

PROFESSIONAL BROADCASTING

A BRIEF INTRODUCTION

JOHN R. BITTNER



Professional Broadcasting: a brief introduction

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for Donald
a very special son

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Preface

This text is designed for the reader who wants to understand what radio and television are all about and how broadcasting has grown, changed, and affected us. While touching on the history of each medium, the emphasis of the book is on the contemporary operation and role of broadcasting in society.

This book is intended for the person planning a career in broadcasting and for the individual who feels the best way to responsibly react to broadcasting in society is to understand how it operates.

The text first discusses the media of radio and television and follows with a discussion of broadcast technology. It next looks inside a broadcasting station, examining programming, production, and broadcast news. It concludes with discussions of advertising and sales, regulations, and careers.

Detailed objectives precede each chapter; selected readings are found at the conclusion of each chapter, and the appendix contains a glossary of terms common to professional broadcasting.

Acknowledgments

A number of people have worked hard to make this book possible. The idea was conceived in discussions with Brian Walker and executed under John Bush's able direction. Continually, the professional people at Prentice-Hall, Inc. contribute their talents. Barbara Kelly, Bruce Kennan, Bobbie Christenberry, Gert Glassen, Ken Quinn, and Pat Cahalan all helped immeasurably.

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Some very fine people are helping to make my family's transition to The University of North Carolina at Chapel Hill both easy and enjoyable. Without Wesley Wallace, the transition would never have been possible. It is an honor to follow Wes, but no one can replace him. A. Richard Elam and Margaret Elam make many sacrifices, as does Alfie. Beverly Whitaker-Long and Bill Long are always there when needed. William Hardy and Martha-Nell Hardy are everywhere offering assistance. In addition, Robert Allen, Elizabeth Czech, Robert Gwyn, Hap Kindem, Paul Nickell, Kenneth Pauwels, Richard Settle, and Loy Singleton are helpful and supportive. The office and technical staffs in any organization are its heartbeat. Thus, deserving mention are Dot Stolle, Janet Edwards, Jan Carroll, David Haynes, Phil Johnson, Ron Smith, and Jim McCulloch.

A new home is made up of people, not things or places. I am grateful for the rich warmth this one promises.

J.R.B.
Chapel Hill, North Carolina

Introduction

In the United States today there are about eight thousand radio stations, seven hundred television stations, and thirty-five hundred cable television (CATV) systems. In addition, thousands of schools and corporations use radio and television for internal communication. People working in these industries number in the millions. Not only do they work in radio and television stations, but they also work in broadcasting networks, operate the cable systems, and work in such related fields as advertising, public relations, government agencies, religious organizations, and the recording industry. Within each of these areas are hundreds of divisions and subdivisions.

A typical radio station will employ people in management, engineering, sales, news, announcing, and clerical positions. Larger stations will normally have their own business managers, personnel directors, accountants, promotion directors, and lawyers. Still more subordinates work under these people. A large promotion department may have people skilled in graphic design, advertising layout, and media buying. The Federal Communications Commission (FCC), for example, numbers only seven commissioners, but they are ultimately responsible for a staff of more than two thousand employees.

Organizations directly or indirectly involved in broadcasting offer still more positions. Typical of these are the National Association of Broadcasters (NAB) and the National Cable Television Association (NCTA). Corporations involved in some aspects of broadcasting employ additional people. Familiar names include the Communications Satellite Corporation (COMSAT); ITT World Communications, Inc.; RCA Global Communications, Inc.; and the Corporation for Public Broadcasting (CPB). Even volunteer organizations concerned with the quality of broadcast programming, such as Action for Children's Television (ACT) and the Parent Teachers Association (PTA), recruit thousands of volunteers to keep a watchful eye on program quality.

If we expand our examples beyond one country, we would find

thousands of more examples with stations, networks, cable systems, corporations, and organizations all in some way tied to broadcasting.

What this points to is that broadcasting is big business. One network alone can have operating revenues peaking at the billion-dollar level. And it affects each and every one of us. Statistics show that in any given day, the average person will spend more than six hours in front of a television set. They'll spend additional time with radio. Many people depend on radio to give them the early morning weather forecast, tell them what happened the night before and what issues they may confront in their daily lives, and even announce the local school lunch menu. Those same people will later settle down in front of their television sets to watch everything from situation comedies to major motion pictures.

Even the print media are filled with news of these pervasive media. If we pick up the evening newspaper we'll come across such features as a television schedule, a listing of the local radio stations, the column of the television critic, and pictures of stars from the prime-time programs. We may also encounter an article describing a congressional committee's inquiry into television advertising, a psychologist's statements about television sex and violence, or a letter from angry viewers complaining because the network took their favorite program off the air.

How do we react to radio and television? To some it is an exciting world that holds promise for future employment—perhaps as a broadcast journalist, a sales executive, management person, consultant, or government employee. To others it reflects an important part of society, one whose operation and function needs to be understood. Within the following pages, both perspectives will be covered.

1

Radio



PREVIEW

After completing this chapter we should be able to:

Understand the diversity in the facilities and personnel found in radio stations

Trace radio's development from a mass-oriented to a specialized medium

Explain what is meant by radio's portability and how the transistor contributed to this portability

Identify the contributions of Marconi, Fleming, de Forest, Stubblefield, Fessenden, Alexanderson, and Armstrong

Trace the development of the pioneer stations

Explain the impact of FM

Distinguish between FM, FM stereo, FM quad, and AM stereo

Diagram the path of ground waves, sky waves, and direct waves

Outline the classes of stations

Understand the history and operation of radio networks

Discuss radio's future

If you decided to take a drive within a few hundred miles of your home town, you would probably encounter a wide diversity of radio stations broadcasting everything from foreign language programs to progressive rock. You would find stations housed in modern corporate complexes with huge doors and plush carpets. You would also find stations nestled in small quarters behind a bank or restaurant, on top of a two-story building, and even in converted mobile homes. But don't assume that the station housed in the mobile home is a less satisfying place to work than the station with huge doors and plush carpets. A station's success is not usually tied to its decor, and many profitable stations are housed in humble surroundings.

STATION DIVERSITY

Even more diversified than the stations would be the people who owned and worked at them. At the large stations you would find corporate executives with all the mannerisms and dress associated with high-level corporate positions. You would find specialists working as engineers, disc jockeys, broadcast journalists, and account executives. Some stations would have business managers, accountants, even promotion and advertising executives. Some might even have a special research department with a staff skilled in marketing and data analysis.

Personnel

At the smaller stations you might be surprised to find individuals who don't seem to fit the mold of the executive in the large station. The station's general manager may greet you in slacks and a sport shirt, even jeans or a pants suit. Their mannerisms may be down-home and folksy. You shouldn't assume they earn less than the large station executive. Because the station overhead is lower, because it employs fewer people, and because it may be the only station in town, their income and net worth might well exceed the executive in the large city. Moreover, they may own the station, whereas the executive with the plush carpet may not. The people who work at the small station would also be generalists rather than specialists. The disc jockey who airs the morning show may spend some time selling advertising. The general manager may serve as disc jockey. All would be part of a team effort that places each in diversified roles.

Equipment

If you visited the staff at the stations, you would also see a difference in the type and sophistication of the equipment. In the large stations

computer technology would be everywhere—from processing payroll to clearing commercial time to commanding automated programming to keeping transmitter programming logs. The disc jockey's control board would be sleek and sophisticated with the latest slide bars to control record volume or preview the next commercial. Modern state-of-the-art equipment would be the norm.

The smaller station might be entirely different. Perhaps the computer is absent, although more and more small stations use some form of computer technology. The control board might not look as new. Some equipment might be secondhand. But you may not be able to tell the difference between the small station and the larger one from simply listening to the station's sound. At the small station, the capital to buy state-of-the-art equipment might be going instead into staff salaries. And regardless of the economics of why one type of equipment is used over the other, both get the job done.

The comparisons illustrate the wide range of people and hardware that make up radio. From a tiny tourist town of a few thousand to a huge metropolis of many millions, radio has found a firm foothold among contemporary mass media.

CHARACTERISTICS OF RADIO

Let's go beyond the personnel and equipment to examine more closely the characteristics of radio.

Early Programming Concepts

First, *radio is specialized*. It reaches a specialized audience via specialized programming. To understand how it got that way, we must look at radio programming before the days of television. The first sounds of radio programming were broadcast in the 1920s. Those sounds weren't today's quick-tempo, fast-changing records nor were they the continuous soft sounds of uninterrupted classical music. Radio of yesteryear was somewhat similar to television of today. It broadcast extended newscasts, discussion programs, and most importantly, radio drama—drama that resembled a television soap opera, situation comedy, or adventure show. As we stay tuned for the next half-hour of our favorite television program, so would people listen to radio shows. The sounds of a thirty-minute *Lone Ranger* thriller would come through the bulky speaker sitting on top of the console radio. "From out of the past come the thundering hoofbeats of the great horse, Silver! The Lone Ranger Rides Again!" It was thrilling, intense, and spellbinding.

And the *Lone Ranger* didn't ride alone in early radio. His creators



Figure 1-1 Much of television's early programming was radio drama and included such suspenseful shows as *The Green Hornet*. Created by George W. Trendle, who also created *The Lone Ranger*, the program first started on WXYZ in Detroit and later became an NBC program. The show became a CBS feature in 1947, and a television feature in 1952. (Charles Michelson, Inc., Beverly Hills)

came up with *The Green Hornet*, super detective (Figure 1-1). *Sergeant Preston of the Yukon* arrived on a dog sled with his trusty canine, Yukon King. When horses and dogs couldn't get the job done, *The Sheriff* tracked outlaws with an automobile. William Boyd starred as *Hopalong Cassidy* (Figure 1-2), arriving just as television made its impact in 1950. Another hero, *Jack Armstrong, The All-American Boy*, was the model high-school athlete and did as much to promote Wheaties on radio as Olympic medalist Bruce Jenner did on television.

Becoming Specialized

In 1947 a new medium called television began to change radio drastically. People could now watch their favorite radio stars, plus new ones, on television, and the radio audience began to disappear. *Time* reported in its August 25, 1952 issue that CBS was slashing its radio advertising rates "20 to 30 percent" during prime-time evening periods when television was siphoning off the radio audience. To survive, radio had to change.

It changed to become a specialized medium. And its specialized programming began with the advent of rock-and-roll. Radio discovered a new audience—the 18- to 24-year-olds. Television catered to the

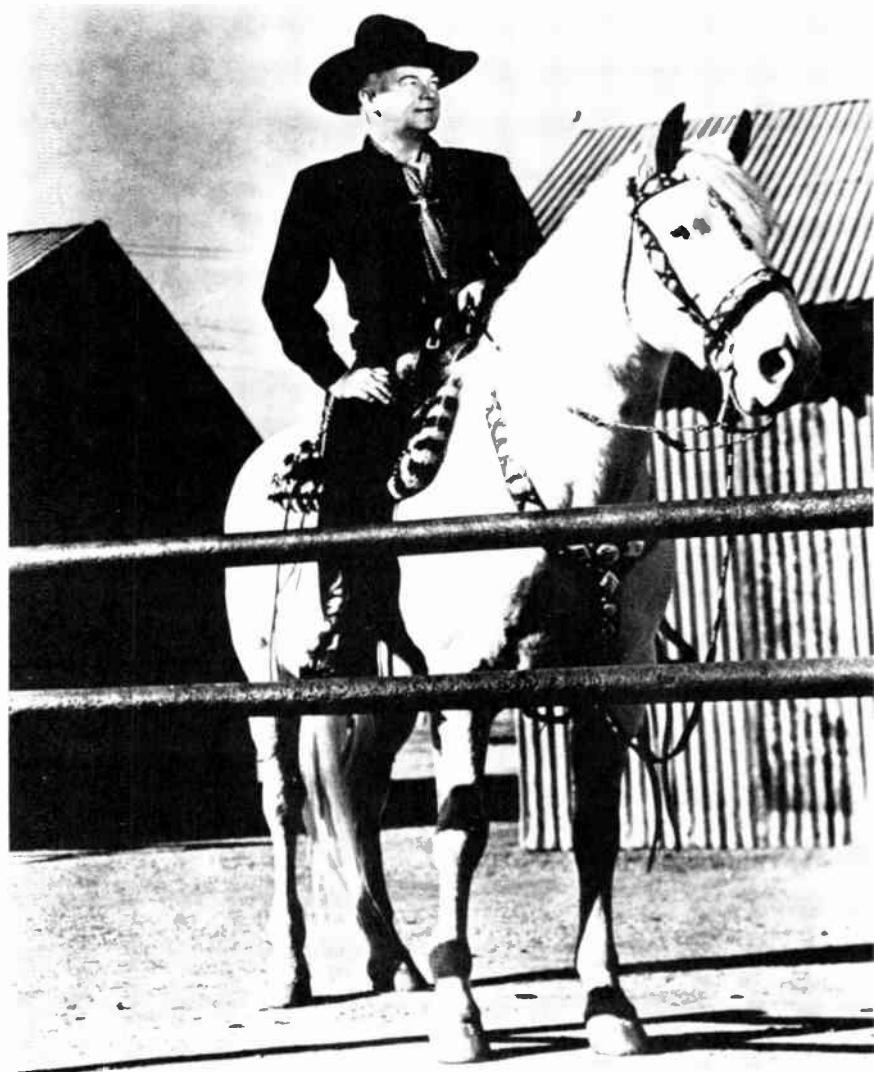


Figure 1-2 Hopalong Cassidy achieved popularity first in 1930s films and then on the Mutual network in 1950. A black-hatted hero of the range, William Boyd starred as "Hoppy" and managed film, radio, television, and comic strip successes simultaneously. (Copyright ©, Freelance, Lansdale, PA.)

masses, but radio captured loyalists among the young. In 1955 a group called Bill Haley and the Comets recorded a song titled, "Rock Around the Clock," and rock-and-roll was born. It swept the nation and it swept radio. Then it too grew more specialized. Soul and country music, for example, created folk rock, and the *Billboard* magazine charts listing each week's top songs recognized that specialization. In fact, the specialized nature of radio programming is reflected in those *Billboard* charts—Top 50 Easy Listening, Hot 100, Hot Country LPs, Hot Country Singles, Hot Soul Singles, Soul LPs, Hit of the World, Gospel LPs, Hot 100/Top LPs, Top LPs, Rock Singles Best Sellers, LP Best Sellers, Jazz and Disco.

Today, if we listen to different radio stations around the country, we'll find still more specialized programming (Figure 1-3). *Broadcasting Yearbook*, which classifies stations according to their format, lists stations programming agricultural and farm formats, all-news formats, informational formats, and foreign language formats. Foreign language is subdivided even further into stations programming in French, Chinese, Spanish, and Filipino, to name just a few. In the Southwest, we find stations programming for the Navajo and Pueblo Indians; in Alaska, radio programming directed to Eskimos. Sports, religious, comedy, Hawaiian, Bohemian, jazz, black, golden oldie, polka, and country-western formats dot the landscape. This specialization has been radio's key to success.

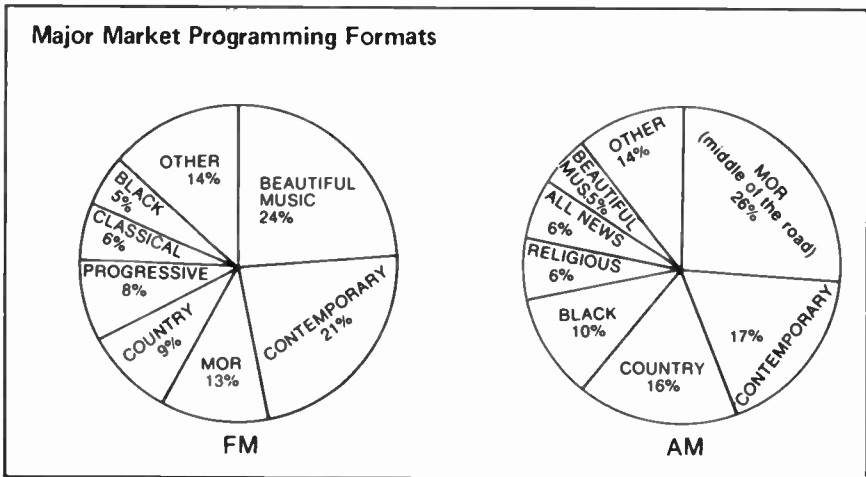


Figure 1-3 Once a mass medium, radio has become increasingly specialized. AM and FM stations alike show great variety in their programming formats.

Toward Portability

Along with being specialized, *radio is portable*. We can take it to the beach, carry it with us while shopping, listen to it on a boat, riding a bicycle, or driving an automobile. Called the “constant companion,” its unique quality is that we can consume it while doing something else.

But radio has not always enjoyed this portability. Early sets had steel cabinets and large vacuum tubes that looked much like clear light bulbs. The vacuum tubes were more sensitive than the earlier crystal sets, which used a silicon-type detector to capture the sounds from the airwaves. But with vacuum tubes and steel cabinets, the early radios weighed as much as twenty pounds. As steel cabinets were replaced by wood cabinets, the units became even larger. With enclosed speakers, the console radios of the 1940s and 1950s grew as large as four feet high. They had large dials that could receive local stations as well as foreign stations broadcasting on shortwave (Figure 1–4). As much a piece of furniture as the sofa or chair, early radios were touted for their attractive cabinets, provincial decor, and grained finish. Portability wasn’t mentioned.

The Transistor

Then in 1956 a Nobel prize was awarded to three men from Bell Laboratories for their discovery of a new device called the transistor. With it William Shockley, John Bardeen, and Walter H. Brattain successfully eliminated the vacuum tube from radio sets. Using a similar principle to that of the old radio sets with crystal detectors, they found that an incoming radio signal could be amplified 40,000 to 50,000 times by feeding it through a thin, wafer-like “sandwich” of positive and negative crystal materials. Now the once cumbersome console radios could be replaced by the tiny, hand-held portables. The era of radio’s portability had arrived.

LOOKING BACK: THE BEGINNINGS OF RADIO

To understand the role of contemporary radio, we should review its historical foundation. Radio is relatively new. Compared to such media as newspapers, it is but a speck on the yardstick of time. Newspapers in various forms can be traced back to A.D. 500 and earlier. Radio for the most part must be content with the twentieth century.

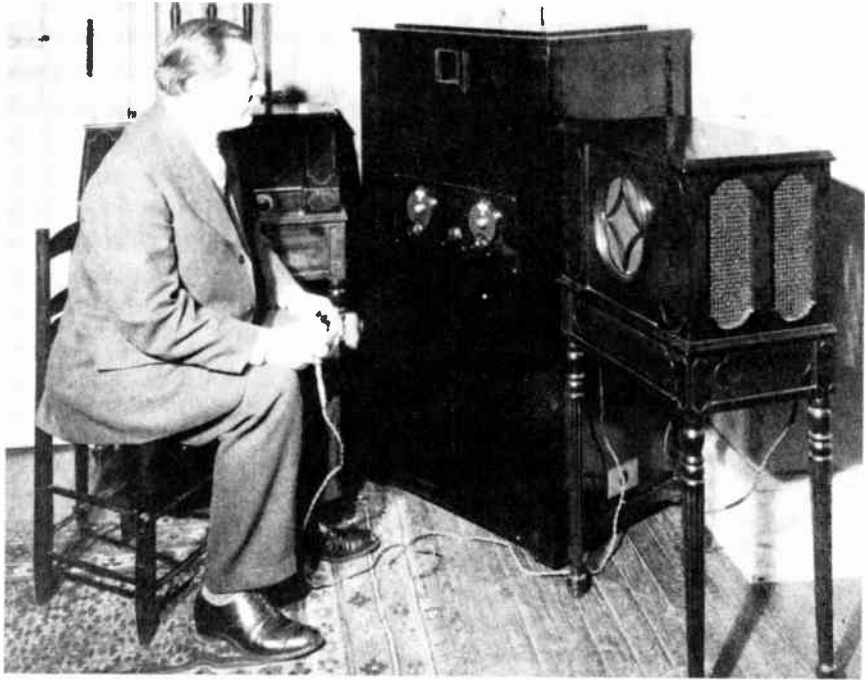


Figure 1-4 Large console radios as much as four feet high could receive domestic and foreign signals in the early days of radio. The man seated at the left is Dr. Ernst F. W. Alexanderson, General Electric engineer who developed a high frequency alternator, giving America the lead in early voice broadcasting. The four-legged device on the right of the large console is the radio's speaker. (General Electric Research and Development Center)

Marconi: The Person

The discovery came from the inquisitive mind of an Italian named Guglielmo Marconi. Born in 1874, Marconi lived with his wealthy parents in their Italian villa. Having read much about the work of Heinrich Hertz and his predecessors (Figure 1-5), Marconi, at the age of nineteen, was already creating an electric spark which in turn made a compass needle turn on the other side of the room. His father was a skeptical Italian businessman who had little praise for the early experiments that turned his attic into an electronic lab with strange wires and metal plates (Figure 1-6). Nevertheless, the family would listen attentively at the evening meal as Guglielmo discussed his work.

The lad convinced his father to invest in the experiments, and the elder Marconi reluctantly obliged with some money for basic scientific equipment. With the equipment Marconi fashioned a *coherer*, a small



Figure 1-5 The men responsible for introducing the early theories upon which wireless was built included Michael Faraday (upper left), who conducted early research on electromagnetism. James Clerk Maxwell (upper right) furthered Faraday's theories and investigated the "theory" of electromagnetic waves. Heinrich Hertz (right) proved Maxwell's theories and is generally credited with discovering electromagnetic waves. Beginning in the mid 1830s with Faraday's work and continuing through the late 1880s with the work of Hertz, the three men spanned the pioneer era, building theories which later were practically applied by Marconi and others. (The Science Museum, London; and der Universität Karlsruhe)

glass tube with two wires in each end that did not quite touch each other. Inside the tube were iron filings which would adhere to the two wires, causing a completed circuit when electricity passed through the wires. The coherer and the boy with the inquisitive mind were now ready for the big test.

Marconi: The Experimenter

Using a home-made spark-gap transmitting device in the attic and a portable receiving unit with the coherer, Marconi sent his brother and a hired hand from the villa over the nearby hillside out of sight of the attic. His brother carried a shotgun with instructions to shoot if the coherer indicated the signal was being received. No sooner did Marconi

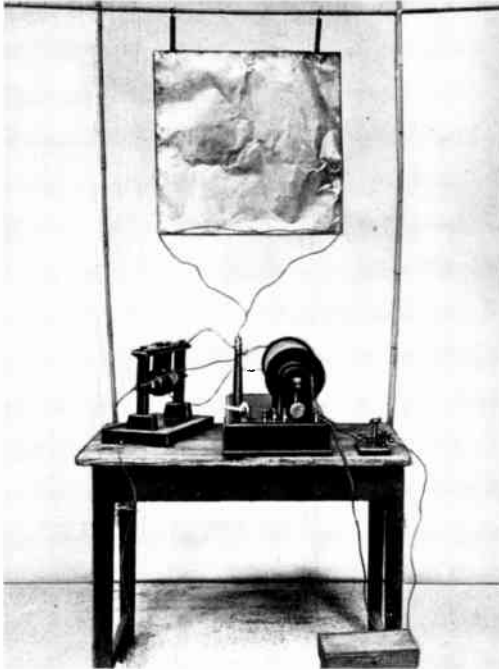


Figure 1-6 The first transmitter used by Marconi in his experiments of 1895. The tin suspended on the rod above the table acted as an antenna. (The Marconi Company Limited, Marconi House, Chelmsford, Essex)

apply the current to the transmitter than the shot rang out. The age of wireless had now begun.

With the encouragement and companionship of his mother, Guglielmo traveled to England for the next phase of his work. After a discouraging setback suffered when customs officials smashed his apparatus, Marconi rebuilt it and secured the interest and support of the British Post Office Department, responsible for the country's telegraph system (Figure 1-7). If wireless was to catch on, it would be in its application to telegraphy. On June 2, 1897, the 23-year-old Marconi received a patent on his "wireless telegraph." He conducted short-range experiments while in England and received press coverage abroad. Contracts to install wireless on British tugboats soon followed. It was clear the trip to England had been wise. But long-distance communication via wireless had still not been accomplished.

The Transatlantic Broadcast

In 1901 Marconi traveled to Signal Hill, Newfoundland, on the North American coast (Figure 1-8). He had experienced difficulties with weather and equipment earlier the same year near Cape Cod in

Massachusetts; Newfoundland promised the best hope for long-distance success. The question remained: Could wireless span the Atlantic? The answer came at 12:30 P.M. on December 12, 1901. Using an antenna wire tied to a kite, Marconi and a few colleagues listened intently for the prearranged signal of three dots, representing the letter S. Suddenly, there it was. The earphones received the S's being sent from the Marconi transmitting station at Poldhu (Figure 1-9) on the coast of England. The world press headlined the event, and even the skeptics were finally convinced that Newfoundland and England had been joined by wireless telegraph.

Marconi's discovery provided the impetus for further wireless development. Marconi himself established worldwide corporate interests, including the British Marconi Company in England and the American Marconi Company in the United States.

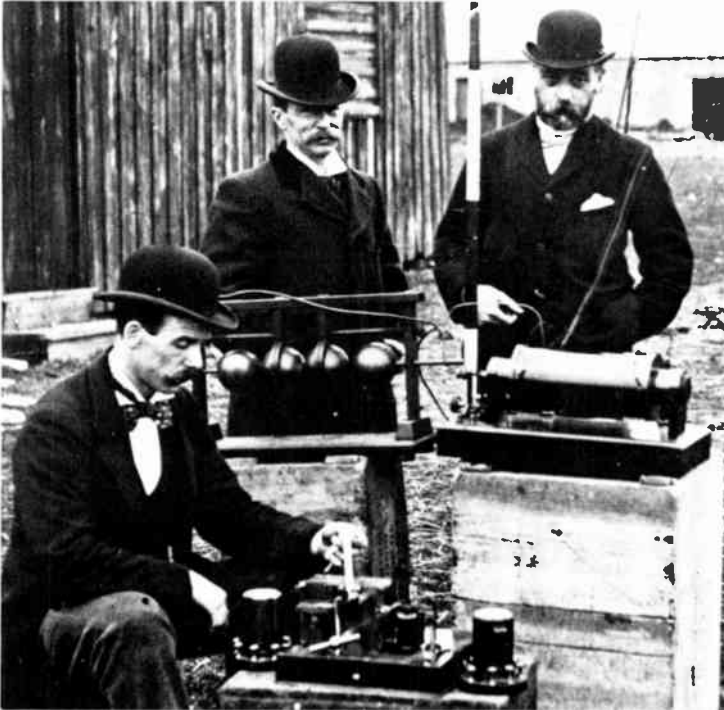


Figure 1-7 Marconi's early experiments in London were financed by the British Post Office Department, which provided financial support as well as encouragement. Here, three officials of the British Post Office Department are examining the equipment Marconi used in his first successful test of wireless across the Bristol Channel in 1897. (The Marconi Company Limited, Marconi House, Chelmsford, Essex)

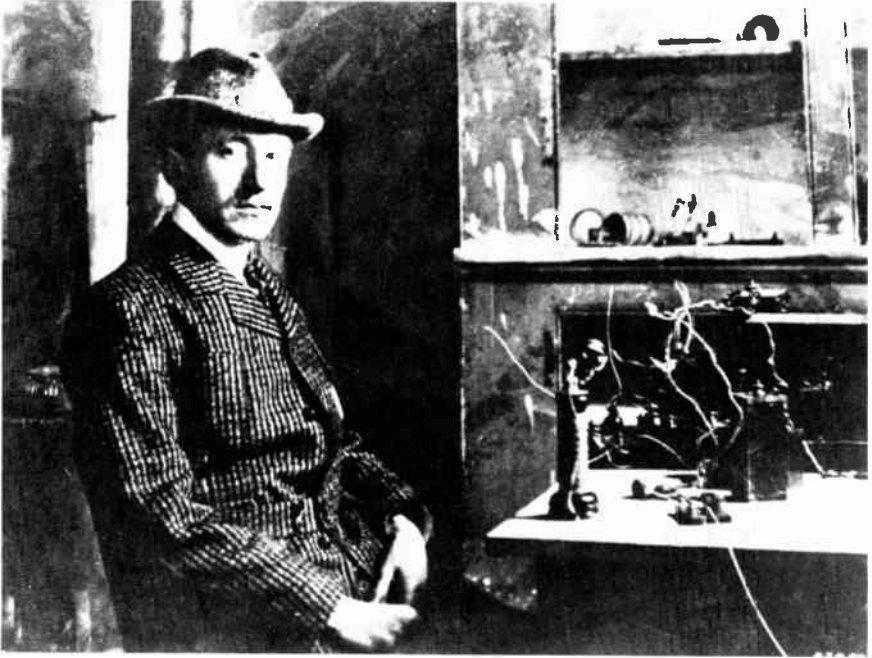


Figure 1-8 Guglielmo Marconi. Marconi's fascination with wireless did not stop with his transatlantic experiments. He went on to develop a worldwide wireless empire which included companies in England, the United States, Canada, and other nations. The American Marconi Company was eventually purchased by RCA. Marconi is pictured with the wireless equipment he used to receive the first signals across the Atlantic from Poldhu, England. (RCA)

Developments in Tube and Circuit Design

Other experimenters furthered radio's development. J. Ambrose Fleming patented an early vacuum tube and called it the Fleming "valve." It was patterned after Thomas Edison's two-element light bulb. The valve's most important application was to detect more clearly and then amplify electromagnetic waves. In the long run, it meant smaller antennas and more efficient transmitting and receiving devices. Another experimenter, Lee de Forest, further perfected the valve, adding another element to make it still more efficient and sensitive. Called the *audion* (Figure 1-10), Lee de Forest's invention started a series of patent infringement suits which weren't completely resolved until the 1940s.

Voice Broadcasting

With wireless telegraphy well on its way to world acceptance, the next step was to go beyond the dots and dashes of the Morse Code to voice transmission. A Kentucky farmer named Nathan B. Stubblefield (Figure

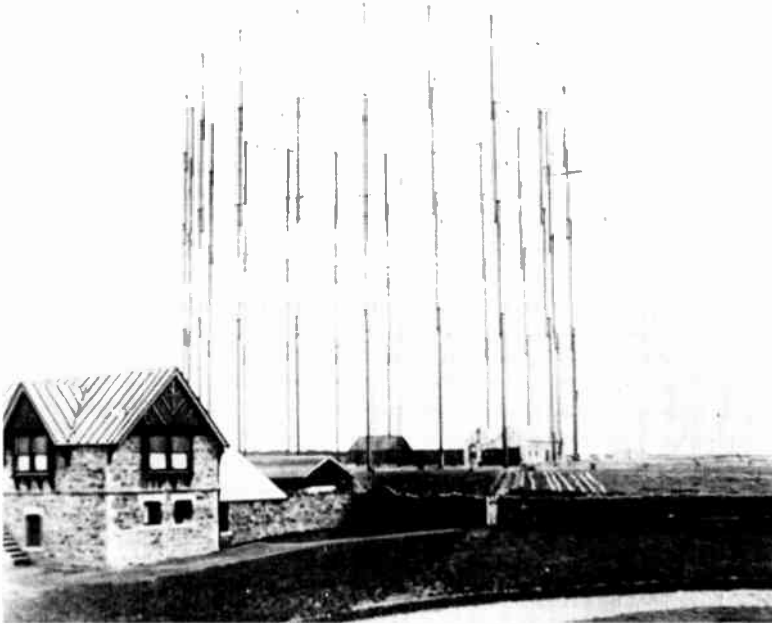


Figure 1-9 Twenty wooden towers, each 200 feet high, comprised the first circular antenna arrangement constructed at Poldhu. Gale-force winds hit England in September of 1901, collapsing the antenna. (The Marconi Company Limited, Marconi House, Chelmsford, Essex)



Figure 1-10 Lee de Forest's three element "audion" tube greatly improved wireless communication. Notice that the base of the tube was screwed into a socket similar to that which would hold an electric lightbulb. (A. T. & T. Co.)

1-11) conducted early experiments in 1892 on a crude transmitting device using electrical induction. More fruitful research took place at the University of Pittsburgh where Reginald A. Fessenden (Figure 1-12) invented the *heterodyne circuit*. This circuit permitted better reception and was moderately successful.

Enlisting the help of a General Electric engineer named Ernst Alexanderson (Figure 1-13), Fessenden sent voice broadcasts to ships at sea on Christmas Eve 1906. Alexanderson developed a high frequency alternator which made voice broadcasting a reality, although the signals weren't nearly as audible as they are today. Lee de Forest also worked on voice broadcasting and completed voice broadcasts between 1908 and 1910 from such places as the Eiffel Tower in Paris and the Metropolitan Opera in New York. All four men—Stubblefield, Fessenden, Alexanderson, and de Forest—rest in history as playing an important part in breaking the voice barrier of wireless transmission.

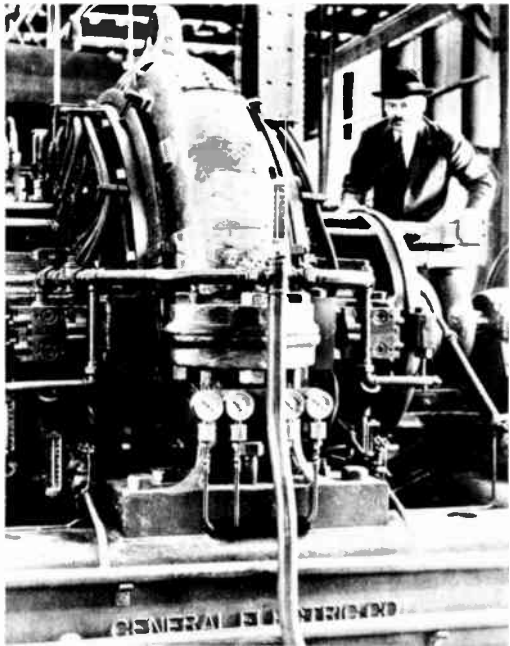


Figure 1-11 Even before Marconi's transatlantic wireless contact, an inventor named Nathan B. Stubblefield (left) transmitted voice by wireless over a short distance using a method of electrical interference known as induction. The method was unsatisfactory for long distance communication but Stubblefield has nevertheless been accorded a place among early broadcast pioneers. His son Bernard (right) became an employee of Westinghouse. (Murray, Kentucky Chamber of Commerce)

Figure 1-12 Reginald Fessenden was a professor at the University of Pittsburgh when he received the financial support from two Pittsburgh investors, resulting in the successful test of long distance voice transmission in 1906. Using an improved antenna design, he transmitted signals from Brant Rock, Massachusetts, which were received as far away as Scotland and Puerto Rico. His invention of the heterodyne circuit improved receiver designs of the era. (Archives of the University of Pittsburgh)



Figure 1-13 Aiding Fessenden's efforts was Dr. Ernst Alexanderson, seen here next to the General Electric alternator that permitted America to gain a substantial power base in early wireless technology. Alexanderson developed several models of the alternator between 1905 and 1920, and used it extensively at the RCA station at Rocky Point, Long Island. (General Electric Research and Development Center)



Government Controls and Radio's Growth

Between 1910 and 1919 radio went through an era marked by experimental stations signing on the air, attempts at government regulation, the growth of interest in amateur radio, and government takeover of wireless during World War I. Charles David Herrold (Figure 1-14) signed on his radio station in San Jose, California, in 1909. The station later moved to San Francisco as KCBS (Figure 1-15).

Acts of 1910 and 1912

Attempts to regulate broadcasting arose with the Wireless Ship Act of 1910, a quick attempt to catch up with broadcast regulation already instituted in many other countries. When the ocean liner *Titanic* sank in the North Atlantic in April 1912, another attempt at controlling wireless followed with the Wireless Ship Act of 1912. Amateur, or "ham," radio operators gained attention as they built their own radio equipment, received call letters, and experimented and chatted with each other. But World War I put a stop to play and signaled a beginning of conflict. With war declared, the United States government took



Figure 1-14 Charles David Herrold, a former student of physics and astronomy at Stanford University, is credited with operating a successful station in San Jose, California in 1909. The station, which broadcast voice and music in downtown San Jose, later evolved into KCBS radio. (Gordon R. Greb & T. Sourisseau Academy of San Jose State University)



Figure 1-15 Herrold's station and KCBS were honored with this plaque, dedicated in 1959, on the site where the 1909 station began. It claimed the position of "world's first broadcasting station." (Gordon R. Greb & T. Sourisseau Academy of San Jose State University)

complete control of broadcasting, including the American Marconi Company, which had strong British ties. The takeover caused rather tense but patriotic relations between the government and the small but growing wireless industry.

When World War I ended, the tension did not subside. Having control of something as important as wireless is a heady thing, and the government didn't want to give it up. Attempts at lobbying and legislation pressed forward. One of the strongest arguments for legislation was the need for the United States to keep control of the Alexanderson alternator used in early voice broadcasting, rather than give it to the British-oriented Marconi Company. Some of the heaviest opposition to government control came from the amateurs, now swelled in numbers by the war-trained radio operators sent back to civilian life. Finally the forces for continued government takeover of wireless lost. The winner was a new "American" company, the Radio Corporation of America (RCA), formed in 1919 in an effort to keep the Alexanderson alternator

under United States control. Private businesses would now be the developers of wireless under the continued regulation of the Wireless Ship Act of 1912.

Pioneer Stations

Between 1919 and 1927 broadcasting became a force with which to be reckoned. Hundreds of stations signed on the air. Some claimed to be first, and three had different claims to that honor. Station 9XM at the University of Wisconsin went on the air in 1919 broadcasting news, agricultural programs, and music to people with crystal receiver sets (Figure 1-16). A year later station 8MK in Detroit signed on for

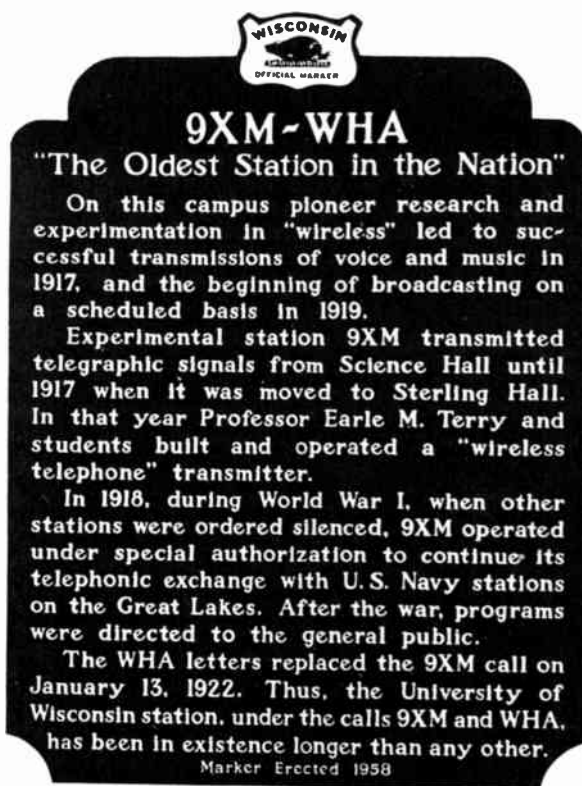


Figure 1-16 Also adding its claim to early broadcasting is WHA radio of the University of Wisconsin, Madison. First started under the call 9XM, the station changed its call letters to WHA in January of 1922. Scheduled broadcasting began in 1919, and some of the programs instructed listeners on how to build crystal receiver sets. (WHA and the University of Wisconsin, Madison)



Figure 1-17 KDKA radio evolved from the work of Dr. Frank Conrad, who conducted experimental work for Westinghouse. The station began regular programming on November 2, 1920. (KDKA)

intermittent programming, later becoming WWJ. And in November 1920 KDKA signed on the air from East Pittsburgh, Pennsylvania. KDKA managed to generate the most publicity for its claim as the first station for two reasons. One, the station planned the event and conducted a widespread publicity campaign that enabled it to reach crowds in special listening auditoriums. Second, KDKA was the first station to begin uninterrupted broadcasting on a regular schedule (Figure 1-17). Other stations quickly followed these pioneers, and by 1927 radio networks were forming.

