱστορία—historia, meaning "inquiry, knowledge acquired by investigation."

Historians are free to explore their topics without expecting to find exact answers, as would usually be required in the sciences or social sciences. While history has a strong duty to accuracy and the truth, history plays by its own rules and answers to its own muse.

History is a powerful tool, not only in terms of analytical ability and scope, but also in the way it can be used to legitimize modern agendas and political projects. As journalist-turned-historian Alan Nevins said, "History is never above the melee. It is not allowed to be neutral, but forced to enlist in every army." Historian Eugen Weber once observed that history is "the dressing room of politics."

Recording and learning from the past is no simple proposition, and history is more than collections of established facts, just as science is much more than an unchanging description of a static physical world. Historical perspectives may change as new facts emerge from research, or as historians use new tools, or as modern perspectives change.

2 Motivations for Historians

Two fundamental motivations for historians are, (1) to remember and honor history's heroes; and, (2) to learn the lessons of history. These were expressed by the two major historians of ancient Greece. The two can be complementary, but they are often at cross purposes.

Herodotus (484–420 BCE) said he wrote *The History* "in the hope of … [p]reserving from decay the remembrance of what men have done, and of preventing the great and wonderful actions of the Greeks and the Barbarians from losing their due need [recognition] of glory." This is "heroic" history.

Thucydides (460–400 BCE) hoped *The History of the Peloponnesian War* would "be judged useful by those inquirers who desire an exact knowledge of the past as an aid to the interpretation of the future … I have written my work, not … to win the applause of the moment, but as a possession for all time." This is "critical" history.

Heroic history often omits the blemishes and controversies, so that when young students are first introduced to history, the heroics get far more attention and controversies are lacquered over. Heroic history has its place—it can help form a basis for cultural or regional pride, or provide, as historian Joseph Campbell once said, "the inspiration for aspiration." Yet heroic history untempered by Thucydides' critical perspective can produce dangerous myths, leading to cultural isolation or extremes of self-righteousness.

Historically damaging myths have included the Dolchstoßlegende, or "stab in the back" myth, that was current in Germany after World War I. That myth blamed Germany's defeat not on military failure, which was the truth, but rather on a lie about unpatriotic people on the home front, and it helped feed anti-Semitism that mushroomed into the Holocaust. Another damaging historical myth is the "Gone with the Wind" myth that portrays the American South fighting for a noble "lost cause" in the Civil War. The truth was far less glamorous.

This may bring to mind the best-known idea about history, which comes from George Santayana (1863–1952), who said, "Those who cannot remember the past are condemned to repeat it." There's always some motive for writing history, and often it is a combination of the heroic and critical perspective and a desire to inform modern policy. Edward Gibbon's (1737–94) *History of the Decline and Fall of the Roman Empire* was an early modern example of a critical history written with the British Empire very much in mind, but also as a celebration of Roman heroes at a time when Britain was looking for its own heroic inspirations.

3 Can History be Objective?

One of the most important questions in the study of history (called historiography) involves the extent to which cultural and personal allegiances can or should be separated from narrative history. People often expect that dry facts, neatly arranged, will speak for

themselves, but that idea is at the center of long-standing struggles between contending schools of historical thought.

The best-remembered proponent of the "scientific" historical philosophy was Leopold Von Ranke (1795–1886), a German historian. He thought that historians should report "the way things really were." An account of the battle of Waterloo should be based on facts commonly accredited by French, German, and English historians, he said.

To be sure, Von Ranke was reacting to British historian Thomas Carlyle's quirky and melodramatic 1837 history of the French Revolution, or to American historian George Bancroft's notion that the United States was created more or less as an act of God. Both approaches were heavily influenced by the personal biases of the historian, and this is what Von Ranke's scientific school found objectionable.

Yet there are also flaws in the "scientific" approach to history. For example, while few would disagree on facts about the Battle of Waterloo, larger issues, such as the rise of Napoleon or the European revolutions of 1848, are not seen in the same objective light by all historians. Similarly, Von Ranke's own history of the Protestant Reformation in Germany, although meticulous in most detail, omits at least one important theme: the impact of the printing press in spreading Martin Luther's ideas and helping ensure the Reformation's success.

Von Ranke's contemporary in Britain was Thomas Macaulay (1800–59), but his idea about historical accuracy was to be sweeping and inclusive. Macaulay wrote that history is incomplete if it only involves palace intrigues and great battles.

