

Telecommunications



An Introduction to Electronic Media

Lynne Schafer Gross

Learn how TV affects your life

Telecommunications

An Introduction to Electronic Media

Fifth Edition

Lynne Schafer Gross

Pepperdine University

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Benchmark**
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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, and videocassettes, just to name a few. Neither would they recognize the structure that has 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, 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

This is the fifth edition of this book, the first appearing in 1983, the second in 1986, the third in 1989, and the fourth in 1992. The same part and chapter organization that was in the fourth edition has been retained in this edition. Part 1 is introductory, with chapters dealing with social and ethical implications and the international scene. The second part describes the electronic media forms of commercial radio, commercial television, public broadcasting, cable television and other media, and personal and organizational telecommunications. The third part deals with business aspects and includes chapters on business practices, advertising, and audience measurement. The programming section, part 4, discusses entertainment programming, news and information programming, and

programming practices. Part 5 covers two aspects of physical characteristics—equipment and distribution. The final part includes chapters on regulatory bodies and laws and regulations.

All chapters have been significantly updated, but the chapters with the largest amount of new material are chapter 2, which deals with international telecommunications, and chapter 7, which covers such topics as the entry of the phone companies into the realm of video and the introduction of multimedia and virtual reality. Many of the chapters in part 2 have had historical information removed from them so that the book can retain its original purpose of containing a reasonable amount of up-to-date information for a course that is one semester or one quarter in length.

All the chapters should lead the reader to assess the strengths and weaknesses of the particular subject being discussed. Information relating to future directions telecommunications may possibly take is also woven throughout the appropriate chapters.

Special Features

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.

Each chapter conclusion summarizes major points but does so in an organizational manner slightly different from that given within the chapter. For example, if the chapter is ordered chronologically, the conclusion may be organized in a topical manner. This should help the reader form a gestalt of the material presented.

Further aids in understanding the material are the thought questions at the end of each chapter. These questions do not have “correct” answers, but rather are intended to lead the reader to form his or her own judgments. Discussions centering around these questions will indicate that varying opinions surround telecommunications issues.

Chapters are broken down into major divisions, and marginal notes appear within each division. Each marginal note highlights the main subject being discussed in the adjacent paragraph or paragraphs. Taken together, these notes serve as review points for the reader. Throughout the text, important words are boldfaced. These, too, should aid learning. Some of the boldfaced words are defined in the glossary, while others are names of important people or organizations.

The chapters may be read in any sequence; however, some of the terms that are defined early in the book 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.

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

The photographs and charts that appear throughout the book supplement the textual information.

Supplementary Materials

Instructor's Manual

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

MicroTest III

The questions in the test item file are available on MicroTest III, a powerful but easy-to-use test generating program by Chariot Software Group. MicroTest is available for DOS, 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. You can customize questions, headings, and instructions, you can add or import questions of your own, and you can print your test in a choice of fonts if your printer supports them. Instructors can obtain a copy of MicroTest III by contacting their local Brown & Benchmark sales representative or by phoning Educational Resources at 800-338-5371.

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PART 1

Introduction

Telecommunications is a powerful force in society. Radio and television permeate our lives, yet many generations of people existed without electronic media. The pervasive influence has occurred in a short space of time, but its intensity compensates for its youth.

In foreign countries many of the forms of electronic media have existed for an even shorter period of time. They have, however, grown to a point where worldwide media interaction promises to be a major force and major issue of the coming decades.



Social and Ethical Implications of the Electronic Media

The influence that telecommunications exerts upon our society is obviously extensive. The mere ability to communicate instantaneously affects the process of communication. Beyond this, the permeation of opinions, emotions, and even fads can often be attributed to various elements of the media.

The pervasiveness of radio and television, whether applauded or condemned, cannot be denied. The influence extends from the individual through the social structure, economy, technology, and politics. All of this places a responsibility on individuals within the telecommunications field to act in an ethical manner that does not betray the confidence placed in them.

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

A Rationale for Study

Everyone has an opinion about radio or television fare, and everyone can exhibit a certain amount of expertise about a force that is seen and heard on a daily basis.