Patch-Up Legislation: The Radio Act of 1927

The 1920s saw more broadcasting than the old Radio Act of 1912 could handle. In fact by 1927 repeated attempts to use 1912 legislation to control broadcasting failed. The industry was floundering in a sea of airwave chaos. A series of National Radio Conferences under the direction of Secretary of Commerce and Labor Herbert Hoover managed through trial and error to mold new legislation. The Radio Act of 1927 established the Federal Radio Commission, a five-member body

charged with regulating broadcasting. The act was the first to require that stations operate in the “public interest, convenience, and necessity,” a clause carried over into the Communications Act of 1934, which currently regulates American broadcasting.

Patent Battles

The tension that existed between government and private industry after World War I now developed between different segments of private industry during the 1920s. Companies, all immune from patent infringement suits during the war, went back to battle after it was clear broadcasting belonged to them and not the government. The big powers were the American Telephone and Telegraph Company (AT&T), General Electric (GE), RCA, and Westinghouse. AT&T tried commercial broadcasting, called “toll broadcasting,” at its New York station WEA. GE and Westinghouse both manufactured vacuum tubes. Westinghouse held the patent on the superheterodyne circuit. This circuit, invented by Edwin H. Armstrong (Figure 1-18), later the father



Figure 1-18 Edwin H. Armstrong is credited with developing FM radio and also for developing the superheterodyne circuit, which greatly improved radio reception, and was thus a considerable improvement over Fessenden's heterodyne circuit.

of FM broadcasting, improved radio reception. RCA manufactured and licensed receiving sets. All were involved in operating stations.

After a scrape with the Justice Department over antitrust issues, AT&T emerged in control of its long lines used for network broadcasting, but it was stripped of authority to operate stations. GE and RCA continued manufacturing. RCA, through its National Broadcasting Company (NBC), went into network broadcasting; it also owned and operated individual stations. Westinghouse also continued operating stations. All had survived radio's developing years, each with a piece of the action.

THE IMPACT OF FM

Today, radio enjoys widespread use with two services: AM, or amplitude modulated stations, and FM, or frequency modulated stations. We'll learn more about these terms later in this chapter. Basically, FM stations operate at a higher frequency than AM and, consequently, are less subject to interference. Both have prospered, but FM's popularity has truly blossomed in recent years because of an increase in the number of FM stations, the ability to broadcast good quality signals, and the ability to broadcast in stereo.

Armstrong's Contributions

The same Edwin H. Armstrong who was responsible for the superheterodyne circuit is credited with developing FM radio broadcasting. His work, much of it at Columbia University and amidst controversy over patent rights with RCA, culminated in a workable system of FM broadcasting in 1933. Furthermore, Armstrong invested considerable sums of his own money in research on FM broadcasting, experimental stations, and lobbying efforts to obtain recognition for FM by the Federal Communications Commission (FCC).

Factors Influencing FM Growth

Many factors contributed to the growth of FM (Figure 1-19). Because of developments in high fidelity and stereo recordings, the public learned to appreciate the sound of good music, which gave FM an advantage because of its clarity and stereo capability. As more and more radio receivers were manufactured with both FM and AM capabilities, more people had access to FM. They liked what they heard, and the number of FM stations consequently increased. At the same time the

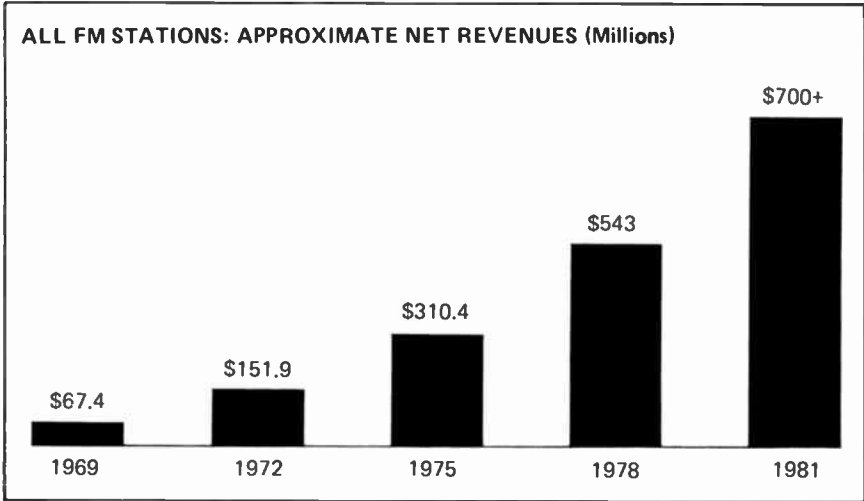


Figure 1-19 FM Radio showed dramatic growth in the decade following 1969. Major increases in net revenues have resulted in FM stations now selling in the millions of dollars.

crowding of frequencies on the AM band sent many broadcasters seeking licenses for the FM band, further increasing the number of stations.

The FCC also boosted FM's potential, although it took almost forty years to permit its full-scale development, partly because of pressure from the industry and partly because of preoccupation with television. In 1941 the FCC gave its first approval for FM to move ahead and develop as a broadcasting service. Twenty years later in 1961 the commission approved stereo FM, and by 1980 had completed phasing out the practice of simulcasting, whereby an AM/FM station under the same owner aired the same programming on both stations. Today the commission recognizes FM on an equal par with AM.

FM QUAD

On the heels of FM stereo is FM quadrasonic broadcasting. Quadra-
phonic, or quad, means four separate signals are broadcast, as opposed to two signals for stereo, placing the listener in the "sound center" of a program. Strategically placed speakers in, for example, four corners of the room, can create the illusion of sitting in the middle of an orchestra, or a crowd, or wherever the microphones are placed when the original

recording is made. Quad is gaining popularity among sound enthusiasts, who are always looking for still another way to increase the realism of their playback systems, and among broadcasters looking for a competitive jump on both FM and AM stereo.

AM STEREO

With FM's dramatic growth and its ability to compete with AM, AM broadcasters began looking for a wedge to cut into FM's growing popularity. Although AM might never be able to match FM's overall quality, AM broadcasters felt they could at least match FM's claim to stereo broadcasting by developing AM stereo. The difficulties in achieving full AM stereo capability have produced a series of experimental systems. One system even broadcasts one channel of the AM stereo system via FM and the other via AM.

AM stereo broadcasting is not new. Emil L. Torick of CBS Laboratories presented a paper at the 1975 National Association of Broadcasters Engineering Seminar in which he traced the beginnings of AM stereo back to 1925 when Station WPAJ in New Haven, Connecticut, broadcast a program on two separate AM frequencies using two separate transmitters. Interest in AM stereo, according to Torick, was also revived in the 1960s when FM stereo was being discussed by the National Stereophonic Radio Committee (NSRC).

In the late 1970s, licenses were granted for experimental use of stereo AM to stations in Elmhurst, Illinois and Baltimore, Maryland. The experimental era came to a semi-close, however, when the FCC voted 4-2 in April 1980 to tentatively approve a Magnavox-designed AM stereo system. Controversy surrounded the decision with FCC staff members differing about the merits of a single system versus multiple systems where the marketplace could sort out the most cost-efficient and technically compatible system. FCC Chairman Ferris contended the single system decision was necessary to bring AM stereo to the consumer as soon as possible. Whatever the future of AM stereo, industry analysts predict its largest application will be in car stereo systems.

RADIO NETWORKS

Although they're part of a highly specialized medium that appeals to local audiences, radio stations still rely on networks to provide them with programming, especially news.

Early Beginnings: NBC and ABC

The beginnings of network radio can be traced back to early wired links between the pioneer stations of the early 1920s. In 1926, AT&T began to divest itself of its stations and formed the Broadcasting Company of America. The company had one purpose, to sell off AT&T's station interests, namely WEAJ in New York City, to RCA. RCA had formed the National Broadcasting Company (NBC) for the purpose of buying the station and including it, together with other RCA stations, in the country's first major radio network, NBC. NBC developed two competing networks, the Red and the Blue, although it allowed some stations to take programs from either network. The two continued to operate competitively until the FCC began investigating network practices in 1938.

The investigation resulted in the FCC's *Report on Chain Broadcasting*, issued in 1941. The report was critical of some network practices, and NBC became the target of conflict of interest charges because of its ownership of a talent agency serving the network. For both financial and political reasons, NBC divested itself of the Blue network, selling it to Edward J. Noble, who made his money manufacturing and selling Lifesavers candy. The Blue ceased to be part of NBC when the FCC approved the sale on October 12, 1943. Mark Woods became its president (Figure 1-20).

Noble's company was called the American Broadcasting System, Inc. On June 15, 1945, he changed its name to the American Broadcasting Company, and ABC entered the world of radio. Noble, using the executive talent of Robert Kinter, who also later headed the network, programmed game shows and other features in an attempt to draw an audience away from its competitors.

CBS and Mutual

Two of those competitors were the Mutual Broadcasting System (MBS) and the Columbia Broadcasting System (CBS). Mutual started as a cooperative in 1934 to provide group advertising rates for four stations: WOR in Newark, WXYZ in Detroit, WGN in Chicago, and WLW in Cincinnati. It later expanded into a national system. CBS began in 1928 when the son of the owner of the Congress Cigar Company, William S. Paley, Jr. (Figure 1-21), convinced his owner-father that they should buy the old Columbia radio network. They did, and under Paley's guidance CBS became one of the largest single advertising mediums in the world.

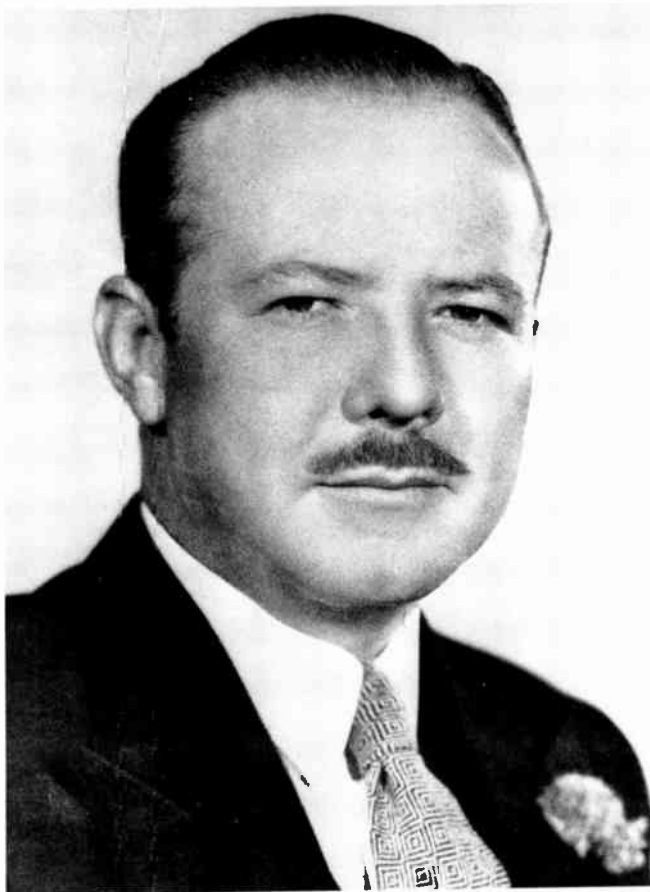


Figure 1-20 Mark Woods started his career with NBC and then became president of ABC in the 1940s. (ABC)

ABC's Demographic Networks

Today, radio broadcasters can choose from a wide variety of networks. ABC split into four separate news networks in 1968. The move was shrewd, successful, and profitable. It applied the increasingly specialized nature of radio to new network services. Now ABC can sell four distinct news networks, and it can even place more than one network in a single market. ABC can air the networks at different times during the hour and get maximum efficiency from their network line charges paid to AT&T. They are called the ABC Demographic Networks because they reach audiences with different demographic characteristics (Figure



Figure 1-21 Few people have had a longer career in broadcasting than William S. Paley, Jr. He guided the growth of CBS from the time his father's cigar company purchased the network in 1928. (CBS, Inc.)

1-22). The four—American Information Radio Network, American Entertainment Radio Network, American Contemporary Radio Network, and American FM Radio Network—serve different stations with different formats. A fast-paced rock station can subscribe to the Contemporary Network, which provides short, fast-paced newscasts. Stations with a news-and-information format can subscribe to the Information Network. Advertisers, meanwhile, can buy time on the network that reaches the audience toward which their product is directed.

State, Educational, and Informal Cooperative Networks

Three other types of radio networks are state, educational, and informal cooperative networks. State news networks operate the same as national networks, but serve only stations within a given state. Usually located in the state capital, state networks offer stations regular news programming, much of it commercially sponsored. Educational networks service noncommercial stations in a given state and are often interconnected via a closed-circuit system, the video portion of which is used to program instructional television programs to colleges and universities.

Informal cooperative networks are still another programming service.



His news isn't her news isn't his news isn't her news.

He wants all the latest world and national news with all the details. She wants her news fast and concise. He's interested in news which affects young people. And she wants major news stories and commentaries.

They all get it! From ABC Radio News, network radio's largest news gathering organization.

ABC Radio News is fast and flexible. A team of over 170 correspondents, stationed in over 75 news bureaus around the world easily adapts to provide news for four different audiences on four distinct networks.

Each day ABC Radio News produces 138 news programs as well as special reports to be used by the local station.

All of which makes ABC Radio News network radio's largest news gathering organization.

His news. Her news. His news. Her news. They find it all on the four ABC Radio Networks.

The Four Demographic Radio Networks.



Divisions of ABC Radio Network

Figure 1-22 The structure of network radio changed dramatically when ABC divided into four demographic radio networks, each reaching a specialized audience. It also permitted more efficient use of leased telephone lines to distribute programming to affiliates, and permitted more than one ABC network in many markets. This advertisement used by ABC illustrated the different network audiences. (ABC Radio Network)

These networks typically consist of a group of radio journalists joined together in an unwritten cooperative agreement whereby each covers the news in his or her own city for the other members of the network. On any given day, a major story in one city will prompt members of the network to call the cooperative station in that city for live reports or additional information to supplement wire service accounts of the story.

UPI Audio and AP Radio

Two other radio networks, although not networks in the traditional sense, are United Press International Audio (UPI Audio) and Associated Press Radio (APR). Stations pay these wire services a fee to subscribe to their audio services, which provide news, special sports programs, and live coverage of major news events. Stations can program their own locally sold commercials during specified times in the newscast. UPI also provides regional audio news services.

Radio networks have changed considerably since the 1920s. Back then they primarily provided entertainment programming, much like today's television networks. But television changed all that, and news, not entertainment, has now become the prime commodity of network radio today.

PUBLIC RADIO AND NPR

The Corporation for Public Broadcasting (CPB), a federally funded quasi-government corporation created by the Public Broadcasting Act of 1967, linked together many of the noncommercial radio stations in the country in a network called National Public Radio (NPR). Beginning its broadcasting schedule in 1971 with the Senate Foreign Relations Committee hearings on the Vietnam War, NPR has continued to build a solid reputation as a responsible member of the journalistic profession. Its award-winning *All Things Considered* remains one of the nation's most respected radio news presentations. Operating without the constraints of sponsorship, NPR has provided continuous coverage of important national legislative hearings.

RADIO FREQUENCIES

Broadcasting can be called a limited resource. Stations use electromagnetic waves to carry their signals to the public. Electromagnetic waves radiate from the electromagnetic spectrum, a yardstick of electromag-

netic energy that is constantly present. Light is a form of electromagnetic energy, as are X-rays and radio waves. Radio waves are only found along a very small portion of the electromagnetic spectrum. All radio stations must share this space with each other. The FCC, using the available space, assigns each station a certain place, called a *frequency*, on the electromagnetic spectrum (Figure 1-23). Since radio waves behave differently even within this small space on the spectrum, the FCC also assigns each station a certain power with which to operate. In the United States this power can range anywhere from 10 watts for small educational stations to 100,000 watts for large FM stations.

Characteristics of Radio Waves

Radio waves travel by three different routes (Figure 1-24): (1) a *ground wave*, which travels a short distance from the station transmitter and stays close to the ground; (2) a *direct wave*, which travels in a straight line from the transmitter, and (3) a *sky wave*, which travels up to a layer of the atmosphere called the *ionosphere*, then bounces back to earth. After bouncing back to earth, sky waves can again bounce up to the ionosphere in a continuing “bouncing” pattern, allowing them to travel much further than ground or direct waves.

Radio waves leave a transmitter much as the waves of water leave the spot where a thrown rock breaks the surface. Each time a radio wave passes a given point, it is called a *cycle*. We use seconds as the common

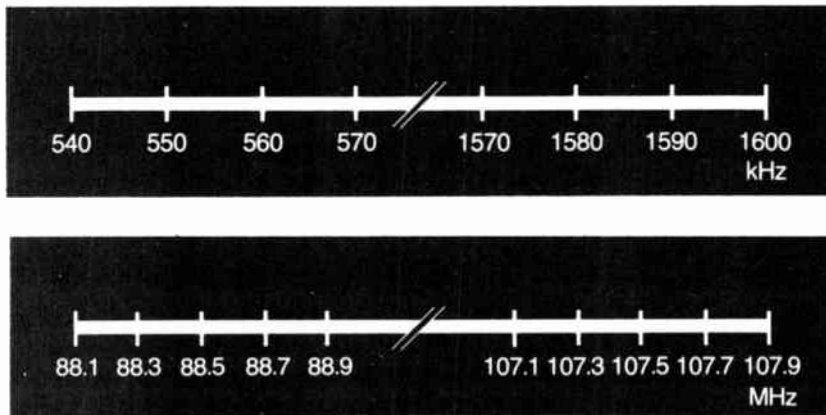


Figure 1-23 The AM or FM dial on the typical radio actually shows different “positions” on the electromagnetic spectrum. The AM dial is divided into kilohertz (kHz—1,000 hertz). The FM dial is divided in megahertz (MHz—1,000,000 hertz). (FCC Broadcast Operator Handbook)

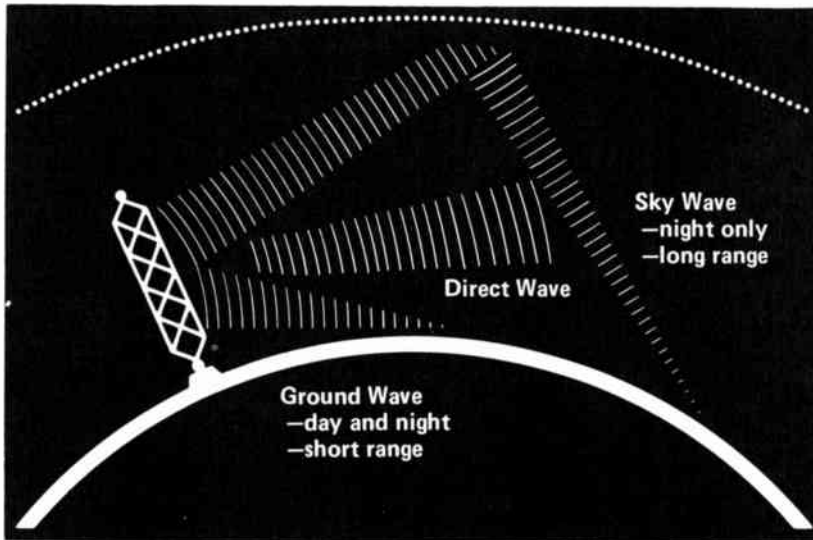


Figure 1-24 Radio waves leaving a transmitter travel in 3 basic directions: Ground wave, Direct wave, and Sky wave. (FCC Broadcast Operator Handbook)

time frame in which to count waves passing a certain point. Thus, if 1000 radio waves pass a given point in one second, we call it 1000 cycles per second, or one kilocycle. In honor of Heinrich Hertz, who discovered electromagnetic waves, the international designation of cycles has become Hertz (Hz). Thus, 1000 cycles per second is expressed as one kilohertz (kHz). One million cycles per second is expressed as one megahertz (MHz).

The space a given station occupies on the electromagnetic spectrum is called its *channel*. In radio we rarely refer to this space as a channel; that's left to television. But radio stations have channels nevertheless. In radio the location of the channel is listed by its exact frequency on the spectrum, such as 550, 1120, or 1410. When the disc jockey says "This is all-hits radio at 1310, WIFE," the announcer is telling you the exact frequency (channel) of the radio station.

Sharing the Spectrum

Radio stations not only share the space on the electromagnetic spectrum with other stations, they also share it with other services—police and fire department radio, citizens band radio, and many more. In addition, they share it with radio stations operating in other countries. A series of international agreements are in effect which, mostly based on a good

faith effort since the FCC only has authority in the United States, keep interference among stations in different countries to a minimum.

CLASSES OF STATIONS

Because of the limits of the electromagnetic spectrum, the FCC assigns frequencies based on different classes of stations. Three major classifications are *clear channels*, *regional channels*, and *local channels*.

Clear

Clear channels are powerful stations broadcasting up to 50,000 watts. For the most part they are protected from interference over a large portion of their coverage area. At one time certain clear channel stations had complete protection, then in 1980 the FCC revised its rules affecting clear channel stations and permitted some smaller stations, that were approximately outside of a 750-mile radius of clear channel stations, to broadcast at night on frequencies previously restricted to the clears.

In changing its policies, the FCC indicated the relaxing of protection would permit an estimated 80–100 new nighttime services on the previously protected frequencies. In addition, the change would permit about 25 more unlimited-time stations to be added to adjacent frequencies.

Regional

Regional stations serve a wider geographical area than local stations, and their power does not exceed 5000 watts. Assigned to frequencies other than those of clear channel stations, regional stations are found throughout the AM portion of the electromagnetic spectrum. Although somewhat protected from interference, they do not enjoy the protection afforded clear channel stations.

Local

Local stations are found near the upper area of the spectrum devoted to AM radio. Their frequencies are often located between 1400 and 1600 kHz. They operate at a power not exceeding 250 watts at night and 1000 watts during the day. Although their reach is limited to their small community audiences, local stations easily command the prestige and respect that their clear and regional channel counterparts enjoy in much larger cities.

Like AM stations, FM stations are also grouped in classes. Class C stations are the highest powered stations and serve the widest area. Class B and class B-C stations serve smaller communities, doing so at a lower power. Class D stations are noncommercial 10-watt stations. As a general rule, noncommercial radio stations operate between 88.0 MHz and 91.9 MHz. The rest of the spectrum up to 108 MHz is reserved for commercial FM stations authorized to carry advertising.

DAYTIME AND DIRECTIONAL STATIONS

In addition to establishing different classes of stations, the FCC also restricts some stations to daytime operation. This restriction applies almost totally to stations on the AM band where frequency crowding has forced the commission to install additional safeguards to avoid signal interference. Stations authorized to operate only during daylight hours are called *daytimers*. Although their sign-on times vary according to the time of year, daytimers must sign off the air at local sunset. Since the ionosphere would reflect their signals over long distances at night, the sign-off protects stations in other communities operating on the same frequency. Although they have a disadvantage over stations in the same market that are not required to sign off after dark, daytimers enjoy less overhead and operate during the peak daytime listening hours.

Still other stations are required to operate with directional antennas. Again, the restriction applies only to AM stations. Using a special cluster of antennas, directional stations produce a signal which does not extend in a perfectly circular coverage area. Coverage areas shaped like a figure eight or an egg are just two of the many variations in coverage areas that directional stations employ.

All of these FCC restrictions—different classifications of stations, daytime operation, and directional signals—are simply different ways of allocating the limited resource of the electromagnetic spectrum to avoid interference among different radio stations.

UNDERSTANDING MODULATION

Earlier in this chapter we referred to the terms AM, or *amplitude modulation*, and FM, or *frequency modulation*. By understanding modulation we can better understand how voice and music travel over radio waves.

Amplitude Modulation

The easiest way to understand each concept is to define their terms. The word *modulate* means to change. *Amplitude* means breadth of range. Thus, *amplitude modulation* means a change in something's breadth of range, in this case a radio wave (Figure 1-25). Visually a radio wave looks very much like a wave of water with both high and low points. If the water is calm, the waves are all the same height. But if the wind blows the surface of the water, its "breadth of range"—that is, the distance between the top of the wave and the bottom of the wave—will vary. The same thing happens when a radio wave is subjected to amplitude modulation. The variance in the voice or the changing tones of music vary the amplitude of the wave. The variance is picked up by the radio receiver, and we hear it again as voice or music.

Frequency Modulation

Frequency modulation works on basically the same principle as amplitude modulation, except instead of varying the amplitude, or breadth of range, we *vary the frequency*. To better understand frequency modulation, imagine a series of waves passing a stationary point. We'll assume a certain number of waves pass the point in one second. By varying the number of waves that pass the point every second, we have varied the frequency of the waves. We call this variance in frequency, frequency modulation (Figure 1-26). Variations in the voice or different tones in music vary the frequency. Our radio receiver picks up these variations in frequency, and we hear them again as voice or music in the speaker of our radio.

Stereo FM uses the same principle as standard FM broadcasting, except that the broadcasts take place on two slightly different frequencies. Along with the stereo signal, a 19,000-cycle tone is also transmitted. We can't hear the tone, but a radio receiver equipped to receive stereo receives that tone. When it does, it automatically triggers a relay in the radio receiver which causes it to receive the two different stereo channels and send each into a separate speaker. A promising AM stereo system uses both amplitude (one channel) and frequency modulation (second channel).

Stations using the latest technology have been able to obtain maximum use of the limited resource of the electromagnetic spectrum, continually improving the quality of radio programming that we, the consumers, receive.

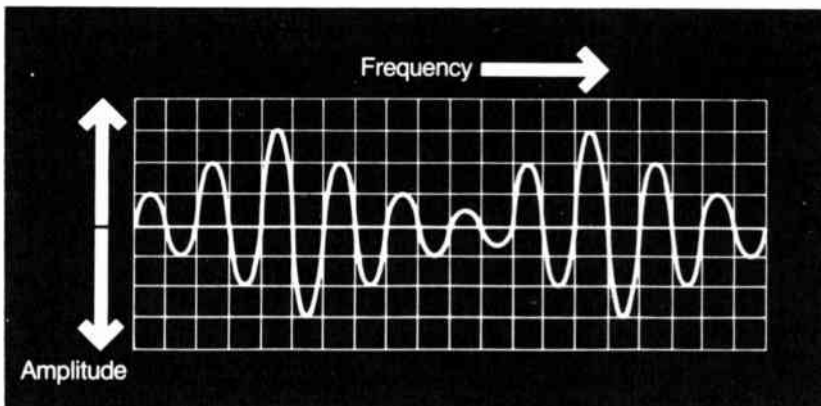


Figure 1-25 AM broadcasting varies the amplitude of the radio wave. (Broadcast Operator Handbook)

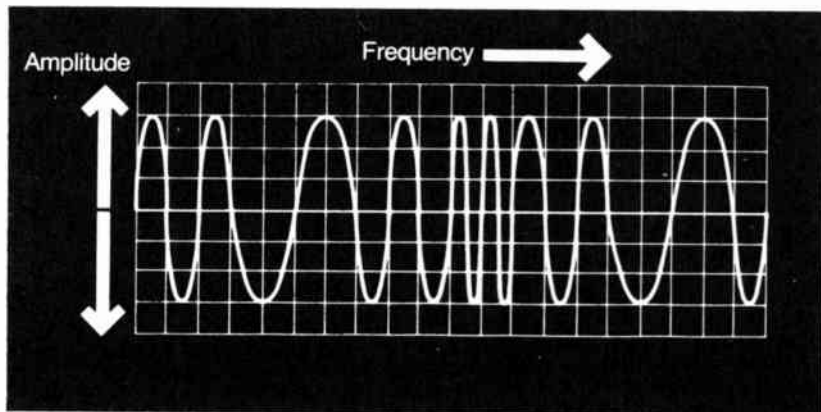


Figure 1-26 FM broadcasting varies the frequency of the radio wave. (FCC Broadcast Operator Handbook)

THE FUTURE OF RADIO

Radio should continue its identity as a local medium with specialized programming, enjoying continued growth in both income and number of stations. Industry estimates examining the future of FM radio predict a continued upward trend. Conservative estimates predict that by 1985 the total number of FM stations will be well over the 3000 mark, which if correct, would be a 20 percent increase in the number of stations since 1973. Other industry sources predict the audience for FM to be well over 50 percent of the total radio audience, a jump of almost 30 percent since 1973.

Radio news will take on new dimensions. Stations are already experimenting with stereo news. Recorded with dual microphones, the sound of a train on radio news can virtually move through your living room. Armed with stereo recorders and special microphone adapters, radio journalists are adding a new sound dimension to broadcast journalism.

Another study of future potential titled *Radio in 1985* was released by the National Association of Broadcasters (NAB). It predicts that radio revenues will increase by as much as 85 percent between 1975 and 1985. But at the same time, the expenses of station operation are expected to rise by 79 percent. On the bright side, people in the higher-income brackets are expected to spend more time with radio. Supporting the Cox research, the NAB study also predicted that FM listening will dramatically increase. The NAB study also concluded that citizens band radios would not have a major impact on radio listening, and that by 1985 the average household will contain more than six radios, including those in automobiles.

Still, there are signs of caution for radio. Among the uncertainties are the effects of cable systems. Cable operators have the capability to program their own radio stations, and it is hard to estimate what fractionalizing of the radio audience might take place if they decide to milk the potential of their wired medium. Competition for radio listeners may also come from an increase in the number of television stations. If local cable companies can successfully produce highly localized television programming, especially news, they may significantly change audience attention patterns for broadcast news programming.

The medium Marconi made famous with his transatlantic broadcast in 1901 is now a fully developed system of broadcasting. It remains to be seen how the economic marketplace, media competition, and the audience it serves will mold its future for the rest of the twentieth century.

SUMMARY

Radio's most dominant characteristics are its portability and its ability to reach specialized audiences. The ability to reach specialized audiences evolved as television drama began to siphon radio's massive drama audience. Consequently, radio changed its image and began serving local audiences with local programming that now ranges from music to foreign language to religious to news and information programming. Radio's portability arrived with the invention of the transistor. No longer was radio trapped in the large cumbersome console receivers. With the transistor, radio could fit in the palm of your hand, be with

you wherever you traveled, and earn its nickname as the constant companion.

Radio's history is embedded in many scientific discoveries. Heinrich Hertz discovered electromagnetic waves in about 1888, and Marconi applied the waves to wireless transmission. Experiments in radio continued through World War I on into the beginning of the pioneer stations. Patchwork legislation in the Wireless Ship Act of 1910 and the Radio Act of 1912 was eventually replaced by the Radio Act of 1927 and the Communications Act of 1934. FM bounded into popularity with FM stereo and quadraphonic FM, which prompted AM broadcasters to come up with AM stereo.

Radio signals can travel via ground waves, direct waves, or sky waves. Because of the characteristics of radio waves, the FCC classifies stations as clear channel, regional channel, and local channel stations.

Radio networks began as early as the 1920s and eventually evolved into NBC, CBS, ABC, and Mutual. ABC split into four networks in 1968. UPI Audio and AP Radio also provide audio news to radio stations, as do state, educational, and informal cooperative networks. In 1971, National Public Radio began operations, linking many noncommercial public radio stations. The future of radio is promising, with some studies predicting radio revenue increasing by as much as 85 percent between 1975 and 1985.

FOCUS ON FURTHER LEARNING

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2

Television



PREVIEW

After completing this chapter, we should be able to:

Envision the scope of the television industry and television programming

Explain early developments in television, including Nipkow's scanning disc system

List the contributions of Zworykin and Farnsworth

Trace the development of the camera picture tubes

Tell what the television freeze was and name two FCC policy decisions resulting from issues studied during the freeze

List the reasons for the recent development and profits of UHF and independent television

Explain how television channels are assigned

Trace the history and contemporary operations of the three major commercial networks, including their allied business interests

Define educational and instructional television

State what contributions the MPATI airborne television and the Rocky Mountain satellite distribution system meant to educational and instructional television

Talk about how portable equipment has affected television in education as well as business and industry

Discuss the origin of public broadcasting, its role, and the categories of public stations

As well as visiting the radio stations we discussed in Chapter 1, we can also visit television stations. Because of the cost of starting and operating a television station, however, you won't see as many of them as you do radio stations. Like the electromagnetic spectrum, advertising dollars are a limited resource. And with the increased costs of television come increased costs of advertising on it. It would simply not be economically feasible for a community to support as many television stations as radio stations. The stations you did visit, however, whether large or small, would still represent a diversity of size and personnel. Let's take a look at them.

THE SCOPE OF TELEVISION

Today, television represents a dominant medium in society. Various studies have shown the average household can spend as much as six hours a day in front of a television set, and the average amount of viewing time per day, although leveling off somewhat from previous years, is still on the increase. Since television began full-scale operations in the late 1940s we have been, as Marshall McLuhan contends, "massaged" by the medium. It has brought us in living color the sights and sounds of entertainment, political conventions, elections, assassinations, wars, and debates. It has been criticized for changing our moral values, making us immune to emotion, turning us into spectators instead of participants in life, and filling our lives with a steady diet of portrayed sex and violence. Former FCC Commissioner Newton Minow called television a "vast wasteland."

Those with kinder words for television claim it has raised our literacy through *Sesame Street* (Figure 2-1), uplifted our political awareness, provided a new means of educating millions of people in the world's underdeveloped countries, and been a major and beneficial supplement to the classroom experience of every high school and college student. It has found uses in business and industry, from corporate news programs to training sessions for sales representatives. Proponents claim the medium has brought unequalled high-quality entertainment to otherwise isolated segments of our society. The finest plays, opera, concerts, and theatre are all available with the flick of a switch. It can take us across the street or across the universe. At one moment we can be watching how to plant carrots and cook lasagna; at the next, watching live cameras scan rock formations on the surface of Mars.

Today there are approximately eight hundred television stations in the United States, about 10 percent of the number of radio stations. Television's proliferation is by no means unique to this country. In



Figure 2-1 Big Bird of television's *Sesame Street* meets with new friends in a mountain ranch setting. The program is produced by the Children's Television Workshop and has international distribution. It has been a classroom supplement, popular television feature, and a positive example of television's influence. (Children's Television Workshop)

Canada stations dot the landscape in the southern provinces, beaming their programming even across the border to the United States, and stations in the northern edges of the tundra program for the isolated Eskimo villages. Television programming spans the globe, too, with the popular American program, *Sesame Street*, not only being broadcast around the world but also spawning foreign imitators. Other programs that are familiar to the United States, such as *Good Morning America*, have their international counterparts. *A.M. Canada* (Figure 2-2), for example, wakes up much of the upper half of North America. Mexico and other countries have morning television shows with similar formats.

The level of sophistication of programs, stations, and broadcasting systems also varies throughout the world. You can visit South Africa, Australia, the United Kingdom, or Canada and see broadcasting complexes furnished with the most modern equipment to be found. Or you can visit the tiny country of Bangladesh and see modest facilities producing impressive programming.

Although the medium is big, omnipresent, criticized, and still growing, one thing is certain—it is here to stay. It will continue to influence our lives. With this growth comes the challenge to use it responsibly as a practicing professional or as a consumer. Let's begin by briefly examining television's history.



Figure 2-2 Much like morning television in the United States, *A.M. Canada* awakens Canadian viewers to news, features, and programming similar to that seen on such programs as *Today* and *Good Morning America*. (CTV Television Network, Ltd.)

TELEVISION'S EARLY HISTORY

We can trace television's history back to the same era as radio, although the technology was a far cry from the complex camera and receiver designs of today's electronic era.

Nipkow uses Selenium and the Scanning Disc

The first actual transmission of television pictures is credited to a German scientist, Paul G. Nipkow, who patented his scanning disc television in 1884. The device was a combination of mechanics, chemistry, and electricity. A disc with holes in it was placed over a picture, behind which were photoelectric cells. As the disc turned, the holes passed over the picture, scanning its entire surface. The holes would let light touch the photoelectric cells and transform the light to electricity, which would then be sent to a similar unit used to receive the signals and transform them back into pictures. Nipkow used sensitive material called *selenium* in his device, but it had two important limitations. The selenium did not respond to the light quickly enough, and the device was unable to amplify the signals. In short, the system lacked quality.

Zworykin and Farnsworth

The key to television's success was to move beyond mechanics to electronics. Two men are credited with that accomplishment: a high school boy from Rigby, Idaho, named Philo Farnsworth and a much more recognized Westinghouse engineer named Vladimir Zworykin. Both men worked without early contact with one another. Farnsworth approached his high school teacher, Justin Tolman, and drew on the blackboard his solution to electronic pickup and scanning of television pictures. The year was 1921. Two years later, in 1923, Zworykin patented an all-electronic television tube called the *iconoscope* (Figure 2-3).

Zworykin and Farnsworth went in different directions during the 1920s. Farnsworth moved to California where he founded his own research and development corporation, later to manufacture television receivers. Zworykin continued his research under the sponsorship of Westinghouse and was later helped by RCA.

The two finally met when RCA's David Sarnoff took Zworykin to California to view Farnsworth's work. The end result was a royalty contract between Farnsworth and RCA which paid Farnsworth money



Figure 2-3 Vladimir K. Zworykin with his invention, the iconoscope, an all-electronic television pickup tube. Zworykin, along with Philo Farnsworth, is credited with moving television from the mechanical to the electronic age. (RCA)

for his own technical developments whenever they were used in RCA equipment.

By the 1930s, television was taking hold as both television cameras and receivers began to improve. The iconoscope tube was followed by the *orthicon*, which was followed by the invention of the *image orthicon*. The *vidicon tube* (Figure 2-4) gained popularity, especially in smaller, portable applications.

Improved Scanning

From Zworykin's iconoscope tube evolved a process of capturing an image on television by employing an electronic scanning process. This process rapidly and alternately scanned and reproduced an image, much as the red then the white stripes of a flag can be scanned and then put together as a completed unit. By increasing the scanning speed hundreds of times per second, this process was able to produce an image of photographic quality. By 1931 Farnsworth claimed 300-line scanning capabilities. Eventually the systems improved above 400-line scanning efficiency, and the FCC approved a 525-line scanning system as the standard for American television. In Europe, a 625-line system is used.

Sarnoff and RCA

For the public, television was still only a new invention reported in the newspaper. But David Sarnoff changed all that when he launched RCA television before the American public at the 1939 New York World's Fair. On display were working models of RCA television receivers (Figure 2-5). President Franklin Roosevelt also stopped by to give further significance to the event. But World War II turned the spotlight back onto radio. Television had neither the receivers nor the stations to justify extensive coverage of the conflict. That would come with the Korean and Vietnam wars. Nevertheless, the medium as a commercial entity had begun.

False Start: The Freeze

Commercial television had been authorized by the FCC since 1941, experimental programming had spread its wings, and color television was on the horizon when the FCC decided to bring things to a halt and call a "freeze" on all new stations in 1948. Between 1948 and 1952, the commission examined the use of the electromagnetic spectrum and continued to examine color transmission systems. The FCC's famous *Sixth Report and Order* lifted the freeze in 1952, allocating channels 2

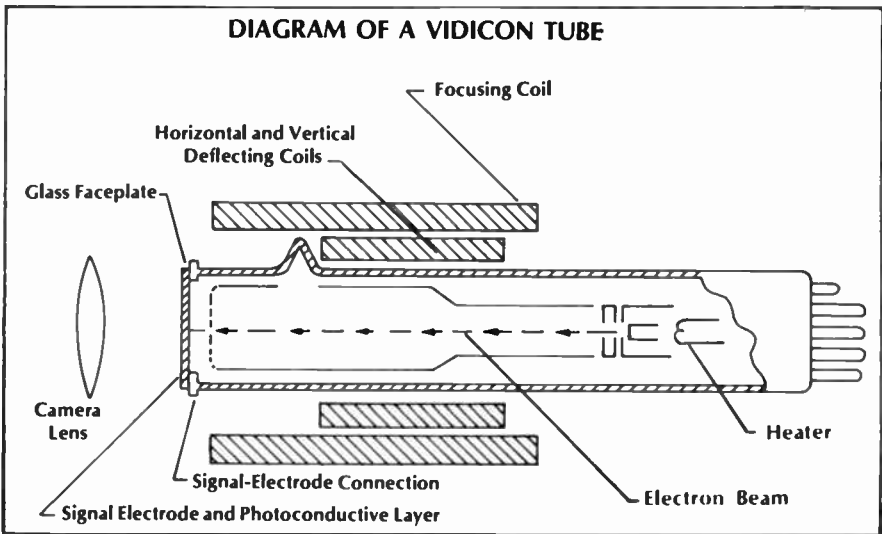


Figure 2-4 The vidicon tube paved the way for greater picture quality. (Educational Industrial Television)



Figure 2-5 Television receiver in a glass case greeted visitors at the 1939 New York World's Fair. An 8" × 10" screen was reflected on a mirrored cabinet top. (RCA)

through 83 for television broadcasting and reserving channels in specific communities for educational television.

