Telecommunications

An Introduction to Electronic Media

Seventh Edition

Lynne Schafer Gross

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McGraw Hill

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PREFACE

Purpose

Telecommunications is one of the most potent forces in the world today. It influences society as a whole, and it influences every one of us as an individual. As each year passes, telecommunications grows in scope. The early pioneers of radio would never recognize today's vast array of electronic media—broadcast television, cable TV, direct broadcast satellite, multimedia, videocassettes, the Internet—just to name a few. Neither would they recognize the structure that evolved in such areas as regulation, advertising, and audience measurement. They would marvel that their early concepts of equipment have led to such developments as audiotape recorders, cameras, videotape recorders, digital effects generators, nonlinear editors, computer graphics, and satellites. If they could see the quantity and variety of programming available today, they might not recognize that it all began with amateurs listening for radio signals on their "primitive" crystal sets.

All indications are that telecommunications will continue to change at a rapid pace. As it does, it will further affect society. All people, whether they be individuals working in the telecommunications field or individual members of society, have a right to become involved with media and have an obligation to understand why people need to interact with the media. Some knowledge of the background and structure of the industry is an essential basis for this understanding.

A major goal of this book is to provide just that kind of knowledge so that intelligent decisions about the role of telecommunications can be made both by those who are practitioners in the field and those who are members of the general society.

Organization of the Book

Influence of the Internet. This is the seventh edition of this book, the first appearing in 1983. This edition is somewhat reorganized and greatly updated to include the many changes that occurred in the media field in the last few years. Much of the updating involves the increasingly important role of the Internet. In addition, the issues surrounding the electronic media have altered, and the prognosis for the future has changed accordingly.

Forms and Functions. The book is divided into two parts, one dealing with forms and the other dealing with functions. The first section deals with the various media forms—commercial radio, commercial television, cable television, noncommercial broadcasting, other forms of telecommunications, corporate telecommunications, and international electronic media. The chapters are in the same order as the last edition. The second section deals with functions and is

reorganized to place more emphasis on laws, regulations, and ethics. It covers business practices, programs, laws and regulations, ethics and effects, advertising, audience feedback, and production and distribution.

Flexible Chapter Sequence.   The chapters may be read in any sequence; some of the terms that are defined early in the book, however, may be unfamiliar to people who read later chapters first. The glossary can help overcome this problem. It includes important technical terms that the reader may want to review from time to time, as well as terms that are not necessary to an understanding of the text but that may be of interest to the reader.

The Beginning and Ending.   The book begins with a short prologue on the significance of telecommunications that points out the importance of media. It ends with a short epilogue on career opportunities in the field.

Special Features

Issues and the Future.   All the chapters should lead the reader to assess the strengths and weaknesses of the particular subject being discussed. Each chapter has a section on "Issues and the Future." This should prepare the readers for fast-changing events that they will read about in newspapers and magazines.

Structure.   Each part of the book begins with an overall statement that relates the chapters to one another. Each chapter begins with a pertinent quote and a short introduction. At the end of each chapter a summary outlines major points in a manner slightly different from that given within the chapter. For example, if the chapter is ordered chronologically, the summary may be organized in a topical manner. This should help the reader form a gestalt of the material presented.

New! Thought Questions within the Chapter.   Further aids in understanding the material are the thought questions found highlighted within the text and at the end of each chapter. These questions do not have "correct" answers, but rather are intended to lead the reader to form judgments. Discussions of these questions will indicate that varying opinions surround telecommunications issues.

New! Issues Boxes.   A new feature is the critical thinking boxes scattered throughout the book. These discuss current controversial issues, usually of an ethical nature. They end with a series of questions designed to stimulate the readers' thinking.

New! Internet Sites.   Also new to this edition are selected Internet sites that are pertinent to each chapter. A more comprehensive list of sites is available on McGraw-Hill's website.

