



Living

in the

Information Age

• A New Media Reader

Erik P. Bucy.



LIVING
in the
INFORMATION AGE

A New Media Reader

Erik P. Bucy
Indiana University

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Preface

From Silicon Valley to Madison Avenue, it's no longer a prediction or distant vision: The vaunted Information Age is here. The rise of networked computing and digital media over the past three decades has brought about a communications revolution and inalterably changed the way traditional media do business. Gatekeeping roles are eroding, storytelling techniques are transforming, and new media entrepreneurs are challenging established industry players and practices. The credo for a new millennium: Embrace the hive that is the World Wide Web or be left behind. And just as the media industries are not immune from Moore's Law—the tendency for computer processing power to double every 18 months to 2 years—so citizens of the information society cannot escape the forces unleashed by technological advancement. Consumers are reaping the rewards of revolution, but access to new technology remains uneven and many adopters, notably of computers, abandon their complicated machines after a period of initial, frustrating use. Digital media clearly do not benefit everyone equally.

In this time of rapid transformation, two developments in particular are revolutionizing the media and telecommunications industries: the transition from analog to digital systems, and the rapid expansion in the reach, capabilities, and user-friendliness of the Internet through the World Wide Web. These developments have far-reaching social, economic, and professional implications and are fundamentally changing the way audiences approach and utilize media. Increasingly, media consumers are seen as active *users* of communication technologies rather than passive *receivers* of content. At the same time, content providers are retooling their operations to remain viable in a media environment characterized by increased competition, program experimentation, and audience restiveness. Needless to say, the dynamism of this theory/practice interface offers students of new media ample opportunity for intellectual exploration and engagement.

PURPOSE AND ORIENTATION

Living in the Information Age offers students of new media focused articles that illuminate the social, psychological, and professional impact of communication technologies. Much of the allure of digital media revolves around the latest hardware and software developments. Yet however much the “new, new thing” may attract our attention, ultimately it is counterproductive to weigh the meaning and consequences of new media technologies exclusively from the standpoint of current applications. In an era of seamless change, narrowly focusing on the latest programs and applications only delivers transient knowledge—information with a short shelf life. Instead, readers stand to benefit over the long term by considering broader trends, issues, and patterns in the evolving information and entertainment ecology.

The articles comprising *Living in the Information Age* have thus been selected on the basis of their conceptual import and industry relevance. Included are readings that illuminate important information-age

issues (e.g., digital copyright controversies and the Napster file-sharing phenomenon) while incorporating more explanatory pieces describing the broader, enduring role of communication technology in society. Developments addressed in this reader include, among others, the following trends.

- How multitasking and the accelerating pace of everyday life can be viewed as byproducts of both computer efficiency and seemingly harmless devices like the remote control
- How the Internet can be profitably thought of as a *communication* medium that enables different levels of social and professional interaction
- How interactivity made possible by networked computing also increases opportunities for surveillance and incursions on personal privacy

To assist learners in a classroom setting, each reading is prefaced by a short introduction and three questions for critical thinking and discussion. The questions are offered to encourage in-depth consideration of the issues raised in the readings and spark spirited discussion of the material. Following each article are suggestions for performing relevant follow-up searches using the InfoTrac® College Edition full-text article database.

As any instructor of information-age topics knows, courses in new media are themselves under continuous revision, reflecting the dynamism of the industries and processes they are dedicated to explaining. Prior to digital convergence—the merging of once-separate media technologies into new hybrid forms—courses in communication, journalism, and media studies all but ignored the impact of computing, while offerings in computer and information science programs routinely overlooked mass media. Given the transition to a digital society, however, information-age topics are rapidly moving to the center of debates about mass media and their volatile future. In the coming decade, information-age approaches will become even more central to general mass communication courses as more media become computer reliant and digitally based. Inasmuch as trends in computer culture tend to foreshadow and predict developments in the broader consumer culture, information-age issues that may still seem peripheral today could very well occupy the mainstream of media studies tomorrow.

ORIGIN AND ORGANIZATION

The idea for *Living in the Information Age: A New Media Reader* grew out of an introductory telecommunications course I have taught for the past several years at Indiana University. Reflecting the organization of this course, *Living in the Information Age* is divided into six major thematic sections that trace the development of, survey the literature on, and explore the impact of new technologies on the media landscape, examining both conceptual and practical aspects of life in an information society. The articles included in this reader examine the utopian promises of technology's true believers as well as the dystopian views of technology's critics, all the while exploring how the media industries are being transformed through digital convergence and corporate concentration. *Living in the Information Age* thus provides students of new media with a broad understanding of the impact of new communication technologies while encouraging original thinking about media, both analog and digital, in relation to theory.