Approving a Color System

One year later, the FCC approved the RCA–NBC compatible color system, which permitted color programs to be received on black and white sets. A demonstration of the system televising the puppet show *Kukla, Fran, and Ollie* took place on August 30, 1952, and the first authorized color broadcast debuted on December 17.

Color television also operates with a scanning process but with the addition of tiny, color-sensitive microdots. Although they are too small to see clearly, the microdots actually cover the television screen. Sensitive to the three primary colors of light—red, yellow, and blue—they project the hues of color onto the screen which, when we see them together, give the illusion of different colors.

VHF-UHF: Closing the Gap

Television was now split into VHF and UHF broadcasting. VHF, or very high frequency stations, operated between channels 2 and 13. This gave them a decisive advantage since most home television receivers were equipped to receive only those channels. In theory, the advantage was upset in 1964 when the FCC required all new sets to include tuners capable of receiving both UHF and VHF channels. However, many sets already in use had only VHF tuners, few UHF stations had signed on the air, and those that were operating had no network affiliation, which had already been assigned to VHF outlets in the same city. Equal parity was still years away.

The gap between VHF and UHF stations began to close in the early 1970s primarily for these five reasons: (1) much of the advertising time was sold out on the commercial networks, driving prices higher for the time that remained and forcing many small businesses to look to UHF stations to advertise their products; (2) syndication permitted UHF stations without network affiliation to obtain quality programming; (3) UHF receiver tuners adopted the same “click stop” tuning used to tune VHF channels; (4) more UHF stations signed on the air; and (5) increased costs of advertising in newspapers and magazines made UHF advertising attractive. Today, UHF stations are finally enjoying much deserved growth and profit.

ASSIGNING TELEVISION CHANNELS

In Chapter 1 we learned how the FCC assigns specific frequencies (channels) to radio stations. It uses much the same process for television. There is a major difference: Since radio waves are used to carry both television audio and video, that portion of the electromagnetic spectrum assigned to carry a television signal is larger than that assigned to carry the signal of a radio station. Television channels are located near that portion of the spectrum devoted to FM radio.

Channels are in most cases assigned in a way that protects a station from interference with other channels. The FCC traditionally makes assignments which separate channels in the same geographic area. Thus in Indianapolis, for example, stations would normally be assigned either to channels 2, 4, 6, 8, and so on or to channels 3, 5, 7, 9, and so on; stations would rarely be assigned to 2, 3, 4, and 5. More sophisticated transmitting and receiving equipment, however, has enabled markets to experiment with adjacent channel assignments. If adjacent channels

can operate without interference, many markets which can economically support additional television stations will have them in the future.

COMMERCIAL TELEVISION NETWORKS

Three major commercial television networks—ABC, CBS, and NBC—serve affiliates throughout the United States, many of which the networks own and operate themselves. Let's take a look at the network picture.

ABC

Each of the commercial networks paved their own path through television's formative years to today's continued competition. For ABC, things began to gel on August 10, 1948, when WJZ-TV in New York signed on the air. It became the flagship station of the network with an opening night gala that included a New York block party, parade, and a television version of the radio hit, *Candid Microphone*, with Allen Funt. Regional programming followed, with early hookups between Chicago, Milwaukee, Cleveland, and Toledo. The first regionally televised program was a football game between the Chicago Cardinals and the Pittsburgh Steelers. Then in 1951 a merger with United Paramount Theatres, Inc. (UPT) added \$30 million to the ABC coffers, permitting the network to compete with CBS and NBC. WJZ-TV later changed its call letters to WABC-TV.

Long possessing a strong image for sports programming with its coverages of special sports events, *Monday Night Football*, *ABC Wide World of Sports*, and the Olympics captured the ratings lead for the network and carried it into the late 1970s as the prime-time champion. In entertainment programming, highly rated series such as *Roots* (Figure 2-6) continued ABC's strong position. It was a welcome change for a network accustomed to the ratings cellar. For a time it even acquired the services of programming whiz Fred Silverman; Silverman left for NBC in 1978.

Roone Arledge, who had moved ABC Sports to its international stature, became responsible for both news and sports in 1977. The *ABC World News Tonight* began a new format under Arledge's direction, using a series of correspondents at the news centers of the world and leaving a minimal amount of exposure to the network anchorpersons.

Along with its television broadcasting interests, ABC is actively involved in other enterprises. ABC Theatres are found in eleven Southern states serving urban areas with multiscreen projection systems.

Figure 2-6 *Roots* became one of television's most successful series and helped ABC move to the top of prime time ratings. LeVar Burton starred as a proud African boy who became a slave and gave birth to an American family traced in the novel of the same name by author Alex Haley. (ABC and Wolper Productions)



Network publications include such familiar titles as *Prairie Farmer*, *Wisconsin Agriculturist*, and *Modern Photography*.

CBS

Meanwhile, William S. Paley's skillful management hand was molding another network giant, CBS. Like ABC, CBS's portfolio goes well beyond broadcasting. Steinway Pianos is a part of CBS, as is Creative Playthings, which manufactures sturdy wooden toys for preschoolers. All operate as part of the CBS/Columbia Group, which also includes record and tape clubs and hobby and craft businesses. It even includes book series such as the *Understanding Human Behavior* encyclopedia series, *Women Alive Encyclopedia*, *Handyman Encyclopedia*, and *Make-it-Yourself Encyclopedia*. In addition, the CBS Publishing Group owns BFA Educational Media, which markets audio-visual educational materials, and W. B. Saunders, the largest health sciences publisher in the world. CBS's International Publishing Division is composed of overseas publishing and marketing operations. Other major groups within CBS include the CBS Records Group and the CBS Broadcast Group.

The CBS Records Group is the world's largest producer, manufacturer, and marketer of recorded music. Among the many stars recording with CBS records are the group Chicago, Bob Dylan, Neil Diamond, Barbra Streisand, Boz Scaggs, Joan Baez, and Ramsey Lewis. The CBS

Records International Division concentrates on producing and marketing records in more than one hundred markets around the world.

But of the four CBS Groups—Broadcast, Records, Columbia, and Publishing—the largest earnings and profits come from the Broadcast Group. This group has four divisions: the CBS Television Network Division, the CBS Television Stations Division, the CBS Radio Division, and the CBS News Division. The most visible of the four is the Network Division. Its success is directly tied to how well the network is doing in the ratings. The leader in prime-time television between 1956 and 1975, CBS had to relinquish its perch when ABC soared to the top, but started to regain it in 1980. CBS has a record of holding many long-running, popular favorites. Its fortunes were built on such programs as *All in the Family*, which started in 1971 and continued through a decade of network programming, going on to popular acclaim in syndication. *M.A.S.H.*, *The Mary Tyler Moore Show*, and *The Waltons* have been other recent successes. Its past is also laced with a rich heritage of television firsts, including *I Love Lucy*, *Arthur Godfrey*, *The Ed Sullivan Show* (Figure 2-7), *The Beverly Hillbillies*, *Gunsmoke*, and *Captain Kangaroo* (Figure 2-8). All have contributed to CBS's popular and profitable niche in broadcasting.

Within the CBS Television Stations Division are found the CBS



Figure 2-7 The *Ed Sullivan Show*, with Ed Sullivan as host, became a staple of CBS programming.

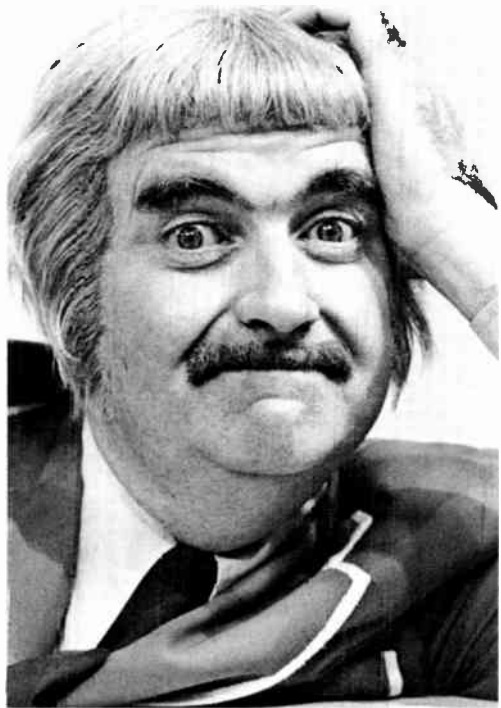


Figure 2-8 While public television has its *Sesame Street*, commercial television has children's programs such as *Captain Kangaroo*. (Robert Keeshan Associates, Inc. 1980)

owned-and-operated (O&O) stations. The familiar call letters of WCBS-TV in New York, KNXT-TV in Los Angeles, WBBM-TV in Chicago, WCAU-TV in Philadelphia, and KMOX-TV in St. Louis grace CBS's O&O roster. Many of the stations produce their own programming, which is then syndicated to other stations. And they continually support the news-gathering facilities of the CBS News, covering major events in the cities they serve.

NBC

NBC Television, with its parent company RCA, forged ahead not only as a network but also as a developer of technology. In essence, NBC became a testing ground for RCA. That testing ground is amply sprinkled with a series of "firsts."

Reliving these firsts, we see members of the FCC gathering in Schenectady, New York, in 1940 to watch some of the earliest pictures

broadcast from NBC facilities in New York City and rebroadcast through a series of relay stations to upstate New York. That same year, NBC presents *When We Are Married*, the first full-length Broadway play to be televised, and *Pagliacci*, the first full-length opera to be televised. It's also an election year, and NBC broadcasts the proceedings of the Republican National Convention held in Philadelphia. A month later films are rushed to New York by plane in order to broadcast the Democratic National Convention from Chicago. Later that fall the public is introduced via television to President Franklin D. Roosevelt and unsuccessful presidential candidate Wendell Wilkie. NBC programming clearly made significant strides.

Between 1941 and 1945 radio went to war while television stayed home. Still NBC continued to grow. The first advertising rate card for television was introduced by NBC in 1941, quoting a rate of \$60 per hour between 8:00 A.M. and 6:00 P.M., and \$120 per hour between 6:00 P.M. and 11:00 P.M. Compare that with some current 30-second rates in the hundred-thousand-dollar range. The year 1941 also saw an NBC television station in New York sign on the air with the first commercially licensed television transmitter. In 1942 NBC television was used to train New York City air raid wardens. Wounded servicemen brought home to recuperate in New York City watched sports events from Madison Square Garden via NBC, and just as the war was ending, the network announced plans for a "nationwide" television network to be completed by 1950.

After the war, NBC continued its leadership. Opening sessions of the postwar United Nations Security Council were broadcast from Hunter College in New York, and in 1947 NBC's Washington, D.C. station made the first television broadcast from the White House. The 1949 Inaugural Address of President Harry Truman was broadcast to millions over NBC television. Office workers were excused from their duties, and school children were permitted to go home and watch television as most people had their first, live televised encounter with a new president being sworn into office. Before television reached its golden era of the 1950s, NBC had already accumulated an impressive record.

Between 1950 and 1980, NBC continued to be recognized for a number of television programming firsts. It pioneered the *Today Show*, first with Dave Garroway, then with a series of hosts that included Hugh Downs, Barbara Walters, Frank McGee, and Tom Brokaw. The *Tonight Show* pioneered on NBC with Jack Paar and later Johnny Carson. Tom Snyder became host of the *Tomorrow Show*, a major experiment into postmidnight network television. Long-running popular series such as *Bonanza* added to the network's success. Today, the network is again attempting to increase its standings among competitors CBS and ABC.

EDUCATIONAL/INSTRUCTIONAL TELEVISION

We've already touched upon some of the early uses of television for education. Colleges and universities had been experimenting with classroom television for years before it was used to train air raid wardens during World War II. Early experiments with mechanical television for educational purposes took place at Iowa State University in the early 1930s. Television was applied to medical education at Johns Hopkins University in 1947 when several hundred doctors and nurses viewed a "blue baby" operation over ten television sets.

Applications

Today educational and instructional television is important to school systems everywhere. It helps to educate millions of people in developing nations. And today there are more businesses using television for internal communications and training programs than there are commercial television stations in the United States. Although television has been severely criticized for the level of its programming to the mass public, it has achieved awards and accolades for its educational programming. A teacher today can select from a multitude of catalogues and choose programs ranging from science to art to philosophy. Programs are designed for levels from nursery school to graduate education. The programs are distributed by closed-circuit cable systems, over-the-air television, direct-broadcast satellites, or stored in instructional media centers for easy retrieval and playback.

Defining ETV and ITV

Some programs are purely *instructional television* (ITV), produced for in-school consumption. Others are *educational television* (ETV), educational programs directed to larger numbers of people who *may* or *may not* view the programs in the in-school setting. For the purposes of definition, it is important to understand that all ITV programs are also considered ETV programs. The term *instructional television* refers to the classroom application of *educational television*. The history of ETV/ITV is a combination of issues and technology which have interrelated and sometimes conflicted to mold the current system.

Airborne Experiments

One of the most publicized and, for its time, successful educational television ventures combined the latest state-of-the-art equipment, air-

craft, and the top teachers in the country into the Midwest Program on Airborne Television Instruction (MPATI). Using a converted DC-6 aircraft fitted with a special transmitting antenna, MPATI broadcast televised lessons from the plane during the 1960s over a six-state area of the Midwest that encompassed Wisconsin, Michigan, Illinois, Indiana, Ohio, and Kentucky. MPATI didn't last, however. With the coming of satellites, television antennas could be hoisted over 22,000 *miles* high to cover a radius of thousands of miles. Nevertheless, MPATI proved three things: ETV could be broadcast over something other than ground antennas, it could disseminate high-quality programs over wide areas, and the public was ready to accept it.

Satellites Take Over

In 1974 the National Aeronautics and Space Administration (NASA) launched the sixth in a series of Application Technology Satellites (ATS). The launch had three primary goals: (1) to demonstrate the feasibility of deploying a parabolic antenna thirty feet in diameter in space. The parabolic antenna, which is shaped like a dish, had been tested successfully in land-based applications; (2) to provide a satellite with fine pointing, tilting, and tracking capabilities; and (3) to provide an oriented, stable spacecraft platform at synchronous (stable) altitudes for advanced technological experiments. Behind the project, along with NASA, were the U.S. Office of Education, the Department of Health, Education, and Welfare (HEW), and the Federation of Rocky Mountain States, a group of northwest states joined to foster cooperation between industry and government. Foundations also provided financial support.

ATS-6 was put in position over the Rocky Mountains and became part of a ground-based receiving and transmitting system that consisted of 130 receiving dishes located outside of 130 school buildings in such places as Three Forks, Montana; Fredonia, Arizona; Antonito, Colorado; and Lapwai, Idaho. With the satellite as the relay station in space, the schools could be linked to one television system without the prohibitive cost and time involved in stringing coaxial cable over millions of square miles of the mountainous West. Electronic consoles were installed in classrooms used for the experiment, permitting two-way talk-back capabilities with the control center in Denver, Colorado. At specific times when the frequency was reserved for their use, students could talk to Denver and ask questions related to the program they had just observed. A regular system of monitoring student feedback and teacher preference for the programs was also developed.

How successful was the experiment? This is difficult to measure. Early opposition to the project centered around two areas: (1) the

concern over a “big brother” from space imposing predetermined objectives set up by Washington bureaucrats on the communities served by the satellite; and (2) cultural identity of the satellite audience being destroyed because everyone was lumped together in one group. Although these two objections may not at first seem like serious concerns, when we realize that the residents of the region served by the satellite included many different nationality backgrounds, the issues become more relevant. But the fears turned out to be mostly groundless, and the ATS-6 became the second major application of television technology to education.

Portable Equipment: Lessening Resistance

Today, educational television has found its way into every segment of education. Equipment manufacturers have created small, portable color cameras and recording equipment, a development that turned out to be at least as important as the airborne and space experiments. Portable equipment gave teachers full control of the television production process from idea to completed program. It also gave them control over the material shown in their classrooms. In the other systems teachers used programs produced for large numbers of students across wide audiences. Although teachers were in no danger of being replaced by television, there was something more comforting in producing their own programs. Portable television equipment is playing an important role across all disciplines and all levels of education.

ETV/ITV IN BUSINESS

As television demonstrated its effectiveness in education, business and industry soon began to recognize its potential (Figure 2-9).

Internal Communication

Today, corporations around the world are using television for internal communication. Citibank in New York produces a regular television news program for its employees. The program gives news about bank personnel, information on employee benefits, and other items of interest. Satellite communication will make it possible for large international corporations to produce corporate newscasts or other programming and send it simultaneously from a central studio to every branch office or plant in the world.

Corporations have found still other ways to use television to com-



Figure 2-9 Steel workers at the Inland Steel Corp. use portable video tape to produce an industrial training program. (Inland Steel Corp.)

municate information to their employees. For example, Dana Corporation sends news items and other educational information throughout the plant (Figure 2-10). In industrial training programs, television is helping to efficiently educate large numbers of personnel. Used much as ETV/ITV is used in the classroom, a company produces its own videotapes and sends them to regional locations for viewing. The method is especially effective for training repair personnel, who constantly need to keep abreast of new equipment, and television can effectively reproduce and display complex moving parts.

Marketing

Television is also becoming a direct marketing tool as many corporations produce videotapes for viewing by potential customers. Today when you walk into an automobile showroom, you may be met by a salesperson who takes you to a television set, inserts a videotape, and shows you in

living color and sound the many features of the automobile you're considering buying. The announcer's deep resonant voice, the perfect lighting, the beautiful country road with fall leaves, and a romantic couple sitting in the front seat can be a powerful persuasive device.

Automobile manufacturers aren't alone in employing prerecorded video tapes to sell their product. A television tape showing the sparkle of crisp powdered snow and a skier gliding effortlessly down a tree-covered slope can do more than just instill interest in skiing. It can sell skis. Similarly, a farmer with \$30,000 to spend on a new tractor can watch a videotape explaining how the tractor is manufactured, watch actual field testing of the tractor, and see it operating in the field under a variety of soil and weather conditions.

But the effectiveness of educational and instructional television, whether used in school or business, is closely tied to the effectiveness of ETV/ITV programming. Too many times people either produce a



Figure 2-10 On line video monitors at Dana Corporation are used to keep employees informed. (Dana Corp.)

program or use a prerecorded one and *assume* the program is effective. The problem is further complicated by the multitude of suppliers trying to make a profit distributing programs which may not have been sufficiently pretested. In Chapter 5 we'll learn the steps necessary to produce *accountable* ETV/ITV programming, programming which meets a set of predetermined objectives.

PUBLIC TELEVISION

Just as National Public Radio joined together noncommercial radio stations, the Public Broadcasting Service (PBS) joins together many of the noncommercial or public television stations.

Early Funding and Support

The roots of this network date back to May 1955 when the first noncommercial educational television station, KUHT-TV, signed on the air at the University of Houston in Texas.

Congress instituted the next major step by passing the Educational Broadcasting Facilities Act in 1962. Amending the Communications Act of 1934, the new law appropriated \$32 million to help develop new educational broadcasting facilities. With money available, 125 noncommercial stations were on the air by 1966. Then in 1965 the Carnegie Commission for Educational Television undertook a study that significantly changed educational noncommercial television in the United States. In its report, titled *Public Television: A Program for Action*, the commission recommended the formation of a quasi-government corporation to develop public broadcasting in the United States. Congress again responded by passing the Public Broadcasting Act of 1967, authorizing an additional \$38 million dollars for construction of facilities. The act also created the Corporation for Public Broadcasting (CPB), a quasi-government corporation.

CPB and PBS

To meet the charges under the act, CPB brought together many of the noncommercial television stations and formed the Public Broadcasting Service. Representatives from the noncommercial stations were elected to sit on PBS governing boards. Although PBS should not be compared to commercial networks, it does supply many noncommercial television stations with programs. The stations, however, have a direct say in what programs will be distributed on PBS. Each year they participate in a

Station Program Cooperative (SPC). The SPC holds a series of bidding rounds where program producers submit their shows for the perusal of station managers, who in turn bid part of their budgets on the shows. Those shows which turn out to be the most popular become part of the PBS schedule.

Some of the larger PBS affiliates play an active role in producing programs. WNET-TV's programs (Figure 2-11), many of which are produced in its New York City studios, often become PBS shows seen throughout the United States. The individual stations also actively solicit foundation and corporate support for these programs, which range from musicals to National Geographic specials. Shows such as *Mr. Rogers' Neighborhood* (Figure 2-12) and Julia Child's *The French Chef* (Figure 2-13) originated at WQED-Pittsburgh and WGBH-Boston, respectively.

PBS has four categories of noncommercial stations: (1) stations licensed to state authorities and state boards of education; (2) stations licensed to nonprofit corporations called community stations; (3) stations licensed to colleges and universities; and (4) stations licensed to municipal boards of education, or school districts serving the precollege public school curriculums. Regardless of the category, all are governed by federal regulations.

Public television has come a long way since its early days at KUHT-TV. PBS and its member stations have received the most coveted programming awards in the industry, and the audience for public television has steadily increased to where it provides in some

Figure 2-11 Typical of quality programming produced by public TV affiliates is the 13-week series *The Adams Chronicles 1750-1900*. In this scene, a young lawyer, John Adams (George Grizzard), seeks the patronage of Justice Jeremiah Gridley (John Houseman) in the first episode of the series, produced through WNET-TV. (Photo by Bill Smith and provided by WNET-TV)



areas stiff competition for commercial television. With a new satellite distribution system and long-term funding from Congress, PBS has become an established member of the broadcasting family.

SUMMARY

Chapter 2 examines the growth of television and the role it plays in our lives and society. Paul G. Nipkow invented a scanning disc television, and Vladimir Zworykin and Philo Farnsworth perfected the electron scanning process used in today's television systems. Television tubes progressed through the iconoscope, orthicon, image orthicon, and vidicon.

The medium was officially unveiled for the public at the 1939 World's Fair. But it was not until the FCC lifted the television freeze in 1952, allocating channels for both commercial and educational television, that the golden era of the medium began. The gap between UHF and VHF

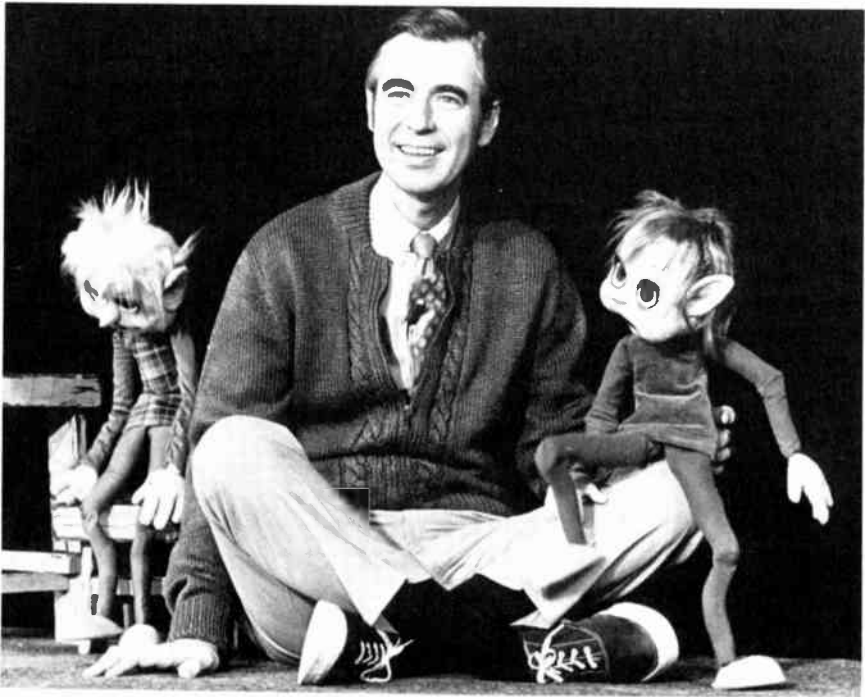


Figure 2-12 Beginning in the United States at WQED-Pittsburgh, *Mr. Rogers' Neighborhood* stars Fred Rogers, seen here with two marionettes from the Bob Brown Marionette Company. (Copyright, Family Communications, Inc.)



Figure 2-13 Julia Child's *The French Chef* is considered the first educational television series and began at WGBH-Boston. (WGBH Educational Foundation)

television began to close as receiving sets were built to receive all channels and as advertising became too expensive on network-affiliated stations, many of which were VHF.

Television networks contribute the majority of programming seen on American television, although syndication is quickly becoming an important source of programming. The newest commercial network, ABC, started in television back in 1948. It had been preceded by NBC and CBS, both of which began in radio. Today, networks or their parent companies engage in book publishing, operate amusement parks, own manufacturing companies, produce records, publish magazines, and are involved in a host of other enterprises.

Educational-instructional television began in the 1930s and today encompasses programs ranging from nursery school studies to post-graduate education. Early experiments with airborne television have given way to direct-broadcast satellites that transmit programs over millions of square miles to hundreds of small receiving antennas on earth. From the recommendations of the Carnegie Commission and the passage of the Educational Broadcasting Facilities Act of 1962 came a

new wave of interest and funding which significantly improved educational broadcasting facilities in the United States. In 1967, Congress passed the Public Broadcasting Act, which paved the way for the Corporation for Public Broadcasting (CPB). The Public Broadcasting Service (PBS) evolved from CPB and links most noncommercial public television stations in the United States.

FOCUS ON FURTHER LEARNING

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3

Technology



PREVIEW

After completing this chapter, we should be able to:

Explain how cable systems first started

List and describe the functioning parts of a cable system

Comprehend the uses of fiber optic technology

Trace satellite broadcasting from Telstar through the Intelsat system

Describe two examples of domestic satellite systems

Describe the advantages and limitations of microwave technology applied to broadcasting

Be aware of videotext and its potential applications

Explain how videodiscs could change the way television programs are distributed

Understand the uses of computers in broadcast station operation

The impact of radio and television on our lives could not have taken place without the many advances in broadcast technology. The sound we hear over radio or the picture we view on television reaches us through many different methods of distribution. The network program from London that arrives in our homes may travel to New York via a relay station, hop across the United States through a series of microwave repeater stations, and eventually come into our homes over cable. Moreover, the program that looks live may actually be videotaped. And the genius of animated cartoon features is not possible without film. To understand radio and television is to understand how this technology works and how it affects us.

CABLE: THE BASIC CONCEPT

Any store selling televisions in the 1940s kept an ample supply of antennas in stock. Their customers would naturally come in and browse over the television sets, but they would pay as much attention to the maze of tubular metal and wire that would eventually be strapped to their chimney or secured on a long pole alongside of their house to receive the television signals. The bigger the antenna the better, especially if the customers lived far from a television station.

The store owner wouldn't have been surprised to have many customers come back to buy more than one antenna to receive more than one channel. Some would also buy a small telescopic antenna called rabbit ears to sit on top of their television set. Antennas even became status symbols. The larger the antenna gracing the rooftop, the more prestige for the owner. If a store's customers wanted the very latest in antenna systems they would buy a rotor tuner, a small motor that would go on the roof with the antenna and turn it at the customer's command from a control box in the living room. Many are still in use today.

Early Applications

Then some ingenious residents of outlying mountainous regions in Oregon and Pennsylvania where reception was poor, no matter how large the antenna, came up with an idea. Why not take the television antenna off the roof and put it on top of the nearest mountain? This added height was bound to increase the quality of reception. A long wire or cable could then connect the antenna to the television set. Great idea. But there was one problem—it was expensive. Placing an antenna on top of a mountain which had few roads was in itself a complex task. Constructing a mountaintop tower on which to mount the antenna was

still another obstacle. And spending the money to erect the tower and the antenna and to string the cable back to the living room made the idea at first seem very impractical.

But then someone asked: What if more than one person could use the antenna? What if all the people in the outlying town could help pay for the cost of the tower, the antenna, and the cable? Each person could pay a monthly subscriber fee for the use of a cable which would run from the main antenna to town. The fee would also cover the cost of smaller cables to connect the main cable to everyone's television sets. That idea was practical. It was also profitable. And it was the beginning of cable television (Figure 3-1).

Size of the Industry

Today, cable television in the United States is big business. In fact, more than 3350 cable systems currently serve more than 7300 communities. A glance at the latest edition of *Cable Sourcebook* shows that Pennsylvania has the most subscribers. A populous state, numerous television stations,

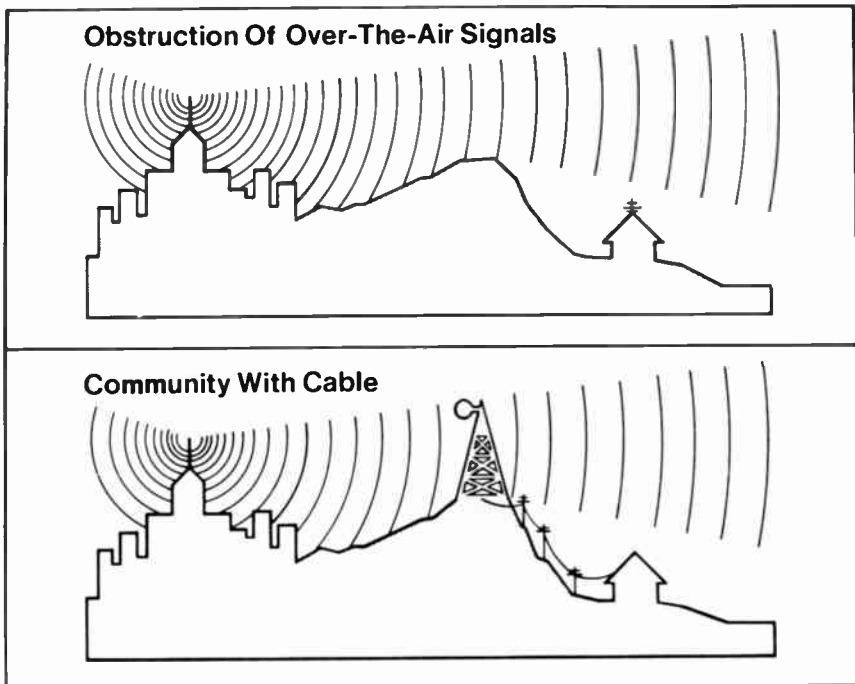


Figure 3-1 With starts in Oregon and Pennsylvania, cable television now operates with over 3500 systems in the United States. (NCTA)

and mountainous terrain simply add up to a demand for cable. About 15 percent of the country's television households subscribe to cable, the largest cable system being TelePrompTer. Systems constructed after 1972 must by federal regulation have at least a twenty-channel capacity. Cable systems are usually owned by individuals, broadcasting stations, newspapers, or program producers.

CONSTRUCTING A CABLE SYSTEM

Cable systems are a series of component parts, each important in bringing the signals of a television station to the set in a subscriber's home. The primary component is the *head end*, the antenna and the control system which processes the signals received by the antenna. The signals are next fed into the second component, the *distribution system*, and go from there to the third part of the system, the *home terminal*. Let's construct an imaginary cable system in order to examine each part in greater detail.

The Head End

Imagine you have acquired the capital necessary to install a new cable system in a community not yet served by cable. You have already done the mound of preliminary planning necessary, such as obtaining local and sometimes state government approval, securing the FCC's go-ahead, and completing a sophisticated market and cost analysis to determine if there are enough potential subscribers to make the system profitable. Now it's time to construct the system.

First, you must find a suitable location for an antenna. This may be much more complex than simply locating high terrain and erecting a tower. Depending on the location of the stations you want to receive, you may find that you must erect more than one tower in more than one location. Each tower will contain one or more antennas.

Once the location is selected, tower construction begins. You'll need to secure the land, either through purchase or lease. The parcel must be large enough to accommodate any building which might be erected at the base of the tower. If the tower is not self-supporting, you'll need enough land to allow you to stretch guy wires in all directions to support the tower. If the location is inaccessible by road, then you'll want to rent a large helicopter to position the sections of the tower. Depending on the strength of the signals being received, you may want to construct amplifiers at the antenna location to boost the signal before it is sent to the signal processing point for distribution to subscribers.

At some location, usually in the community you're going to serve, you'll need to install a signal processing system. Signal processing systems and frequency conversion are necessary because the channel a television station normally broadcasts over will be different from the channel you'll use to distribute the signal to your cable subscribers. You may choose different channels for various reasons. One is to avoid interference. If your master antennas are receiving two stations, both operating on the same channel, one station must be transferred to another channel for distribution. Admittedly, the switch can play havoc with a station's promotional efforts, which are closely tied to its channel number. However, the inconvenience is more than made up by the increased exposure the station receives through new cable viewers.

Distribution System

Next comes the installation of the cable itself, the primary component of the distribution system. Most cable systems use coaxial cable, consisting of an inner conductor of copper wire, a plastic shield around the inner conductor, and an outer conductor of webbed wire, which is surrounded by still another plastic shield. The cable may contain additional shielding for external use.

To plan the installation of the cable, you will have to analyze where the main traffic arteries of the community are located, where the potential subscribers are located, and where future increases in population might take place. You'll use a "plotter" to design and draw a blueprint of your installation routes, then decide the most effective installation methods to employ.

You may locate some of your cable above ground, either installing utility poles or using existing poles that belong to utility companies. The latter has become a source of controversy in recent years because of the rates charged to cable systems by the utility companies. You may find it is not only more profitable but also far more popular with home owners to construct cable underground. Broadcasting is becoming more concerned about environmental impact and by installing the cables above ground you would undeniably be creating visual pollution. In some cases, local authorities may even require you to construct your system underground.

The main artery of your cable distribution system is called the *trunk* (Figure 3-2). Cables which feed off the trunk are called *subtrunks* or *feeder cables* and are found on side streets or areas which are not within the city center. Along the trunk and subtrunks are still more amplifiers which receive and boost the signal along its path. The amplifiers perform the delicate job of boosting the signal by different amounts

Basic Cable Television System

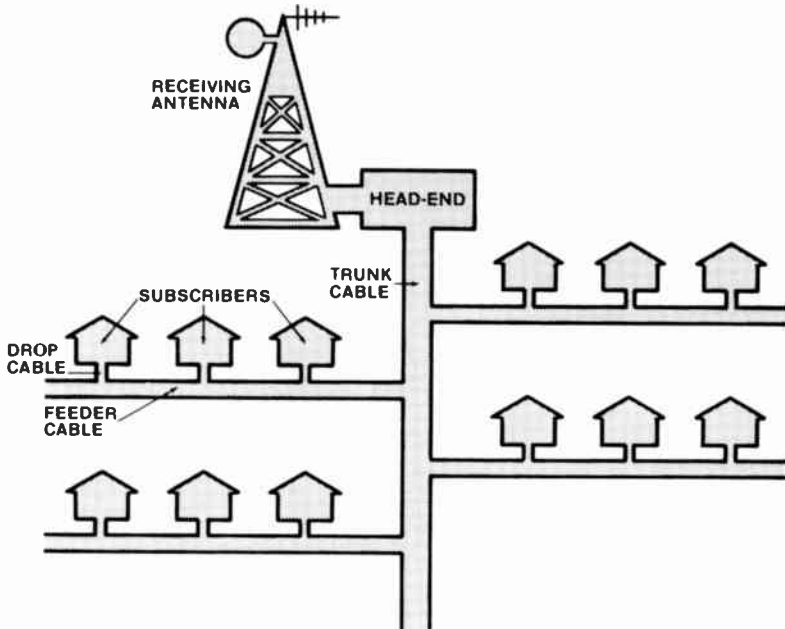


Figure 3-2 The head end is the hardware and human hub of the cable system, feeding signals through trunk cables, feeder cables, and finally drop cables to subscribers' home terminals. (NCTA)

along the route. Finally, a *drop cable* extends from the subtrunk to the subscriber's home.

Home Terminal

At the end of the drop cable is the *home terminal*, which connects directly to the subscriber's television set. Home terminals are of two types—*one-way* and *two-way*. One-way terminals are still the most common; a signal travels along them in only one direction, from the head end to the subscriber's television set. Two-way terminals operate with two-way cable systems, enabling the subscriber to send signals back to the head end. Containing a central computer for tabulating such things as public opinion polls and performing a host of other functions, two-way cable systems offer subscribers a wide range of services such as in-home shopping, instructional television programs with immediate feedback to the instructor, and the ability to answer questions by pushing a button on the home terminal. Columbus, Ohio was one of the first towns to operate a two-way system.

Fiber Optics

Most cable systems operate with a capacity ranging between twenty and forty channels. However, through research at Bell Labs, glass fibers have been perfected to the point where they can replace the wire inner core of the standard coaxial cable (Figure 3-3). These fibers use light waves to carry information and make possible a greatly increased channel capacity, numbering into the thousands of channels. With fiber optics we can achieve what is known as the "wired city," where every home is wired through two-way cable to every other home much like an extremely high-capacity telephone system. Fiber optics allow massive amounts of information and data to be distributed via two-way visual communication; everything from shopping to hospital diagnostic services can be accomplished without ever leaving your home.

The future of fiber optics is clouded with controversy. Not only may cable systems employ this technology, but the telephone may also become involved in distributing large amounts of information to the home via these light waves. And when a utility monopoly like the telephone company becomes involved in more than simply personal communication services, the entire issue becomes controversial. However, this new technology is changing many of our traditional applications of communication processing, causing us to rethink competitive policies. Who will control the fiber-optic systems of tomorrow? What will be distributed over these systems? Who will operate them? All are vital issues, and you should stay informed and take an active role in determining future policy.

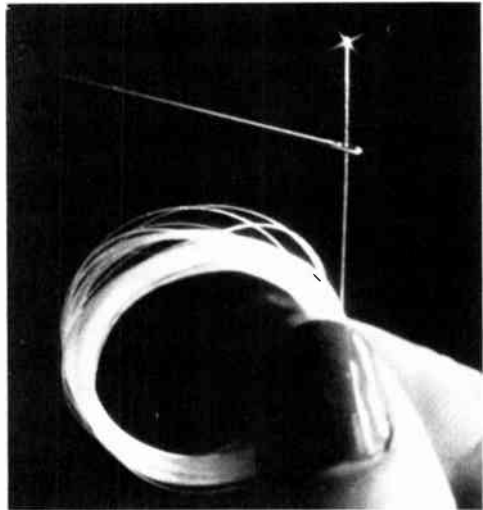


Figure 3-3 Tiny glass fibers transmitting light waves promise to greatly increase channel capacity through "fiber optic" communication. (Western Electric)

SATELLITES

The network news begins on schedule. Before the program ends, correspondents report from London, Paris, Moscow, the heart of Africa, the mountains of South America, and the coast of Australia. A beauty pageant in Hong Kong is carried live on American prime-time television. "Live via satellite" has become routine as we take for granted those antennas in space that have made communication around the world as commonplace as around the corner.