Review Guides.   Marginal notes appear in each chapter. These notes highlight the main subject being discussed in the adjacent paragraphs. Taken together,

these notes serve as review points for the reader. Throughout the text, important words are boldfaced. These, too, should aid learning and are defined in the glossary.

Further Study. Chapter notes, which appear at the end of the book, are extensive and provide many sources for further study of particular subjects.

Supplementary Materials

The supplementary materials available with this text include instructor's material and text updates on the Internet, test items, and videotapes.

Instructor's Manual on the Web:
http://www.mhhe.com/gross

The instructor's material available with *Telecommunications* offers a sample course outline that can be adapted to semesters or quarters, as well as learning objectives, suggested lecture topics/activities, films and tapes, and a bibliography for each text chapter.

Information on the Internet

Because telecommunications is such a fast-changing field, the author will provide updated material for instructors who are using the text. These updates will be available by accessing McGraw-Hill's web page at www.mhhe.com/gross. Web sites related to the book content also appear here. Sales representatives can provide additional information.

Also available for students, *INTERLINK, The McGraw-Hill Internet Guide for Mass Communication and Telecommunication Students and Instructors,* by Joseph Bridges, Malone College, offers insights and practical guidance for general use of the Internet. http://www.mhhe.com/interlink

MicroTest III

The questions in the test item file are available in print as well as on MicroTest III, a powerful but easy-to-use test-generating program by Chariot Software Group. MicroTest is available for Windows and Macintosh personal computers. With MicroTest, an instructor can easily select the questions from the test item file and print a test and answer key. The instructor can customize questions, headings, and instructions; can add or import his or her own questions; and can print the test in any choice of fonts the printer supports. Instructors can obtain a copy of MicroTest III by contacting their local McGraw-Hill sales representative.

Videotapes

McGraw-Hill sales representatives can advise instructors concerning selected free videotapes that they can obtain to enhance lectures.

Acknowledgments

This book represents the combined efforts of many people, including the following reviewers who offered excellent suggestions:

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LYNNE SCHAFER GROSS

Prologue

THE SIGNIFICANCE OF TELECOMMUNICATIONS
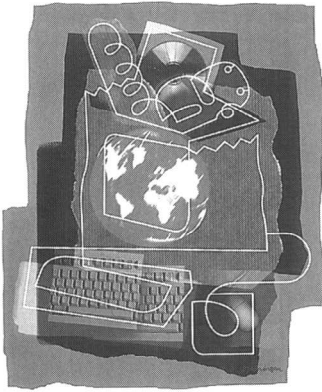
The electronic media are a major source of entertainment and information for most people. They act as a soothing relaxant, a warm companion, a regular babysitter, a friendly sage, a portage to a vicarious adventure, and a window to the outer world. Radio and TV answer simple questions such as whether or not to carry an umbrella, and they give us more complex information so we can better choose our country's leaders. They keep us up to date in times of disaster and keep us in touch with each other through periods of happiness, pain, and curiosity. Television has caused lunchrooms around the country to buzz with talk of the latest *Friends* episode and the latest news from Washington.

And yet the electronic media are far from perfect. Detractors complain about the sensationalism of news and talk shows. Parents bemoan the violence of such programs as *Mighty Morphin Power Rangers* and the wasted time

Television is less a means of communication (the imparting or interchange of thoughts, opinions, and information by speech, writing, or signs) than it is a form of communion (act of sharing or holding in common; participation, association; fellowship).

Richard Schickel, *The Urban Review*

that children (and adults) spend on video games and "surfing the net." The under-lying commercialism of most electronic media systems causes a "buy, buy, buy" mentality. Favorite shows are cancelled—seemingly for no reason. To some, the electronic media appear to be run by greedy moguls devoid of ethics and uncon-cerned about the influence their actions have on the citizenry as a whole.

A transmitter broadcasting radio waves, a TV set sitting in the corner of the living room, a microphone picking up sound, a fiber optic delivering a phone sig-nal—none of these is good or bad. They are at the mercy of the people who use them, both those who are involved with them as a career and those who interact with them on a day-to-day personal basis.