> It will be my endeavor to relate the history of the people as well as the history of the government, to trace the progress of useful and ornamental arts, to describe the rise of religious sects and the changes of literary taste, to portray the manners of successive generations and not to pass by with neglect even the revolutions which have taken place in dress, furniture, repasts, and public amusements. I shall cheerfully bear the reproach of having descended below the dignity of history, if I can succeed in placing before the English of the nineteenth century a true picture of the life of their ancestors. (Macauley 1848)

Perhaps objectivity is unattainable; perhaps it's quixotic to even speak of it. In *That Noble Dream*, historian Peter Novick describes historians' often futile attempts to attain objectivity in the past two centuries. Not surprisingly, Novick says, many historians disliked the idea of serving up a string of scientifically cold facts as much as they disliked Carlyle's style and Bancroft's American piety. Not everything in human affairs can or should be quantified, and a "science of history" was a farce, some said. Their response was to write history in a way that would be more relevant, or progressive, or uplifting. Prominent among these progressive historians were American historian Charles Beard (1874–1948) and Lord John Edward Acton (1834–1902) of Britain.

Beard used an interesting scientific analogy to describe what he valued in history. It wasn't enough to classify fact after fact, like a botanist's classification of species after species. That approach "does not explain … proximate or remote causes and relations." What was needed was something more interpretive and exploratory, more like the broader study of ecology. So, for example, Beard's most famous and controversial book,

An Economic Interpretation of the US Constitution, argued that American Revolutionary leaders were not merely idealistic, but also were acting in the interests of their social and economic class (Beard 1913).

Lord Acton believed in a moral approach to history. His most famous aphorism is, "Power tends to corrupt, and absolute power corrupts absolutely." The idea comes from an exchange with a colleague about the doctrine of papal infallibility. The colleague had suggested that great men should not be judged too harshly because they were dealing with great issues. Acton disagreed. On the contrary, he said, great men should be held up to an even higher standard, under suspicion that they had become corrupted by power. Acton's *History of Freedom in Christianity* was written with critical ideas about the papacy and uplifting Protestant motives in mind.

Late twentieth-century historian Howard Zinn, like Macaulay, would say that a people's history is far more than an account that tugs on the heartstrings of culture or patriotism. A people's history describes the lives of the powerless as well as the powerful while rejecting, like Action, the myth-making heroics that can obscure the immorality of the powerful.

In the years following World War II, historians moved towards an exploration of the consensus that holds societies together, tending to downplay some of the conflicts. Daniel J. Boorstin was among the leaders in the 1950s and 1960s. But the consensus approach, with the Grand Narrative in the background, did not explain the histories of emerging social movements, especially civil rights of minorities, the women's movement, and the environmental movement. Nor did consensus describe the social turmoil that broke out across Europe and the US in the late 1960s and 1970s. Historians began investigating a variety of new approaches under the heading of social history (Gage 2011).

4 Whig History and Other Fallacies

Scientific objectivity wasn't the only problem, according to historian Herbert Butterfield (1900–79). A larger problem was the tendency of historians to take sides. Butterfield objected to the way historians would "write on the side of Protestants and Whigs, to praise revolutions, provided they have been successful, to emphasize certain principles of progress in the past, and to produce a story which is the ratification if not the glorification of the present." This is often called "Whig" history.

Thomas Macaulay saw these extremes as errors, and advised historians to take a more balanced approach:

> There are two opposite errors into which those who study the annals of our country are in constant danger of falling, the error of judging the present by the past, and the error of judging the past by the present. The former is the error of minds prone to reverence whatever is old, the latter of minds readily attracted by whatever is new. The former error may perpetually be observed in the reasonings of conservative politicians on the questions of their own day. The latter error perpetually infects the speculations of writers of the liberal school when they discuss the transactions of an earlier age. The former error is the more pernicious in a statesman, and the latter in a historian.

A related problem is called the "historian's fallacy," in which we assume that people in the past had the knowledge that we have today, which can lead to unwarranted conclusions about cause and effect. A good historian, avoiding the "historian's fallacy," will take into account the "fog of war," or the limitations on what could have been known at the time.

Another kind of fallacy involves cultural restrictions on historians themselves. Women and minorities were rarely taken seriously as historians until the mid- to late twentieth century, despite outstanding contributions. One who broke through the glass ceiling was Barbara Tuchman, who won a Pulitzer Prize in 1963 for *The Guns of August*, her history of the outbreak of World War I. Another was Elizabeth Eisenstein, whose theories about the influence of printing on early modern Europe changed the way we see the history of communication. Her ideas are discussed in Chapter 1 of this book.