Telstar

The modern era of communication satellites used in broadcasting began on the night of July 10, 1962. That night, political figures in England, America, and France waited as a NASA-AT&T-launched payload named Telstar roamed through outer space (Figure 3-4). Its antennas homed in on signals from North America, amplified them ten million times, and retransmitted them back to earth to receiving antennas in England and France. The telecast lasted less than an hour, not because the program ended, but because the satellite passed out of sight of the signals from earth. Telstar made international history during this marriage of satellite technology and broadcasting. In fact, 1960s tele-

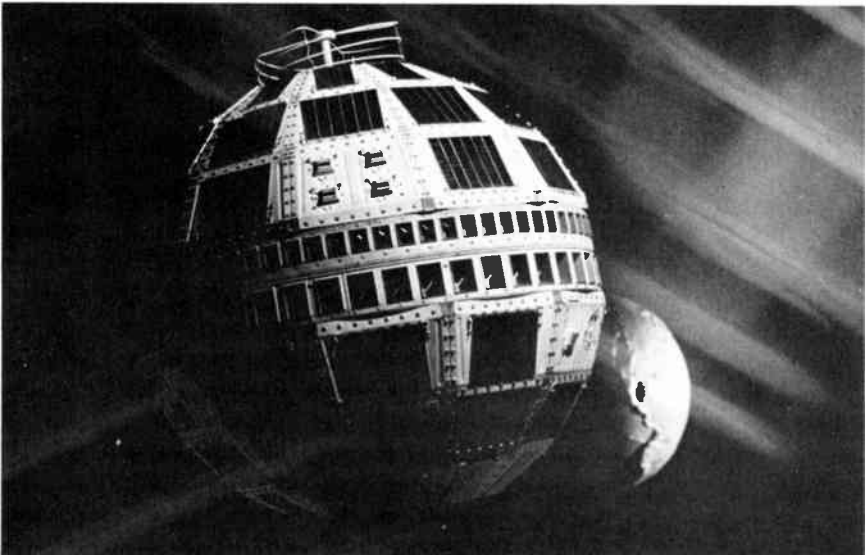


Figure 3-4 The satellite "Telstar" opened a new era of satellite communication which could relay live television pictures around the world. (A. T. & T. Co.)

vision seized every opportunity to use this technology for its programming. The Ecumenical Conference in Rome was seen in Europe and the United States via satellite. European audiences watched the American reaction to the unveiling of the Mona Lisa at the National Gallery of Art. And the Japanese Olympics traveled around the world via Telstar. A new era in international television had arrived.

Synchronous Orbit Satellites

But the satellites in themselves were not as important as their sophisticated control and guidance systems. Engineers at Hughes Aircraft Company tried their first launch of a *synchronous orbit satellite* in February 1963. The synchronous orbit satellite, if successful, would reach a point in space where it would rotate at a speed that would synchronize with the speed of the earth's rotation. As a result the satellite would appear stationary, even though traveling at several thousands of miles per hour. But this first attempt, Syncom I, ended in failure.

Undaunted, Hughes engineers tried again with Syncom II in July of that same year. This time the launch was successful and, at 22,300 miles in space over the equator and the Atlantic Ocean, synchronous orbit was achieved. On board the United States Navy's ship *Kingsport*, sailing off the coast of Nigeria, "Kingsport, this is Lakehurst, New Jersey. How do you hear me?" came through loud and clear. The second era of satellite broadcasting, the synchronous orbit satellite, had begun. No longer was it necessary to interrupt a political speech, concert, play, or correspondent's report simply because the satellite had left the range of the earth station's signals. Continuous live coverage could now take place, and hours of uninterrupted live programming became possible.

COMSAT and INTELSAT

By now the world was taking an active interest in satellite development. In the United States, Congress had created the quasi-government Communications Satellite Corporation (COMSAT) with passage of the Communications Satellite Act of 1962. COMSAT became the early planner of satellite systems on an international scale when it evolved as the manager of the International Satellite Consortium, a cooperative effort governing and developing world satellite systems. The consortium established itself under two international agreements originally signed by fourteen countries and eventually ratified by fifty-four. In 1974 it became the International Telecommunications Satellite Organization (INTELSAT) with a membership of more than eighty nations and presided over by a secretary general. Today it has approximately one

hundred members and is responsible for about 95 percent of the world's telecommunication traffic (Figure 3-5).

INTELSAT Satellites

On April 6, 1965, Early Bird became the first INTELSAT satellite to be launched into orbit. It was followed by a long series of INTELSAT spacecraft which orbited the earth and provided a worldwide system of communication, not only for broadcasting but also for computer data, telephone communication, two-way radio communication, weather monitoring, and other uses.

The satellites which lead up to the current INTELSAT V system included the INTELSAT II series launched during 1967 and positioned over the Atlantic and Pacific Oceans. This series provided communication to two-thirds of the earth's surface. INTELSAT III satellites

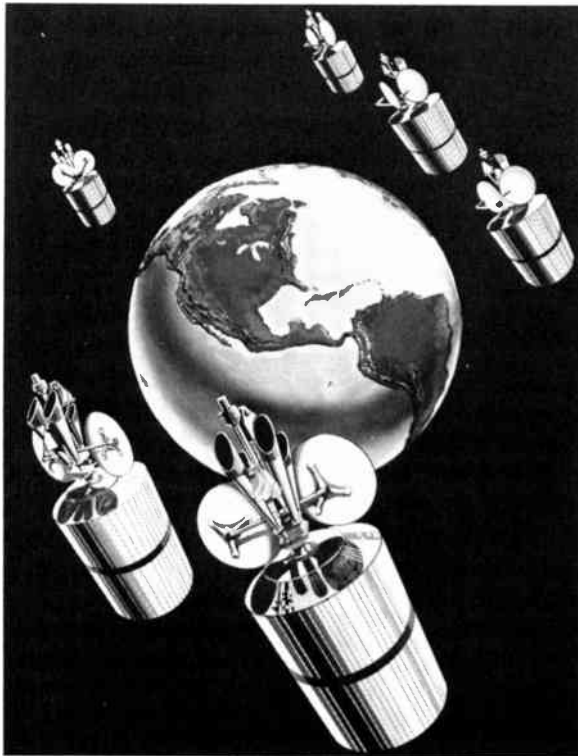


Figure 3-5 The INTELSAT satellite system operates with approximately 100 member nations and is responsible for 95 percent of the world's telecommunication traffic. (Courtesy of Hughes Aircraft Co.)



Figure 3-6 The INTELSAT V system is the most sophisticated satellite communication program yet developed. It is responsible for meeting the communication needs of much of the world during the early 1980s. (Aero Nutronic Ford)

became operational between 1968 and 1970 and were positioned over the Atlantic and Indian Oceans. With global communication now possible, the next step was to improve and increase the capabilities of satellite communication.

Four improved INTELSAT IV satellites were launched between 1971 and 1973, followed by the launching of INTELSAT IV-A. The IV-A satellites, six in all, utilized improved technology called *beam separation*. Beam separation allowed the same frequency to be used for transmitting a signal both to and from the satellite, creating a more efficient use of the frequency. Moreover, improved antenna systems permitted a more highly directed "beam" to an earth station, eliminating the power normally wasted by beaming signals over ocean areas, for example.

The INTELSAT V (Figure 3-6) system is the most sophisticated satellite communication program yet developed. It will meet the communication needs of much of the world during the early 1980s. It consists of a planned seven-satellite system, and the contract for its development was awarded to Aero Nutronic Ford. With a fifty-foot wing span when their solar panels are deployed, these satellites measure twenty-two feet in height. They consist of three primary modules:

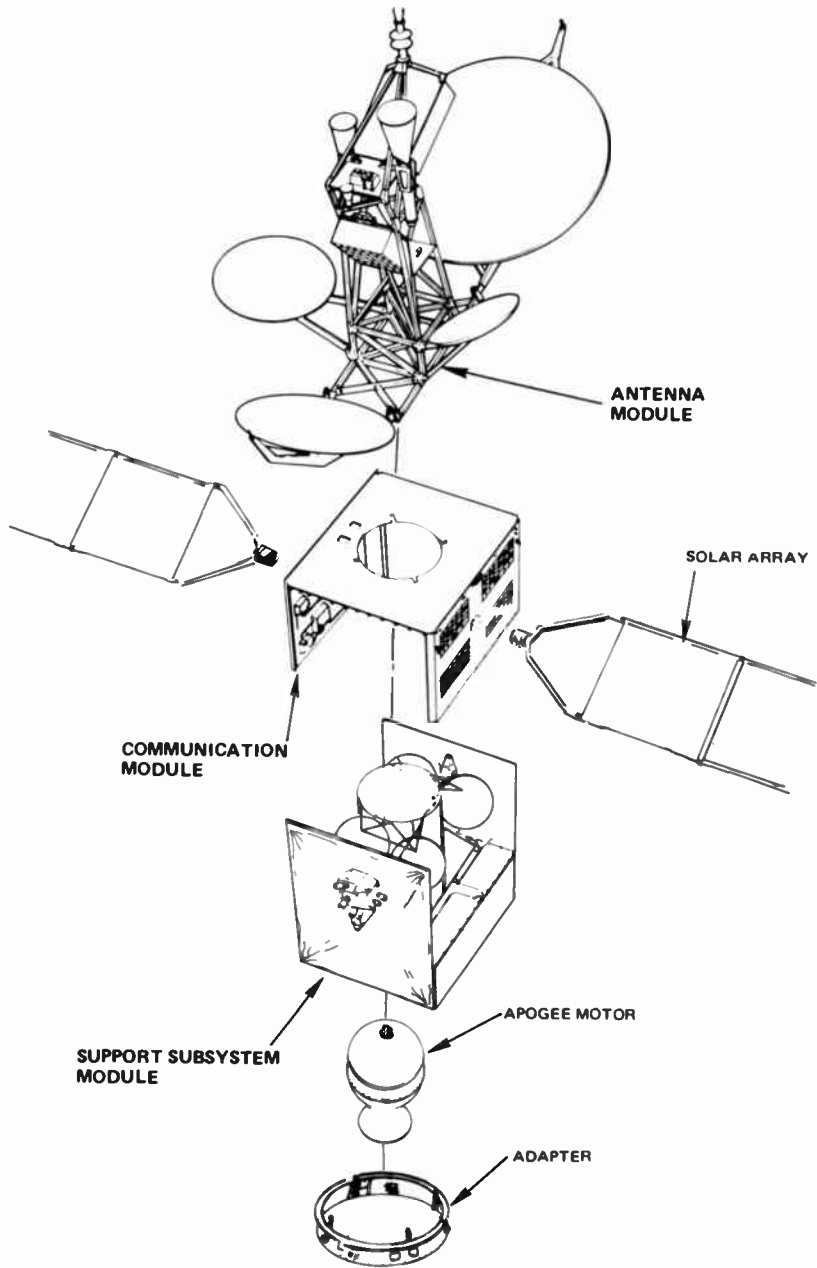


Figure 3-7 The body-stabilized 3-axis spacecraft is subdivided into 3 modules—antenna module, communication module, and support subsystem module. Solar array “wings” are connected to the communication module. (Aero Nutronic Ford)

antenna, communications, and support subsystem (Figure 3-7). Since even at the high frequencies of gigahertz (billions of cycles per second) overcrowding is beginning to set in, the INTELSAT V series will have alternate frequency capability with twice the capacity of the INTELSAT IV-A series.

RCA Satcom: Domestic Satellite System

Along with the global communication of the INTELSAT satellites, there are numerous domestic satellite systems. One, begun back in December 1973, is operated by RCA. Originally leasing circuits from Canada's ANIK II satellite, RCA finally launched RCA Satcom I on December 12, 1975. The satellite began service on February 28, 1976. On March 26 of that same year, the company launched its second satellite, RCA Satcom II (Figure 3-8). RCA also formed a wholly owned subsidiary company to operate its domestic satellite system, RCA American Communications, Inc. (RCA Americom), which became part of the RCA Communications group. A network of earth stations complements the RCA system. The Satcom satellites permit their antennas to face the sun whenever it's in view, thus improving the power over previously launched satellites. When the sun is not in sight, the satellites are powered by nickel cadmium batteries. In addition to this antenna design, Satcom employs three advances in satellite technology: (1) a special high-capacity antenna that can carry up to twenty-four simultaneous color television channels; (2) the use of graphite fiber epoxy composite materials, insuring strength yet providing less weight in construction; and (3) a special lightweight amplifier.

Western Union's Westar

Western Union also employs a domestic satellite system, called Westar. The system is capable of carrying a variety of information, including voice and video circuits (Figure 3-9). Five sending and receiving earth stations operate in New York, Atlanta, Chicago, Dallas, Los Angeles, San Francisco, and Washington.

Oscar

While the major corporations and government consortiums receive most of the attention when we talk about satellite communication, a group of amateur radio operators, called "hams," are also experimenting with their own satellites (Figure 3-10) as part of the Oscar series. Information gained from their experiments is being applied to improving satellite communication among broadcasters and other users.

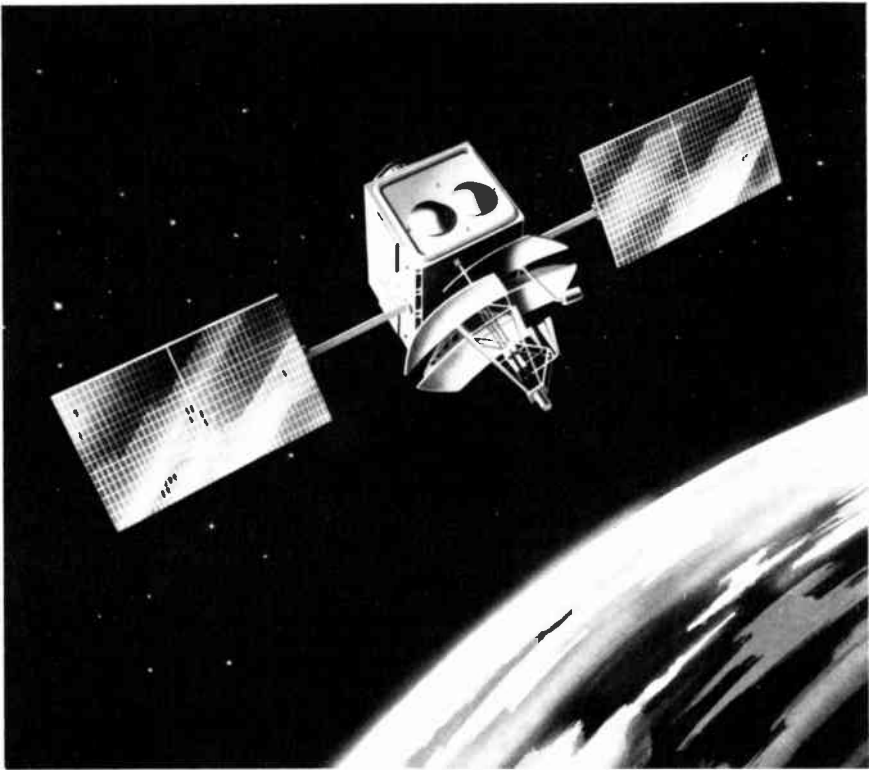


Figure 3-8 RCA's Satcom II operates with 75 square feet of silicon solar cells mounted on two panels continuously pointed at the sun. (RCA)

USING MICROWAVE TECHNOLOGY IN BROADCASTING

In addition to radio waves, the electromagnetic spectrum also contains other forms of electromagnetic energy. Extremely high on the spectrum are light waves. Light waves travel in a straight line. Alexander Graham Bell used them in the 1800s to demonstrate his photophone, a novel device for communicating between two short distances. Between light waves and radio waves on the spectrum are microwaves. Like light waves, microwaves travel in a straight line and can carry large amounts of information. And as the name implies, they are very short waves. In fact, microwaves can only be used over a distance of about thirty miles on earth before they are absorbed by the atmosphere and become ineffective. (In outer space there is no atmosphere.) As a result, repeater stations are set up to receive, amplify, and retransmit the signals. We've all seen the towers containing the large dish antennas. The dish

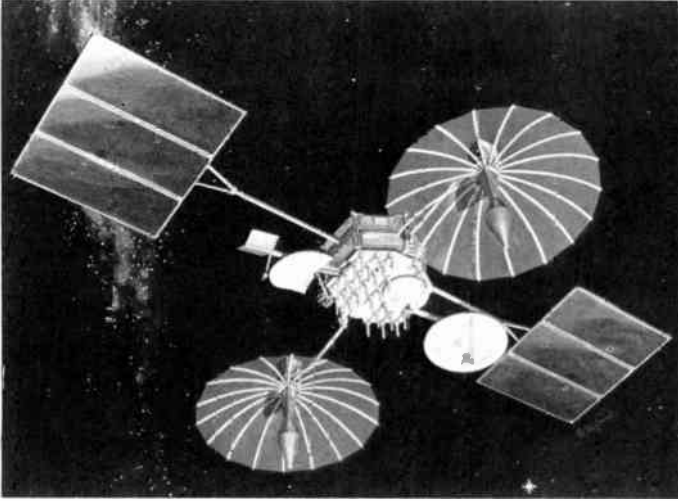


Figure 3-9 The latest generation of the Western Union-NASA tracking and data relay satellite is part of the Westar domestic satellite system. (Western Union & TRW Defense and Space Systems Group)

antennas are used to send and transmit microwaves. Local stations use microwaves in electronic news gathering (ENG) and to relay programs from station to station in some areas, such as feeds from the networks.

Broadcast Relay

If you live on the West Coast and watch a network television program originating in the East, chances are good that the program at some

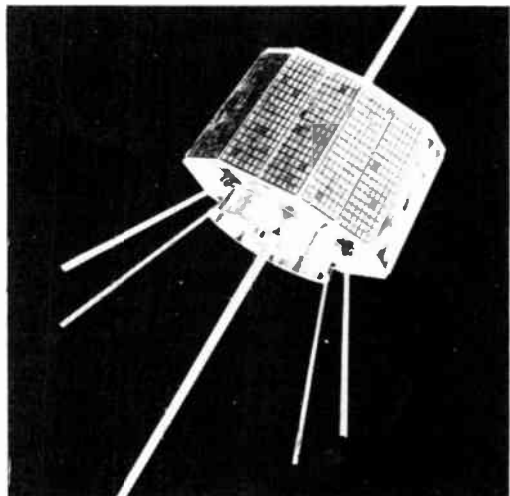


Figure 3-10 Amateur radio operators with special equipment can relay messages around the world using the satellite Oscar. (American Radio Relay League)

point on its route travels via microwave. Microwave antennas (Figure 3-11) dot the mountain regions and provide a communication link that would be prohibitively expensive if cables were installed across the mountains. Thus, the network program is relayed to your local television station via microwave; your station then retransmits the program on a lower frequency that you can receive on your standard television set.

You may ask, if microwaves are so efficient for television transmission, why don't we use them to send television directly to our homes? Actually, if we develop widespread use of the small satellite-receiving antennas that can be easily installed on rooftops, direct broadcast satellite transmissions *will* reach us through microwaves (Figure 3-12). However, for normal home use, microwaves are inefficient since they require line-of-sight transmission capability between the television trans-

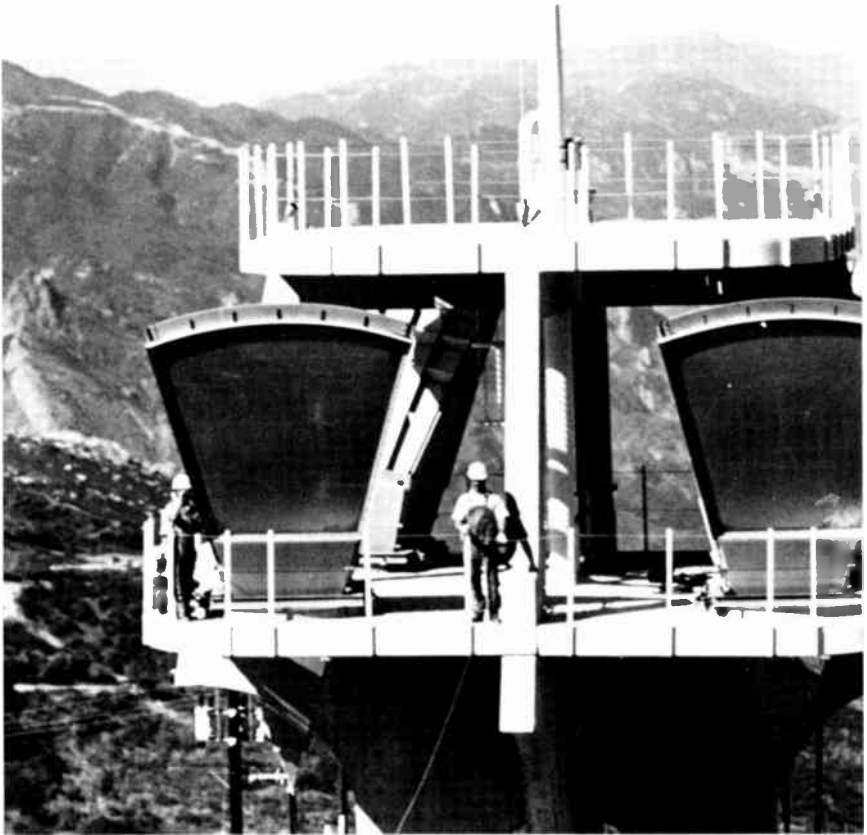


Figure 3-11 Microwave relay towers such as these near Los Angeles carry voice, video, and data communications over national and international microwave networks. (A. T. & T. Co.)

COMSAT'S CONCEPT OF SATELLITE-TO-HOME SUBSCRIPTION TV

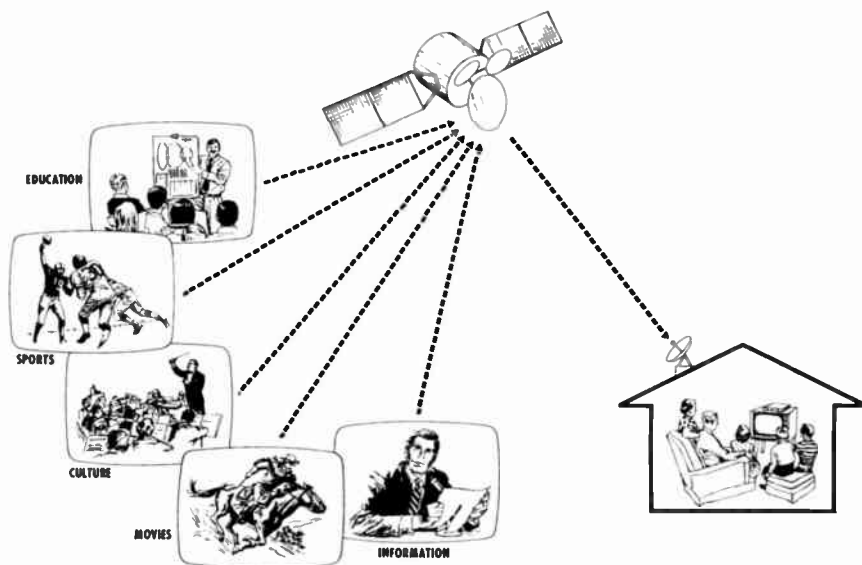


Figure 3-12 Satellite-to-home subscription TV promises to open up a new era in television programming. The potential for many new television networks to develop as well as increased channel capacity to the home viewer are just two of the changes that would occur under the concept. (Comsat)

mitting antenna and the receiving antenna. Thus, if you lived behind a hill or a tall building, the signal would be blocked before it ever reached your home.

Electronic News Gathering

Although microwaves have been used on a wide scale to relay television programming since 1951, only recently have they been instrumental in electronic news gathering. Improved microwave transmission and receiving systems as well as smaller, portable cameras have contributed to what has become known as the ENG revolution (Figure 3-13). It began catching on in the mid-1970s and by 1980 trade publications were devoting entire issues to the subject. They were even discussing radio ENG.

Television ENG employs a main microwave receiving antenna at a strategic location, usually at the station's transmitter site. A mobile van equipped with a microwave transmitter and antenna comprise the second part of the system (Figure 3-14). Smaller, portable microwave



Figure 3-13 Smaller portable television cameras permit the broadcast journalist to go far beyond the confines of the studio and send live pictures through microwave relays from almost anywhere in the world. (Thomson-CSF Laboratories, Inc.)

units are then used to transmit the picture between the camera and the van. It means a television journalist can, for example, carry a portable camera and portable microwave transmitter into the office of a politician and proceed to conduct a live interview. The technician merely points the portable microwave transmitting antenna out the window toward the van. The van's equipment receives the microwave signal and retransmits it back to the television station, where it is picked up and fed into the station's transmitter. There it is sent over the air to home receivers. If the program is not live, the interview can be videotaped for later editing and broadcasting.

Microwave technology applied to ENG has revolutionized the broadcast news room. Before ENG a television assignment editor would send a news crew into the field to cover stories and never see the final camera

shots until the videotape or film was delivered back to the studio. With ENG, the assignment editor can be in constant contact with the news crew and monitor its work. If a crew is covering a fire, the assignment editor has two-way communication with the crew and can see what the camera is picking up. The editor may have the camera scan the area and then decide which area of activity the camera should cover. By the time the fire is over, the shots picked up on the scene have already been videotaped back at the station. They can be edited and prepared for the next newscast before the news crew returns to the station. In fact, the news crew doesn't need to return; it can be dispatched to another story. This saves time and transportation and, because the news staff is not pressed by last minute deadlines, it results in better quality editing and production.

Stations in market areas of all sizes have converted to ENG. Interestingly, the skills required by a television journalist using ENG are similar to those the radio journalist has always taken for granted: the ability to report accurate information live from the scene, without the aid of cue cards or teleprompters.

VIDEOTAPE

When the CBS affiliates met in Chicago in 1956, Ampex unveiled what stockholders were told "was a practical system for the recording and reproduction of TV pictures on magnetic tape." It brought wide acclaim and launched the era of videotape. In 1957 RCA introduced its version, which could reproduce images in color as well as black and white. Then

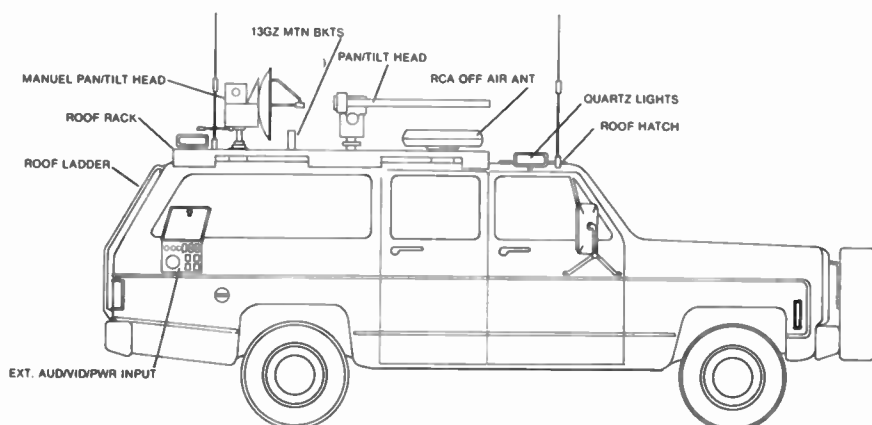


Figure 3-14 The modern television news van is equipped with microwave relay antennas capable of sending signals back to the station for retransmission to home viewers. (E-N-G Corp.)

in June of 1962, Machtronics, Inc. introduced a portable videotape recorder, and manufacturing companies started entering this field left and right. Sony, Memorex, Arvin Industries, and Panasonic all began manufacturing videotape components and systems.

The next revolution came with the introduction of the videocassette by Sony. Introduced in April 1969, the videocassette has found its way into every facet of television production, from libraries and instructional resource centers to the television newsroom. In fact, home videocassette recorders are becoming almost as common as color television sets in stores. Developments by the late Dr. Peter Goldmark of CBS led to a high-capacity storage system in which one videocassette can store as much as thirty hours of programming.

VIDEODISCS

While cassette videotapes are making an impact, videodiscs are also changing the industry. The videodisc's potential lies with its capability to distribute television programming directly to homes, completely bypassing television stations. The implications of that possibility are staggering. Pushed to its full potential, it means that videodiscs can be duplicated and shipped inexpensively anywhere in the world for playback on home players which operate much like a standard phonograph. Videodiscs are already being produced for limited distribution, and in the future you'll be able to pick up a catalog and order your favorite television program much as you order your favorite album through a record club. Producers who are now involved in syndication to television stations may find themselves bypassing the stations and the networks to deal directly with the consumer.

These developments do not mean that television stations will start signing off the air, just as radio stations didn't succumb when 45 r.p.m. and 33 1/3 r.p.m. records came on the market. However, viewers will have more choices about what they watch and when. Your favorite magazine may one day be sent to you each month as a television documentary, and the book-of-the-month club selection may arrive in the form of a five-part television special, all via the mail. It may sound futuristic, but the technology to provide those services is already available and being used.

COMPUTERS

Computer technology has become a way of life in broadcasting as in other areas. Stations are now integrating computers into virtually every phase of station operation from accounting and processing commercials to the broadcast newsroom.

Automation

Some of the most widely accepted uses of the computer are in on-air automation, including the automatic keeping of FCC-required station programming and transmitter logs. A blank log is typed directly into a video display terminal (Figure 3-15) which is interfaced with a computer. Also interfaced with the computer is an automated control system which triggers prerecorded tapes, both reel-to-reel and cartridge tapes (Figure 3-16). On the tapes are commercials, public service announcements, prerecorded music, and even prerecorded newscasts. The computer selects the correct tape at the correct time, sees that it's played on schedule, and types the program log accordingly as it airs.

Live Programming

Even at nonautomated stations, the computer can be used in programming. A disc jockey sits in front of the control console (Figure 3-17) and reads the prestored playlist on a visual display terminal. By punching a button corresponding to the number code listed with each song, the disc jockey selects the song to be aired next, and by pushing

TIME	DUR	VIDEO	AUD	MID#	COMMENTS	FCC
6:05:23AM	15:18	TST			TEST PATTERN	LO
6:20:41*	0:44	UT1 ME		50IJ7890	SIGN ON U918 CUT 1	I
6:21:25	5:00	BR5	C1		COLOR BARS	LO
6:26:25	1:55	UT2 /M		UGGH2345	NATIONAL ANTHEM	S
6:28:20	0:30	UC1		CWRT9876	HALLELUAH	P
6:28:50	0:30	UC1		CWRT3324	UNITED WAY CRUSADE #1	P
6:29:20	0:30	UC1		INH55149	CHANNEL 97 MOVIE	P
6:29:50	0:10	F3SX	C2	INH55381	ID BUMPER.	I
6:30:00*	-MAN-	NET MM			MORNING COFFEE SHOW 1	NE
[6:42:58]	0:30	F1A FF		IERD0198	ZONK COMM'L	C
[6:43:28]	0:30	FC1		FISH2645	TANKORISHNESS COMM'L	C
[6:43:58]	1:00	UC1		ARGH1480	LARGO NUT CO. NO. 1	C
[6:44:58	0:02]	F3SX	#	NUMB0045	ID SAFETY	I
6:45:00*	13:00	NET MM			MORNING COFFEE SHOW 2	NE
6:50:00	1:00	UC1 FF		DLIX1694	US ARMY	S
6:59:00	0:45	UC1		DSNU5777	THREE TERMITES	C
6:59:45	0:05	FIS KI	#	IXOU6789	INSERT 1 SLIDE-MATTE	
6:59:50	0:05	UC2 KS	---	MNUV6790	INSERT 2 SELF KEY	
6:59:55	0:05	UC1			THREE TERMITES CONT.	
7:00:00*	-MAN-	NET MM			MORNING COFFEE SHOW 3	NE

Figure 3-15 More and more stations are using computer-based logging systems as automated programming becomes commonplace in radio and television broadcasting. (Harris Corp., Broadcast Products Division)

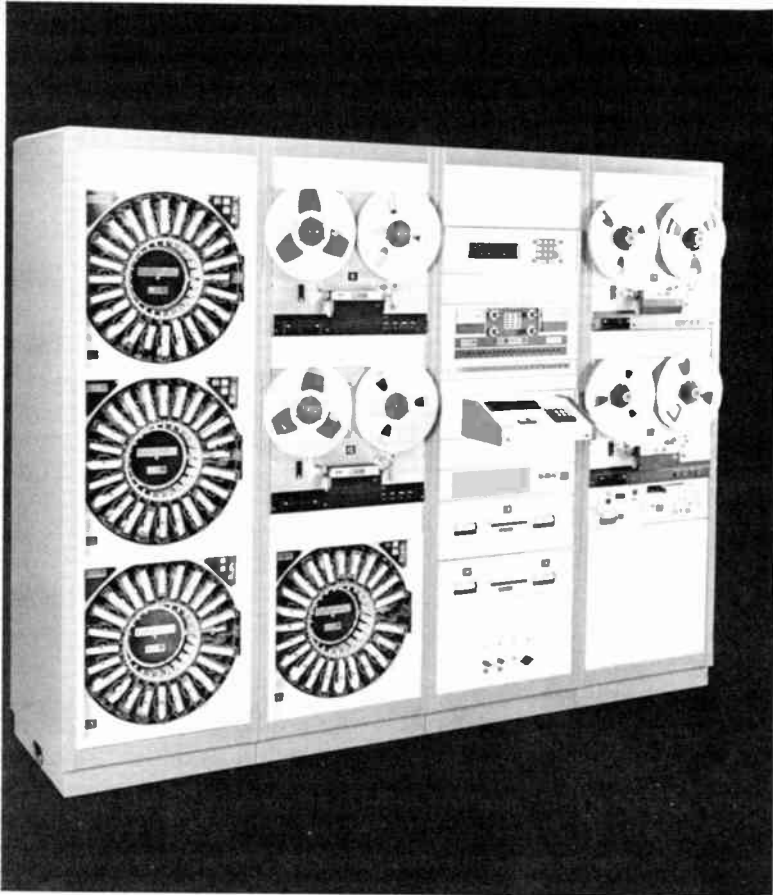


Figure 3-16 Modern automated radio programming systems integrate computers with the latest in broadcast technology. The computer is preprogrammed and can select from a variety of programming sources. At the left of the system are large round carousels holding prerecorded cartridge tapes. (Sono-Mag Corporation)

another button, commands the computer to execute the play. In addition, because it can retrieve song titles, formats, artists, and other data, a computer can make the local announcer with a few lessons in computer processing sound like a major market professional. And here's another application: If the song that is playing has thirty seconds left before it ends, and there's a two-minute and thirteen-second time gap before news, how do you fill that time? A simple command to the computer immediately displays a list of perhaps five songs which last exactly two minutes and thirteen seconds. The disc jockey selects one, and the transition to news takes place right on schedule.

A complete musical format can even be chosen before the disc jockey is ready for his or her air shift. The computer tells the disc jockey what songs are available in the tempo sequence requested. For example, if a commercial ends on a high tempo, then the disc jockey can choose, with the computer's help, a record with a similar tempo to play after the commercial. Or if a record has an instrumental introduction for the first ten seconds, the disc jockey can choose a pre-recorded ten-second public service announcement or promotion to play over that intro. In this way a very precise, tight-sounding air shift can be maintained. The songs for a given air shift can be placed in the automatic play-back system, the sequence in which the songs will be played can be placed in the computer, and the disc jockey only needs to type each song's code number into the computer, and the songs are ready for air play.



Figure 3-17 A computer-based system with a video screen (top center) shows the disc jockey the event on the air, the next event to go on the air, and the seventeen events that follow it. An "enter" line accepts the next event to be scheduled by the disc jockey and a clock automatically resets each time an event is started on the air. The key board in the lower right is used by the disc jockey to control the pre-recorded programming with the convenience of being able to retrieve, position, play, and return material automatically while retaining the spontaneity of a live operation. (Courtesy of IGM, Bellingham, Washington)

Preparing Playlists

Program directors can find the computer indispensable in determining formats for their stations to follow. By having all of the station's songs catalogued in the computer, the program director can select a sequence of songs to air on a given day. Perhaps it begins with three songs having a Top 40 beat, followed by one song that's more middle-of-the-road, a country-western selection, and then three more Top 40 hits. The computer is programmed to select songs from each of these lists that will add up to the total air time per hour minus time for commercials, news, station identifications, public service announcements, or other material, then print out a list of songs in the order they are to be played.

In compiling the playlist, a list of popular song titles mailed to record companies and retail stores, the computer again can play a role. The program director simply enters in the computer data about record sales, songs appearing on other charts, times the songs are requested during request radio segments, and other data the program director feels are important. Each piece of data is weighted, depending on its importance, then stored in the computer. A single command to the computer provides a typed playlist ready for distribution. No guesswork is involved, and for the most part, the process is error-free and reliable from week to week.

Production and Editing

Although we can't see it when we're watching television or listening to the radio, the computer may have played an important role in the production of a particular program. Computers interfaced with switching and editing equipment (Figure 3-18) are easing the burden of second guessing the sporadic timing of a whirling tape reel or making a bad editing decision right in the middle of an important segment. By placing all of the editing cues in the computer before the editing process begins, the computer can make editing decisions with split-second accuracy. Assume you have two videotapes which you want to edit onto a master tape. You find the exact spot on each tape where the editing is to take place and give that information to the computer. The computer then starts and stops the machines, switches the frames, and dubs the audio at precisely the frame selected. The end result is an error-free editing job of high professional quality.

The swirling electronic-looking globe, the logo that swoops to the front of your television screen, the whirling backdrop of lines that appear before a science fiction classic; all of these might have been



Figure 3-18 Computers interfaced with switching and editing equipment eliminate the burden of second guessing editing decisions. (Datatron, Inc.)

produced by the computer. Computer animation (Figure 3-19) is becoming a part of production and can be seen in almost every phase of programming. Commercial production especially lends itself to computer animation where only a few seconds exist to catch the attention of the audience and introduce the product.

Writing Broadcast News

While the electronic transition to video display terminals started somewhat earlier for newspapers, computer editing in the broadcast newsroom is now becoming commonplace. Computer-based systems permit reporters to type and edit stories directly on VDTs (Figure 3-20), then have the hard copy printed (Figure 3-21) at will. In the Station Business Systems NEWSCOM® system, any information related to a story can be typed into the system, and the computer will retrieve all stories related

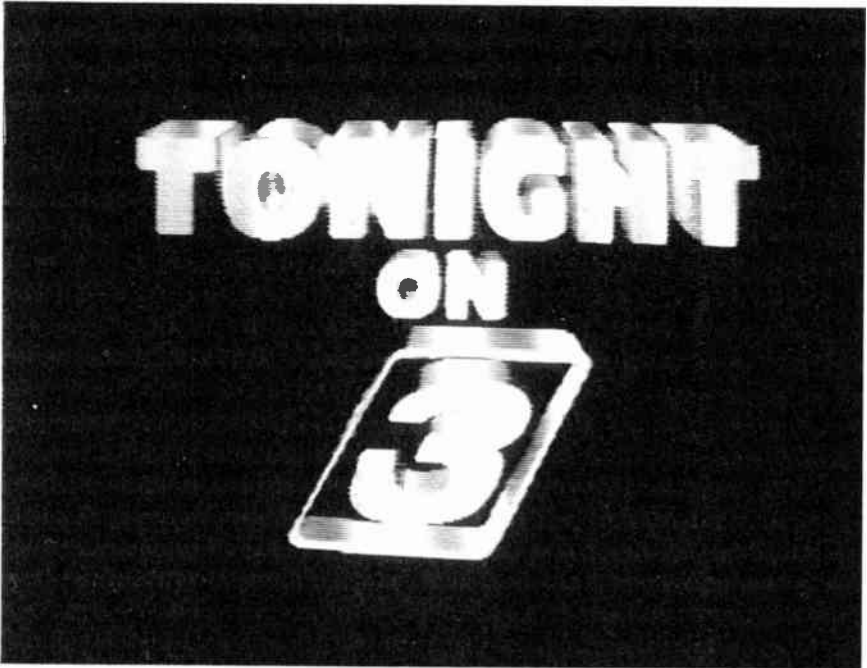


Figure 3-19 Computer animation is finding its way into both local and national production applications. Shown here is one selection from a 3-D "gold metallic" station package which includes a Monday-through-Sunday graphic for "today," "tonight," and "tomorrow" available without the number "3" for custom insertion of another station's channel number or call letters. (Courtesy, Computer Image Corp., Denver, Colorado)

to that information. Even large-type teleprompter copy can be produced in printed or electronic form.