Relationships to Electronic Media

The degree to which individuals interrelate with electronic media is great. Ameri-cans own a large number of electronic communication devices (see Exhibit P.1).

Exhibit P.1

Percent of Households with Various Telecommunications Devices and Services.

Sources: Bureau of Census, *Statistical Abstracts of the United States, 1997* (Washington, DC: Department of Commerce, 1997), 566, 568; *Cable Television Developments* (Washington, DC: Cable Television Association, 1997), 1, 3; "The Technology Culture," *Wall Street Journal,* 16 June 1997, 16; "By the Numbers," *Broadcasting and Cable,* 11 May 1998, 82; "Wireless Cable Pins Hopes on Internet," *Broadcasting and Cable,* 4 May 1998, 60; "DBS Prepares for Breakeven," *Broadcasting and Cable,* 22 June 1998, 60; "Viewer Fragmentation on Rise," *Electronic Media,* 20 June 1998, 30.
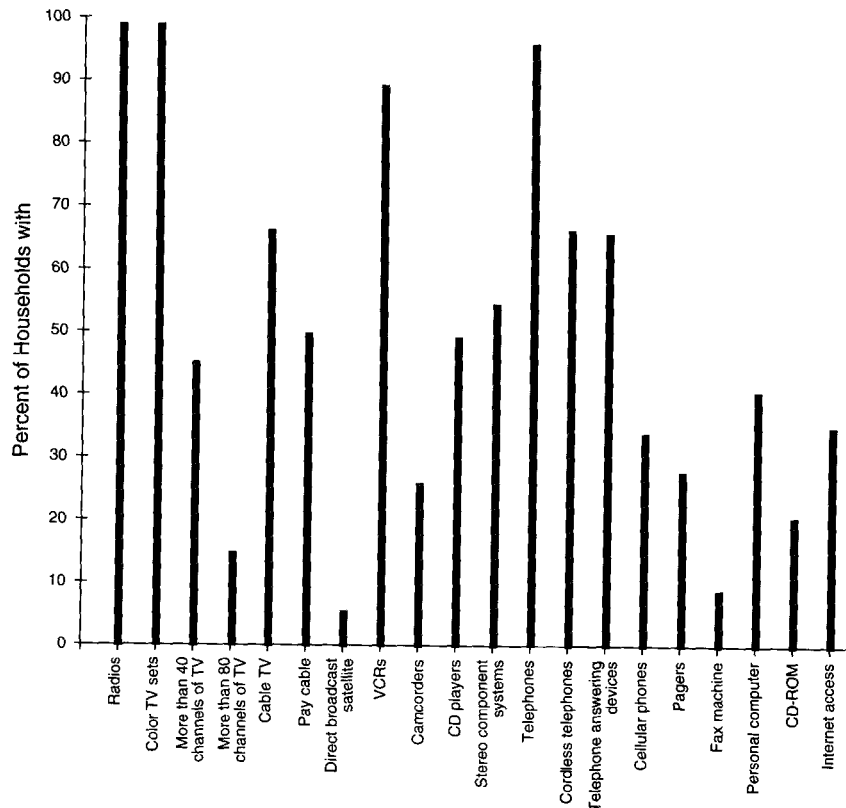
They don't just own them; they use them. The average person listens to the radio   **use**
three hours a day and watches TV four and a half hours a day.[1] And that doesn't
include the time spent playing video games, talking on the phone, scouring the
Internet, or faxing documents.

For the most part people seem to like what they see and hear. A *TV Guide*   **attitude**
survey found that almost half of the population would not give up television
viewing for less than a million dollars and that only 12 percent of people feel
guilty about the amount of TV they watch.[2] Year after year, people say TV is
their major source of news.[3]

A Matter of Terms

Telecommunications is a fast-paced business with major changes occurring al-
most daily. It is also young—a product of the twentieth century. Although the
pervasive influence of telecommunications has occurred in a short space of time,
its intensity compensates for its youth.