Is there an end of history? To some, such as Francis Fukuyama (1952–present) and Jean Baudrillard (1929–2007), the collapse of ideology or even the end of an *idea* of historical progress represents the "end of history." According to Baudrillard, this comes from the abandonment of utopian visions shared by both the right- and left-wing political ideologies (Fukuyama 1992; Baudrillard 1994).

And yet, ideas about utopian futures re-emerged with the advance of communications technologies, living on in the visions of social networks and free cultures described by Vannevar Bush, John Perry Barlow, Howard Rheingold, Richard Stallman, and others engaged in the digital revolution, as we will see in Chapters 11 and 12.

These, then, are some of the initial issues we encounter when we consider how history is written. The question of objectivity see-saws across the centuries between ideals of accuracy on the one hand and high purpose on the other. It never really ends, but each historian finds points of balance. If there are no final answers, there is at least a need to be conscious of the issues; to attempt to steer one's own best course past the Scylla and Charybdis of historiographic calamity; to write the truth to one's best ability; and to serve the muse of history.

5 The Study of Communication History

The historical study of the whole field of communication is relatively new, but histories of the press and biographies of notable editors have been popular for centuries. These include Joseph Moxon's *Mechanick Exercises* (1683); S. Palmer's *History of Printing* (1733); Isaiah Thomas's *History of Printing in America* (1810); James Parton's *Life of Horace Greeley* (1855); *The Life and Times of Benjamin Franklin* (1864); Frederic Hudson's *Journalism in the United States* (1873); and James Melvin Lee's *History of American Journalism* (1917). (All are available online through Project Gutenberg, Google Books, and others; they are listed on this book's web site.) Moxon and Palmer were intending to strengthen the allegiance of initiates to the profession; Thomas, Parton, Hudson, and Lee all took the heroic approach, although Lee faced criticism in his time for "a complacent and partisan denial" of problems with the news media (Grabo 1918).

Critical perspectives of the news business did begin appearing in the twentieth century, as part of the Progressive Age. No doubt some were inspired by US president Teddy

Roosevelt's 1906 speech denouncing journalistic muckraking, but others thought the news media far too complacent. Will Irwin's *American Newspaper* (1911) appeared in Colliers magazine at a time when the power of the press was "greater than ever before." Irwin noted many problems as well as contributions from the "light of civilization." Another critical approach was socialist reformer Upton Sinclair's *Brass Check* (1920), which focused on the warped reporting of labor struggles and compared journalism to outright prostitution. The *New York Times* reacted by calling Sinclair a "defiling insect" and refusing him editorial space for his views (Goldstein 2007).

Other examples of press criticism are found in Walter Lippmann's 1920 book *Public Opinion* and the Hutchins Commission of 1947—both discussed later in this book—but very few histories of communication saw the light of print.

Edwin Emery and other twentieth-century American media historians focused primarily on a progressive, narrative history of American journalism, following closely behind Hudson and Lee, but updating US media history during the Civil Rights era and the Vietnam War (Emery 1973). The exclusive focus on American journalism, rather than international communication, was typical of the times. Even the American minority press appeared only briefly until Jean Folkerts's book, *Voices of a Nation*, brought a more thorough and long-overdue treatment (Folkerts and Teeter 1989).

In his intellectual history of communication in the US, Daniel Czitrom noted the "surprising dearth of historical precedents." His book, *Media and the American Mind*, covered telegraph, movies, the radio, and historical views of the media. More comprehensive books include *The Story of Human Communication* (1988) by media theorist Wilbur Schramm, and *Social History of the Media* (2002) by Asa Briggs and Peter Burke. Both are strong examples of themed sociological approaches to the history of communication.