TELETEXT

In teletext a television signal is sent simultaneously with the television picture but can only be seen by a special decoder. Actual "pages" of information can be transmitted and the viewer selects which pages are to be viewed by selecting from a special index also transmitted via teletext (Figure 3-22). Anything from grocery lists, to graphs, to computer-drawn pictures can be seen on the home television set. Experimental versions of the system have been demonstrated by KSL in Salt Lake City, KMOX in St. Louis, and others. Although still

experimental, the system promises still more ways to reach new audiences and can give television stations a local competitive edge in the increasingly competitive field of home video services.

VIDEOTEX

While teletext refers to the over-the-air broadcast of information, videotex employs a wired connection between a central computer and a home receiver. The wired connection, such as via telephone or cable systems, permits a *two-way* interactive relationship to exist between the user and the transmission system. Both videotex and teletext are generic terms, meaning they refer to many different types of broadcast or wired connections. One videotex system, viewdata, has gained considerable interest. In many ways, it resembles teletext in that the home user can select pages of information. With viewdata, however, the information will appear immediately on the home screen as it is "called up" from the databank. With teletext, the user must wait, although usually less than a minute, until the transmission system completes its cycle of sending pages and the page is sent which corresponds to the one requested.

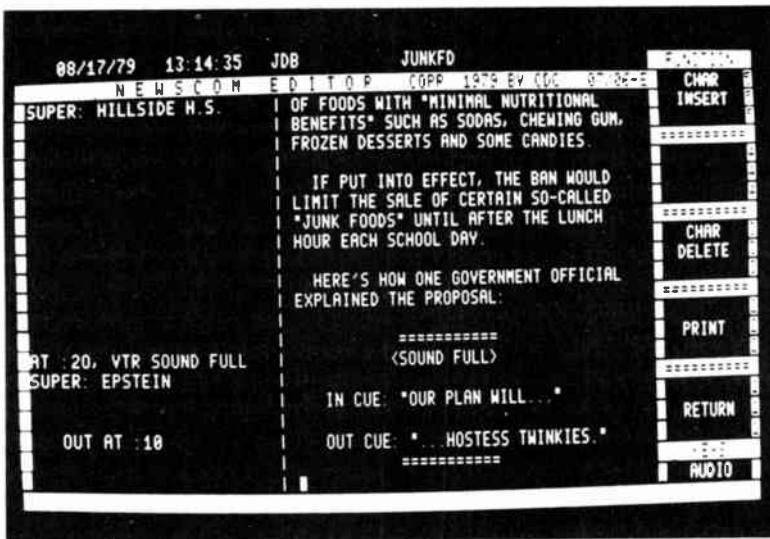


Figure 3-20 Hard copy television story from the NEWS.COM system. (Station Business Systems)

```

JUNKFD/JDB                                STORY TIME: 2:43                                NEWS
NCO021                                     31
08/17/79
11:14P

CK: JUNKFOOD                               \
                                           \ STUDENT "JUNK FOOD JUNKIES" WILL
                                           \ HAVE TO GO "COLD TURKEY" UNTIL AFTER
                                           \ LUNCH EACH SCHOOL DAY IF THE U-S
                                           \ GOVERNMENT HAS ITS WAY.

VTR/V.O. JUNKFOOD                          \
TRT: 1:40                                  \ THE DEPARTMENT OF AGRICULTURE
SUPER: HILLSIDE H.S.                       \ IS PROPOSING A LIMITED BAN ON THE SALE
                                           \ OF FOODS WITH "MINIMAL NUTRITIONAL
                                           \ BENEFITS" SUCH AS SODAS, CHEWING GUM,
                                           \ FROZEN DESSERTS AND SOME CANDIES.

                                           \ IF PUT INTO EFFECT, THE BAN WOULD
                                           \ LIMIT THE SALE OF CERTAIN SO-CALLED
                                           \ "JUNK FOODS" UNTIL AFTER THE LUNCH
                                           \ HOUR EACH SCHOOL DAY.

                                           \ HERE'S HOW ONE GOVERNMENT OFFICIAL
                                           \ EXPLAINED THE PROPOSAL:
                                           \
                                           \ *****
                                           \ <SOUND FULL>
                                           \
                                           \ IN CUE: "OUR PLAN WILL..."
                                           \
                                           \ OUT CUE: "...MOSTESS THINKIES."
                                           \ *****

AT 1:20. VTR SOUND FULL                   \
SUPER: EPSTEIN                             \

OUT AT 1:10                                \

LIVE                                         \
                                           \ PREDICTABLY, THE PROPOSAL WAS NOT
                                           \ A POPULAR ONE AMONG SOME STUDENTS.
                                           \ HERE'S A LIVE REPORT NOW FROM HILLSIDE
                                           \ HIGH SCHOOL:
                                           \
                                           \ *****
                                           \ <REMOTE>

TAKE REMOTE: HILLSIDE HS                  \
TRT: 1:30                                  \

```

Figure 3-21 In the Station Business Systems NEWSCOM, information related to a story can be typed into the system and the computer will retrieve all stories related to that information. Large type teleprompter copy can be produced in printed or electronic form. (Station Business Systems)

CLOSED-CAPTIONING

Closed-captioning is a system for the hearing impaired where the audio portion of a television signal is converted into lines of textual information (words and sentences) which appear on the television screen. Like teletext, closed-captioning uses a vertical blanking interval, the dark line seen when a set is being adjusted. Closed-captioning and teletext systems also have somewhat different decoding devices, and the closed-captioning material is sent at a slower speed, thus reducing interference problems.

SUMMARY

In Chapter 3 we've examined broadcast technology. Cable began as a means of supplying distant television signals to local communities and grew to a multifaceted technology which shows promise beyond broadcasting's traditional uses. The component parts of the cable system

100	KSL TV	PAGE
	JUNE 15, 1978	
NEWS BULLETIN		120
USED CARS AND TRUCKS		130
FOOD ADS		140
AIRLINE SCHEDULES		150
BUS SCHEDULES		155
TOP ROCK SONGS		160
MOVIE SCHEDULE		170
TEMPERATURE CONVERSION		174
WEATHER FORECAST	175-176	
RECIPES	180-181	
STAIN REMOVAL		182
FARM REPORT		190
TV SCHEDULE		200
STOCK MARKET REPORT	215-217	
NATIONAL HEADLINES	220-222	
GRAPHICS(CAR)		310
(KSL)		320
CONTINUED ON PAGE 101		

170	PAGE 170
SALT LAKE MOVIE SCHEDULES	
VISIT FERNWOODS AFTER MOVIE	
CAPRICON ONE	
VILLA	5.15, 7.30, 9.45P
CLOSE ENCOUNTERS THIRD KIND	
REGENCY	7.15, 9.45P
THE LATE GREAT PLANET EARTH	
FOX COTTONWOOD	5.00, 7.00P
CANDLESHOE	
VISTA	7.15, 9.00P
CASAWAYS	
OLYMPUS DRIVEIN	8.00P
TROLLEY SB	6.00, 7.50, 9.40P
FAMILY CENTER TROLLEY	7.50P
CENTURY	7.10P
THE GOODBYE GIRL	
CENTURY 5	7.30, 9.30P

Figure 3-22 Video systems, such as this one showing teletext, can increase the amount and type of information and open up new services for home viewers. Complete teletext pages can be selected from the special index shown here as it is being received on the experimental teletext system in operation at KSL-TV, Salt Lake City. (Bill Loveless and KSL)

include the head end, distribution system, and home terminal. The head end normally contains the master antenna and signal processing system. The distribution system contains the trunk cable, the subtrunk, and the drop. Home terminals can be either two-way or one-way. Fiber optics have the potential to increase cable's channel capacity into the thousands.

Satellites are playing an increasingly important role in broadcasting. Beginning with Telstar in 1962, satellite systems today include the global INTELSAT system and numerous domestic systems. Western

Union and RCA are two of many companies operating domestic systems.

Microwave technology is also an integral part of broadcasting, its primary function being the relay of television programs both at the network level and through local stations' uses of electronic news gathering.

Videotape revolutionized television recording, and with the introduction of videocassette tapes has become part of television, not only in commercial broadcasting but in libraries and instructional media centers. Videodiscs are expected to have a similar impact.

Computer technology is integrated with virtually every facet of broadcasting, including radio programming, the accounting and business side of broadcasting, and even the editing of television programs. Both radio and television stations are using computers in station automation.

New video delivery systems such as teletext offer new information services for the home viewer of the future.

FOCUS ON FURTHER LEARNING

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4

Station, Studio, and Controls



PREVIEW

After completing chapter 4, we should be able to:

Diagram a station organization chart

List the primary functions of the broadcast station

Explain different considerations in studio design

List the types, pickup patterns, and applications of broadcast microphones

Discuss the uses of tape, tape recorders, and turntables

Explain the operation of the radio control board

Explain how studio sets are constructed

List the different lighting instruments and their function in television production

Diagram the main parts of a television camera

Explain the uses of a camera mounting head, tripod, pedestal, and skid

List the parts of a film camera

Understand the operation of a video switcher

Understand the uses of the slide chain, film chain, character generator, and interstudio communication system

In Chapters 1 and 2, we talked about the facilities and the people found in a typical broadcasting station. In this chapter, we'll not only explore how a station is organized but also discover what takes place in a broadcast studio and learn the components of that studio. Typically, a broadcasting station has three primary functions: *program origination*, *program processing*, and *program transmission*. Each function contains different components. The program origination components are primarily in the studio and include such equipment as television cameras, audio tape recorders and turntables, lighting equipment, microphones, sets, and scenery. Program processing includes such components as control consoles and program monitoring equipment. Program transmission facilities include the station transmitter as well as its antenna system. We'll begin our discussion with the organization of a broadcast station.

STATION ORGANIZATION

Stations vary considerably in the size and responsibilities of their personnel. Moreover, staff titles vary from station to station. To understand the organization of a station we'll begin with the management staff (Figure 4-1).

Undoubtedly one of the lures of broadcasting is the fact that as a business it is attractive to everyone from the small entrepreneur to the corporate conglomerate. A small-town station with a small staff can be a very profitable venture. Similarly, a chain of broadcasting properties can be highly attractive to the large corporation, and its profits can easily run into the millions of dollars.

Owners and Managers

We find both young and old alike owning broadcasting properties. A national media broker recently stated, "It's not the money that's lacking to buy and run stations, it's the talent." In other words, broadcasting has proven itself a solid enterprise in bankers' eyes. After that, it's up to the owners.

Next on the organization chart are managers, many of whom also own stations. Management's world is one of long days and major decisions. Along with knowing about federal regulations, as a manager you must meet payrolls, handle personnel decisions at different levels, and deal with thousands, even millions, of dollars annually. You must know something about every aspect of the business. You must be able to recognize good executive talent and delegate responsibility. It is not

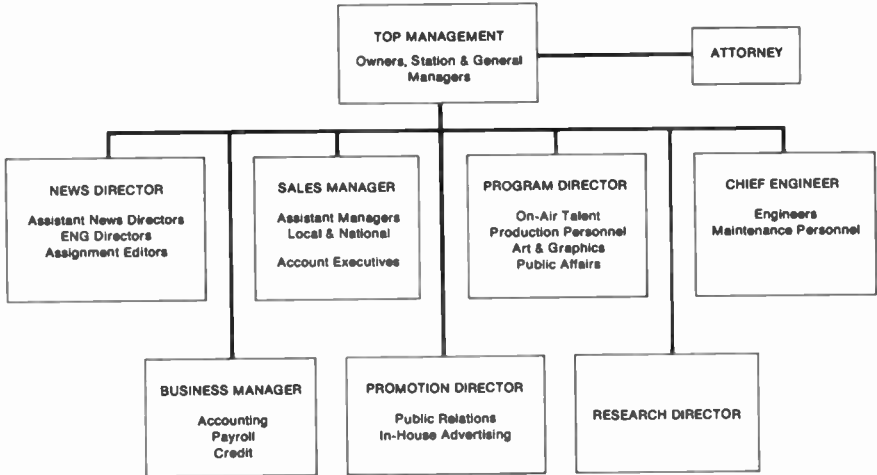


Figure 4-1 This basic organization chart shows the structure of one broadcast station. In larger stations, in-house corporate attorneys may be employed, and research directors can employ larger staffs to support other functions of the station. In stations which are part of larger group operations, a parent corporate structure exists above the level of top management. In still larger corporations with diversified holdings, an entire broadcasting division can have its division heads reporting to the top management of the parent organization.

a position where you try and prove you can do everything. It is a position demanding an awareness of your strengths and weaknesses, the ability to recognize them in others, and working together with a team to operate a profitable and successful enterprise which serves the public.

Sales Department

Closely aligned with the management functions of a commercial station is the sales department. Approximately 66 percent of broadcast management comes from sales backgrounds, and many professionals in broadcasting still look at sales experience as a prerequisite for management. Sales personnel must be able to communicate effectively. They must be able to interact on an interpersonal basis with clients, be sensitive listeners, and understand the needs of a client's business. They must also understand broadcast production. A client wants to know what a finished commercial will look or sound like. That means the salesperson must be able to explain how a refrigerator, Levis, a new car, or even an insurance policy can be sold through the sound and visual medium.

Most sales departments are organized around a sales manager who is responsible for all personnel in the department. The manager may also be actively involved in direct sales; in most stations this is the rule rather than the exception. People involved in direct sales to clients are called account executives. Working in tandem with the sales department are copywriters who write commercial copy; art department personnel who create the slides, films, and visuals necessary for television commercials; and audio or production people who mix the sounds for radio. In small stations, one person may handle all of these tasks. Traffic personnel handle the orders, making sure commercials reach the air and clients are billed. Orders for commercial time arriving from advertising agencies also pass through the traffic department.

Programming

Program directors, disc jockeys, announcers, producers, and directors are part of a station's programming department. The program director, sometimes called program manager, is in charge of the programming personnel. In radio, programming personnel include disc jockeys—or air personalities as they are frequently called. In television, the program director may supervise producers, directors, technical directors, camera persons, and floor managers, all of whom, we'll learn, are vital for locally produced programming. Although the program director may delegate much of this responsibility, the final burden rests on his or her shoulders. Because of the amount of programming supplied by the network, the program director is also involved in scheduling network programming, determining which network programs will be cleared for local broadcast, and filling programming segments where network programming is not available. In *some* stations, the news department also comes under programming.

News

If the news department is *not* included under programming, the news director reports directly to the general manager. With the increased importance of broadcast news, many general managers are realizing the need for a direct line of authority to the news department, bypassing the program director altogether.

With the increased use of electronic news gathering, a whole new set of titles and responsibilities is beginning to emerge in broadcast journalism. Because of the need for assignment editors to make decisions not only about what will appear on regularly scheduled newscasts but also about what can be aired live at any moment, titles like ENG

coordinator, ENG assignment editor, and ENG director are surfacing. Electronic news gathering is changing the news room substantially from what it was ten years ago. The broadcast journalist of today must not only be able to report the news, but also be able to make split-second decisions about what will go on the air live—unedited and without tape delay. Since the consequences of that responsibility may affect thousands of viewers, it's easy to see why a broadcast journalist must have the talents of a reporter, producer, editor, and lawyer.

Engineering

The hub of the station's technical operation is the engineering department. Heading this department is the chief engineer, a person holding a First Class FCC Radiotelephone license and having the ability to repair all types of station equipment. The engineer must keep up with the latest technology, be able to understand something about radio and television production, and in larger stations manage other engineering personnel. Many television engineers have taken college-level programs in electronics or electrical engineering and are continually updating their skills through additional course work. Today the typical engineer also understands computer technology and how it interfaces with station operations.

Other Personnel

Along with the major areas we've just discussed, most stations employ business managers who oversee accounting, payroll, and credit functions. Larger stations have promotion directors who supervise station public relations and place advertising or work with an advertising agency. Legal staffs, both local and in Washington, D.C., service major stations. Larger stations are, with increasing frequency, employing in-house counsel. In some stations, a full time research director serves such departments as sales, news, programming, and promotion.

Now that we have learned about the organization and station personnel, let's examine those areas of the station where programs are actually produced—the broadcast studio.

THE RADIO STUDIO

Despite a great diversity in size and complexity, most radio stations contain studios capable of producing both live programming and taped programming for broadcast at a later time.

Studio Design

A very basic typical radio studio consists of a *control room*, *production room*, and *news studio*. The news studio may include production facilities used exclusively for news production, such as taping interviews and recording “actualities”—the “actual sounds” used in radio journalism. At some smaller stations, the production room may double as a news studio. At larger stations, the news studio may even be separate from the news room, which contains typewriters, editing equipment, and teletype machines.

The size devoted to each of the three rooms also varies with the size of the station and its primary programming function. An all-news station, for example, devotes more space and multiple studios to news production and programming with multiple locations for taping and editing news copy. Stations that are primarily personality radio using live talent devote more space to the main control room where the on-air personalities are located, and even more space to the production facilities where major sophisticated production takes place. Automated stations may not need the studio space of other stations and may limit their studio facilities to a production room, news room, and a small announcer’s booth as a back-up to the automated equipment, or for inserting live news bulletins into regularly automated programming.

Stations operating under the same roof but broadcasting separate AM and FM programming many times double up on facilities. The AM station’s news studio can also serve as the hub for the FM newscast. Similarly, the production room used to record a commercial for the FM station may next be used to produce one for its AM counterpart.

Keep in mind that it’s not the size of the facilities but the skill of the personnel that determines what we hear. A creative talent can do wonders with the most basic equipment, and the finest production equipment available may only reach a small fraction of its potential when the staff doesn’t know how to operate it to maximum effectiveness.

Microphones

Microphones transform the sound waves of the human voice into electrical impulses which, after being amplified, eventually reach the station transmitter and finally the listeners. Microphones can be classified by *types*, *patterns*, and *style*.

Types. In professional broadcasting, the major types of microphones are *carbon*, *dynamic*, *ribbon*, *condenser*, and *ceramic* microphones. *Carbon microphones* employ carbon granules which vibrate with the sound of the

voice, causing variations in the electrical energy that reaches the transmitter. The most common use of the carbon microphone is for two-way communication, especially by a mobile news unit sending live reports or talking to the studio. Although acceptable for studio use, carbon microphones produce the distinguishable “dispatcher” sound which is somewhat crisp and hollow.

Dynamic microphones provide good quality reproduction for numerous studio uses. They also function well under such rugged conditions as outdoor or remote broadcasting. A diaphragm in the microphone collects the sound, which in turn compresses a coil that varies the electrical current reaching the transmitter.

Although not as widely used today as in previous years, the *ribbon microphone* uses a thin strip of metallic “ribbon” which vibrates, varying electrical current. *Condenser microphones* use their own supplementary power supply and are generally considered the top of the line in broadcasting. *Ceramic microphones* are low-cost voice reproducers used on many portable tape recorders. Sound vibrates a thin ceramic wafer in the microphone, which generates a very weak electrical current.

Pickup Patterns. Not all microphones pick up sound in the same pattern. By *pattern*, (Figure 4-2) we mean the direction from which sound can enter the microphone. There are three patterns common to broadcasting, and each has variations. A microphone with an *omnidirectional* pattern picks up sound in all directions from the microphone mouthpiece. Omnidirectional microphones are effective for walk-

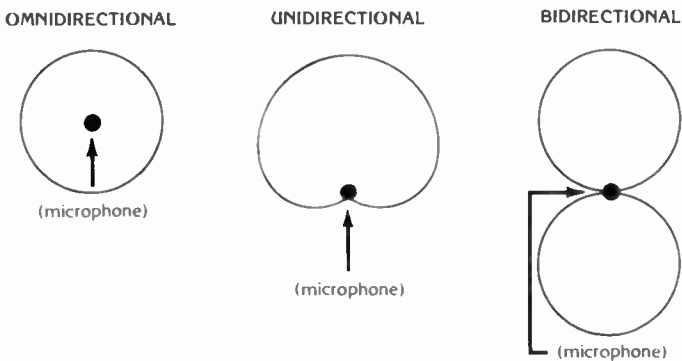


Figure 4-2 Microphones employ 3 basic patterns: unidirectional, with the cardioid pattern (heart shaped) being the most common; the omnidirectional pattern, which picks up sound more evenly from all directions; and the bidirectional pattern, which picks up sound from two directions. The unidirectional pattern is most commonly used in local stations while the omnidirectional and bidirectional patterns are employed more often in large production centers where more than one performer uses the same microphone. (Courtesy, Shure Brothers, Inc.)

around interviews or programs where the sound of the audience is a natural complement to the program.

A microphone with a *unidirectional* (also called directional) pattern picks up sound primarily from one direction (Figure 4-3). Two *subpatterns* are used in unidirectional microphones. One is the *cardioid* pattern, so called because it is shaped like a heart. This pattern detects sound in a half circle area from the mouthpiece of the microphone. The other subpattern is the *shotgun*. This pattern picks up sound in a narrow area directly in front of the mouthpiece. Shotgun patterns are used when the microphone is a considerable distance from the sound source, as on a football field, and also when it is necessary to restrict unwanted noise coming from areas that an omnidirectional or unidirectional-cardioid pattern would detect. A unidirectional pattern is the most commonly used pattern in local stations.

A *bidirectional* pattern looks much like the figure eight and picks up sound from two opposite directions. Bidirectional microphones work well when two performers are using the same microphone or in interviews when the microphone is stationary.

Styles. A microphone's style refers more to its actual use. The *lapel* microphone is small, can clip to a necktie or collar, and is inconspicuous. It's used extensively by television anchorpersons and interview hosts. *Lavalier* microphones are similar to the lapel mikes but are worn around the neck. *Boom* microphones (Figure 4-4), on the other hand, are anything but inconspicuous. They are connected to a long horizontal rod, the boom, which in turn is connected to a vertical rod and floor base. Special spring and rubber shock absorbers permit the boom to be moved quickly and easily without distorting the quality of the sound or causing noise from a vibrating microphone. *Hand-held* microphones, which are also used with stands, are a favorite of performers and receive widespread use among broadcast journalists for interview work. *Telephone* microphones are used with telephone headsets found in mobile news vehicles or other station transportation. *Head-worn* microphones are found in headsets used for play-by-play sports broadcasting. Most head-worn microphones are unidirectional, picking up only the sound of the announcer's voice.

Two other styles of microphones are *parabolic* and *utility*. *Parabolic* microphones are frequently used to cover sports events because their dish-shaped reflector mouthpiece can be pointed in the direction of the sound. The dish then reflects the sound into the microphone. A final style of microphone is the *utility* mike, which is permanently mounted on a heavy flexible shaft and used extensively where the microphone remains in a permanent position, such as on a radio console.



Figure 4-3 Three microphones common to broadcasting are these with unidirectional patterns. Left to right is the Shure Model SM53, containing a built in shock mount isolating cable, stand, and handling noise; the Shure Model SM54, similar to the SM53, but with a built in “pop” and wind-blast filter helping to suppress breath and wind noises, and special noise reduction system to help eliminate breath, “pop” sounds, wind, and electromagnetic hum interference. (Courtesy, Shure Brothers, Inc.)

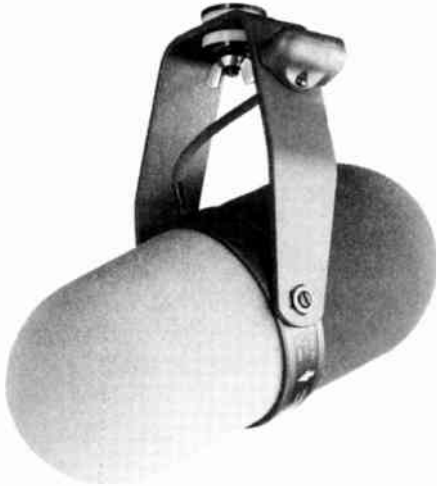


Figure 4-4 Boom microphones such as the Shure SM5 have a cardioid pattern and special features to help eliminate unwanted sounds such as reverberation noise, noise bouncing off floor or scenery, performers “off-mike”, and background noises. A special wind screen built into the microphone helps eliminate noise from outdoor locations or fast boom swings. (Courtesy, Shure Brothers, Inc.)

Don't forget that each *style* of microphone just mentioned still has one of the various *pickup patterns* discussed and is a specific *type* of microphone as well. Stop and ask yourself how you might use different microphones in different broadcasting situations. The next time you are listening to radio or watching television and hear poor quality sound, ask yourself how you could correct the problem by changing the microphone or its location (pattern).

Recording Equipment

The development of magnetic recording has been one of broadcasting's salvations, especially for radio. When television began to chip away at radio's audience, inexpensive methods of recording sound came to the rescue. Magnetic recording tape provided program-length features, commercials, and radio news actualities, eliminating stations' dependence on a network for programming.

Today's magnetic recording tape is made primarily of polyester or acetate material. The former tends to stretch and can cause distortion, yet the latter has a greater tendency to break and is more subject to changes in age and climate. But technology has achieved a balance between these two materials to create a strong tape able to withstand the demands of large, high-speed, reel-to-reel machines as well as meet the sensitivity needs of micro cassettes.

Reel-to-Reel Recorders. Like the tape they employ, *reel-to-reel*, *cartridge*, and *cassette* tape recorders are indispensable to radio stations. Reel-to-reel recorders (Figure 4-5) were the first magnetic tape recorders developed, and they are designed for both monophonic (one-track) and stereophonic (two-track) recording and playback. In stations capable of quadraphonic broadcasting, four-, eight-, and even sixteen-track reel-to-reel tape recorders are in use. These multitrack machines "mix" the different recording tracks until the desired balance between various musical instruments or voices is achieved.

On a reel-to-reel machine, the tape travels from the *feed reel* to be collected on the *takeup* reel. Between these two reels the tape flows over the *erase head*, which erases the tape prior to being recorded; the *record head*, which actually transposes the sound on the tape; and the *playback head*, used to reproduce the sound during playback. The tape is moved over the heads by two rollers: one, called the *capstan*, is power-driven; the other, called a *pinch roller*, is depressed against the capstan to hold the tape in place.



Figure 4-5 Console model reel-to-reel tape recorders are popular for many broadcast applications, permitting flexibility and high quality sound reproduction. Some models employ digital timing devices permitting new levels of exactness in production and editing. (Studer)

Cartridge Recorders. Cartridge tape recorders (Figure 4-6) use a self-contained, continuous loop of tape, bypassing the two-reel system of the reel-to-reel unit. Thus, they're much faster to set up and easier to cue. Used extensively for all types of programming, the cartridge recorder or playback machine looks much like a square shoe box with a slot in the end. It is operated by inserting the cartridge in the slot and pushing the start button.

The audio cartridge tapes (Figure 4-7) are of standard sizes but contain varying lengths of tape. Because this tape is a continuous loop, it will keep running unless an automatic "stop" cue is recorded on it. To record such a cue, a high frequency tone is automatically placed on the tape the instant the "start" button is pushed. When that portion of the



Figure 4-6 Cartridge tape machines permit production flexibility in many areas of station operations. Many stations find placing songs on cartridge tape can eliminate missed cues in live disc jockey applications. In the news studio, audio actualities (voices of news makers) are first placed on cartridge tapes and then integrated into the newscast. (International Tapetronics Corp.)

tape comes back to the playback head, the tape stops automatically, “cued up” for the next play.

The common components of the cartridge tape include the *braking mechanism*, used to stop the tape when the recorder forces it against two *pressure pads*, and *corner post* to keep the tape centered at a given height after it leaves the *cartridge reel*. High-quality stereo cartridges have an adjustable corner post which can be precisely tuned by the station engineer so that the tape flows correctly over the *dual record heads* in stereo machines. A *center bearing* made of brass and coated with a lubricant provides smooth flowing operation on the reel. The *center*

screw, when removed, permits the top and bottom of the cartridge to come apart for cleaning or replacement of defective tape.

Although special machines are available to play oversized cartridges holding as much as an hour or more of tape, most operate with smaller cartridges containing enough tape for a ten-, twenty-, forty-, or seventy-second message. These lengths are ideal for recording a station identification, jingle, promotional announcement, or a thirty- or sixty-second commercial. These small sizes also work well for broadcast news, where audio actualities in contemporary formats usually run less than twenty seconds. Longer two and one-half, three and one-half, and five and one-half minute cartridges are used for recording multiple commercials when announcements are rotated into the programming, or for "carting" songs originally recorded on disc. An advantage of placing songs on tape is that the song is always cued up, ready for play, avoiding human error in judging the beginning of a record. It also saves the records from becoming scratched and worn.

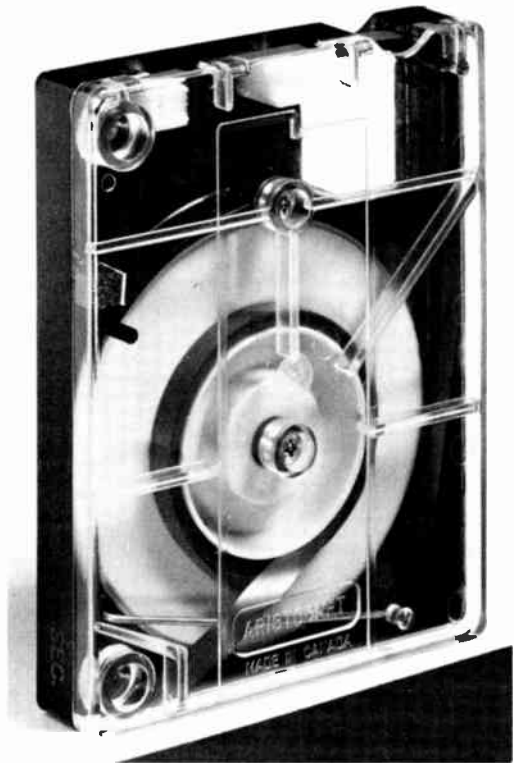


Figure 4-7 Audio cartridge tapes used in the cartridge machines are standard sizes but contain varying lengths of tape. Because the tape is a continuous loop, it will continue to run unless an automatic "stop" cue is recorded. The cue is automatically placed on the tape when the "start" button is pushed to begin recording. (Aristocart Division—Western Broadcasting Co., Ltd.)

Cassette Recorders. With their improved tape quality and precision in recording, the smaller cassette tapes are finding a solid home in broadcast studio applications. For years they have been the mainstay of the broadcast journalist who uses the portable cassette recorder for field interviews. Back at the station, the sound on the cassette is usually transferred to reel-to-reel tape and eventually to cartridge tape for editing and on-air playback ease. Today, however, stations are finding cassette tapes satisfactory for many on-air applications, including music. In fact, today's cassette recorders can provide network-quality recordings. Small units are about the size of two packs of cigarettes, and some are even smaller. Virtually all units of high broadcast quality employ external microphones with remote on-off switches.

These portable recorders also find their way into community programming. The station's public service director can interview a local charity worker and edit the interview into a public service announcement. Planning a few days in advance and assigning one staff member equipped with a portable cassette tape recorder to conduct community interviews can produce a series of public service announcements devoted to the local community's needs, instead of to the needs of some distant organization.

When used to its full potential, tape can make radio a much more flexible medium than it has been in the past. It can add a professional as well as a community service sound to the airwaves.

The Turntable

The third component of the radio studio is the turntable. Modern broadcast turntables are a distant cousin of the heavy console turntables and amplifiers of early radio. The heavy tone arms have been replaced with delicately balanced ones which reduce wear on records and achieve maximum tonal qualities without riding the groove too heavily. High-quality broadcast turntables also contain direct drive, in which the spindle of the turntable motor is attached directly to the turntable, replacing the belt-driven systems which are susceptible to slip and variance in speed. Special circuitry assures a constant flow of electrical current to the motor, eliminating changes in speed caused by changes in current. Also, many turntables have adjustment mechanisms to vary their speed by as little as one tenth of one percent if they are ever so slightly too slow or too fast. Fast start-stop mechanisms are also important. When producing any type of programming, it is critical that the turntable reach its correct speed as soon as possible.

When playing a record at home we may not think much about special circuits or direct drive. But to the broadcaster these exact measures of

quality are important, not only in meeting the competition but also for providing the highest quality sound to the listener.

RADIO CONTROL AREA

The sound we hear from our radio does not go directly from the microphone, tape machine, or turntable into the station transmitter and out over the air. The sound must first pass through a *control console*, commonly called a *control board*, where a trained operator can channel certain sounds, delete some, monitor others, and even mix sounds together.

The Control Board

The major control board (Figure 4-8) used to control the program being broadcast is found in the station's control room. Secondary control boards may be located in a production room and the news



Figure 4-8 Control boards, also called "audio control consoles," have either slide bars called *sliders* or tuning knobs called *pots* to control the various functions. Audio control consoles can range anywhere from a few audio channels in smaller stations to large production studio models. (Broadcast Electronics, Inc., Quincy, ILL.)

studio, where they are used to control the announcer's microphone or to produce taped audio actualities for use in the newscast.

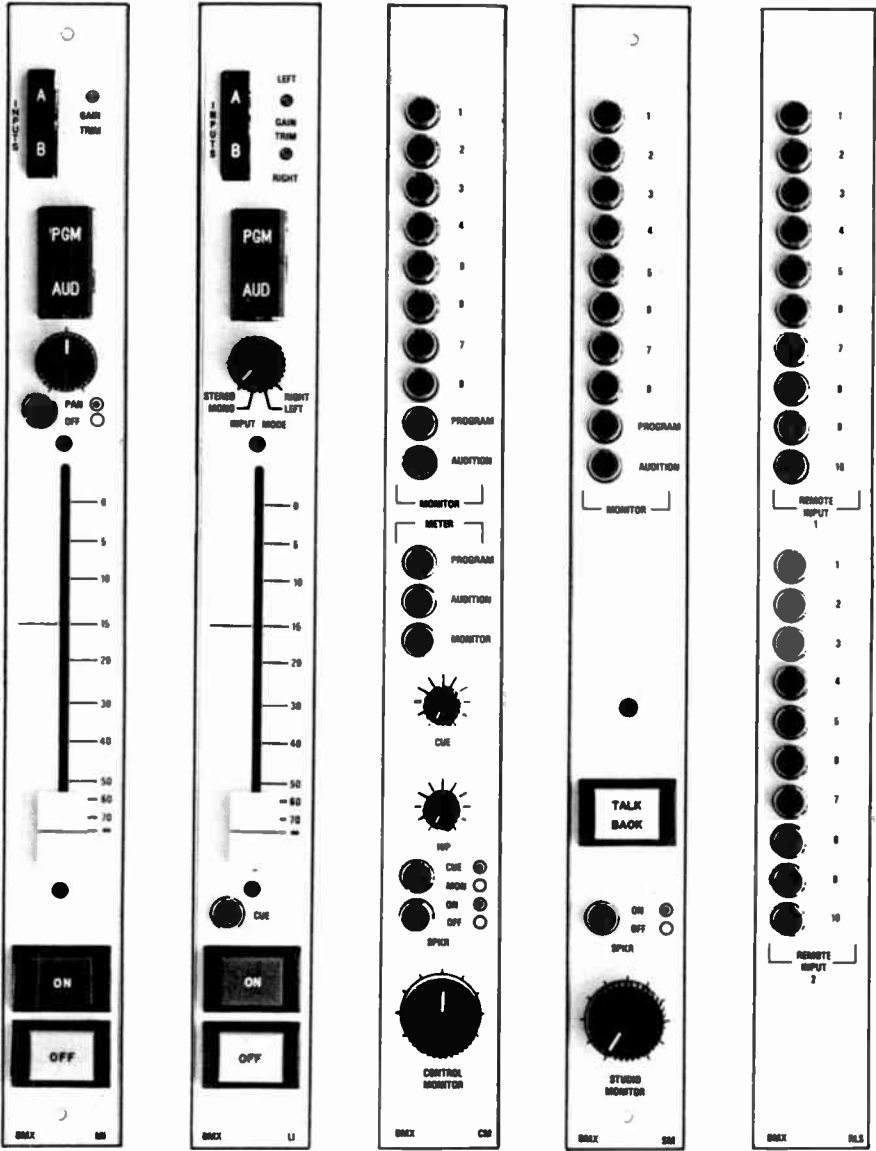
Control boards vary in complexity from those controlling a few program sources at very small stations to others controlling as many as thirty or more sources at networks and large stations, which also use them for major recording applications with multitrack tape recorders. Although the actual layout and design of control boards vary, each contains certain basic equipment. First of all, each program source is controlled by either a slide bar, (Figure 4-9) called a *slider*, or a tuning knob, called a *pot*. A *master gain control* then controls all of the sliders and pots, virtually controlling all sound fed through the control board. The master gain control will be either a pot or a slider, depending on the style of the board. For example, one slider will control the audio level of the studio microphone. Other sliders control the audio level of the turntables, the tape recorders, and perhaps incoming signals from remote transmitters, such as a mobile news unit. Each slider or pot has two positions. By turning a pot all the way to the left or moving a slider to the base of its track, the program source is placed in *audition* position. That means a small speaker on the control board monitors the program, but the sound is not being sent over the air. By turning the pot to the right or moving the slider upward, the channel is placed in the *program position*, which means the program is being fed into the station transmitter and consequently over the air.

Still other controls are found on the control board. A *VU meter* measures volume units and tells the level of the audio being sent to the transmitter. A *power switch* turns all power to the board on and off, and a *program-audition switch* can control whether the program leaving the board goes over the air or is monitored (auditioned) in the studio. *Intercom switches* permit the board operator to communicate with other areas of the station.

Although all of these controls seem complex, actually they're not. It's a matter of realizing that each slider or pot controls a different program source. The job of the operator is simply to mix and direct the program sources into whatever combination is desired for the final sound to be sent over the air.

Program Monitoring

Before leaving our discussion of the radio studio, we should examine how programs are monitored. We've already mentioned three methods—listening to the program on the “audition” position of one of the sliders or pots; listening to the program on the studio monitor, which



Microphone Input Module

Line Input Module

Control Room Monitor Module

Studio Monitor and Talkback Module

Remote Line Selector Module

Figure 4-9 Typical control modules on a slide bar audio console include microphone input modules (left) and other control room functions which can be selected on a "push-button" basis from a wide-range of audio inputs. (BMX Console)

tells us what's going over the air; and reading the level of the program on the VU meter. All are functions of the control board.

In addition to these, a radio operator must constantly check the *modulation monitor*. This monitor registers the *average modulation*, or the "change" in sound, of the signal. Our illustration (Figure 4-10) shows a modulation meter reading 52 percent. (The decibel [dB] scale is a measure of the difference between electrical and acoustical power.) Modulation monitors are important in a station's operation. In fact, FCC rules prohibit stations from "over modulating," which can cause interference with other stations, and "under modulating," which can make the station difficult to hear. Most operators prefer the modulation level to ride between 25 percent and 75 percent of peak modulation, permitting a good quality sound without interference or violation of FCC rules. To simplify this monitoring, many stations use special equipment that automatically monitors the modulation and keeps it within the prescribed limits.