The widespread study of radio and television at the university level did not   **radio and TV**
begin until the 1960s. At that time, there were two media—radio and television,
and together they were called **broadcasting.** Radio consisted of a fairly large
number of local stations with specific formats. Television was dominated by
three commercial networks—ABC, CBS, and NBC—and their **affiliated** sta-
tions. A few stations were **independent** and did not broadcast material from any
of the three big networks, but they were definitely considered second class.

By the late 1960s, broadcasting was divided into two categories—commercial   **commercial and**
and public (originally called educational). These two coexisted fairly harmo-   **public**
niously because public broadcasting was small and not really a threat to its com-
mercial kin. In fact, it often relieved commercial broadcasting of its more onerous
public service requirements because the commercial broadcasters could point out
that public broadcasting served that interest.

Then in the mid-1970s a number of other media came to the fore to chal-   **other media**
lenge radio and TV, creating an alphabet soup that included **CATV (cable
TV), VCRs (videocassette recorders), DBS (direct broadcast satellite),
MMDS (multichannel multipoint distribution service,** sometimes referred
to as **wireless cable), SMATV (satellite master antenna television),** STV
(subscription television), and LPTV **(low-power television).** Also during the
1970s many companies began using television, particularly for training. This
was referred to as **industrial TV.**

The word *broadcasting* no longer seemed to apply because that word im-
plied a wide dissemination of information through the airwaves. Many of these
other media were sending information through wires, and cable TV was even
touting its **narrowcasting** because its programs were intended for specific audi-
ence groups.

In the 1980s when the new media weren't so new anymore, they began being
referred to as *developing technologies,* but some of them didn't develop very
well. In fact, a number of them just plain died. Generally, the term **electronic
media** was used to describe broadcasting and the newer competitive forces, but

sometimes the word **telecommunications** was used to label the entire group, including industrial TV, which by now had changed its name to corporate TV because industrial sounded too grimy.

The whole concept of television as a form of mass communication began to change. Prior to the 1980s, most people in the country watched the same programming at the same relative time. The three networks competed fiercely, but, on the average, each garnered almost 30 percent of the available audience. They were mass communication systems sending out programming to be viewed by generally passive masses. Individuals could accept or reject the programs, but they could not "talk back" or interact. This differed from interpersonal point-to-point communications where a small group of people engaged in give and take on a subject through telephone conversations, letters, or face-to-face talking.

mass comm and point-to-point comm

With the introduction of a variety of delivery systems, TV became a more fractionalized medium that appealed to smaller groups of consumers. No longer did three network programming chiefs call the shots on what the people would watch and when they would watch it. People could tape programs off the air to watch whenever they wanted. Instead of watching NBC, CBS, or ABC, they could watch one of the many cable channels, public broadcasting, one of the independent TV stations that by then had grown in stature, or one of the other alternative media forms. They could also watch programs on the newly formed Fox network. The **share** of audience that the "big three" networks attracted plummeted dramatically (see Exhibit P.2).

Exhibit P.2

The Prime-Time Share of Audience of ABC, NBC, and CBS from 1978 through 1998.