6 Parochialism in Communication History

Most students of media history were painfully aware of the narrow outlook that afflicted their field in the early twenty-first century. Not only were media historians barely managing to catch up to great historical issues, such as civil rights and the digital technology revolution, but the attachment to professional and nationalistic heroism was all too obvious. Controversies were often overlooked, especially if they involved complex international issues. This nationalism is contrary to modern trends, according to historian Jonathan Shaw:

> Historians increasingly recognize that trying to understand the past solely within the confines of national boundaries misses much of the story. Perhaps the integration of today's world has fostered a renewed appreciation for global connections in the past. Historians now see that the same patterns … emerge across cultures worldwide through time, and they are trying to explain why. (Shaw 2014)

In his call for an international history of journalism, Mitchell Stephens said,

> To attempt to separate the history of American journalism from developments overseas seems … as foolish as attempting to separate the history of journalism in Ohio or Kansas

from what was happening in Boston, Philadelphia and New York … A kind of ignorance—which would not be tolerated in literature departments, in theater departments, in art departments, in science departments—is routinely accepted in journalism departments. American journalism history is dangerously and unflaggingly parochial. (Stephens 2011)

The same point should be made across the sub-disciplines of communication. Why should we separate the history of photography from advertising and journalism, or the history of computing from the history of broadcasting? If we do that, we risk missing some of the overlapping effects of the technological revolutions that are having a profound impact on life in the twenty-first century. We also miss seeing the way digital technologies undermined the newspaper industry starting in the 1960s and 1970s; we miss seeing the rise and fall of radio and television broadcasting networks; and we might miss an understanding of the way that artists and reformers have, when confronted by political obstacles, used ever-evolving new media technologies to circumvent the old ones.

This book, *Revolutions in Communication*, attempts to take international, technological, and professional issues as the framework for the narrative structure of media history. Of course, constructing a history that approaches a broad professional and international scope presents an interesting problem of scale; there is far too much to include in a standard encyclopedia, much less a single book.

One solution is to take advantage of the new media that this book describes. We might see this book as an initial structural framework for a much broader international history of the media that is already begun on a variety of collaborative websites such as Wikipedia. Since we live in revolutionary times, we ought to reflect and model those revolutionary new modes of communication in the way communication history is taught—and written.

With that in mind, readers can turn to this book's website—www.revolutionsincommunication.com—for resources that can enhance understanding of the depth, breadth, scope and geographic reach of media history topics.

7 Communication and the History of Technology

The use of tools has often been seen as one of the characteristics that distinguishes humans as a species. The historical study of technology and culture involves questions about the creation, diffusion and social impacts of tools and techniques to extend human power for agriculture, communication, energy, transportation, warfare, and other fields. Which of these techniques and fields have had more influence over civilization is a source of ongoing debate and exploration over the centuries. Technological progress was the primary factor driving civilization, according to some early anthropologists, while others have seen the use of energy or the accumulation of information as central to cultural development.

Mass media technology has had a special influence, according to many historians. We need to ask how this influence has been evident in the past and what is its likely path in the future.

7.1 Harold Innis, Marshall McLuhan, and media technologies

Two mid-twentieth-century historians most concerned with media technologies and their place in history were Harold Innis and Marshall McLuhan.

Harold Innis (1894–1952) was an economic historian who said that Western civilization has been profoundly influenced by communication technologies, while Marshall McLuhan (1911–80) was a media critic who was strongly influenced by Innis and also put communication at the center of history and social life.

Innis had the idea that civilizations using durable media tended to be oriented toward time and religious orthodoxy (Babylon), while, on the other hand, cultures with flexible media (Rome, Greece, modern) were oriented toward control of space and a secular approach to life.

> The concepts of time and space reflect the significance of media to civilization. Media that emphasize time are those durable in character such as parchment, clay and stone. The heavy materials are suited to the development of architecture and sculpture. Media that emphasize space are apt to be less durable and light in character such as papyrus and paper. The latter are suited to wide areas in administration and trade. (Innis 1950)

What this implies is both obvious and far-reaching. Clearly, detailed instructions and correspondence over a distance can take place only if medium is light and flexible enough to carry the message. A dozen letters of credit on parchment are far easier to carry than a dozen clay tablets. But rather less obviously, the qualities of media flexibility and durability may be important elements in the way a civilization is organized. The fact that you can have letters of credit means you can have a banking system with branches across large distances.

McLuhan extended Innis's ideas, which he summed up in the statement, "The medium is the message." By that, McLuhan meant that the kind of communication media—print, imaging, broadcasting, or computing—has a strong influence not only on the message itself, but also on the type of thinking and the development of the culture creating the messages. A literate print culture is very different from a visual or radio or television culture, McLuhan said.