Although there are many other means of monitoring programming that go beyond the modulation meters, and stations with sophisticated equipment take advantage of all such means, our introductory discussion of the studio and its components does not warrant detailed examination of these. If you are planning a career in professional broadcasting, many books are available which detail these areas. Some

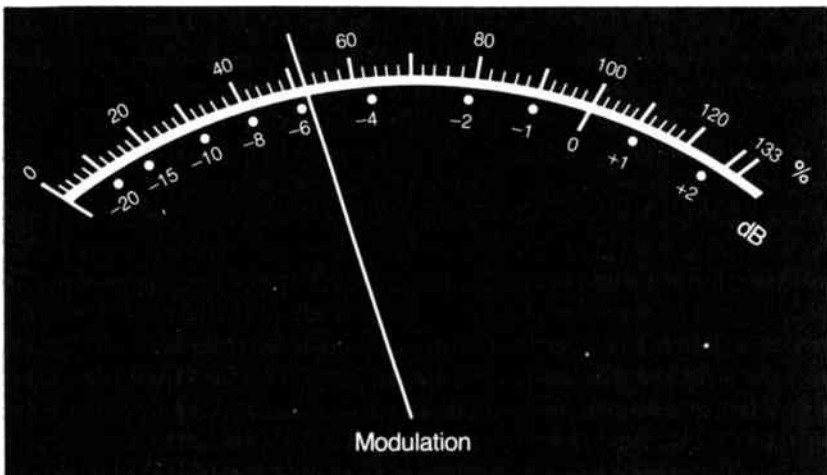


Figure 4-10 Monitoring the modulation is one of the important functions to which a board operator or transmitter engineer must attend. FCC rules prohibit stations from over-modulating, a practice which can cause interference with other stations and distort the station's signal. The monitor here is registering 52% modulation. (FCC Broadcast Operator Handbook)

are listed at the end of this chapter. Other good sources are the study guides for FCC Radiotelephone Operators licenses.

On The Air

When the program leaves the studio and the control board, it is fed first into the transmitter, then into the antenna. Additional monitoring functions are required at these two points—checking antenna current and power to the transmitter to name just two. Radio station transmitters range from the small 10-watt systems used in budding educational stations to the powerful 100,000-watt systems used in high-powered FM stations. Naturally, the size of the transmitter corresponds to its power output.

Transmitters are not always located at the studio. Both the transmitter and antenna may more ideally be located on a distant hilltop, but then remote monitoring is required. In addition, special permission from the FCC is required before a remote transmitter operation is set up. Telephone lines or microwave hookups usually connect the transmitter with the studio to permit the operator and engineer to monitor and control the transmitter.

THE TELEVISION STUDIO

Many components of a television studio are similar to those of a radio studio. Microphones have the same applications, and the audio control board helps the television producer create the audio mix of a television documentary or a major musical production. Thus, we'll concentrate primarily on those components that apply to the *video* portion of programming.

A typical television studio is equipped with many of the same things a theatre uses to produce stage plays. Basically, it is designed to accommodate the set or sets, the cameras, and the lighting. Many studios also have storage space for sets and props and for lighting equipment, microphones, and cameras which are not in use. Some large studios have a cyclorama, which is a large, semicircular backdrop wall. Extensive draperies are used in some studios along with a variety of color schemes for creating different backdrops and scenes.

When a number of studios are available, some are devoted to a specific program, such as a regularly produced news or interview show. Others are kept more flexible to allow for quick changes in scenery, perhaps for locally produced commercials. The "committed" studios, because they remain essentially the same, can employ more elaborate

scenery and sets, such as desks and bookcases, complex weather maps, or news sets.

Television studio sizes range anywhere from thirty by forty feet to sixty by eighty feet for larger complexes. And depending on the extensiveness of their lighting or scene storage systems, the height of their ceilings can be anywhere from twelve feet to as much as thirty feet, with scenery lowered or raised into the ceiling areas by cables.

Set and Scenery Construction

Now that we've examined the layout of a studio, it's time to examine how the scenery is constructed. Scenery consists of a series of separately constructed *flats* (Figure 4-11). Flats are usually constructed of one-by-three inch boards and range in length from a few feet to large floor-to-ceiling designs. The boards are covered with a special canvas or muslin, which is stapled and glued to the flat, then painted with a water-base paint. Constructing a flat begins by cutting the *rails*, or the horizontal supports, and the *stiles*, or the vertical supports. These in turn are fastened with half-inch thick plywood plates called *cornerblocks* and *keystones*. Cornerblocks are used to fasten the corners of the flat, and keystones are used to fasten the flat together where a center bracing

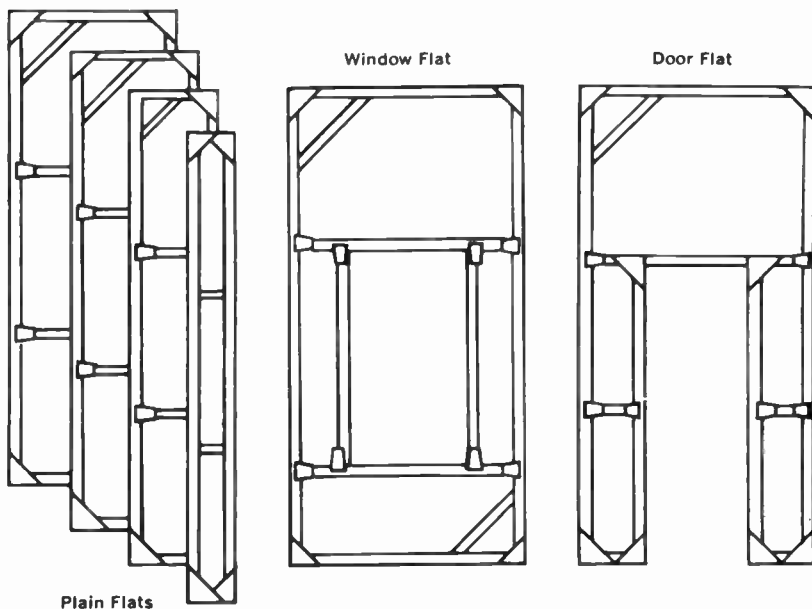


Figure 4-11 The foundation of scenery design in a television studio are the flats. Three basic types of flats include plain flats, door flats, and window flats. (Olesen)

rail attaches the two stiles. The center brace is called a *toggle rail*, or *toggle bar*. *Corner braces* are also used for large flats. *Lash cleats* can be fastened to the flats and are used with rope to tie two or more flats together. Easily stored, flats can be repainted to change a scene or alter the visual structure of a given set. In fact, many scenes we see on television are actually skillfully painted flats.

The flat we have just discussed is called a *plain flat*. Two other types of flats are *window flats* and *door flats*, containing windows and doors, respectively. Window and door flats are basically constructed like plain flats, but additional stiles and rails are used as support for the positioning of windows and doors. The door itself is usually constructed of canvas and is lightweight; the window does not contain glass.

Studios have heavy floors with a hard surface that is not easily marked or dented. A rough floor makes it impossible to move television cameras smoothly. Some studios have cement floors; others cover the cement with a hard tile or linoleum. Cement has an advantage in that it can easily be painted to match the needs of the program.

The next time you watch television, look closely at the background. Stop and ask yourself if what you see is really a scene or if it is a flat constructed and lighted to create the visual location and mood of the program.

Lighting Instruments

Lighting a television studio (Figure 4-12) properly is very much like lighting a theatre. It can create mystery, show suspense, add authority to a program, give it life, or bury it in shadows. To use lighting properly is a skilled task necessitating a combination of artistic mastery and technical ability.

In television, the camera lens takes the place of the human eye. One problem with this replacement, however, is that the eye can see objects better in low light than the lens. Consequently, more light must be placed on an object for the television camera to see it clearly. A second problem is that the human eye sees objects in three dimension; the television cameras does not. To give the illusion of three dimension, lighting is used to cast shadows and create depth. Outside, bright sunlight usually produces enough natural light for the television camera. Inside, the light must be produced artificially.

Types of Lights. Two types of lights are used in television: floodlights, also referred to as “scoops,” although scoops are a particular type of floodlight; and spotlights. Floodlights are used to light a large area with diffused light; spotlights light specific areas. Quartz bulbs, incandescent

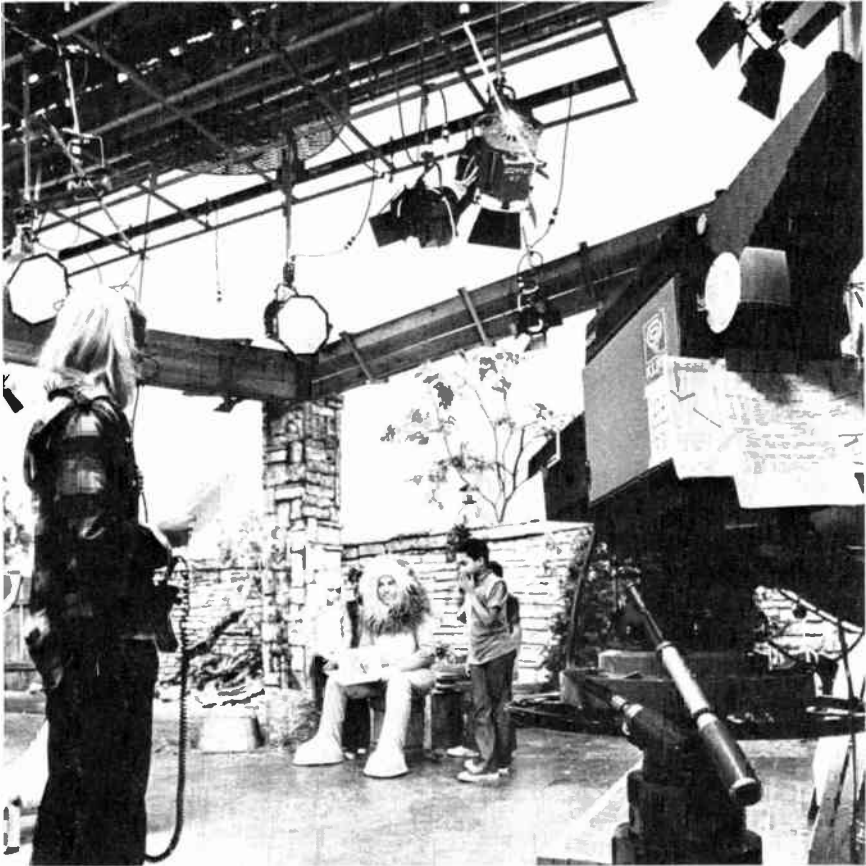


Figure 4-12 Lighting is a critical part of the TV studio. Notice at the top of the picture are a variety of spotlights positioned toward the set. The illustration shows a scene from the TV program *Carrascolendas* produced at KLRN-TV in Austin, Texas. (University of Texas at Austin)

bulbs (standard light bulbs), and fluorescent bulbs are used in television lighting. The two most common spotlights are the Fresnel spotlight (Figure 4-13) and the ellipsoidal spot (Figure 4-14). The Fresnel, named because of its lens, is known for its high output and spot focusing capabilities. The ellipsoidal spotlight (which can use a Fresnel lens) is a high-intensity light normally used in very large studios for special effects work.

Functions of Lights. The three primary functions of television lights are for key, back, and fill lighting. Key lights illuminate a subject from the front. Back lights illuminate the rear and separate the subject from



Figure 4-13 A compact light source using a Fresnel lens. Because of the smaller size of the light, it is popular for remote taping of TV news or other events. (Mole-Richardson®)



Figure 4-14 The ellipsoidal spot light is a high intensity light normally used in larger studios and in special effects work. (Mole-Richardson®)

the scenery. Fill lights “fill in” shadows or areas not satisfactorily handled by the key or back lights. We will discuss key, back, and fill lighting in detail in our discussion of “Lighting Setups” in Chapter 5.

With the increased use of ENG, portable lighting systems are becoming more important (Figure 4-15). Some portable systems are powered from regular wall outlets or battery packs strapped to the belt of the



Figure 4-15 The increased use of electronic news gathering and remote lighting needs has resulted in the development of smaller, more compact lighting systems which are easily portable and, in the case of the light on the right, can be mounted on a large TV camera. (Mole-Richardson®)

camera operator. Single spotlights are usually used and can either be hand-held, attached to the top of the camera, or placed on a stand.

Lighting Control. Controlling the amount of light is as important as selecting the proper lights. This is done with stationary and portable *dimmers*, which work much the same as audio controls. Dimmers use a series of rotary knobs or slide bars to control the amount of electricity fed to the light. A master switch on a dimmer control board can cut off power to all the lights. Large dimmers can be interfaced with computers, and each light setting preprogrammed.

Television lighting is a highly specialized yet extremely fascinating area of television production. It draws the utmost creative talents from

people who work in this area of the medium, and they are as important to a successful production as directors, camerapersons, or talent. We'll learn more about television lighting in Chapter 5.

Television Camera and Lens

When the first television pictures were transmitted over Paul Nipkow's scanning disc, the camera was little more than an aperture through which light passed over a picture and in turn was "transmitted" to another scanning disc. It has since evolved from the iconoscope pickup tube to the Plumbicon® tube. But through all these developments, the basic components of the television camera (Figure 4-16) are still in operation—the lens, the pickup tube, and the viewfinder.

Understandably, all three components have changed over the years, especially in size. The Telefunken Company's early camera using the Zworykin iconoscope tube was so large that it took two men to operate. The camera didn't even have a viewfinder to tell what the camera lens, a giant thirty-nine-inch-long tube, was seeing. Joseph Roizen, writing for the *ORTO Courier* of the Olympics Radio and Television Organization, notes that the camera was completed only three days before the



Figure 4-16 Changes in television design have made cameras more versatile. The camera seen here can be used either on a fixed pedestal or hand held for remote work. The eyepiece for the view-finder is located in the upper right. The handle, in the lower left, is used to steady the camera for hand-held applications. This particular unit is equipped with a zoom lens. (Hitachi)

1936 Berlin Games. Not only were two men necessary to operate the camera, but two more were needed to work the power supplies. The camera operators would listen to the sports announcers through ear-phones, then try to focus “blindly” on what the sports announcers were describing.

The camera lens of the 1930s was replaced by a considerably smaller one which could rotate on a turret to give the camera greater flexibility with wide-angle, regular, and close-up lenses. Most cameras had four or five lenses to select from, and the turret could be controlled by the cameraperson. Zooming in on an object, however, was still not possible.

That all changed with the zoom lens (Figure 4-17). This particular lens offers the flexibility of wide-angle and alternative shots and has the added capability to zoom in on an object without changing lenses. Most zoom lenses are operated automatically by a motor in the camera housing. Others are hand-controlled. The hand-controlled systems are found primarily in smaller cameras used for ENG work and on cameras used in closed-circuit systems or audio-visual centers.

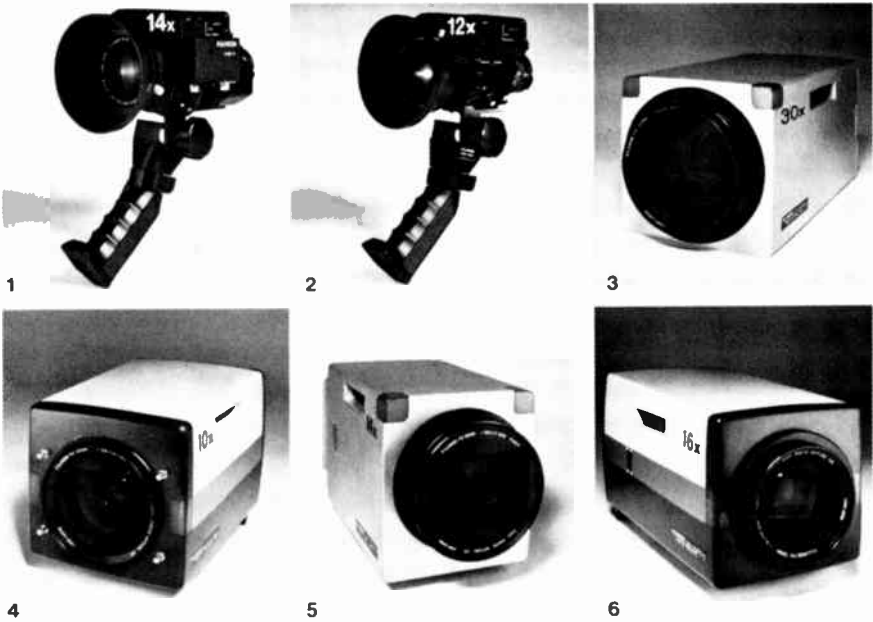


Figure 4-17 Six modern lens designs incorporating the zoom feature. The lens on the television camera of today is much smaller than its predecessor, which was many times larger than the camera itself and took special support systems just to steady the lens. A camera and lens design for the 1936 Berlin Olympic Games was so large it took two men just to operate the camera and lens assembly. (Fujinon Optical, Inc.)

Camera Mountings and Pedestals

Supporting the camera is the *mounting head*. Mounting heads vary in complexity depending on their function and the size of the camera they support. Their most important function is to provide a smooth horizontal (*pan*) and vertical (*tilt*) motion for the camera. All heads are also equipped with a lock which can secure the camera in position. In the illustration of the camera, a handle extending back from the head is used by the camera operator to control the head and, consequently, the camera. The *drag* control, which is combined with the lock, determines the ease with which the camera tilts or pans. Tightening the drag control just shy of the lock position creates a firm movement; loosening it permits the camera to move more freely. Larger cameras use larger more complex mountings (Figure 4-18).

Either a *tripod* or *camera pedestal* is connected to the camera mounting head. Smaller cameras and cameras used for on-location assignments frequently employ the tripod (Figure 4-19). A simple three-legged stand with a connection for the camera mounting head, the tripod is one of the most flexible supports. Adjustable legs permit it to be used on uneven terrain, and special wheel bases, called *skids*, make it adaptable for studio use. The wheels of the skid can turn freely to steer the

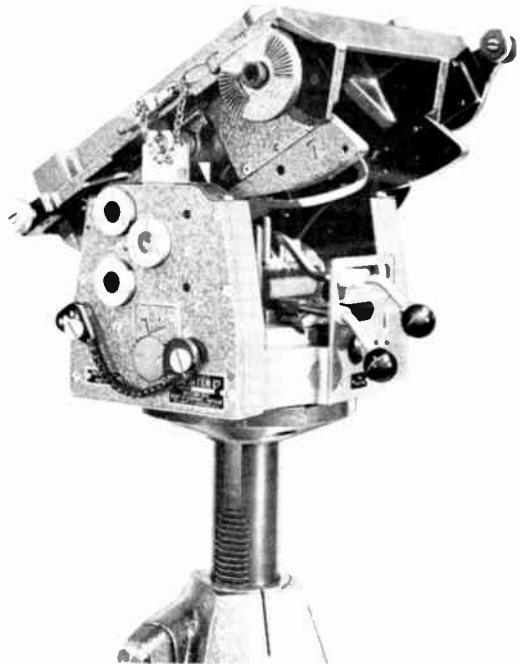


Figure 4-18 Larger cameras need heavy, complex mountings with precision balance and sensitive control mechanisms. Compare the complex construction of this mounting to that holding the camera in Figure 4-16. (W. Vinten, Limited)



Figure 4-19 Smaller cameras and cameras used for on-location assignments frequently employ a tripod assembly. A tripod is one of the most flexible supports and consists of a three-legged stand connected to the camera mounting head. (W. Vinten, Limited)

camera. Two of these wheels can either be locked in position with the third moving freely to steer it in a straight line, called *tracking*, or all three wheels can be adjusted to turn parallel with each other, called *crabbing*.

The camera pedestal (Figure 4-20), although working on the same three-point suspension principle as the tripod, is much larger and is



Figure 4-20 Larger camera pedestals still work on the theory of tripod support but are much larger, and primarily used for studio work. Many are pneumatically controlled and use compressed gas to raise and lower the camera into position. The steering ring permits the camera operator to both steer the camera and control the elevation. (W. Vinten, Limited)

primarily used in studios. Pedestals are designed to support the heavy studio cameras with ease, and many are pneumatically controlled, using compressed gas to raise and lower the camera into any desired position. A steering ring located just below the camera mount permits the camera operator to both steer the camera and control elevation. Pedestals have considerable range of height, averaging between twenty and fifty inches. *Portable pedestals* combine the flexibility of the tripod with the support and pneumatic control advantages of the pedestal. They're primarily designed for heavy outdoor use on rough terrain.

Camera Cranes and Arms

For even greater heights and maneuverability, cameras can use either *camera cranes* or *crane arms*. Cranes are especially useful for large studio and outdoor applications where smooth camera movement is necessary over relatively long distances. The cranes can take a camera and the operator many feet into the air to provide an aerial view of the action. Many cranes are capable of being lowered to compact size and can follow the action through doorways and hallways.

Crane arms are single bar supports without the collapsible features of the crane. The crane arm is becoming more and more popular with ENG crews because of its smaller size and adaptability to standard skids.

TELEVISION CONTROL AREA

Moving out of the studio and into the control room (Figure 4-21), we see many of the same features we encountered in the radio control room. Again, we'll concentrate on the video controls.

Video Switcher

A video control console, also called a *video switcher* (Figure 4-22), permits the director to choose which video source or combination of sources will be incorporated into the final program. A video switcher consists of rows of switches called *banks* or *buses*. Each bus serves a different function. For example, one bus controls the studio cameras. By pushing the appropriate button on the switcher, the director can send whatever the camera is seeing either to be videotaped or directly out over the air. Other buses control programs coming into the station from the network, or slides and films being shown as commercials. Still other buses are used for a multitude of special effects (Figure 4-23) that can be produced by individual "special effects" controls on the video switcher.



Figure 4-21 The television control area is the hub of studio activity where an engineer not only can control live programming, but monitor and switch network feeds and, in some stations, direct in-house editing and production. (WRTV)

In addition to the buses, the video switcher also contains *fader bars*. Fader bars smoothly change one picture to another. The bars are actually levers positioned side by side, each lever controlling one of the buses. By carefully moving the fader bars, the director can move gradually from one camera to another, called a *dissolve*, or between a camera and film, or any other combination the director chooses. Fader

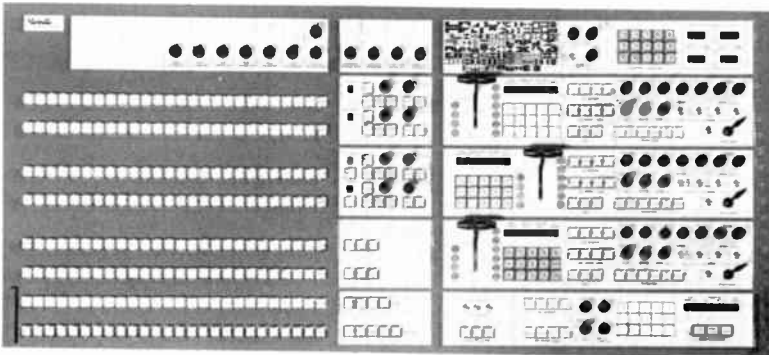


Figure 4-22 Larger video control consoles, also called video switchers, provide many different creative opportunities for skilled directors and producers. Notice in the upper right center is a special effects control panel similar to the one seen in detail in Figure 4-23. (Duca-Richardson Series 4,000 Production Switcher)

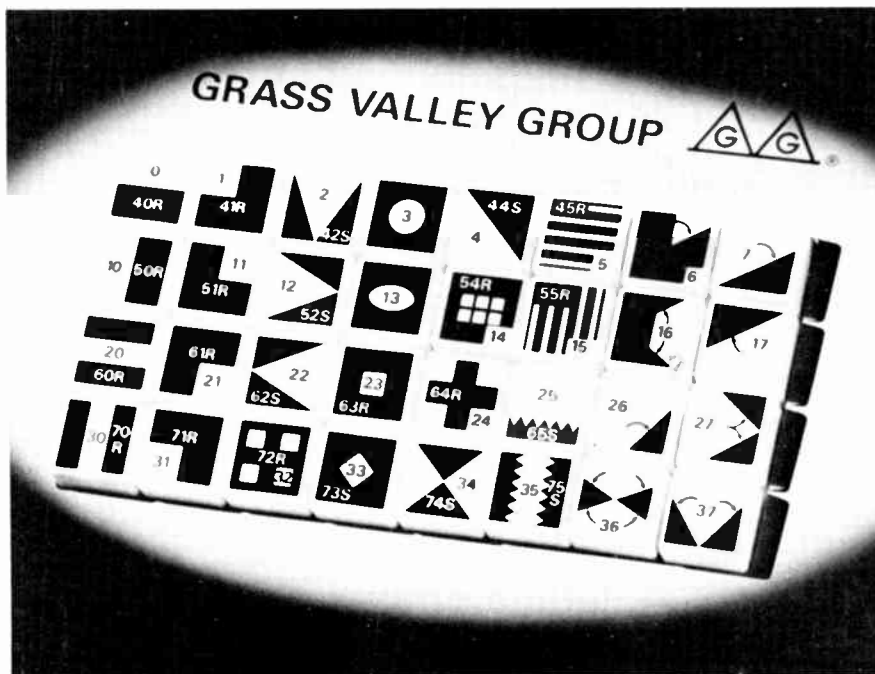


Figure 4-23 Modern switchers provide a variety of special effects which can be creatively used by trained personnel. (Grass Valley Group)

bars are most effectively used to retain the mood of a program, such as dissolving from a full-size view of a singer to a closeup of that singer's face.

Fader bars are also used to superimpose one picture over another, called *supering*. In this case, the fader bar levers are moved side by side away from each other permitting the picture controlled by each bus to appear on the screen. *Fading* is still another function of the fader bars. A picture is either "faded out" or "faded in." For example, if the screen is black and the producer tells the director to fade in camera 1, the view seen by camera 1 will gradually appear on the screen as the fader bar is moved into position. If the command is given to "fade to black," the picture will gradually disappear as the fader bar moves back into its original position.

Additional Control Room Hardware

Along with the video switcher, the preview monitors are located within easy view of the director. Each preview monitor tells the director what is available on a given program source.

A *slide chain* and *film chain* are also important to every studio and

consist of slide and film projectors directed into a special camera, which in turn can be controlled by the video switcher. *Character generators* are used to superimpose words over the picture. A person's name, the title of a program, and other labels are first typed and then stored in the character generator to be called up by the director at the appropriate moment.

Videotape recorders fulfill the recording needs of television. Used extensively in both studio and remote production applications, the new cassette machines are becoming the standard at many stations. Many recorders are interfaced with computer technology, permitting built-in automatic editing features unheard of in previous years.

Interstudio communication systems permit the director to talk with personnel in the studio through a series of *headsets*. Although many control rooms are located in plain view of the television studio, preview monitors and the interstudio communication system theoretically make it possible for the control room to be located anywhere. And sometimes that theory is put into practice. At remote locations, such as major sporting events, the control room is located in a mobile van out of direct sight of the action seen by the cameras.

The various components of the broadcast station we've discussed in Chapter 4 all work together under the direction of skilled personnel. The seemingly effortless dissolves and switches from one location to another or from one personality to another are actually a series of human and electronic decision-making processes integrated into a total functioning unit. We'll examine these decision-making processes that make up radio and television production in the following chapter.

SUMMARY

Chapter 4 has examined the studio and studio control areas of radio and television stations. We learned that stations typically have three functions: program origination, program processing, and program transmission.

Radio stations vary in size and function depending on how much local production takes place, the extent of automation, and whether the station utilizes the studios for both AM and FM programming. We reviewed the components of the radio studio. Microphones can be classified by their type and pickup patterns. Different types of microphones include the carbon, dynamic, ribbon, condenser, and ceramic mikes. Microphone pickup patterns include omnidirectional and unidirectional. Microphones can also be classified by their respective styles. Along with microphones we discussed magnetic tape, tape recorders,

and turntables, all important in reproducing recorded sound. Control boards then “process” the sounds of the station. Anyone operating a control board needs to be aware of its basic components: pots or sliders, master gain control, and the VU meter. Also important is the modulation monitor, which measures the average modulation of the program before it leaves the station.

Many of the same components found in the radio studio and control area are also found in the television studio and control area. The difference lies in the television studio’s video components. Sets can include everything from a single news desk and weather boards in very small stations to complete television theaters. In larger complexes, plain, window, and door flats are used as scenery. Television lighting includes spot and floodlights as well as portable lighting gear. Cameras can range from the large studio models with automatic lens and hydraulic-assisted controls to portable cameras with manual controls used for electronic news gathering.

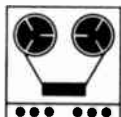
The television control room includes a video switcher with buses and fader bars to switch or dissolve from one video source to another. Special effects can be produced by using the controls on the video switcher. Other components include a film chain, slide chain, character generator, videotape recorders, and an interstudio communication system.

FOCUS ON FURTHER LEARNING

- BERLINER, OLIVER, *Color TV Studio Design and Operation: For CATV, School and Industry*. Blue Ridge Summit, Pa.: TAB Books, 1975.
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- WORAM, JOHN M., *The Recording Studio Handbook*. Plainview, N.Y.: Sagamore Publishing Co., 1976.

5

Understanding Production



PREVIEW

After completing this chapter, we should be able to:

Comprehend why radio is called a medium of the mind

State how copy and sound must blend together for successful radio production

Explain how such new technology as stereo and quad is expanding the production possibilities of radio

List the elements of production used in daily radio programming

Trace how an idea becomes a television script

Explain the application of camera shots to the television script

Discuss the production of commercial copy

List the steps in the production of an accountable ITV program

Becoming familiar with radio and television studios was the first step in understanding program production. In this chapter we'll briefly survey the production process, concentrating on the basics of writing a script and developing it into a final program. We'll also examine different types of production, such as the day-to-day duties of the radio disc jockey, producing television commercials, and the steps involved in producing ITV programs. By necessity, our treatment of these processes will be introductory. If you have a keen interest in production, you'll want to read the books listed at the end of this chapter. We'll begin our discussion with radio.

RADIO PRODUCTION

Radio has certain special qualities that distinguish it from television. To many people, it is a more creative medium than television. By "more creative," they mean that because radio has but a single dimension—audio—the radio producer can literally "create" visual images in the mind of the listeners.

Creating the Mental Image

Radio truly represents a medium of the mind. It demands we use all of our senses to envision the mental images it can create. In fact, radio can broaden your imagination beyond any dimension available by television. Consider the following introduction to a commercial:

A scarlet valley of fragrant roses shimmered in the caress of a soft breeze descending from the lilac-splashed hills.

Few of us will ever see a valley of roses, to say nothing of hills of lilacs. In this case, we used radio to turn on our senses.

One of the most quoted and effective examples of using radio copy to create visual images is Robert C. Pritikin's commercial for Fuller Paints. Notice how Pritikin dynamically brings "yellow" to life:

The Fuller Paint Company invites you to stare with your ears at—yellow. Yellow is more than just a color. Yellow is a way of life. Ask any taxi driver about yellow. Or a banana salesman. Or a coward. They'll tell you about yellow. (Phone rings) Oh, excuse me. Yellow!! Yes, I'll take your order. Dandelions, a dozen; a pound of melted butter; lemon drops and a drop of lemon; and one canary that sings a yellow song.

Anything else? Yello? Yello? Yello? Oh, disconnected. Well, she'll call back. If you want yellow that's yellow-yellow, remember to remember the Fuller Paint Company, a century of leadership in the chemistry of color. For the Fuller color center nearest you, check your phone directory. The yellow pages, of course.

The copy created a whole series of visual images to firmly plant yellow in our mind. And although we have all seen the color yellow, seldom have we been so bombarded with it.

Visual Limitations

But if we were to see the commercial on television, for many of us it would not carry the same images or even the effectiveness it has on radio. For instead of concentrating on yellow, we would also be focusing on the traffic congestion seen behind the wheel of a taxicab, the attire of a banana salesman, the expression on the face of a coward, and whether or not the dandelions are going to be crushed by the pound of butter which is leaking through the bag that is obviously going to break from the weight of the lemon drops. And even though the canary will grab our attention, we'll still need to concentrate on the canary's warble. By the time we get to the Fuller Paint Company, we'll be thinking of everything but paint. To incorporate all of these images in a television commercial would require much too fast a pace or more air time. The other alternative would be to cut out some of the examples. With radio, however, we control the images and the time spent with them.

In radio's early days, most of the programming consisted of these visionary images created by the heroes and villains of radio drama. Even today, these theatres of the mind have returned as popular nostalgia, proving once again that even in the presence of television, radio's power to persuade is as strong as ever.

Complementing Copy and Sound

Successful radio production uses every opportunity to perform on your mind's stage, be it with commercials, radio drama, promotional IDs, or public service announcements. In short, it skillfully combines each word and each sound in perfect *complement* with each other. That word "complement" cannot be stressed too strongly and accounts for one of the most common mistakes in radio production. Too often good radio copy is mixed with a musical background or other sound accompaniment which doesn't fit the copy. The background is simply added for the sake of adding, without considering what the marriage of copy and sound does to the total message. For example, the description of our

field of roses would be all but ruined when accompanied with hard rock music.

Another common mistake is to add a vocal accompaniment to a radio commercial. The listener, trying to comprehend the words of the commercial, is distracted by the words of the song. Television can handle a vocal accompaniment as a background to a visual scene, but in radio, the mind must be able to paint that scene without distraction.

There are exceptions to this advice, however, the most obvious being when the product being sold is a recording. The use of radio and television commercials to sell albums and singles has proven an effective part of many recording companies' marketing plans. In such cases, it's common to have the recording playing softly behind the announcer's voice as the listener receives price details and information on how to obtain the record.

Radio Production in Daily Programming

The great majority of radio production centers around the daily operation of the station. It's production the disc jockey engages in when he or she walks into the studio to prepare for four or more hours in front of a microphone and control board. That kind of production involves a coordinated minute-to-minute effort of technical and artistic qualities to create a smooth-sounding product.

Achieving this product begins with the station's format—the basic foundation of radio production. Although small-market stations have a flexible format, large-market stations utilize a carefully prepared playlist to give them a sound appealing to their target audience. In selecting records, the station takes into consideration not only the popularity of the song but also the tempo. Although other types of music can be blended into that format, the station basically strives for one specific "sound."

The second phase of production employs a special set of *production aids*, called *jingles*, which are used in conjunction with the music. These incorporate the call letters of the station into short musical selections used as a station identification. But the station identification is only a small part of the jingle package. Also included are numerous sound *bridges* used between records or *sound pads* used behind news promotions, commercials, public service announcements, and other programming. Good jingle packages offer a wide variety in their introductory or intro tempos, and their ending or outro tempos. For example, one jingle might start with a fast tempo and taper off to a mellow one. Such a jingle can be used to bridge between a song which ends in a fast tempo and one which begins more slowly. The result is a smooth sound.

Knowing how to successfully introduce different musical selections is another important aspect of good radio production. For instance, the most common mistake new announcers make is wanting to talk too much. After all, the ability to reach thousands of listeners can be a heady experience. Unfortunately, too much ego can turn off listeners. Considering the commercials, newscasts, public service announcements, and station identifications, there is plenty of “talk” available. Most disc jockeys use the instrumental intro of a song as a good place to not only announce the song but also to give such information as the time and temperature. The listener can still enjoy the song, and the time an announcer’s voice is on the air is kept in balance with the station’s format.

This is *not* to suggest that all radio is music and the only good radio production is when announcers are heard over the musical intros of records. Some of the most popular stations feature air personalities who effectively use a combination of talk and music to attract listeners. The key is to know what to say. Done successfully, personality radio can be a very competitive force in a market.

New Technology and Creative Production

The development of AM stereo opens up entirely new creative vistas in radio production. Even though FM stereo has opened up new potentials of its own, the incentive for creative excellence in this medium is lessened by the limited exposure FM stereo provides. The principles of stereo mean that the same breeze that caressed the roses can be heard softly entering one side of the living room and blowing out the other end. Imagine a restaurant scene where two people talking (heard in one loudspeaker) are joined by a waiter entering the room (heard on the second loudspeaker) and gradually approaching the table (back to the first speaker). The possibilities are limitless. Stop and consider how stereo can be used to enhance a visual image. What changes in production or copy would enhance this even further?

Now consider quadraphonic or four-channel broadcasting. Suppose in our restaurant scene that two people are talking (one loudspeaker). A waiter enters (second loudspeaker) and walks by a piano playing soft music (third loudspeaker). From the background comes the sound of a cash register (fourth loudspeaker). Now place all four of your quadraphonic speakers in four separate corners of a room, sit in the center of that room and listen. You actually become part of the restaurant with the action taking place all around you. With this in mind, how might you change the production and copy of a radio commercial or even a program for quadraphonic sound?

PLANNING TELEVISION PRODUCTION

In Chapter 4 we learned the components of the television studio and control area. Television production matches those components with the human skills of producers, directors, writers, and technical crews to develop anything from instructional television programs produced in a local schoolroom to network extravaganzas. But whatever the location, whatever the finished product, it all involves planning. It's through planning that an idea turns into a script, and eventually evolves into a combination of elements on a screen.

The Blend of Dialogue and Setting

The key to any television script is the marriage of *dialogue* and *setting*. Dialogue communicates and even dictates the setting, camera shots, lighting, and scenery. Consider two romantically involved people in a scene that consists of softly spoken words, direct eye contact, a soft touch, and eventually a kiss. Now imagine the setting for this action. We could place it near an automobile assembly line, or have two people hanging from a scaffolding, or perhaps put them on the wing of an airplane. All would be out of place, unless we were producing a comedy. But by adding the correct setting to the correct dialogue, the writer can create the desired emotion. The dialogue-setting interface is vital for all types of programs—commercials as well as entertainment.

Writing the Script

Writing a television script involves discipline, creativity, and good writing ability. Different writers use different methods. Some start with an idea about the *theme* of the program. For example, if you are writing a script for a situation comedy, you may already be familiar with the characters and the setting. Even if you aren't, you'll have some idea about what type of characters would best fill the roles. You'll also have an idea about the story line, what the plot will be, and something about the conclusion. Next you'll *outline the sequence of events*, telling what will happen first, second, and next. Then you'll begin *developing a dialogue* around all of these elements, working it into a *preliminary script*. The preliminary script is worked and reworked toward the *final script*. The script is never final until the actual production is completed since the director will make changes in the dialogue to better suit the needs of the program. A change of a word here or a line added or deleted there all help integrate the script with the actors as well as with the mood and tempo of the show.

The script the director originally works with may not at first take into consideration the movement of the cameras or the actors. Those decisions will come as the show develops. A typical script for a situation comedy might look like this:

- Betty:** But you didn't get fired, did you? I mean, you couldn't possibly be fired. Could you? Well, could you? Oh boy. You really could, couldn't you?
- Donald:** Yes, I could. I definitely could. But I wasn't. I wasn't fired. . . .
- Betty:** (INTERRUPTING) Oh thank heavens. For a moment, I thought you were out. Out without pay. Out without our rent check. Out without the next batch of groceries. Out without my pantyhose.
- Donald:** (TRYING TO INTERRUPT) Betty, wait a minute. I . . .
- Betty:** (BEFORE DONALD FINISHES) Oh Donald, I'm sorry. I shouldn't have said that. I mean, I shouldn't have added that comment about the pantyhose. . . . Out without the rent check. Out without the next batch of groceries.
- Donald:** (IN A LOUD VOICE) Betty, will you shut up a minute?
- Betty:** (QUICKLY) Oh Donald, of course I will. I'm sorry. I didn't mean to lose faith in you. I have the highest respect for you. I mean, of course they couldn't fire you. Of all people, you. You who gives me furs, and jewels, and cars, and, and, and pantyhose. Of course they couldn't fire you.
- Donald:** They suspended me for a year without pay.
- Betty:** They did what?!
- Donald:** They suspended me for a year without pay.
- Betty:** Donald, that does it! Out! Get out of here you incompetent. . . . you, you worthless flirt. You, you freeloader!

The script is typed with wide margins to give ample room for notes, such as camera shots, positioning of actors, changes in the script, and other reminders.

Revising the Script

After the actors read through the script, changes may be made. Perhaps the script is too wordy. Perhaps it needs to flow faster. Or perhaps the timing is off. The revised script may look like this:

- Betty:** You got fired, didn't you? Well, admit it! They canned you. They kicked you out, didn't they?
- Donald:** No, I wasn't fired.
- Betty:** (AFFECTIONATELY) Oh thank heavens. I knew you were too good to be fired. Too important. You . . . you luscious creature who pays the rent, who buys me jewels, and buys me furs, and takes me to dinner. No one in their right mind would fire you.
- Donald:** They suspended me for a year without pay.
- Betty:** They did what?!!
- Donald:** They suspended me for a year without pay.
- Betty:** (WITH GROWING CONTEMPT) That does it. That's the last straw. Get out! Get out of here this minute! (SCREAMING) You . . . you . . . you . . . freeloader!!