From an educational standpoint, *Living in the Information Age* is intended to enhance college-level courses addressing media and technology, social informatics, cyberculture studies, new communications technologies, or mass communication and society, with an emphasis on the changing media environment. Dozens of courses are beginning to emerge in this area—indeed, new media offerings are currently catalogued by the Resource Center for Cyberculture Studies (<http://www.com.washington.edu/rccs>)—but despite growing student and scholarly interest in new media, there are few satisfactory texts.

Living in the Information Age is designed to help bridge this gap. Note, however, that even this reader has its limits; there are few articles, for example, on business uses of the Internet. The emphasis throughout this collection is on the social/psychological implications and professional impact of new media, not on the dynamics of e-commerce per se. On the other hand, the media ethicist should feel quite at home contending with the legal and moral dilemmas presented by the issues discussed in many of these readings.

Although it may be used as a primary text, *Living in the Information Age* is intended to serve as a supplementary resource for introductory communication courses that have a new media orientation. Specifically, *Living in the Information Age* is designed as a companion volume for the Wadsworth textbooks *Media Now* (3rd ed.) by Joseph Straubhaar and Robert LaRose, *Electronic Media in the Information Age* by Robert LaRose and Joseph Straubhaar, and *Electronic Media* by John Craft, Frederic Leigh, and Donald Godfrey. Unlike traditional textbooks, which are obliged to offer a broad historical overview of the different media industries, *Living in the Information Age* focuses on topical issues that can serve as the basis of individual class discussions. In larger classes, the readings in *Living in the Information Age* can be used to inform main lectures as well as smaller discussion sections. Whether packaged with a more traditional textbook or assigned separately, *Living in the Information Age* presents a variety of intriguing vantage points from which to examine the new media landscape.

The organization of the reader roughly follows the general outline of *Media Now* (3rd ed.) and *Electronic Media in the Information Age*. The first part of *Living in the Information Age* consists of articles dealing with the evolution of the information society and overviews a set of theories relevant to understanding new media. The next section examines issues pertaining to convergence and concentration in the various media and telecommunications industries. The third section highlights interesting issues “at the interface” of new media and society, exploring new technologies, the self, and social life as well as media acceleration and the increasing velocity of everyday life. The fourth section addresses social and economic impacts of networked computing as well as dystopian views of information technology. The fifth section delves into issues surrounding electronic democracy and uneven access to the Internet, commonly referred to as the “digital divide.” The last section raises concerns about copyright, privacy, and computer hacking—legal and ethical dilemmas that are perhaps unique to our Information Age.

While this reader covers a broad range of topics, some issues important to readers may have been overlooked. Related topics that could be further addressed in future editions include (but are by no means limited to) e-commerce, information overload, wearable computing, cyberpunk fiction, information warfare, transborder data flow, digital crime, online ethics, cultural biotechnology, sex and morality in cyberspace, and continuing explorations of the impact of new technology on specific media industries and practices. I welcome any comments or suggestions readers may have in response to the current selection of articles as well as ideas regarding future editions of *Living in the Information Age*.

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I am also especially grateful to those authors who recognized the educational value of this project and permitted their work to be reprinted in this collection, either at a nominal fee or free of charge.

Sharing knowledge and freely circulating ideas is the essence of the educational enterprise and provides students and professors alike with the intellectual raw materials necessary to arrive at new insights.

The editorial team in Wadsworth's communication division was instrumental in making this project happen and deserves special praise for their enthusiasm and support. I thank in particular Karen Austin, who recognized the value of this reader early on and advocated for its development even when the permissions fees mounted. Lori Grebe also played a pivotal contact role during the book's nascent stages. Gretchen Otto and the helpful professionals at G&S Typesetters brilliantly managed the production aspects of this project.