Many people thought literate culture would be weakened by television and radio, just as generations before thought that religious oral cultures would be weakened by printing. McLuhan was relatively optimistic, although not utopian, about media technology. Digitally controlled international broadcast media were connecting print and imaging and radio and television

Figure 0.1

Time, space and communication— Harold Innis (1894–1952), a Canadian historian, noted that flexible or durable communications media had implications for the organization of empires. Photo by William A. James, Jr., Toronto City Archives.

through satellites in the 1950s and 1960s, when he was active, and the convergence of media cultures to extend human perceptions would expand exponentially, leading us into a twenty-first-century "global village." This would not lead to universal peace and happiness, he believed, but it would allow humanity to approach a greater degree of cultural maturity.

7.2 Determinism versus social construction of media technology

When historians consider how a technology is developed, there are often two basic schools of thought at work: determinism and social construction. Determinists see technologies as path-dependent, with inevitable changes and consequently predictable impacts on society. Social constructionists see a stronger influence for economics, politics, and culture that controls technological development. Neither is right or wrong, and both perspectives are often applied to the study of media technology.

Marshall McLuhan took this deterministic view when he said we need to anticipate the process of social change that communication technologies generate. But whether or not we anticipate the change, there will still be an impact.

Figure 0.2 Global villager—Marshall McLuhan (1911–80), a Canadian media theorist, saw changes in communications technology having deep social impacts. Photo courtesy of Michael McLuhan.

> Because of today's terrific speed-up of information moving, we have a chance to apprehend, predict and influence the environmental forces shaping us—and thus win back control of our own destinies. The new extensions of man and the environment they generate are the central manifestations of the evolutionary process, and yet we still cannot free ourselves of the delusion that it is how a medium is used that counts, rather than what it does to us and with us. (*Playboy* 1969)

Technological determinism was probably best articulated by historian Charles Beard, who said, "Technology marches in seven-league boots from one ruthless, revolutionary conquest to another, tearing down old factories and industries, flinging up new processes with terrifying rapidity" (Beard 1927). It was simplified into the grim motto of the 1933 Chicago World's Fair: "Science Finds, Industry Applies, Man Conforms."

To a large extent, as I will argue in this book, media technologies have been seen as less deterministic than (for example) technologies in energy or transportation. Still, it's important to realize that many experts see unavoidable impacts in media technologies.

For example, fiber optics, satellites, and digital networks have "flattened" the world, according to *New York Times* columnist Thomas Friedman. They have made it just as easy to process information or do business in India as it is in Europe or North America, he notes in his 2005 book, *The World is Flat*. While social institutions might buffer some of the impacts, the global sharing of semi-skilled information work has brought the world
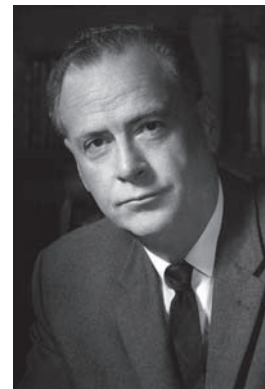
closer but has also destabilized employment in banking, news, entertainment, and other areas.

For example, Eastman Kodak, film and camera company, once employed 140,000 people, but went bankrupt in 2012 after widespread adoption of digital cameras. Where did all that economic value go, asks Jaron Lanier in a 2014 book, *Who Owns the Future?* Digital networks tend to centralize wealth and limit overall economic growth, enriching only a few in the process, he says.

According to Google founder Larry Page, the acceleration of digital technologies might eventually eliminate nine of out ten jobs, but may also make basic living costs much cheaper. "When we have computers that can do more and more jobs, it's going to change how we think about work. There's no way around that. You can't wish it away" (Walters 2014). This is classic determinism, of course, since "wishing" is certainly not the only possible social constraint on technology.

The possibility that technology could accelerate to a point where no social process could exert any control whatsoever is considered to be a technological "singularity" beyond which any future is opaque. For example, futurist Raymond Kurzweil asks what would happen if the global network of computers acquired intelligence. That would be a "singularity," because after that, no one could predict what might happen. The network could even make decisions about ending all human existence (Kurzweil 2005).

The counter-thesis to technological determinism is social construction of technology, which is the idea that social processes (including politics, economics, and culture) have more influence on the development of a technology or on its impacts than the technology's own characteristics.

For example, in most countries during the early to mid-twentieth century, nearly all communication media—from post offices to telegraph companies, to telephone and radio television systems—were socially constructed through national and international telecommunications regulatory agencies, such as the International Telecommunications Union (part of the United Nations) and, on the national level, agencies like the US Federal Communications Commission. Only print media achieved a relatively high degree of freedom, through the First Amendment in the US and similar traditions in Europe and other countries.