Notice in the revised script the dialogue is much quicker. The impact of the humor more intense, more deliberate. Still more changes in dialogue may follow when production actually begins. But at this stage, it becomes a matter of the actors feeling comfortable with the script. After the preliminary work with the script, production begins.

PRODUCING THE PROGRAM

Remembering that the various steps in producing a television program are interrelated, we'll begin with lighting. We can use the two types of lighting instruments—spotlights and floodlights—to set up the three basic lighting functions.

Lighting Setups

As we learned in chapter 4, lights have three primary functions: *key* lighting, *back* lighting, and *fill* lighting.

Key Lighting. Key lighting is the primary source of light hitting the object. It focuses from the front of the object and is the sharpest detector of structural differences. If, for example, the object to be televised is a face, moving the key light down so that the beam shines up on the face can create a spooky affect. Moving it to one side can create suspense, much like a detective in a dark alley. Moving it above the face can create the illusion that something is watching from above, unseen by the face.

Back Lighting. Back lighting, on the other hand, adds depth to the object and can create the illusion of distance from the backdrop scenery or cyclorama. Back lights shine from behind the object but must be used with care so as not to distract from the front key lights. A back light too high above the object or too intense can create an unnatural “hot spot” of light on top of the head of a performer. Back lights employ both floodlights and spotlights. Back light is sometimes called scenery light, although then its main purpose is to illuminate the background, not the object being televised. Special wide-beam floodlights are used for scenery lighting, sometimes constructed in groups where multiple floodlights are placed close together to illuminate large areas of the background.

Fill Lighting. The third type of lighting function is fill lighting. Fill lights “fill in” the areas not covered by the key lights. For instance, they can be directed at the side of the televised object and hide unwanted shadows. Floodlights (scoops) are also popular fill lights.

Incorporating Camera Shots

In considering the next stage, the script again becomes an important part of the production process.

VIDEO

MS of Betty and Donald

CU of Donald

MS of Betty

MS of Donald

MS of Betty

TCU of Donald

AUDIO

Betty: You got fired, didn't you?
Well, admit it! They canned you. They kicked you out, didn't they?

Donald: No, I wasn't fired.

Betty: (AFFECTIONATELY) Oh thank heavens. I knew you were too good to be fired. Too important. You . . . you luscious creature who pays the rent, who buys me jewels, and buys me furs, and takes me to dinner. No one in their right mind would fire you.

Donald: They suspended me for a year without pay.

Betty: They did what?!!

Donald: They suspended me for a year without pay.

TCU of Betty

Betty: (WITH GROWING CONTEMPT)
 That does it. That's the last
 straw. Get out! Get out of here
 this minute! (SCREAMING)
 You . . . you . . . you . . . you
 freeloader!

Each portion of this dialogue was captured by an appropriate camera shot. The abbreviations used in the video column were medium close-up (MS), which includes the upper torso and head of the talent; a close-up shot (CU), which involves the shoulders and head; and a tight close-up (TCU), which moves in on just the head. Our director has used increasingly tighter shots to coordinate the heightened emotion of the dialogue. When the big moment arrives and Donald repeats that he has been suspended, we are looking directly at his face. Similarly, when Betty's lines reach the height of her emotion, we are concentrating on her face. So not only does the dialogue relate emotion, but the close-ups of each actor's face also add to the intense atmosphere being generated between them. If Donald decides to leave the room, the camera might take a long shot (LS) of the room showing Donald heading for the door. The camera would not only pick up the action but would also communicate the actual parting of the two people.

Other shots and directions as well as variations on any of them are possible. Extreme long shots (XLS) place the talent in about one third of the screen. An extreme close-up (XCU) shows only half of the talent's face which includes the eyes, hairline, and upper part of the nose.

Production Terms

The camerapersons capture these various shots according to the directions given them. We've encountered some of these earlier in the text. The command *pan* means to move the camera horizontally to the right or left while keeping the pedestal stationary. The command *tilt* means to move the camera up or down on its pedestal. *Dolly* means to move the entire pedestal. The term *zoom* is used with a zoom lens. The command *zoom in* directs the cameraperson to adjust the lens toward a closer shot of the subject. *Zoom out* means to adjust the lens to a wider shot. And as we learned earlier, the word *dissolve* is a command given to the technical director operating the video switcher. It means to change gradually from one picture to another using the fader bar on the switcher. The command *cut* means to change pictures abruptly by pushing the appropriate button on one of the rows of buses. The command *focus* means to adjust the focus control until the picture is clear. Although all of this may sound like a foreign language, a few

experiences directly involved in the production of a program will make these terms second nature. Each represents a concise communication necessary to keep the production moving toward a successful conclusion.

Final Editing

Production is now completed. But significant editing may have to be done and portions of the program may even have to be reshot to improve the action or change some dialogue. In television, the program must be a certain length—to the minute. Unless the production is being broadcast live, the finished tape or film will be sent to the editing room where it will be trimmed down or expanded to fill the exact time frame. Editing may involve splicing in retakes or deleting some dialogue. In many productions, even though a master tape is made of the show when it is originally produced, tapes of what each individual camera sees may also be retained until the final editing is completed.

PRODUCING COMMERCIAL COPY

Many of the steps involved in producing television commercials are the same as those we've just discussed for programs. First comes the script.

Developing the Script

As with the entertainment program, a commercial script is first roughed out and a preliminary script prepared. After the preliminary script is reworked, the writer suggests possible camera shots with the video portion of the script in mind. The following script for a television commercial was prepared by the OMAR advertising agency of Chicago, which specializes in reaching the Hispanic audience. In this commercial for Coca-Cola, we can see the idea of the script as well as the video which might accompany it. This particular commercial uses a male and female voice.

VIDEO

Open with Coca-Cola logo covering whole screen.
Dissolve to LS of Chicago skyline showing beach.

AUDIO

He: Coca-Cola!
She: . . . to add life to any occasion!

Cut to group in a picnic. CU of basket with food and cooler with cans and bottles of Coke.

He: Coca-Cola!

Dissolve to a couple running down the beach.

She: . . . to get the fun really going!

Cut to young girl fixing some of the food. Next to plate is a bottle of Coke. Keep inside frame.

He: Coca-Cola!

She: . . . to go with any good food, what could be better?

Dissolve to picnic scene. All are eating and enjoying a glass of Coke.

He: That's right.

She: Things go better with . . . Coca-Cola.

A couple continues drinking and eating. Another is playing in background.

He: Glass after glass of the real thing, of refreshing flavor!

She: Lots more flavor with Coca-Cola because . . .

Cut to final shot of Coca-Cola logo and theme.

He: Coca-Cola adds more life!

Preparing Storyboards

Once the script is developed, the next step is to prepare a *storyboard* (Figure 5–1). Storyboards are drawings of approximately what should appear on the screen at any given portion of dialogue. Although they can be used for any television program, they are almost a prerequisite in producing commercials. For along with giving the director and producer an idea of what the finished commercial should look like, ad agencies use storyboards to get client approval of a script and video before actual production begins. If changes are necessary, it's much easier to change a storyboard than a commercial.

Looking at the storyboard, we see the first shot will be of the company trademark, creating instant visual identification with the product. This is followed by a scene of the Chicago skyline. From the skyline the

1



OPEN WITH COCA-COLA LOGO
COVERING WHOLE SCREEN

MUSIC UP AND UNDER
(VO) HE

Coca-Cola!

2



DISSOLVE TO LONG SHOT OF
CHICAGO SKYLINE SHOWING
BEACH

(VO) SHE

...to add life to any occasion!

5



CUT TO YOUNG GIRL FIXING
SOME OF THE FOOD. NEXT
TO PLATE IS A BOTTLE OF
COKE. KEEP INSIDE
FRAME.

HE

Coca-Cola!

SHE

...to go with any good food,
what could be better? ...

6



DISSOLVE TO PICNIC
SCENE. ALL ARE EATING
AND ENJOYING A GLASS
OF COKE

HE

That's right!

SHE

Things go better with ...Coca-
Cola

Figure 5-1 (OMAR, Chicago)

3



CUT TO A GROUP IN A PICNIC. CUT OF BASKET WITH FOOD AND COOLER WITH CANS AND BOTTLES OF COKE.

HE

Coca-Cola!

4



DISSOLVE TO A COUPLE RUNNING DOWN THE BEACH

SHE

...to get the fun really going!

7



A COUPLE CONTINUES DRINKING AND EATING. ANOTHER IS PLAYING IN THE BACKGROUND

HE

Glass after glass of the real thing, of refreshing flavor!

SHE

Lots more flavor with Coca-Cola because...

8



CUT TO FINAL SHOT OF Coca-Cola LOGO AND THEME.

HE

Coca-Cola adds more life...!

storyboard moves to a picnic, starting with a close-up of a picnic basket. From there, the camera dissolves to the couple running down the beach. It then cuts to the young girl fixing food. Next, the camera dissolves to the two people drinking Coca Cola. Before a final shot of the logo, it shows the other group of people playing volleyball. The final shot combines the Coca Cola trademark with the Spanish words “da mas vida a . . . ,” which in English means Coca Cola adds more life.

Although they may only last a minute, a commercial is a major production in itself. Some go to great lengths to capture exotic scenery, special testimonials, and persuasive artistry. These efforts can range from using helicopters for special photography, to positioning cars on the edge of cliffs, to traveling to Russia to get comments from yogurt eaters. And although all of this may seem like a great deal of trouble for thirty seconds of air time, it may be a small price to pay in order to vie for the attention of and to persuade millions of people.

PRODUCING ITV PROGRAMMING

So far, our discussion of broadcast production has centered on the commercial side of radio and television. Let's now examine educational broadcasting.

Almost anything of significance that occurs in a local school system becomes the concern of the community. Students, parents, teachers, school board members, and even the legislature are all involved. The educational process in its simplest terms attempts to provide the most for the taxpayer's dollar. This quest can reach extreme levels, as in Oregon, where taxpayers often refuse to approve school budgets, forcing some schools to close. It also provokes hard questions asked at PTA or school board meetings. Thus, it is only natural that people are concerned over ITV, television programming used in the classroom. The public, parents, and policy makers want to know if ITV is worth the money. Are the expensive facilities or special programs paying for themselves in student benefits? Does the type of programming really teach something or is it just background entertainment?

Toward Accountability

The result of these probing questions is the trend toward increased *accountability* in developing ITV programming. By *accountability*, we mean being able to show that programs actually teach what they are designed to teach. Educators and producers alike are asking: What does this program teach? What are its objectives? Is this the best way to

present this material? What techniques are used to keep the student interested while learning? How much entertainment is included without distracting from the basic subject matter? The answers to these questions are forcing people involved in ITV production to take very systematic steps to assure program accountability.

Producing accountable programs requires a team effort. It involves a group of people skilled in many facets of ITV program developments: writing objectives, writing test questions, script writing, television production, and the subject matter being taught. It's important that you understand the steps involved in producing accountable ITV. You will more than likely be exposed to it during your school career. Upon graduation, you may enter a business where ITV programs are a major part of your training program. Your children will undoubtedly experience ITV. And you may find yourself a member of a PTA or school board that becomes involved with ITV.

To learn about the ITV production process, let's assume you have been appointed to direct the production of an ITV program on teaching tennis.

Preproduction Stages

Roll out the cameras and start shooting, right? Not quite. Your first step is careful **program planning**. That involves examining other programs about tennis. The catalogues of ITV program suppliers are a good place to start. You may find a program already available that appears to meet the same objectives you want to achieve. If that's the case, you'll want to obtain a copy of the program, view it, then decide whether you should proceed with your own production.

You'll also want to **analyze your intended audience**. Will it be adults, elementary school children, those experienced in playing tennis, or those just beginning? If your audience is made up of beginners, you won't want to include unfamiliar terms without explaining them. But if your tennis audience comprises seasoned veterans, you won't want to spend time on preliminaries.

The second step is to **identify the goals** of your program. What do you want to teach? This answer is especially important since it will determine your success.

You must also clearly state your goals by **writing your program's objectives**. For example, one goal or objective might read "After viewing this program, you should be able to score a tennis game." Too many people feel the easiest way for a program to meet its goals is to write goals *after* the program is produced or to change the goals to

reflect those the program meets. That defeats the total purpose of your program.

A word of warning. It will be easy at this point to try to do too much in your production. Don't. Trying to cover too much in one program will only cause confusion, and the viewer won't learn much of anything. You'll be frustrated because your program didn't meet its goals, or you'll spend your time trying to revise the program. Neither alternative is acceptable. Although some program revision is usually inevitable, it can be reduced by determining realistic goals.

The third step is **planning evaluation**. Here, you'll prepare the test questions to test the objectives you've set. The type of test questions will be important, as will be how to score the questions, and how many questions to use. Will three questions sufficiently test the viewer's knowledge about keeping score? Will these questions be given as much weight as questions about other important points?

Chances are you won't be skilled in all of the areas necessary to produce a successful ITV program. Don't hesitate to consult experts. Remember, ITV is a team effort. Recruit people skilled in writing objectives as well as those skilled in writing test questions to help you. Consult tennis experts, even if you personally play the game and know all of its aspects. You may be too close to the program and overlook what an expert may not. Moreover, unless you have taught tennis, you may overlook such pointers as the proper sequence in teaching certain skills. Thus, to be sure, draw on the expertise of others.

You'll want to bring these people together as a team throughout the production process. The tennis instructor may suggest a concept that is difficult or impossible to evaluate. Another expert may construct an objective test that confuses the instructor. Ironing out these issues early can prevent costly revision later.

Producing the Program

Now that you've completed the preliminary steps, it's time to begin step four, **producing the program**. Keep your goal in mind—you want to teach tennis, not rival Hollywood. The most cost-efficient methods are the most sensible. Because you will use a tennis court and instructor to demonstrate the game, your costs will be less than, say, major animated cartoon segments or special lighting or dramatic effects that might be used for other subjects.

A good script will be your most important ingredient. This calls for a talented script writer, one who has the ability to be flexible. A tennis instructor serving and returning balls isn't going to be able to read a

teleprompter. Thus, certain segments may have to be taped, reviewed, rewritten, and retaped until the program teaches the objectives.

The sophistication of your equipment and planned camera shots will also be important. Will one camera at a distance do the job? Will a camera on both sides of the court be necessary—or will it only be confusing? If the court is indoors, will auxiliary lighting be necessary? Is it available? The production process is littered with these questions, all requiring an answer before the program is completed.

Postproduction

Now that the production is completed, it's time to enter step five, **testing the program**. Here is where you'll discover how successful you were. Religiously following the actual evaluation plan you created in the preproduction stages, you'll still need to avoid some pitfalls. If the program is designed for beginning tennis players, don't test it on seasoned experts. For instance, what would happen if you used your classmates in this course to test your elementary tennis program? Chances are many of them play tennis and already know the basics. Testing them might show you did a good job. However, when a group of physical education students enrolled in a beginning tennis class fail your test miserably, your ego will return to normal. The physical education students didn't know a ball from a racket on your test, and those are the people for whom your program is designed. Thus, you'll need to find the right audience with which to test your program.

We'll assume you have tested your program and found some shortcomings. Now it's time for the sixth step of the production process, **revising the program**. Perhaps the segment on scoring wasn't successful. Students became confused. You review the program and their test scores. There's the problem! You forgot to define the word *love*, and from that point on, your viewers were lost. You'll revise that segment, clearly defining *love* as *zero points*. That should polish your program.

Finally, you'll want to review everything you have done. This step is called **postprogram analysis**. You'll bring together all of the members of your production team and discuss the entire program. Chances are, you'll be producing other ITV programs, and the lessons learned on this one can help you in the future. Also, immediately after the production is completed, every step will be fresh in people's minds. Take advantage of everyone's suggestions before they forget them.

In conclusion, remember that producing an ITV program is a team effort designed around a carefully planned, multistep process. It involves the ability to share ideas, work together, and, most importantly,

admit and learn from shortcomings and mistakes. With this blueprint, you'll be on your way to producing accountable ITV programming.

SUMMARY

In chapter 5 we surveyed the different techniques used in producing radio and television programs. We learned how radio is a medium of the mind, and that good radio writing means developing and expanding these mental images to their full potential. New technology, such as stereo and quadraphonic broadcasting, can actually increase these images by placing listeners in the middle of a sound experience produced for either entertainment or commercial messages. Most of radio's production today centers around the day-to-day operations of the on-air announcer.

Television production involves adding video to the sound experience with the script remaining supreme, as it does in radio. A good script commands attention and, when used in the proper setting, can create a program with tremendous impact. Evolving from an idea, a script is worked, reworked, outlined, and arranged in sequence until a preliminary version takes form. From there it progresses through continuous revision as the actors adapt it to their needs and the needs of the director and the medium. Then, using the wide variety of camera shots available and communicating in the special, precise language of their profession, the director and the production crew fuse the final product. Producing commercials involves many of these same steps, except that most commercials use a storyboard to visually plan out the sequence of shots.

ITV production is a careful, step-by-step process with a team approach. It includes writing objectives for a program, measuring those objectives through tests, producing the program, evaluating it, revising it, and reviewing the entire production process.

FOCUS ON FURTHER LEARNING

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6

Understanding Programming



PREVIEW

After completing this chapter, we should be able to:

Discuss the context in which broadcast programming operates

Understand what is meant by radio formats

Be aware of the flexibility in programming small-market radio

Explain how radio formats are developed in competitive markets

Discuss network influence in television programming

Know how affiliates influence network decision making

Explain how syndication is influencing television programming

Understand the economics of syndication

Trace current trends in cable's local organization and access programming

If we turn on our radio or television set, we are immediately exposed to a wide variety of broadcast programming. Part of the reason for this diversity is that broadcasting operates in a relatively free society, functioning as part of a competitive marketplace. Yet it must do so responsibly and in light of the public trust.

THE CONTEXT OF BROADCAST PROGRAMMING

Programming is the *product* of broadcasting. Just as a store sells goods or a law firm sells advice, broadcasting sells programming. And just as the store owner sets prices for those goods, and as lawyers set fees for their services, broadcasters set rates for commercials to share time with that programming. Even public broadcasting, which cannot sell commercials, solicits contributions on the basis of the type of programming it can offer. But if that programming on either commercial or public broadcasting should be irresponsible or not meet the public's needs, then like the lawyer who gives bad advice or the store owner who sells inferior goods, broadcasting will be out of business.

Watching this broadcasting industry create its product are various professional associations and citizens groups concerned about the quality of broadcast programming. They normally act as a safety valve against government control. Just as the Better Business Bureau and the American Bar Association set standards for their members, the National Association of Broadcasters (NAB) establishes guidelines for radio and television programming so that the Congress or the Federal Communications Commission will not have to declare their own guidelines. In a sense, the NAB tries to keep broadcasting from becoming irresponsible and therefore keep it in business.

But not all broadcast programming is produced and disseminated in a democratic society. And where it is not, the competitive or noncompetitive marketplace it operates in and the associations and government that control it will have a profound effect on the end product. Keep in mind that competition in our society is a great determinant of broadcast programming. And although such competition can evoke critical outcries over programming quality, the alternative to our system could be total government control as is common in dictatorships or authoritarian forms of government. Thus, while we may not like everything we hear or see on broadcast media, if the programming is preferred by the majority of the viewing or listening public, and if the competitive marketplace will support it, then it will likely stay on the air.

This does not mean that programming cannot be improved. The

critical question for broadcasters is this: How can they effectively program their station to serve the needs of the public while making a profit? If this dual responsibility can become the foundation of broadcast programming, then program planners and broadcast management can work cooperatively with the public.

UNDERSTANDING RADIO FORMATS

In chapter 1 we learned how radio programming evolved from the theatrical elements of radio drama to the music and news formats of today. Decreasing its reliance on network programming, radio became a specialist in locally produced programming. It even specialized in different formats to compete not only with other stations but also with television.

Today radio enjoys an almost endless number of formats and combinations of formats, each designed to reach specific audiences. One of the earliest specialized formats was Top 40 radio, which developed in the 1950s and concentrated on rock-and-roll. Top 40 radio has now become more of a middle-of-the-road format, still catering to rock-and-roll fans but mild in tempo compared to the progressive and acid rock formats which developed in the late 1960s.

When the ABC radio network split into four demographic networks in 1968 (Figure 6-1), it brought news programming into radio's specialization fold. It wasn't long before all-news stations and those with an information format settled into competition with the many musical formats. NBC launched its News and Information Service Network in 1975, but the projected number of affiliates needed to make it profitable wasn't reached, and the all-news network folded two years later. Yet despite this well-publicized failure, all-news radio continues to be a strong force in many markets.

Music played the major role in the specialized formats of still other stations, as seen by these format types: beautiful music, classical, jazz, and country-western. Still other stations catered to the needs of various population groups, indicated by the format types of black, Spanish, foreign language, and religious. Public and educational broadcasting stations filled an additional programming niche.

For program directors, trying to reach a specific audience has become a very challenging task today due to the vast number of stations, closely overlapping formats, considerable variance in station power, and a wide variety of on-air personalities. It has become a select art which combines musical tastes, demographics, an understanding of popular music, and the skill to put them all together.

ABC Four Network Services Daily Feed Pattern

Basic hour

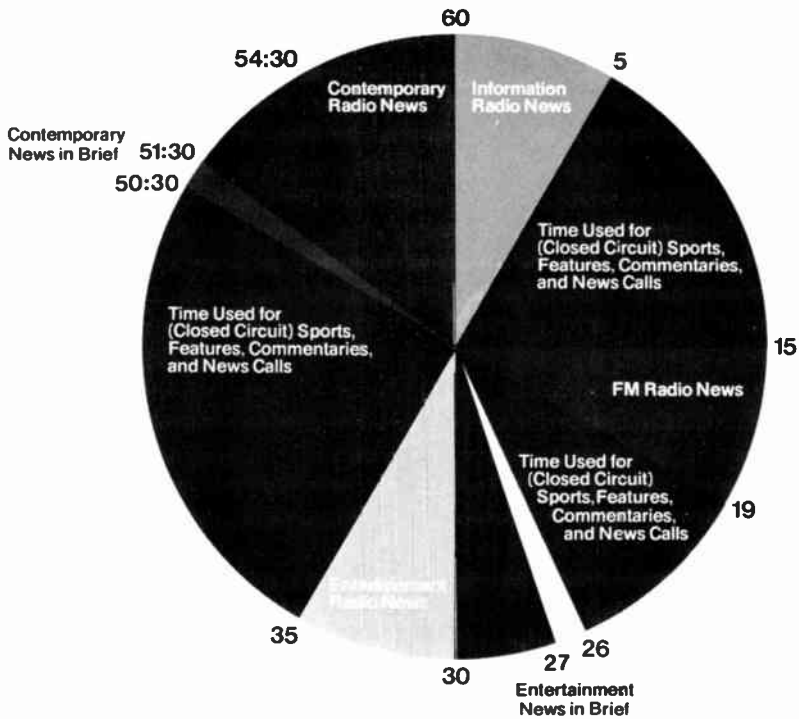


Figure 6-1 ABC's four network daily feed pattern shows a 1-hour segment split between Information, FM, Entertainment, and Contemporary radio news segments. Each news format is directed to a different specialized audience. (ABC)

SMALL-MARKET RADIO: PROGRAM FLEXIBILITY

Imagine you're the general manager of the only radio station in a small market. How would you plan your programming? First, you would consider the characteristics of your community. What type of people

reside there? Since your station has no local competition, you would not have to base your programming decisions on that competition. That in itself gives you greater flexibility. Since your community is small, you could include programs that would appeal to a small-town audience. For example, you might include a “swap-shop” program where people would call the station listing things they wanted to sell. Such programming might be entirely out of place in a large city. But in the small community, where church suppers, bazaars, and auctions are a way of life, the program could very well be popular.

Or you could automate your programming, using a syndicated programming package. The syndicate would plan your musical programming, but you would still be responsible for providing service to your community through locally produced programming. Such programming could include play-by-play coverage of local high school or college sports events, live coverage of community-sponsored events, and a community call-in or talk-show program.

Because your station will operate with a small staff, their duties will be many and varied. The person responsible for the morning air shift may double as the afternoon talk-show host. The station news director may also broadcast the local play-by-play. As general manager, you may be responsible for producing commercials, taking an afternoon air shift, and selling advertising time. Your station’s programming will reflect these multiple roles as your staff becomes well known for its community involvement.

As general manager of the small-market station, your job will be challenging and exciting. It will give you the freedom to program your station based on the needs of your community. Your colleague at a large-market station is faced with all of these concerns and more—how to handle the competition.

PROGRAMMING STRATEGIES IN COMPETITIVE MARKETS

Moving to large-market stations, we find that general managers usually delegate programming responsibilities to a specialist, a program director, while still retaining overall station responsibilities. Let’s take a closer look at this program director.

Analyzing the Competition

As the program director for a large-market station, not only would you be concerned with the needs of your audience, but you would also need to be concerned with competing stations. Which stations are the leaders?

What do they program? In addition, you need to realize that long-cherished listening habits are very hard to break, and the reputation of being the leading station with seniority in the community is a powerful advantage. A friend of mine passed up buying a radio station in a large market because an old established station was capturing over 50 percent of the listenership. Even though the station for sale was a good buy, trying to program a sound that cut into the leader's market was perceived to be so difficult that the time and talent necessary to accomplish it made the investment too risky and expensive. Interestingly, the formats used at many established stations would fall flat on their faces in any other market. Twenty years of the same radio personality, programs heard in the same time slots, and familiar newscasters can be tough to beat.

Adjusting to Formats

Assuming that no station completely dominates the market and sharp programming decisions can be made, then careful planning can significantly improve your station's position. A good place to start is to examine the other stations' formats. You may discover a format that is not covered by the competition, perhaps country-western. Another possibility: formats which seem to be covered may lend themselves to alteration. For example, there are many varieties of rock-and-roll. Even though a competing station may be programming a tight playlist with the top twenty hard-rock songs, the market may have room for a soft-rock format with more mellow rock songs with a slower tempo.

The Radio Personality

Still another strategy is to examine the radio personalities in your area. You may find that although a popular personality gives a station an identity, when that personality signs off the air, the other personalities do not retain that listenership. At this point, you can make one of two decisions. You can develop and promote a personality at your own station (Figure 6-2), then place that person on-the-air head-on with the competing personality. Or you can schedule your personality's show so that it avoids such a competitive confrontation. If you have the money, you can sometimes hire the popular personality away from the competing station. This practice is risky, however, especially if the personality is linked with a certain format. For instance, a personality who has achieved popularity with a rock-and-roll format may be disastrous with country-western music. Remember, popularity may have been achieved because of a *combination* of personality and music. Having one without the other may simply send the listeners turning the dial.

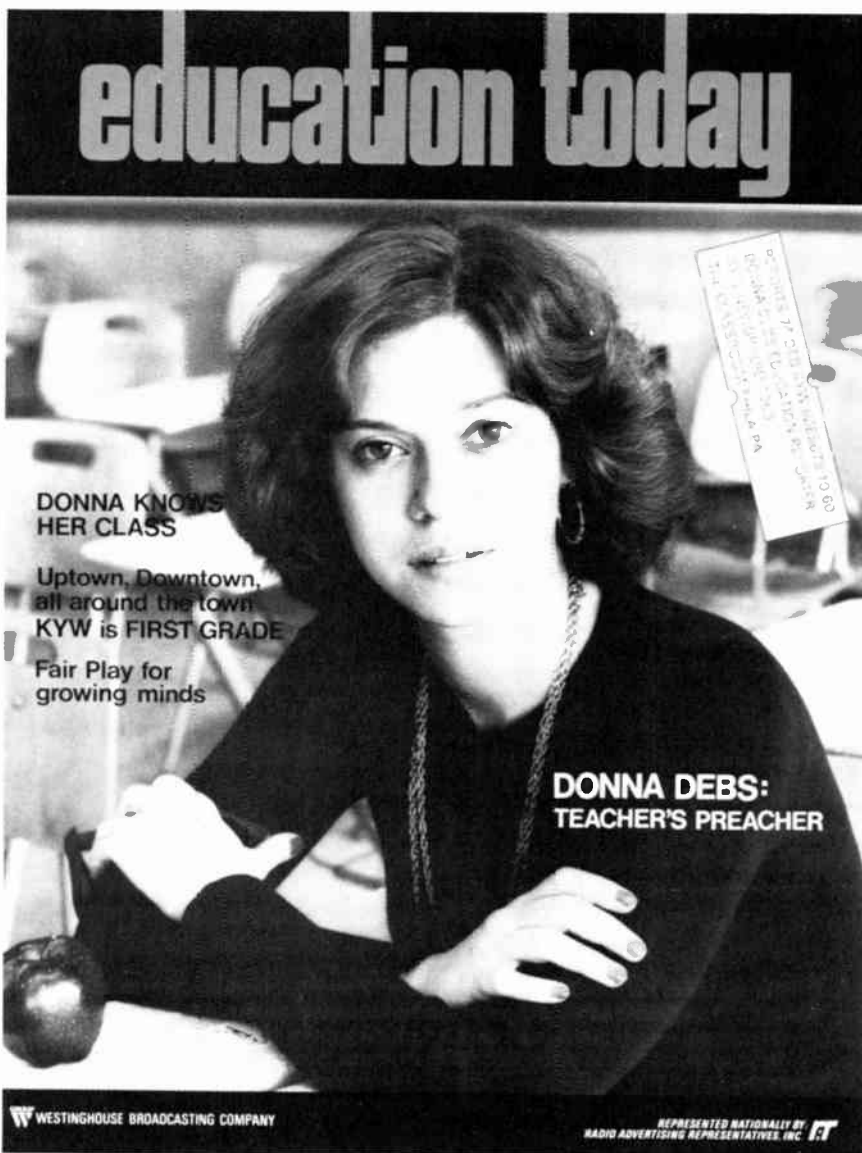


Figure 6-2 Promotion is becoming an increasingly important part of broadcast operations. Here, KYW used a mock magazine cover to publicize education reporter Donna Debs. Larger stations are developing major promotion departments which operate in some cases like in-house advertising and public relations firms and support various operations of the station. (KYW News Radio and the Westinghouse Broadcasting Company)

Bringing in a personality who has been a big hit in another city may also spell disaster. Listeners develop habits and tastes based on a variety of factors. Perhaps the previous popularity was achieved by a series of successfully done promotions. But the listeners in the new city have not been exposed to the same promotions, so they simply view the newcomer as a rank amateur and give their loyalty to another station. A famous Chicago station once brought a top disc jockey out of the South to run a popular morning show. Although his southern humor had made the announcer popular in his home state, he immediately turned off Chicago listeners who weren't attuned to southern speech patterns.

You may discover that your market simply has no dominant personality, and by adding and promoting one of your own, you can bring your station a loyal following. If you're successful at doing this, you will probably find the idea becoming very expensive as other stations try to hire the person away. If and when the person leaves, the popularity vacuum may be filled by another station. But it's all part of large-market programming.

The Jingle Package

In addition to considering personalities and formats, you will also want to obtain a good set of jingles. Jingles, you'll remember, are a set of short musical recordings, all designed around a common musical theme and usually related to the station's call letters. Consider an upbeat combination of musical notes behind the call letters, WABC. Each letter of the call would have a musical identity as would the set of call letters as a whole. The same musical identity would be woven into a musical background for a thirty-second commercial or public service announcement, a ten-second musical background for use behind a station identification or a promotional announcement, and most likely a news bulletin in a fast tempo combined with a teletype sound. A good jingle package, although costing many thousands of dollars, is not only a good investment, it is a must in large-market programming.

SYNDICATED RADIO PROGRAMMING

Still another way to approach a competitive market is to use syndicated programming (Figure 6-3). Syndicated programming is developed by a production company and supplied to a station on large reels of prerecorded tape. Because the format is designed and pretested, many of the error factors have been removed. The station reaps the benefit of the finest equipment, careful selection of songs, the latest trends in

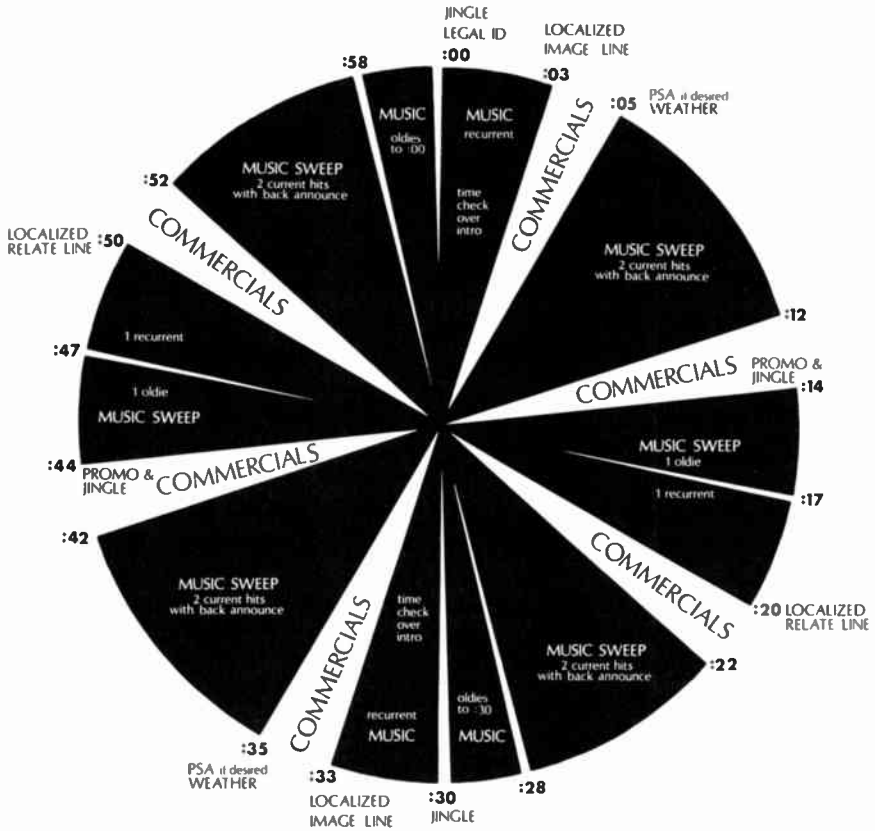


Figure 6-3 A typical hour of a syndicated music format shows the different segments allotted to music and local commercials. Most syndication companies can tailor exact “sound” hours to the individual needs of the station and market. (Century 21 Productions & Programming, Inc.)

music, and the elimination of much of the work and human error of local production.

But syndicated programming is not all roses. It lacks flexibility and eliminates the opportunity to develop personality radio with local appearances and promotions. Even though some syndication packages feature their air personalities in local newspaper ads and promotional spots, they simply can’t adapt to a local community as well as live personalities can.

Qualities of Syndicated Programming

The number of syndication companies in radio is large and the formats varied. Some successful syndicated talk shows actually give the listener the impression that the calls are coming into the local station and are

being answered on the air. The secret to creating this impression is focusing on general but controversial issues. Obviously a talk program discussing Dubuque, Iowa, politics would have little appeal in Portland or Albuquerque. But one discussing abortion, birth control, or national politics could be syndicated successfully to other markets.

What makes a successful syndicated program? In an article in *Broadcast Daily*, the management team at the syndication company of Drake-Chenault credits its success to the three Cs: consistency, cohesion, and concern. Consistency refers to the uniformity of sound in both the format and the style. Cohesion means that the syndicated programming will fit in perfectly with locally produced programming. An audience must not detect any difference between the two. Concern refers to the way the station, via the syndicated programming, serves its listeners.

Syndication Companies

In addition to Drake-Chenault, companies producing this syndicated programming include John Doremus, Inc. of Chicago, which syndicates *The John Doremus Show*, a music and comment program, and *Your Passing Parade*, a program of interviews on people and events. Bonneville Broadcast Consultants (Figure 6-4) out of Tenafly, New Jersey syndicates either full-time programs or shorter segments which can be incorporated into local programming. Typical Bonneville formats include beautiful music, classical MOR (middle-of-the-road), and traditional MOR. New York's DIR Broadcasting Corporation is famous for its *King Biscuit Flour Hour*, which syndicates live rock concerts. *British Biscuit*, which is taped in Britain, also features a monthly rock concert.

Whatever a station is looking for in syndication, there is an ample supply of formats to choose from, proven talent to back them up, and ready assistance to incorporate the format into locally produced programming.

TELEVISION PROGRAMMING

The versatile Steve Allen, in discussing his PBS television program which interviews celebrities from history, commented on the audience he wanted to reach with his show in the publication *Bookviews*. "I want it all," Allen said. "I want the intellectuals to be pleased because we're discussing ideas, but I want the ordinary people at the gas stations to be able to enjoy it too." Author of the *Bookviews* article, John Firth, writes "Allen is the first to admit that finding an audience for such a program is a problem, and that he has to steer a course between making it absurdly simplistic, and thus not getting across the ideas adequately, or aiming it above the heads of the large audience he hopes to reach."

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© 1988 Bonneville Broadcast Consultants, Inc.

Figure 6-4 This succinct ad by Bonneville Broadcast Consultants states clearly the goal of good syndicated radio programming: "Larger audiences" and "good demographics."

The comments of Allen and Firth illustrate what television programmers face every day. Unlike the specialized medium of radio, television must program to a more general and mass audience. Even PBS realizes its impact will be greater if its high quality programming can appeal to a large segment of the population. Reaching this mass audience amid the morass of competing stations and networks is a big job.

Network Strategies

Television programming differs from radio programming in two ways. First, radio is primarily music. Television, on the other hand, includes everything from cartoon shows to coverage of major news events. Second, although independent stations and cable are certainly factors to be contended with, the real competition in any market usually revolves around the three commercial network affiliates. Networks play a powerful role in determining the position of their affiliates in local ratings. The investor wanting to buy a television station or the program director programming it inherits the merits and demerits of the net-

work, and each has only a limited amount of flexibility in instituting programming changes.

For the network, the audience is national, and programs which make the networks are those which appeal to the largest segment of the population. After all, the network is in the business of convincing advertisers that buying its commercial time will enable them to reach the largest national audience. Any program that weakens that audience base has little chance for survival. The result has been what critics call programming to the lowest common denominator, or trying to reach the largest mass audience.

If television advertisers wish to reach a more specialized audience, they select different types of programming, rather than changing stations or networks the way a radio advertiser can. Television has not yet become a specialized medium, although new technology and competition is rapidly changing this. It is only a matter of time before all-news television stations, sports television, stations programming nothing but motion pictures, and other specialized stations become commonplace.

Affiliate's Goals

In the meantime, local stations that want an alternative to network programming are finding an increasing variety of syndicated programs available. Affiliates are also exercising their right to have both a say and some control over network programming. And networks, facing competition from syndication, independent stations, cable, and stations implementing their own satellite distribution system are taking the time to listen to their affiliates.

Despite the powerful position of the network, it could not exist without its affiliates. Unless its affiliates agree to carry its programming, the network would have no market for its advertisers. If a network program does not receive affiliate clearance, the national ratings can suffer. Advertising dollars aren't spent on network programs which show up poorly in the ratings. In a sense, a station imposes economic sanctions on a network when it refuses to carry a network program.

Instead of refusing to clear network shows, some affiliates record the programs and air them at a different time. A violent program showing vicious mayhem or a sexually explicit program may be rescheduled into late-night hours. In this way, the show is still broadcast. But the new time slot may give the program a much smaller audience than it would have reached during prime time. The audience may also have a different makeup, perhaps a different income level. The program shown opposite the rescheduled program may seriously cut into its

viewership; if the program had appeared in its regularly scheduled time slot, it would have faced weak competition. Even more important, there is no way to successfully measure this new audience, for each station rescheduling the program may show it at a different time. So a rescheduled program can spell the same economic disaster as a preempted one.