Then 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 inner workings 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.

career information

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 a presentation 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.

understanding
of influence

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.

interesting subject

The Broad Context

Studying this field used to be fairly simple. There were two media—radio and television, and together they were called **broadcasting**. As time progressed, broadcasting was divided into two categories—commercial and public (originally called educational). These two coexisted fairly harmoniously because public broadcasting was small and not really a threat to its commercial 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.

broadcasting

Then in the mid-1970s a number of other media came to the fore to challenge radio and TV, creating an alphabet soup that included CATV, VCR, DBS, MMDS, SMATV, and LPTV. The word *broadcasting* no longer seemed to apply because that word implied a wide dissemination of information through the airwaves. Many of these other media were sending information through wires, and cable TV was even going around touting its **narrowcasting** because

new technologies
and industrial TV

its programs were intended for specific audience groups. For a while these new forms were referred to as new media or new technologies, so people studied broadcasting and the new media. During the 1970s many companies began using television, particularly for training. This was referred to as *industrial TV*, but it was not studied to any great degree.

electronic media

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*.

personal video and
the telephone

In the early 1990s, the field of study broadened even more. Video gear was developed to the point where just about anyone could afford it and use it to create quality pictures and sound. This democratization of video led to a new field often referred to as *personal video*. In addition, the telephone and computer teamed up to create an information evolution. In a way, this brings broadcasting full circle. Radio can be seen to have 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!"¹ 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.

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.

the computer

Then along came the computer and a device called a *modem*. By attaching this modem between a computer and a telephone, data generated by the computer could be sent over phone wires to another computer. Suddenly information sent through the telephone was appearing on what looked like (or were) television screens. 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.

telecommunications

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

Now the telephone, computer, radio and TV broadcasting, cablecasting, personal video, corporate video (sometimes called *organizational video*), and the alphabet soup of newer technologies seem to be merging into some form of information supplier as yet undetermined. The most common word used to encompass all of this is *telecommunications*, but the word or even the concept could change drastically in the near future.

The words *telecommunications*, *electronic media*, and *broadcasting* are used somewhat interchangeably in this book because, at the time of writing, the general use of all three words is somewhat ambiguous. The book will concentrate, however, on commercial radio, commercial television, public radio, public television, cable television and its competitors, and organizational and personal video. It will also deal with the telephone and computer, but mainly as they relate to and are becoming merged with the media taught in the traditional radio and TV curriculum.

Statistics of Pervasiveness and Change

This force, by whatever name—telecommunications, electronic media, or broadcasting—is very pervasive in our society. On the sending end, there are about 12,800 radio stations and approximately 1,700 TV stations in the country. In addition, there are over 11,000 cable TV systems. On the receiving end, 99 percent of households have radios, 98 percent have TVs, 93 percent have telephones, 59 percent subscribe to cable TV, and 73 percent own videocassette recorders.²

sending and
receiving

More important, people don't just own radios, TVs, and VCRs; they use them. Seventy-five percent of people watch TV every day, with the average person watching about four hours a day. The average person also tunes in radio over three hours a day. They seem to like what they see and hear. A *TV Guide* 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. (See plates 1 through 8 for more statistics.)³

Due to the fast-paced nature of the electronic media business, many characteristics of the industry are subject to rapid change. This can be seen by what happened to the TV industry during the decade of the 1980s. (See plate 9.)

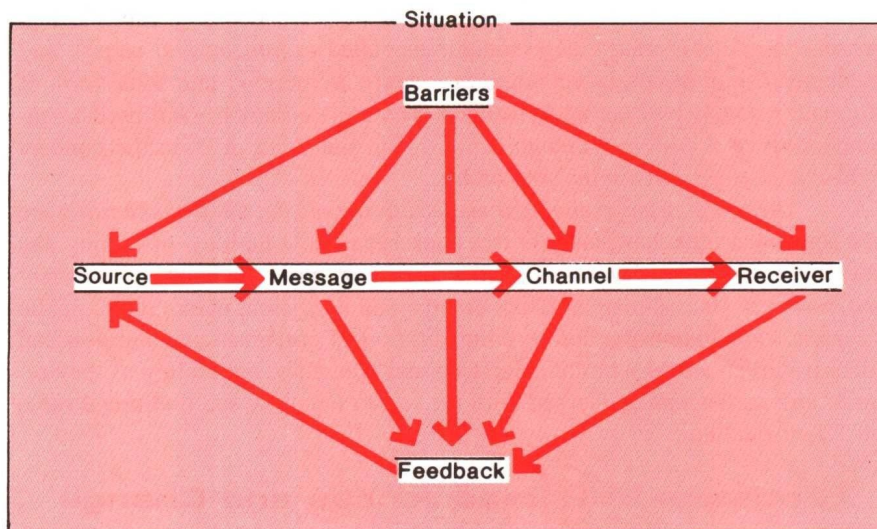
The beginning of the 1980s saw a television field dominated by three networks. By the end of the decade, these networks had competition from many sides, primarily cable TV, independent TV stations, and VCRs. The average share of network prime-time viewership went from 85 percent in 1980 to 67 percent in 1989. Not surprisingly, the average number of channels available per household rose from 8 to 28, cable TV penetration increased 37 percent, and almost three-quarters of American households equipped themselves with a VCR during the 1980s.⁴