The relatively negative experience with over-regulation of electronic media in the US during the mid-twentieth century had a strong influence on the way the world wide web was socially constructed in the 1990s, when innovators successfully argued that the Web should be relatively unregulated, like print media (Rand 1998; *Reno v. ACLU* 1997).

Another perspective on the social construction of technology is that inventors themselves tend to infuse their own values into technology. For example, Steve Jobs of Apple computers wanted to make personal computing possible and then tried to control it when he was successful; Thomas Edison also tried to retain control of the motion picture industry. Sometimes an inventor's values come into conflict with powerful industrial or social forces. Brian Winston, for example, describes the emergence of some media technologies as influenced by what he calls the law of the suppression of radical potential (Winston 2008).

Similarly, values may also be infused in the broad inventive process as people come to believe that things could be done better. Historian Robert Friedel calls these "cultures of

improvement," as key technologies are "captured" and become part of a sustained series of changes. The jockeying for power surrounding these technologies is the process by which a technology is controlled (Friedel 2007).

So, is the medium is the message? Or, perhaps we should ask, to what extent is the medium the message? If the dark side of printing was empire, colonialism, capitalism, and the rise of the nation state, what was the dark side of electronic and digital communication? Would the new technology just intensify the same trends? Or would it, as McLuhan believed in the 1960s, produce a qualitative change in society and cultural life, liberating users from the limitations of the past (Blondheim 2007)?

There's no question that, in comparison to McLuhan's era, we are seeing rapid, deep qualitative changes in the media and in society. Old media empires have disintegrated and new kinds of media functions are animating an emerging global culture. Rather suddenly in human history, we have instant language translation, free international encyclopedias, and free media exchanges in text, audio, and video between individuals and groups from anywhere in the world. None of these things was possible a decade ago. We also have unusual public encounters between very different cultures that have never much been in contact before, and as a result, conflicts over closely held values and an increasing drift towards international speech restrictions.

7.3 Utopians and Luddites

When people embrace technology in an extremely optimistic way, they are said to be technological utopians. For example, much of the rhetoric surrounding the development of the telegraph, the early years of radio, and the early years of the internet tended to be influenced by this sort of enthusiasm. The telegraph will make "one neighborhood of the whole country," Samuel Morse wrote about 125 years before McLuhan's idea of the "global village." Similarly, H. G. Wells envisioned the morning television report as a staple of a utopian communal village of the future (Wells 1898).

When people reject technology in an extreme and pessimistic way, they are sometimes called Luddites. The term goes back to 1811, when thousands of British textile workers lost their jobs following the introduction of steam-powered machinery. Mobs of starving workers broke the textile machinery and blamed it on a mythical figure named Ned Ludd, who, according to legend, was a simple-minded boy who accidentally broke textile machinery. Apparently, the Luddites only intended to destroy property, but there were accident deaths of mill owners, and as a result, about two dozen were executed and more were exiled to Australia. French workers with a similar idea of resisting unfair working conditions by breaking machinery with wooden shoes (sabots) led to the term sabotage.

The Luddite movement was very much on the mind of London *Times* owner John Walter II when he promised workers that they would keep their jobs even after steam printing presses were introduced in 1814. Walter's enlightened response didn't work 150 years later, when printing technology triggered a wave of "new Luddite" labor disputes, including the very damaging four-month New York newspaper strike of 1962–3 (Kempton 1962).

Enthusiasm for new technologies has been more the rule than the exception, but skepticism about virtually every technology is not difficult to find in history. One of the chief critics of technology in the nineteenth century was Henry David Thoreau (1817–62), the transcendentalist writer and author of "Walden." He was especially skeptical about the telegraph, which he considered merely "an improved means to an unimproved end."

Another technological skeptic was writer and diplomat Henry Adams (1838–18). He worried that civilization had left behind an old world concerned with religion and had entered a new one, a world concerned with science and technology but morally and philosophically adrift. His point of comparison of the two ages of civilization was between the Virgin, a symbol of old Europe, and the Dynamo, a symbol of new Europe (Adams 1917). This idea has been often repeated in discussions about technology.

7.4. Fallacies and anachronisms

Sometimes predictions for technological directions that do not occur are called technological fallacies. The fallacy that computers would lead to a police state is important to consider in the history of computing because, in the 1970s, it led to a preference for individual, non-networked personal computers.