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*Erik P. Bucy, Ph.D.
Indiana University, Bloomington
ebucy@indiana.edu*



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SECTION I



The New Information and Entertainment Ecology

This section establishes a foundation for examining the development and consequences of the new information and entertainment ecology. The use of the word *ecology* to describe the information landscape evokes the environmental nature of today's communications media; in many ways, media serve as a primary source of sensory stimulation, knowledge gain, and need satisfaction. Information technologies and entertainment media literally saturate modern life, to the point where it has become difficult to imagine life *without* them. The readings in Chapter 1 explain the origins and development of the information revolution, highlighting the developments that made our current mediated existence possible. The convergence of digital technology and enhanced telecommunications systems since the early 1980s has resulted in the explosive growth of new media in recent years, yet the trends that set this process in motion were long in the making. The readings in Chapter 2 present several theoretical approaches relevant to studying new media, including *mediamorphosis*, which describes the process of media evolution as well as how new technologies diffuse or spread throughout society, and *medium theory*, which explains how mass media don't merely convey information but actively shape the social environment. Additionally, readings on two audience-centered theories of media use are presented, the first on *uses and gratifications*, addressing the needs that media fulfill and the sources of need satisfaction that media compete with, and the second on *parasocial interaction*, the experience of social intimacy with an on-air radio or television personality, albeit at a distance.

The Communication Revolution

Reading 1-1

The Roots of Revolution

Frances Cairncross

EDITOR'S NOTE

In the first of these two excerpts from The Death of Distance: How the Communications Revolution Will Change Our Lives, Frances Cairncross discusses the major changes that have occurred since 1980 to the three communications technologies most important to the Information Age—the telephone, television, and networked computer. In the second excerpt, “The Trendspotter’s Guide to New Communications,” she offers thirty predictions for how the “death of distance”—her term for the ability to reach anyone in the world at any moment through electronic media—will shape the future.

CONSIDER

1. What important advances in communications technology have occurred since 1980?
2. In your opinion, do the transformations that have taken place in communications technologies deserve to be called “revolutionary”?
3. Which predictions do you *agree* with in “The Trendspotter’s Guide to New Communications”? Which do you *disagree* with, and why?

It is easy to forget how recently the communications revolution began. All three of today's fast-changing communications technologies have existed for more than half a century: the telephone was invented in 1876; the first television transmission was in 1926; and the electronic computer was invented in the mid-1940s.¹ For much of that time, change has been slow, but, in each case, a revolution has taken place since the late 1980s. In order to approach the future, we need first to ask why the really big changes have been so recent and so far-reaching.

THE TELEPHONE

Since the 1980s, the oldest of the three technologies has undergone two big transformations—an astonishing increase in the carrying capacity of much of the long-distance network and the development of mobility. They result, in the first case, from the use of glass fibers to carry digital signals, and, in the second, from the steep fall in the cost of computing power.

For much of its existence, the telephone network has had the least capacity for its most useful service: long-distance communication. A cross-Atlantic telephone service existed early on: indeed, by the 1930s, J. Paul Getty could run his California oil empire by telephone from European hotels, in which he chose to live because their switchboard operators could make the connections he needed.² But even in 1956, when the first transatlantic telephone cable went online, it had capacity for only eighty-nine simultaneous conversations between all of Europe and all of North America.³ Walter Wriston, former chairman of Citibank, recalls the way it felt to be an international banker in the 1950s and 1960s: "It could take a day or more to get a circuit. Once a connection was made, people in the branch would stay on the phone reading books and newspapers all day just to keep the line open until it was needed."⁴

Since the late 1980s, capacity on the main long-distance routes has grown so fast that, by the start of 1996, there was an immense and increasing glut, with only 30 to 35 percent of capacity in use.⁵ The main reason for this breathtaking transformation was the de-

velopment of fiber-optic cables, made of glass so pure that a sheet seventy miles thick would be as clear as a windowpane. The first transatlantic fiber-optic cable, with capacity to carry nearly 40,000 conversations, went online only in 1988. The cables that will be laid at the turn of the century will carry more than 3 million conversations on a few strands of fiber, each the width of a human hair.

Meanwhile, new cables are being laid; new satellites, which carry telephone traffic on less popular routes, are due to be launched; and a range of low-orbiting satellites may eventually carry international traffic between mobile telephones. In addition, new techniques are starting to allow many more calls to travel on the same fiber. It is as though an already rapidly expanding fleet of trucks could suddenly pack several times as many products into the same amount of space as before.

This massive growth in capacity is increasingly reflected in tariffs. MCI's generous Mother's Day gesture [of free long-distance calls in 1995 and 1996] cost the firm plenty, but would have been impossible without the growth in capacity on the American network, where the traffic on that day is probably the heaviest of any day, anywhere in the world. Already, international and long-distance call rates have been falling, changing our mental map of the world. But the cost of carrying an extra telephone call across the Atlantic and on many other long-distance routes has fallen much further and now approaches zero. This fall in rates is the drive behind the death of distance.