network changes

What all this meant was that TV was going from being a mass appeal medium, where most people in the country watched the same programming at the same relative time, to being a more fractionalized medium that was appealing to

mass to
fractionalization

FIGURE 1.1
Communication model.



smaller groups of consumers. No longer did the three network programming chiefs call the shots as to what the people would watch and when they would watch it. People could tape programs off the air and watch them whenever they wanted. Instead of watching NBC, CBS, or ABC, they could watch one of the many alternatives.

remote control

Thanks to the remote control, which was in more than 60 percent of homes by the end of the 1980s,⁵ and is now in over 80 percent of homes, people could switch channels from the comfort of their easy chairs. At one time, networks could rely on the fact that much of the audience that tuned in at the beginning of the evening would stay with the same station because they did not feel like getting up and changing the channel. Now, with the remote control some people watch two or more programs at once.⁶ 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**.

Radio and TV income rose during the decade, although it did not keep pace with costs, causing the networks to cut back in many ways. The networks were far from dead by the end of the 1980s, but they certainly did not wield the power that they had in previous decades. In the 1990s, the networks appear to be continuing a decline. Given the volatile nature of the electronic media business, anything could happen.

Communication Models

Despite many changes in electronic media, the process of communication in general remains the same. Various models have been designed to explain this communication function. One model that can apply to both personal communications and telecommunications is presented by Bert E. Bradley.⁷ This model shows communication as an ongoing process that includes a source, a message, a channel, a receiver, barriers, and feedback.

For telecommunications, the **source** is composed of the total number of people needed to communicate a message. In radio or television, this is usually a large number that includes actors, camera operators, a producer, an audio technician, the station manager, and all the other positions necessary for programming to be successful. source

Of course, some people are more important sources than are other people. For example, the people who decide which news stories will be broadcast, which will receive the most time, and which will be presented at the beginning or end of the newscast direct the communication process more than the camera operators who focus on the anchorpersons.

Some communication models refer to the people who make important decisions as **gatekeepers**. They do, in effect, control what information passes through.

The people who act as the source are concerned with sending a **message**. The message will have a purpose—some messages are intended to inform, some are designed to entertain, and some are planned to persuade. Transmission of a message is the primary reason for communication although, obviously, both the message and its process of transmission are often far from perfect. message

Messages are transmitted through **channels**. For telecommunications, some of the most common channels are radio, broadcast television, and cable TV. Various devices and processes can influence the effectiveness of a channel. For example, instant replay, which is a particular quality of the TV medium, enables sportscasting to communicate to the fans in ways that other channels, such as radio and newspapers, cannot. channels

The **receiver** of the message is the audience. For some forms of telecommunications, primarily broadcast TV, the audience is a composite of individuals that is generally large, heterogeneous, and fairly anonymous. Cable systems that narrowcast are seeking a more homogeneous audience. For corporate video, the receiver might be even narrower—for example, the people who will be selling a new line of women's clothes may be targeted. In all these instances, the people representing the source send their message through the channel to the receiver. receiver

Many **barriers** can obstruct the communication process or reduce its effectiveness. The source can have built-in physical or psychological barriers. For example, if all the people representing the source live and work in California, they may not have a proper frame of reference to design a message that will communicate to people in Massachusetts. If the majority of people working in a newsroom are Democrats, they may not communicate in a way that is considered appropriate by Republicans. Individual biases and experiences can affect how the source sends its messages. barriers

Messages also have barriers. A poorly written joke may not entertain. An informational piece delivered in Spanish will not communicate to someone who does not understand that language. A campaign speech intended to persuade might only inform.