It was also a partial fallacy for Alexander Graham Bell and other inventors of the late nineteenth century to predict that the telephone would be used more or less as a medium for music and news broadcasting, in the way that eventually occurred with radio in the 1920s. It was a complete fallacy for Guglielmo Marconi, inventor of the radio, to predict that radio waves could stimulate plants and act as a new kind of fertilizer. In the 1950s and 1960s, comic book detectives carried "wrist televisions" like wrist watches to communicate with each other—again, something of a partial fallacy, in that such devices are possible. Following the introduction of the Apple watch, which doubles as a cell phone and personal information assistant, we may now have the return of the comic book detective.

Envisioning the future has always been an interesting and sometimes productive pastime, but the future isn't what it used to be, as many authors have noted. The atomic-powered airplane, the personal helicopter, the robot valet—all have been chalked up by now as technological fallacies (Barbrook 2007; Dregni 2006).

Anachronisms (which means "contrary to time") often confuse two or more time periods. For instance, medieval paintings and Renaissance-era woodcuts often portray biblical figures with fashions or weapons typical of the era when the paintings or woodcuts were made. The usual portrait of Johannes Gutenberg is an anachronism, since it was created to illustrate a different person 100 years after Gutenberg's death and totally misses the typical fashions and style of Gutenberg's era in Mainz, Germany, as noted in Chapter 1.

7.5 Classifying media—hot and cool

Media can be classified by their impacts on audiences, McLuhan said in his 1964 book *Understanding Media*. Some types of media tend to be "hot"—that is, they invite easy

participation and less conscious immersion. Others tend to be "cool," and audience members have to take a more active role in constructing meaning.

Just where each medium might fall on a hot-cool spectrum depends on its cultural and technological context. In the 1960s, McLuhan could say that cinema was "hot" because audiences were fully immersed in the medium, suspending disbelief, while television was "cool" because, at the time, it was a low-definition medium that required some effort to enjoy. Yet over time, as television technology improved, the medium became more and more immersive. Today, McLuhan might see television as much hotter than it once was.

The idea wasn't entirely new; for example, Enlightenment philosopher David Hume said in 1742 that a free press should not be feared because the medium could not incite rebellion: "A man reads a book or pamphlet alone, coolly. There is no one present from whom he can catch the passion by contagion" (Hume 1742).

The categories are not really fixed, and McLuhan often said provocative things he called "probes" just to stir up conversation. For instance, he thought of radio as a "hot" medium since it immersed audiences, and yet many others have seen radio as requiring a sense of imagination to fill in the details of the story, which would make it a "cool" medium. Perhaps his most provocative idea was that "hot" new media technology could be so overwhelming that many people would go into a subtle state of shock, a "psychic rigor mortis," as they tried to "cool off" its effects. Modern concerns about addiction to social media and online video gaming systems might be seen as examples of this idea.

In any event, McLuhan's linear view of hot–cool media categories is only the beginning of the study of psychological reactions to media. Studies of brain activity using functional magnetic resonance imaging (fMRI), which was not available in McLuhan's time, show that reading books and watching cinema affect different portions of the brain and deepen our ability to understand the complexities of social life. And yet, for reasons not yet explained, television has less of this effect (Paul 2012).

7.6 Media trajectories: McLuhan's tetrad of technology change

New communications technologies change and grow in familiar patterns that McLuhan said could be mapped out in what he called a "tetrad" of four effects. A new medium can (1) enhance, (2) obsolesce, (3) retrieve, and (4) reverse. For example, the arrival of radio enhanced news and music, it obsolesced (or made less prominent) print and visual media; it retrieved the spoken word and vaudeville-style music hall shows; and it reversed (when pushed to its limits) into television (McLuhan 1992). We might also say that television enhanced the visual, obsolesced the audio, retrieved theatrical spectacle, and reversed into "500 channels with nothing on."

The comparison can help clarify and anticipate some of the social changes that technology creates. We ask:

1 What does the new medium *enhance* or amplify?
2 What becomes *obsolete* or driven out of prominence?

    3 What is *retrieved* that had nearly been forgotten from an earlier time?

    4 How does the medium *reverse* or flip or diminish into something different?

What about digital communication and the Internet? In his 1964 book, *Gutenberg Galaxy*, McLuhan said, "A computer as a research and communication instrument could enhance retrieval, obsolesce mass library organization, retrieve the individual's encyclopedic function and flip into a private line to speedily tailored data of a salable kind." In other words, networked computers would facilitate memory but allow commercial invasions of privacy.