Sources: *Cable Television Developments* (Washington, DC: National Cable Television Association, 1997), 4; Elizabeth Jensen, "Still Kicking," *Wall Street Journal,* 9 September 1994, R–3; Steve McClellan, "Big Three Post Record Share Slide," *Broadcasting and Cable,* 10 April 1995, 8; "Net Ratings Plunge to Record Low," *Daily Variety,* 11 June 1990, 1; "Viewer Malaise," *Daily Variety,* 29 August 1997, 46; and "Low and Behold, NBC Wins," *Electronic Media,* 25 May 1998, 4.
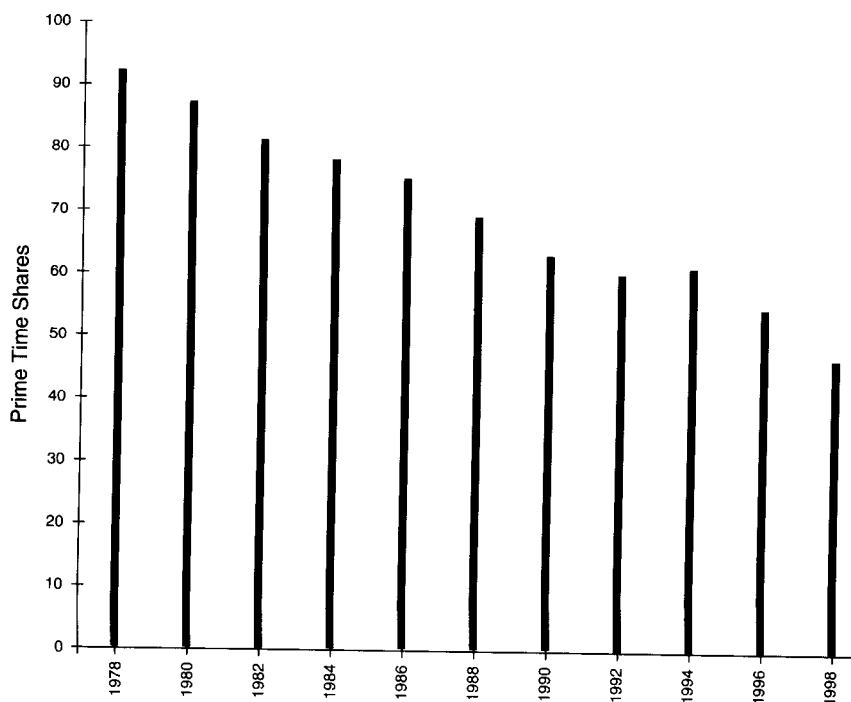
In the 1990s, the field of study broadened even more. Telephone companies started to enter areas that had traditionally been reserved for broadcasters and cablecasters. The once lowly phone also allied itself with the computer, spawning a whole new array of interactive services. An **information highway** emerged as interlinked computers were used to exchange **electronic mail** and other information available on the **Internet.**

the information highway

The entry of the phone industry into electronic media, in a way, brought broadcasting full circle. Radio has its antecedents in the telephone because, at one point, the telephone was seen as a mass medium and the radio as an individual, private medium. In 1877, a song called "The Wondrous Telephone" contained the following lyrics: "You stay at home and listen to the lecture in the hall, Or hear the strains of music from a fashionable ball!"[4] The original idea for the telephone was that it would deliver words and music to large groups of people. With the development of radio, many people tried to invent ways to make the signals private so that two people could have their own confidential conversation.

telephone and radio roles

Of course, over the years the two media switched roles—telephones being the private medium and radio becoming the mass medium. The two also went their separate ways academically and socially. Rarely were they studied in the same curriculum, and rarely did people trained for broadcasting obtain jobs in the telephone industry. The social, economic, and political issues affecting each were quite dissimilar.

Then along came the computer and the **modem.** The modem enabled data generated by the computer to be sent over phone wires to another computer. Some of the information being transmitted over this computer-telephone system was not private, but was intended for anyone in the population who wanted it or was willing to pay for it, including those in corporations. It included news, stock market quotes, sports, and other information traditionally provided by radio and TV, as well as newspapers and magazines. It also included new services such as electronic mail and at-home banking that had not previously been part of the electronic media structure.

computer influence

The word *telecommunications* was somewhat taken over by the telephone industry to encompass the old telephone services as well as all the new data transmission and other services the computer enabled the telephone to undertake.