By the middle of 1997, the threat of a glut had receded. The reason was the enormous increase in demand created by the Internet, which carries messages of many sorts at prices that ignore distance. When distance carries no price penalty, people communicate more, and in new ways. In the future, the lavish plans to build more capacity and ingenious technologies to compress signals will continue to push prices down, until it costs no more to telephone from New York to London than to the house next door.

While capacity has been increasing, the telephone has become mobile. Cellular communication, which dates back to the period immediately following World War II, became commercially viable only in the early 1980s, when the collapse in the cost of computing made it possible to provide the necessary processing power at a low enough cost.

Now, the mobile telephone may arguably be the most successful new way of communicating that the world has ever seen—already, more than one tele-

From *The Death of Distance: How the Communications Revolution Will Change Our Lives* by Frances Cairncross. Boston, MA: Harvard Business School Press, 1997, pp. xi-xvi, 4-12. Copyright © 1997 by Frances Cairncross. Reprinted by permission of Harvard Business School Press.

phone subscription in seven is to a mobile service. Mobile telephony's share will continue to rise: in 1996, it accounted for 47 percent of all new telephone subscriptions.⁶ For conversations, people will come to use mobile telephones almost exclusively.

They will be able to communicate from every corner of the globe: in the course of 1996, two stranded climbers on Mount Everest used mobile telephones to call their wives. One wife, 2,000 miles away in Hong Kong, was able to arrange her husband's rescue; the other, sadly, could merely say a last farewell.⁷

The mobile telephone also allows better use of the most underused chunk of time in many peoples' lives: traveling time. People will use their commuting time more fully, but other benefits may be even greater: passengers can be checked in for flights during the bus ride to the airport, for example, and maintenance staff can schedule visits more efficiently, knowing exactly when equipment in transit will arrive. The mobile telephone thus raises productivity by using previously idle time.

THE TELEVISION

At the end of the Second World War, a mere 8,000 homes worldwide had a television set. By 1996, that number had risen to more than 840 million—two-thirds of the world's households.⁸ The basic technology of television sets has not changed over those fifty years, but the transmission of programs has been revolutionized by the development of communications satellites. Now another revolution—in channel capacity—has begun.

In fall 1963, people around the world witnessed for the first time an important but distant political event as it was taking place. The 1962 launch of Telstar, the first private communications satellite, had made possible the live global transmission of the funeral of President John F. Kennedy.⁹ The psychological impact was huge: this unprecedented new link among countries would change perceptions of the world, creating the sense that the world's peoples belonged to a global, not merely local or national, community.

The 1988 launch by PanAmSat of the first privately owned commercial international (as opposed to domestic) satellite constituted another milestone, cutting the cost of transmitting live television material around the world. As recently as the 1970s, more than half of all television news was at least a day old. Today, almost all news is broadcast on the day it occurs.¹⁰ Big

events—the fall of the Berlin Wall, the Gulf War, the O. J. Simpson trial verdict—go out to billions of viewers as they happen.

Until recently, most television viewers around the world have had access to perhaps half a dozen television channels at most—and often to only two or three. The main reason is purely physical: analog television signals are greedy users of spectrum. Only in the United States and a handful of other countries, and mainly only since the 1980s, have cable-television networks—less constrained by the limits of spectrum—brought people real viewing choice.

Now choice is expanding with breathtaking speed. Toward the end of the 1980s, communications satellites began to broadcast directly to a small dish attached to people's homes, thus inexpensively distributing multichannel television. Suddenly, more viewers had more choice than ever before.

In the mid-1990s came another revolutionary change: broadcasters began to transmit television in digital, not analog, form, allowing the signal to be compressed and, consequently, far more channels to be transmitted, whether from satellite, through cable, or even over the air. Like the long-distance parts of the telephone network, a service that had been constrained by capacity shortage for most of its existence has suddenly begun to build more capacity than it knows what to do with.

The result will be a revolution in the nature of television. For those who want it (most of us), the old passive medium will remain, a relaxing way to pass the evening after a day spent at work. But television—the business of transmitting moving pictures—will develop many more functions, including new roles in business. The finances of television will also change, and in a way that many viewers will resent. The scarcest thing in television is not transmission capacity, but desirable programs, especially live programming. In the future, these will rarely be available at no cost to viewers. Increasingly, viewers will pay directly for what they most want to watch.

THE NETWORKED COMPUTER

The newest of the three building blocks of the communications revolution, the electronic computer, has evolved fastest. In 1943 Thomas Watson, founder of IBM, thought that the world market had room for about five computers.¹¹ As recently as 1967, a state-of-