A further example is the effect of digital networks on print media. The impact of digital media has been to enhance immediacy, obsolesce printed newspapers, retrieve letter writing, and reverse or diminish the political culture of the press.

As media revolutions continue to reverberate, McLuhan's tetrad is a useful way of considering change, although we need to be careful about the uncertainty of historical cause-and-effect relationships. In formal logic, cause-and-effect can involve necessary, sufficient, or contributory causes. Modern historians tend to think mainly in terms of contributory causes because the field is so broad, and so many alternative explanations are possible for complex situations. Historians also tend to consider inter-related levels of impact, such as primary, secondary, and tertiary impacts that may come into play.

A primary impact of printing, for instance, was to make it easier to publish Bibles, and most translations of the Bible into national languages took place after the introduction of printing around 1455. A secondary impact of these translated Bibles was to provide a model for the unification of national languages, which were often quite different from region to region. A tertiary impact of translated Bibles was the ease with which Church doctrines could now be questioned, which contributed to the Protestant Reformation.

7.7 Classifying media services

Another way to understand the changes in mass media is to consider how information is created and channeled (See Figure 0.3). If the source of information and the choice of viewing time and place are all centrally determined, from within a media company, then this is a top-down, traditional mass media service. If the individual controls reception time and place by using a recorder or a video-on-demand service, then that is rich content.

On the other hand, if the individual controls both the content and the time and place of reception, that's social media, where everyone is both a source and a receiver. And if an individual is the source and the control is central, it's probably a virtual market place.

The diagram is an important demonstration of the use of theory in communications history. The idea that rich content, virtual markets and social media could be created with digital technology was an important inspiration for software engineers.

For additional reading, discussion questions, links to video, and other suggestions, see www.revolutionsincommunications.com.
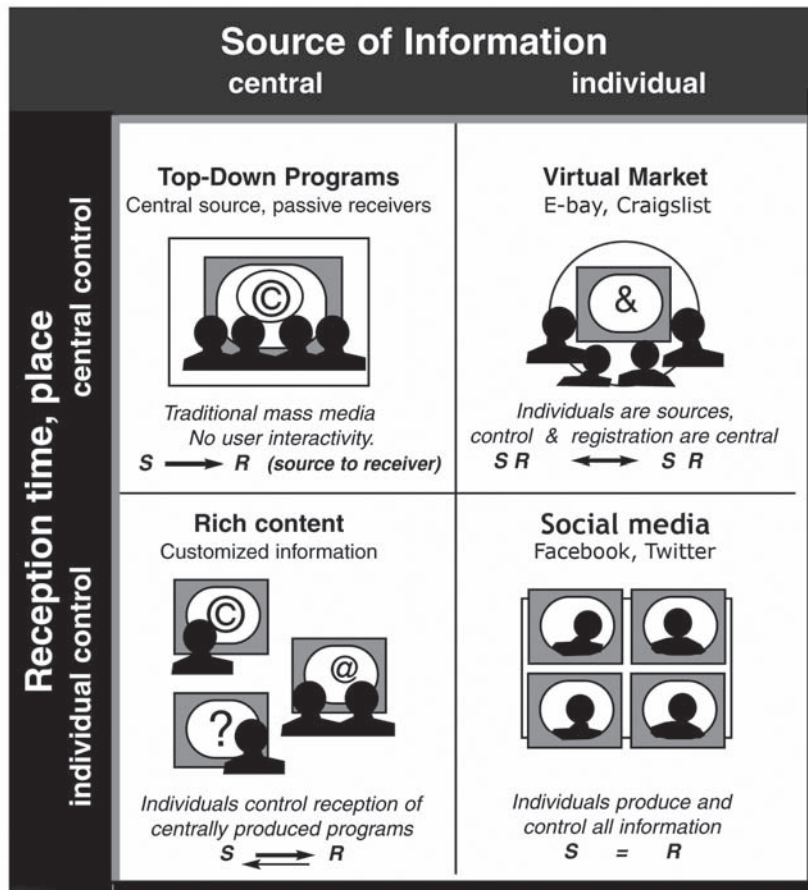
Figure 0.3 Media Traffic—Digital networks have enabled revolutionary changes in the flow of communication, as this chart shows. Traditional media (upper left) is characterized by central control of production at the source as well as central control of the time and place of reception. Other forms of media traffic are characterized by some level of individual control. Illustration by Bill Kovarik; adapted from Sally J. MacMillan, 1999.