Now the telephone, computer, radio and TV broadcasting, cablecasting, DBS, VCRs, SMATV, MMDS, corporate video, and even newer technologies (**videodiscs, CD-ROM, virtual reality, multimedia**) seem to be merging to form new types of information and entertainment suppliers. The most common word used to encompass all of this is *telecommunications,* but the word or even the concept could change dramatically in the near future.

newer technologies

One result of all the changes is that the consumer is becoming more empowered. Armed with the TV set **remote control,** people can switch channels from the comfort of their easy chairs. At one time networks could rely on the fact that most of the people who tuned in at the beginning of the evening would stay with the same station because they did not feel like getting up to change the channel. Now with the remote control, some people watch two or

remote control

more programs at once. Even more people switch to a new channel the minute commercials are on. This channel-switching phenomenon has become known as **grazing** or **channel surfing.**

Many TV and radio programs have pages on the Internet, and fans and non-fans alike can comment on the shows to each other and to the program's creators. High-quality cameras have become so portable and inexpensive that individuals can produce program material that can be aired on many of the TV distribution systems. The passive masses are becoming interactive individuals.

The words *telecommunications, electronic media,* and *broadcasting* are used somewhat interchangeably in this book, depending on the circumstances and the era being discussed. Media forms are also separated into discrete chapters so that their characteristics and development can be chronicled in an organized manner. In reality, however, a continuous blurring and blending is taking place.

A Rationale for Study

If telecommunications is constantly changing and if all people know a great deal about the electronic media because they deal with them on a daily basis, why study this field?

Some of the answers to this question are obvious. Anyone who is aiming toward a career in this area will profit from an intimate knowledge of the history and organization of the industry. Radio and television are highly competitive fields, and those armed with knowledge have a greater chance for career survival than those who are naive about the inner workings and interrelationships of networks, stations, cable TV facilities, advertisers, unions, program suppliers, telephone companies, the government, and a host of other organizations that affect the actions and programming of the industry. As the various forms of communi-

cations expand, new and exciting jobs are created. Knowledge of the past will help people predict the direction of their future jobs. Knowledge about the industry can also help its practitioners set their own personal values in regard to it so that they can help mold the industry into a form that they feel is effective in a positive way.

On a broader scope, individuals owe it to themselves to understand the messages, tools, and communication facilities that belong to our society because they are so crucial in shaping our lives. Rare is the individual who has not been emotionally touched or repulsed by a scene on TV. Rare, too, is the individual who has never formed, reinforced, or changed an opinion on the basis of information seen or heard on one of the electronic media. A knowledge of the communications industry and its related areas can lead to a greater understanding of how this force can influence and affect both individual lives and the structure of society as a whole. It can also teach each individual the most effective methods for interacting with media and affecting their programs and services.

In addition, telecommunications is a fast-paced, fascinating industry worthy of study in its own right. It is associated with glamour and excitement (and power and greed), both on-screen and off. Although, in reality, the day-to-day

workings of the industry can be as mundane as any other field, the fact that it is a popular art that includes the rich and famous makes it of special interest. The ramifications of the power that the electronic media exert over society is most deserving of study.

Thought Questions

1. Why do you watch TV and listen to the radio?
2. Of all the telecommunications devices and services listed in Exhibit P.1, which do you own? Which would you like to own?
3. Why are you interested in studying telecommunications?

For Further Information

AV Video: **www.avvideo.com**

Broadcasting and Cable: **www.broadcastingcable.com**

Electronic Media: **www.emonline.com**

Hollywood Reporter: **www.hollywoodreporter.com**

Variety: **www.variety.com**

Notes

1. Bureau of Census, *Statistical Abstracts of the United States, 1997* (Washington, DC: Department of Commerce, 1997): 565
2. "Would You Give UP TV for a Million Bucks?" *TV Guide,* 10 October 1992, 10–17.
3. The Roper Organization, a New York-based public opinion research company, conducts a survey about media every two years. Since the mid-1960s, TV has come out on top as Americans' primary source of news. See also "A Newsweek Poll," *Newsweek,* 20 July 1998, 25.
4. Eric Barnouw, *A Tower in Babel: A History of Broadcasting in the United States to 1933* (New York: Oxford University Press, 1966), 7.

CONTENTS IN BRIEF

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