SYNDICATED TELEVISION PROGRAMMING

Television stations are taking advantage of the variety of syndicated programs available for broadcast (Figure 6-5). In fact, the mere presence of so much syndicated programming has made the networks stop and consider their relationships with affiliates. It has also been the reason that so many shows have such short network exposure. A network that continues to air an unpopular show runs the risk of its affiliates airing syndicated programs that can capture a larger audience. Again, without the affiliates, the networks couldn't exist.

Many of the most familiar shows in syndication have already made their network runs, sometimes at a loss of money to the producers, who often wait until syndication to turn a profit. Such familiar titles as *The Streets of San Francisco*, *The Mary Tyler Moore Show*, *Happy Days*, *Hee Haw* (Figure 6-6), *The Six Million Dollar Man*, *Bonanza*, and *Mission: Impossible* have done well in syndication. Many programs are even going directly

Women 18-49	Men 18-49	Teens
PM MAGAZINE	PM MAGAZINE	HAPPY DAYS AGAIN
MUPPET SHOW	M*A*S*H	GOOD TIMES
DANCE FEVER	MUPPET SHOW	DANCE FEVER
M*A*S*H	EVENING MAGAZINE	MUPPET SHOW
FAMILY FEUD PM	THAT'S HOLLYWOOD	M*A*S*H
EVENING MAGAZINE	\$1.98 BEAUTY CONTEST	SANFORD & SON
HAPPY DAYS AGAIN	DANCE FEVER	BRADY BUNCH
HEE-HAW	HEE-HAW	PM MAGAZINE
\$1.98 BEAUTY SHOW	HAPPY DAYS AGAIN	GILLIGAN'S ISLAND
NAME THAT TUNE	FAMILY FEUD PM	KICKS

Figure 6-5 The variety of syndicated programming and how it appeals to different audiences is seen in the lists for teens, women 18 years of age and older, and men 18 years of age and older. Notice how the popularity of different shows shifts among different audiences. Such considerations are an important part of scheduling syndicated programming. (Lists based on A. C. Nielsen data)



Figure 6-6 Junior Samples of television's *Hee Haw*. The show has achieved national success in syndication and found a popular time slot on weekend evenings.

into syndication. The soap opera farce, *Mary Hartman, Mary Hartman*, made the industry acutely aware that a program could go directly into syndication and completely bypass a first run on the network. *Space 1999* followed and further proved that point. Consequently, producers are becoming bolder in their syndicated endeavors. Although the networks are certainly considered an important programming outlet, a negative response from a network is by no means the kiss of death for a program.

Regional programs and specials are also making a hit in syndication. Fishing shows, features on skiing, travelogues, and great football plays are being syndicated. Even the original book-length features which were so popular on network television during the 1976–1977 season are in syndication. Author John Jakes's best seller, *The Bastard* (Figure 6-7), about the history of America and the evolution of the fictitious Kent family, reached television through syndication on many independent television stations.

New outlets for syndicated programming are growing continually. Cable systems hooked together through satellites, the rise in profitability of independent stations, and affiliate stations wanting alternatives to network programming are just some of the potential markets.

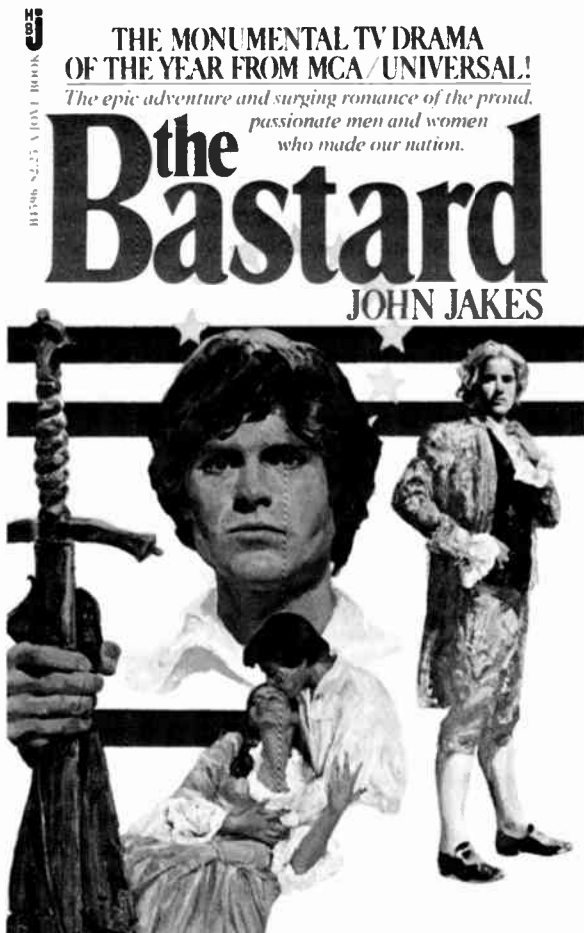


Figure 6-7 The popular American Bicentennial Series (also called the Kent Family Chronicles) written by John Jakes, came to television as a syndicated series and scored a rating success on many independent television stations nationwide. *The Bastard* was the first book in the series and the first of that series to be made into a television drama. (Courtesy Jove Books)

ECONOMICS OF SYNDICATED PROGRAMMING

Before you run out and rent a television camera, enlist your friends as actors, and find a ski slope or a fishing tournament, it's important to understand the economics of syndication. Although profits can be made with good syndicated material, the investments, the competition, and the gamble are all big business.

The Financial Commitment

Regardless of how popular an event may be or how good a script looks, networks and station managers make commitments only on finished products. More than one show that looked good on paper turned out to be a flop once it was produced. The star of the show might not pull it off, what seems like a good idea to New York program executives may fall flat in Peoria, and it can rain on the day of the ski tournament. Networks and stations have been through it all before. The cost of producing a pilot program to get into syndication can run into many thousands of dollars. Many foreign countries with developing television systems purchased syndicated features, then decided they could produce the programs cheaper themselves. After about two years they went back to buying syndicated features—what had seemed like a two or three thousand dollar savings turned into a fifty thousand dollar investment that flopped.

For syndication, you must first produce a pilot show. The pilot—which requires writers, producers, directors, talent, sets, and equipment—can cost as much as a quarter of a million dollars for the quality that will appeal to management and meet the competition. Perhaps more than one pilot will be necessary. But even if the pilot looks good, the investment can go down the drain if the audience rejects it.

Again, it's a gamble. For major one-time events, there is the cost of securing the rights to the event. If more than one company is bidding, the cost can escalate out of reach. Major sports events are one example. Minor sporting events can't compete with the audience drawing power of major events, even though the cost of production might be less. A million dollar investment can mean a million dollars profit. It can also mean a million dollar loss.

Promoting the Commitment

After key stations have made the commitment to air your program and the program is ready for syndication, then you must advertise and promote it. You'll need to buy advertisements in trade magazines (Figure 6–8), produce promotional brochures for a direct mail campaign to reach station managers, and exhibit your program at major conventions where program executives gather.

In some cases, you may decide to sell your program at a reduced rate to large-market or prestigious stations so that their acceptance can be publicized in your advertising. Seeing that a major Los Angeles station has purchased your program may reassure a Cheyenne, Wyoming station that the program will draw an audience. You can create a bandwagon effect: The more stations that buy your program, the more that others want to buy it.

THREE'S COMPANY

THE SYNDICATION SUPERSTAR OF THE EIGHTIES

These stations believe that "Three's Company" is *indeed* the syndication superstar of the eighties and have backed their belief with major financial and programming commitments. And this is just the beginning!

Albuquerque	KOAT	Louisville	WLKY
Atlanta	WXIA	Minneapolis	WTCN
Cincinnati	WXIX	New York	WNEW
Colorado Springs	KRDO	Oklahoma City	KOCO
Columbus, Oh.	WCMH	Orlando	WBDO
Denver	KBTV	Philadelphia	WPHL
El Paso	KDBC	Phoenix	KPNX
Ft. Wayne	WPTA	Portland, Ore.	KGW
Gnsboro, Win.-Sal., Highpoint, N.C.	WGHP	Providence	WJAR
Houston	KRIV	Sacramento	KOVR
Indianapolis	WTTV	Salt Lake City	KUTV
Kansas City	KMBC	San Antonio	KSAT
Las Vegas	KLAS	Spokane	KREM
Little Rock	KARK	Toledo	WDHO
Los Angeles	KTTV	Washington, D.C.	WTTG

D.L. Taffner Syndication Sales

1730 Avenue of the Americas, New York, New York 10019 (212) 245-4680
5900 Wilshire Boulevard, Suite 1450, Los Angeles, California 90036 (213) 937-1144

Figure 6-8 Along with quality content, the key to the success of any syndicated feature is in good marketing practices. Preview showings at broadcaster conventions and advertisements in trade publications help to alert broadcasters to the programming opportunities of new series and series making previous successful network runs.

The promotion can be especially difficult if the program is a single event, if it's a bit unusual, or if the syndicator or production company is untried. Managers understand football and situation comedy. But the Minnesota Canoe Championship or the White Water Raft Races will be tougher to sell. A well-known syndicator can deal with credibility. But a new company must prove its stripes. It must promote not only its product, but its reputation as a company as well.

SELLING SYNDICATION

The selling of syndicated programming is much like a farmers' market. There are more deals, more contractual arrangements, more variety, and more companies than there are fresh vegetables and homemade pies. Many syndicators sell on a market-to-market basis. Others try for contracts with groups of stations, such as network owned-and-operated stations. The syndicator who can, for example, say that the ABC owned-and-operated stations have already purchased the program is in a strong position to deal with other stations. This is especially true when marketing pilot programs. If too few stations buy the program, production for the series is cancelled. But by the time it's cancelled, the stations have lost the opportunity to buy alternative programming, which might then be in the hands of their competition.

Bidding

The syndicator who wants to let the marketplace determine the selling price may decide to auction a program, an increasingly common practice. On a given day, a syndicator will send telegrams to all the station managers in a market, announcing the availability of a program. Each manager is given a certain amount of time to bid on the program, and the highest bid buys the show. Variations include open bidding, where each manager knows at any time what the highest bid is, and sequence bidding, where each manager is told the bid of the previous manager contacted. First practiced in the book publishing trade, auctioneering has produced record prices for syndicated programs.

Barter Arrangements

Bartering, or trading advertising time on a station for the opportunity to air a program for free, is still being used to sell syndicated shows, but even here there are pitfalls. Some large market managers shy away from bartering, feeling if the program was top quality, it would be sold

outright. In some cases that's true, but there are many exceptions. For example, major advertisers who want barter time may place a large financial commitment behind a program. A major corporation that has a reputation for sponsoring quality programs can use that reputation to make a syndicated program a success, for both the program and the corporation's public relations efforts. Also, some programs are only available through barter. Many advertising agencies are actively involved in barter because the stations not only air the program but also their client's commercial. Other agencies provide barter programs on the basis that their clients receive "commercial credit" for those programs. For instance, an ad agency provides a program series, and then receives one hundred minutes of commercial time to be used in whatever way the agency wants.

CABLE'S LOCAL ORIGINATION AND ACCESS PROGRAMMING

In addition to airing syndicated programming and the programs of distant television stations, cable systems both originate local programming—programs produced by the cable system—and air local access programming—programming produced by local community organizations.

Local Origination Programming

Many larger cable systems are now actively producing local programming. With large numbers of subscribers, it has become profitable to operate the head end much like a typical television station. Cameras, studios, switching equipment, and remote broadcasting equipment constitute a production center that can offer everything from local news programs to entertainment programming. Cable companies are finding that smaller, less expensive color television equipment provides picture quality for cable signals that is comparable to over-the-air signals that demand considerably more costly equipment. Moreover, the cable operator has no need for television transmitters and other transmission facilities. In essence, cable operators have the potential to operate their own television station.

Access Programming: The Concept

Community groups and the public have access to cable channels and, when there is cooperation between the groups and the cable company, these channels can be used for specialized programming. The full

potential of local access programming has barely been touched. Most community groups are unaware that these facilities are available, and fewer still are trained in how to use them properly. Used effectively, they can communicate nutritional information to selected nursing homes, show customs and traditions in ethnic neighborhoods, cover a school board meeting or a chamber of commerce parade, and a host of other local events which would be unprofitable for a commercial television station to cover or, for that matter, for the local cable company to produce alone. By using community volunteers and portable equipment (Figure 6-9), local access programming can supplement regular cable and television programming.



Figure 6-9 Cable access programming has opened up new opportunities to reach highly specialized audiences so small that commercial television could not profitably program to such groups. But with a minimum of equipment, a local halloween parade, a community softball game, a track meet, or any other event with highly localized interest can be seen on a local cable television system. (NCTA)

Examples of Access Programming

Two cable systems programming local access television are found in such cities as Columbus, Indiana. The Columbus system operates through its Video Access Center. Initially funded under a grant from the Irwin-Sweeney Miller Foundation, the Center serves citizens and community groups who wish to use the cable system to produce programs for distribution. Columbus, which has always been a community-oriented and artistically conscious city, responded well to the idea, although the programming only reaches a narrowly defined audience. Typical of the programming in Columbus is an exercise program produced and aired by the local park department, job referrals from the Indiana Employment Security Division, and a story hour produced by elementary school youngsters.

Program Content

Professor Alan H. Wurtzel has examined the content of public access cable programming on a New York City cable system. The results of his work offer a comparison between a large metropolitan city and smaller communities such as Columbus that we just discussed. He discovered that the great majority of the access programs on the New York system were informational. These included ethnic programs appealing to the Irish, Chinese, Afro-Americans, or Puerto Ricans; such community programs as block association meetings and community events; health programs reporting information about drug abuse, venereal disease, and health clinics; consumer education programs giving information on lease agreements or children's flammable clothing; and political programs on current national issues. Along with these he found entertainment programs, news shows, public affairs programs, religious programs, instructional classes, sports, children's shows, experimental art, and many other "miscellaneous" programs.

The future of local access programming will depend on the ability of groups to use the medium effectively and responsibly and to gather an audience. It cannot be looked upon as programming which will compete with the networks. But where it has an important story to tell and an audience to tell it to, local access programs can perform a service unavailable on any other medium.

SUMMARY

Programming is the product of broadcasting. In a sense, it plays a dual role between the broadcaster who views it as a means of income and

society which views it as entertainment and public service. It is in this context that we must constantly keep programming in mind.

Networks influence radio programming less than they do television programming. What does influence radio programming is local, specialized radio. Radio stations in small markets have the greatest flexibility in programming, mostly because of the lack of competition. In the larger, more competitive markets, the formats must become more specialized and the production more sophisticated.

As a program director programming a new station in a competitive market, your first strategy might be to examine your market's existing formats to determine if there is one no other radio station has. You would also want to examine the radio personalities in your market, then decide if you want to hire one or develop one of your own. Or you could decide to use syndicated programming. Whatever format or programming strategy you employ, a good jingle package will be a valuable aid in perfecting your station's overall sound.

Unlike radio, television programming relies heavily on the network. Even though each station is accountable to its own local community, the network programs designed for a mass national audience still make up the majority of programming. Local affiliates present their views to network executives through affiliate organizations.

A growing alternative to network television programming is syndicated programming. More and more stations are finding they can purchase network-quality programming from syndicators who distribute either their own programs or programs that have already appeared on networks.

Taking a program into syndication means first obtaining a financial commitment, then producing a pilot. From there, the promotion and selling begins. Shows may either be sold directly to stations, with the stations then selling advertising in the program, or they can be bartered, with the station trading advertising time to the syndicator for the right to air the program.

Local origination and access programming are becoming integral functions of a cable system. Cable companies are not only establishing their own studios but in some markets are actively competing with television stations.

FOCUS ON FURTHER LEARNING

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7

Station Regulations



PREVIEW

After completing this chapter, we should be able to:

Diagram the organization of the FCC

Know the enforcement powers of the FCC

Fill out a station program log

Explain the basic entries made on a station operating log

Know the three types of FCC operator licenses

List the basic contents of a station's public inspection file

Outline the three phases of a community needs and ascertainment survey

Explain the relationship between a community needs and ascertainment survey and programming

Explain the equal-time provision of Section 315

Know what programming is exempt from Section 315

Explain the lowest-unit charge rule of Section 315

Discuss how the Fairness Doctrine is applied to controversial issues of public importance

Discuss the Fairness Doctrine's application to editorializing and personal attack.

Few employees of a broadcasting station spend a day on the job without becoming involved with some law or regulation. The station manager may update the station's public file. The news director may brush up on the state's shield law to see how it protects the confidentiality of news sources. The disc jockey makes entries on the program log to conform to FCC regulations. Even the traffic director checks to see how many commercial minutes were aired in a given hour. From the federal to, in the case of cable, local governments, stations face a plethora of operating rules. For some managers, these rules become unmanageable bureaucracy. For the FCC and the public, they assure responsible use of the airwaves.

THE FEDERAL COMMUNICATIONS COMMISSION

It employs more than two thousand people. It integrates with virtually every branch of government concerned with broadcasting. It affects in some way everything we see and hear on radio and television. Formed by the Communications Act of 1934, the Federal Communications Commission is a product of a long history of broadcast regulation. We'll begin by examining its organization (Figure 7-1).

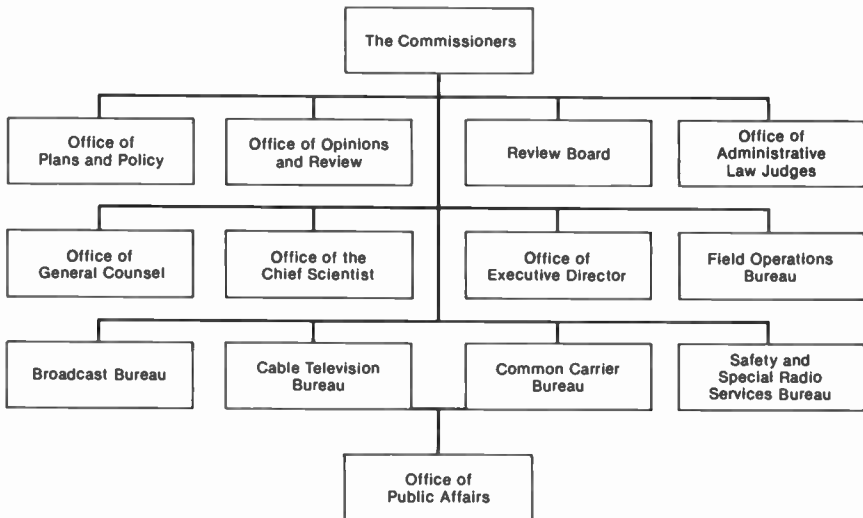


Figure 7-1 Federal control of broadcasting began in 1927 with a five-member Federal Radio Commission, and has evolved into the Federal Communications Commission that now employs thousands of persons.

FCC Organization

The FCC is organized around a group of offices and bureaus; the Broadcast Bureau, Cable Television Bureau, and Field Operations Bureau most directly affect radio, television, and cable. Charged with handling commercial and noncommercial broadcasting, the Broadcast Bureau's role extends to network-affiliate matters, complaints from the listening public, license renewals, and other regulations affecting the day-to-day operation of radio and television stations. Cable television comes under the Cable Television Bureau, which includes such divisions as Policy Review and Development, Certificates of Compliance, Research, and Special Relief and Microwave. When an FCC inspector checks a station to see if it is operating properly, the inspector will be from the Field Operations Bureau. Part of the important "enforcement arm" of the FCC, the Field Operations Bureau operates out of regional field offices, which also enable it to deal directly with the public.

Higher on the FCC ladder are the FCC offices. Responsible for the planning and policy aspects of the FCC is the Office of Plans and Policy. This office also assesses the long-range effects of FCC decisions. Serving as the commission's legal staff is the Office of Opinions and Review. It may, for example, recommend a particular action to the commission based on the evidence presented by the parties involved in a license challenge. In addition, two divisions of the FCC serve as ladders in the appellate process—the Office of Administrative Law Judges and the Review Board. Acting as the FCC's attorney and representing it in court is the Office of General Counsel. This office works closely with the Department of Justice and the Attorney General in prosecuting such cases as illegal operation of a pirate radio station or broadcasting with stolen equipment. At the head of the technical branch is the Office of the Chief Engineer. A vitally important office, the Chief Engineer becomes involved in allocating frequencies, testing equipment, and certification. The FCC also has an Office of the Executive Director, which is responsible for overseeing its day-to-day operations. Much like a city manager, the Executive Director coordinates the different staff units, is responsible for the overall financial management of the FCC, and oversees such tasks as internal security.

At the top of the FCC hierarchy are the FCC commissioners. Appointed by the President of the United States with the advice and consent of the Senate, the seven commissioners serve seven-year terms. No more than four of the commissioners can be from the same political party. Appointees who are filling unexpired terms of commissioners may or may not be reappointed.

Enforcement Powers of the FCC

What powers does the FCC have? What sanctions can it take against radio or television stations? How does it patrol the airwaves?

Of all the actions the FCC chooses to take against a violation of its rules, the *letter* is the least severe. The commission simply corresponds with the station, tells it what the violation is, and explains what can result if the violation is not corrected. Beyond the explanatory stage, letters can be more severe reprimands, telling the licensee that it did not, in the FCC's eyes, meet the requirements of the Fairness Doctrine. Letters are also employed as "information" mediums to inform licensees of missing documents on license renewals or ascertainment surveys.

At the opposite end of the punitive scale is the commission's *Cease and Desist Orders*. Here the FCC tells the licensee to stop doing something. These orders are rare, however, and in almost all cases, the FCC may instead impose a milder *forfeiture* or fine on stations which have violated commission actions. Some of the fines can be substantial if the FCC considers the violation to be serious. Typical forfeitures can range from \$10,000 for fraudulent billing, \$8,000 for failure to log commercials, and \$8,000 for broadcasting information concerning a lottery.

Still more serious than forfeitures are *short-term license renewals*. Ranging anywhere from six months to two years, the short-term renewal places the station on notice that unless there is marked improvement in the serious problems associated with the operation of the station, its license may be lifted. For the FCC to *revoke a license* or *deny renewal* of a license is the most serious sanction it levies. Over the years, a number of stations have found themselves out of business because they failed to take the FCC's rules and regulations seriously. Although the commission works cooperatively to make sure broadcasters are able to work within its rules, the agency maintains a no-nonsense operation and will not hesitate to take whatever action it feels is necessary to assure compliance with its rules.

PROGRAM LOGGING

Of all the daily regulations broadcasters deal with, few are more important than maintaining the station's logs. Logs become a record of everything that is heard or seen on the air, including the times programs were aired, who sponsored them, whether they were prerecorded or aired live, whether they originated at the station or from a network, and when station identifications were aired. We'll start our discussion

by examining a typical programming log for a commercial radio station. As you read, keep in mind that logging requirements, although fairly standard, are fulfilled in different ways by different stations.

FCC rules require program logs to be kept by a person knowledgeable “of the facts.” In most cases, this person makes these entries while operating the station’s control board. A secretary or other person not involved in programming, therefore, is not permitted to make log entries. FCC rules also require logs be *legible, organized*, and in an easily *accessible* location at the station. An FCC inspector would have little sympathy for logs containing scribbled entries which can’t be read, logs scattered around the station at different locations, logs not filed in chronological order, or worse yet, missing logs. Some stations duplicate logs just to protect against loss or damage.

Figure 7–2 shows one type of program log that meets basic FCC requirements. Program logs should also have a cover sheet which explains all of the categories, sources, and types of programs which are abbreviated on the individual program entries.

Basic Information

At the top of the program log is the station’s call letters (in this case WXXX), the name of its parent corporation, and the town in which it is licensed. The log is clearly identified with the label “program” to differentiate it from the other station logs we’ll learn about later. It also tells the page number (page 2), the day of the week (Wednesday), the date 7/16/81, and what time applies (in this case Eastern Standard Time). Logs must always be kept in *local* time. To the left of the first column is a number for each line. This is not required by the FCC but can be helpful in giving directions to the operator. For example, if a mistake is made on the log, the program director can leave a note for the board operator referring to a specific line and page number where the correction is to be made.

Station Identification and Program Times

The first column on the log indicates the time of *station identification* (ID). These identifications are required when the station begins and ends its programming day. Sometimes stations are forced off the air unexpectedly, such as during a bad storm. When the station returns to the air, the operator must broadcast an ID and make a notation in the “remarks” section that the interruption occurred. Station identifications must also be broadcast on the hour or as close to the hour as possible, such as a natural break in a program.

**Chevrolet
Broadcasting
Co., Inc.
Littletown,
Maine**

STATION WXXX DAILY PROGRAM LOG

AM FM TV

page 2

day Wednesday

date 7/16/81

time EDT

- 6. Commercial Matter or Announcement Type: Commercial Matter (CM); Public Service Announcement (PSA); Mechanical Reproduction Announcement (MRA); Announcement as Sponsored (V).
- 7. Program Source: Local (L); Network (Identify); Recorded (REC).
- 8. Program Type: Agricultural (A); Entertainment (E); News (N); Public Affairs (PA); Religious (R); Instructional (I); Sports (S); Other (O); Editorials (EDIT); Political (POL); Educational (EO).

Station Identification Time 1	PROGRAM TIME		PROGRAM TITLE - SPONSOR 4	Commercial Matter or Announcement		PROGRAM		
	Begin 2	End 3		Duration 5	Type 6	Source 7	Type 8	
1-	8:00	9:00	RHYTHM MELODIES			REC	E	
2-			James Brothers	60	CM			
3-			XYZ Laundry	60	CM			
4-			Alan Tires	60	CM			
5-			ABC Ice Cream	30	CM			
6-			Red Cross		PSA			
7-			Sureway Food	60	CM			
8-			Stop-Start Driver Training School	60	CM			
9-			Shady Hill Summer Theatre	60	CM			
10-		8:30	NEWS HEADLINES - Country Journal	1:30	CM	L	N	
11-			John's Donut Shop	60	CM			
12-			Blackacre Real Estate	60	CM			
13-			Wright Insurance	60	CM			
14-			Rony Shoe Store	60	CM			
15-	9:00	9:00	JOE SMITH DEM. County Democratic Com.			L	PA-POL	
16-			Cosmo Drugs	30	CM			
17-		9:15	FARM REPORT Coles' Tractor Co.	3:00	CM	L	A	
18-		9:29	Announ. per Sec. 73.1202					
19-		9:30	LITTLE ORPHAN PUNJAB			MBS		
20-		9:59	Frank's Carpet Center		CM			
21-	10:00	10:00	LITTLETOWN LIBRARY TOPICS			L	I-ED	
22-			Petite Clothes	60	CM			
23-		10:30	HEAVENLY MOMENTS - Coun. of Churches			L	R	
24-			Lehi Beverage Co.	30 60	CM			
25-		10:45	MAN ON THE STREET Ford's Used Cars	3:00	CM	L	PA	
26-			John's Garage	60	CM			
27-	11:00	11:00	Coca Cola Melodies	3:30	CM	REC	E	
28-			Tony's Pizzeria	60	CM			
29-		11:25	MORNING HEADLINES -			L	N	
30-			Sta. Promo - Sports Windup (Schmaltz Beer)	10	CM			
31-		11:30	JOHN'S OTHER LIFE			MBS		
32-			Ray Hay Rep. Back Hay Com.	20	CM			
33-			Weekday Religious Education		PSA			
34-	12:00	12:00	MID-DAY NEWS			MBS		
35-		12:15	AIR FORCE TUNE TIME			REC	E	
36-			Air Force Recruiting		PSA			
37-			Air Force Recruiting		PSA			
On	<i>Operator or Announcer</i>		Off	9:00	On	9:00	<i>Operator or Announcer</i>	Off
On	<i>Operator or Announcer</i>		Off		On		<i>Operator or Announcer</i>	Off

Comments: ABC Ice Cream spot was not run during Rhythm Melodies and log-keeper forgot to delete entry. *Bob West, Program Manager WXXX 7/17/81*

Figure 7-2 A typical daily programming log used in manual logging (as opposed to automated logging). (National Association of Broadcasters)

A station ID must consist of the call letters and the name of the community served by the station. Television stations must also announce their channel. The station *may* insert the name of its licensee between the call letters and the community, such as “This is WXXX, Tower Broadcasting, in Anytown.” But that is all that can be inserted, Additional information can be added *before* and *after* the mention of the call letters and the community, such as “At 1410 on your dial, this is WXXX in Anytown, the voice of the Wabash Valley.”

The FCC also prohibits stations from “inflating” their primary service area by substituting a town in the ID other than the one to which the licensee is assigned. A Newark, New Jersey, station could not announce “This is WXXX serving greater New York City.” Even though Newark is across the river from New York and the station might be heard in New York, it is still *licensed* to Newark.

This doesn’t mean that all announcements must avoid reference to their larger metropolitan area. If our hypothetical Newark station could show that its broadcast contour actually covered New York City, then it could identify itself as “This is WXXX, Newark, serving the greater New York City area.” Notice, however, that the city of license was mentioned in conjunction with the call letters. When the FCC has licensed a station for dual-city designation, then the name of both cities can be announced in the order that they are listed on the station’s license. This occurs in such twin cities as “This is WXXX, Minneapolis, St. Paul.”

The next two columns on the log are the *begin* and *end* times of a program. Examine line 10 and column 4 of our sample log. The program *title* is “News Headlines.” We can tell from column 2 that the program started at 8:30 A.M. and ended at 8:35 A.M.

Identifying Programming and Commercial Matter

Column 4 also tells us that the *sponsor* for “News Headlines” is Country Journal. Logs require identification of the program and its sponsor(s). To quickly differentiate between the program and the sponsor, the program is typed in capital letters and the sponsor in lower case.

Column 5 lists the actual *duration* of the commercials. By examining line 10 and column 5, we can see that Country Journal commercials ran for one minute and thirty seconds during “News Headlines.” This might have occurred as one sixty-second and one thirty-second commercial. Most commercial announcements run in ten-second multiples. Although thirty- and sixty-second announcements have been popular in the past,

the escalating costs of advertising time, especially on television, have made the ten- and twenty-second commercials popular.

Another important part of the log is a listing of the *commercial type*, found in Column 6. Most of the announcements in our sample log are listed as CM, which, by consulting the top of the log, we see stands for commercial matter. Another standard abbreviation is PSA, standing for Public Service Announcement. Examining line 36 and column 6, we see that a PSA is logged for Air Force Recruiting. Stations are required to make available a certain amount of time for airing PSAs. These are free to whatever nonprofit organization is fortunate enough to receive the time. Although our example was for a national organization, local nonprofit organizations in the station's home community also qualify for public service time.

Listing Program Sources

Column 7 on our sample log lists the program's *source*. Three main categories of source are used by the FCC—*local*, *network*, and *recorded*. Letters are used to abbreviate the source with a network designation being the actual network abbreviation. In our sample log, line 34 and column 7 tells us this program originated from the Mutual Broadcasting System (MBS). The FCC defines these sources as:

1. *Local* (L): Any program originated or produced by the station, or for the production of which the station is primarily responsible, employing live talent more than 50 percent of the time. Such a program, taped or recorded for broadcast, shall be classified as local. A local program fed to a network shall be classified by the originating station as local. All nonnetwork news programs may be classified as local. Programs primarily featuring records or transcriptions shall be classified as recorded (REC) even though a station announcer appears in connection with such material. Identifiable units of such programs which are live and separately logged as such may be classified as local (e.g., if during the course of a program featuring records or transcriptions, a nonnetwork two-minute news program is given and logged as a local news program, the report may be classified as local).
2. *Network* (NET): Any program furnished to the station by a network (national, regional or special). Delayed broadcast programs originated by networks are classified as network.
3. *Recorded* (REC): Any program not otherwise defined above, including, without limitation, those using recordings, transcriptions, or tapes.

In our sample log, we can see on line 10, column 7 that NEWS HEADLINES is logged as local (L) since it was produced by the station

and used live talent. Line 1, column 7 shows RHYTHM MELODIES logged as recorded (REC). Even though the disc jockey might make announcements during the program, the program consists primarily of recorded material in the form of records.

Listing Program Types

Column 8 refers to *program types*. This is the most complex of all logging requirements because of the wide variety of programming types available. They fall into one of the following FCC categories:

AGRICULTURAL PROGRAMS (A) include market reports, farming or other information specifically addressed, or primarily of interest, to the agricultural population.

ENTERTAINMENT PROGRAMS (E) include all programs intended primarily as entertainment, such as music, drama, variety, comedy, quiz, etc.

NEWS PROGRAMS (N) include reports dealing with current local, national, and international events, including weather and stock market reports; and when an integral part of a news program, commentary, analysis, and sports news.

PUBLIC AFFAIRS PROGRAMS (PA) include talks, commentaries, discussions, speeches, editorials, political programs, documentaries, forums, panels, round tables, and similar programs primarily concerning local, national, and international public affairs.

RELIGIOUS PROGRAMS (R) include sermons or devotionals; religious news; and music, drama, and other types of programs designed primarily for religious purposes.

INSTRUCTIONAL PROGRAMS (I) include programs other than those classified under Agricultural, News, Public Affairs, Religious or Sports involving the discussion of, or primarily designed to further an appreciation or understanding of, literature, music, fine arts, history, geography, and the natural and social sciences; and programs devoted to occupational and vocational instruction, instruction with respect to hobbies, and similar programs intended primarily to instruct.

SPORTS PROGRAMS (S) include play-by-play and pregame or postgame related activities and separate programs of sports instruction, news, or information (e.g., fishing opportunities, golfing instructions, etc.).

OTHER PROGRAMS (O) include all programs not falling within other definitions.

EDITORIALS (EDIT) include programs presented for the purpose of stating opinions of the licensee.

POLITICAL PROGRAMS (POL) include those which present candidates for public office or which give expressions (other than in station editorials) to views on such candidates or on issues subject to public ballot.

EDUCATIONAL INSTITUTION PROGRAMS (ED) include any programs prepared by, in behalf of, or in cooperation with, educational institutions, educational organizations, libraries, museums, PTA's, or similar organizations. Sports programs shall not be included.

Program type loggings become very important at license renewal time. As part of its renewal application each station must submit logs for a composite week of broadcasting and determine the percentages of programming on those logs that are devoted to each programming type. This is then used as a comparison by the FCC to see if the station is devoting the time to programming types that it "promised" in its previous license renewal.

A program log also tells us who the board operators were and what time they signed on and off the log. Under the section marked *Comments*, we can see a program change for ABC Ice Cream that was written in by the program manager. On line 5, we can see a correction has been listed. In this case, the commercial for ABC Ice Cream didn't air. If a correction is made while the operator is on duty, all that is necessary is to draw a single line through the entry. If the correction is made after the operator signs off the log, then a special notation must be made in the comments section, dated, and signed by either the operator who made the error or a representative of the licensee, the general manager, or the program director. Some stations have started using a special statement at the bottom of each log adjacent to the operator's signature similar to, "I hereby certify that this log is an accurate and true representation of that material broadcast during the period I was on duty as a station operator."

OPERATING LOGS

In addition to logging broadcast programming, FCC regulations require that logs be kept for the operation of the station's transmitter. This includes regularly scheduled monitorings of power output, voltage measurements, and such operating functions as monitoring tower lights. Our discussion will confine itself to the very simplest of operating logs—those for standard radio broadcast stations. More complex logging is required for television stations and directional radio stations.

Figure 7-3 illustrates a basic operating log for an AM radio station. Like the program log, it contains the station's call letters, its location, the date, and the city and state of its license. Logged in the left column is the *time* of each entry. Although programming logs may be kept by people who do not hold an FCC license, the person making operating

WXXX-AM TRANSMITTER OPERATING LOG				
12-KILOCYCLES: 5 KW		DATE _____ 19__ Anytown, U.S.A.		
1	2	3	4	
TIME	PLATE CURRENT FINAL STAGE	PLATE VOLTAGE FINAL STAGE	ANTENNA CURRENT <small>Amperes</small>	REMARKS:

Figure 7-3 Transmitter operating log for an AM radio station. (National Association of Broadcasters)

log entries must be licensed by the FCC. We'll learn more about those licenses later. As with programming logs, operating logs must be kept legible and must be available for inspection.

For an AM or FM station with no special logging requirements, an operating log is rather simple. In addition to the time of the entries are columns for three "power" readings affecting the operation of the transmitter. Although it isn't important at this point to understand the precise meaning of these terms, they include the *plate current* (column 2), the *plate voltage* (column 3), and the *antenna current* (column 4). Although not shown in our figure, the operating log also leaves space to note the times the carrier (power to the antenna) is turned on and off at the beginning and end of the broadcast day, and spaces for the licensed operators to sign on and off the log. Additional information requested from most AM and FM stations includes the time the tower lights, if necessary, are turned on and off, the time they are checked daily for satisfactory operation, and a notation if a light is extinguished or malfunctions.

Different *modes* of operation for certain stations must also be logged. A mode can best be defined as *a unique combination of transmitter, operating power, and antenna pattern*. Consider the following example from the FCC's *Broadcast Operators Handbook*:

If an AM station is operating at 1,000 watts with a nondirectional antenna, that is its mode of operation. If it reduces its power to 250 watts and changes to a directional pattern at sunset, that is a different mode of operation. If it

shifted from a main to an alternate transmitter at midnight, that is a third mode, and if at 6:00 A.M. . . . it increased power to 500 watts, that is a fourth mode of operation.

Remember, any change in the mode of operation must be entered in the operating log.

OPERATOR LICENSING REQUIREMENTS

To operate a station's "electronic" functions, a person must possess a license issued by the FCC. The station must also have a license to operate. The difference between the two licenses is comparable to a motor vehicle license and a driver or "operator's" license. The station license is similar to a vehicle license. The license plate assigns certain letters and numbers to the vehicle and specifies for what purpose it is to be used as defined in a motor vehicle code. Similarly, the FCC states that a station license, "assigns a unique station identification, states the purpose for which the station is to be used (broadcasting, business, aviation, etc.), and requires that the licensee complies with the Federal Communications Commission Rules and Regulations."

To be operated on the highway, a motor vehicle must be under the control of a licensed operator. Passengers can operate the window or radio, but certainly not the steering wheel and brakes. Correspondingly, a broadcasting station must be under the control of a licensed operator. As the FCC notes,

" . . . other unlicensed persons may use the microphone (announce), run the tape decks, edit news programs and so forth, but the hour-by-hour technical control of the transmitting system—involving modulation, operating power, and, possibly, antenna pattern—are the responsibility of the operator."

Assume you decide to obtain an FCC operator's license. You'll first need to decide which class of license you want—First, Second, or Third. An FCC First Class Radiotelephone Operator's license provides the greatest latitude. To pass the test, you must be well versed in electronic theory and application, equivalent to being able to make major repairs on equipment. The license permits you to be employed and designated as "chief operator," also called "chief engineer," at any broadcast station. An FCC Second Class Radiotelephone Operator's license is similar to the First Class license but demands somewhat less technical knowledge.

Although it permits you to operate the station, a First Class operator must still be under contract as chief operator and oversee your activities. Second Class operators may make many major repairs and log entries at noncommercial, educational FM stations with the power of one kilowatt or less.

The most commonly held license is the FCC Third Class Radiotelephone Operator's Permit. The Third Class permit, available without examination, enables you to perform most of the functions associated with running a smaller station, including taking transmitter readings. Although a First Class operator must still be employed by the station, a Third Class operator can handle the hour-to-hour functions.

Major FCC field offices located in most major cities give daily license examinations. Other FCC examiners visit smaller cities every few months. If you wish to take an exam in a smaller city, you must first send in your application to an FCC field office. It will then assign you a date, time, and place to appear in that city to take your test.

PUBLIC INSPECTION FILE

Operating in the public interest includes making certain station records available for public scrutiny. This does not mean the station must show every person who asks its confidential financial records, how much money advertisers spend, or other items the FCC considers confidential. It does mean that the station must keep a *public inspection file* containing certain basic documents which can be viewed by anyone who wants to see them. And they can choose to see them any time during normal business hours. Although the station has the right to ask for personal identification, the person asking to see the files shouldn't be "interrogated" about motives. If the person wants certain documents copied, then the station can charge a reasonable fee to have the material reproduced.

What is contained in the public file *varies* somewhat between AM, FM, and TV stations and between noncommercial and commercial stations. It essentially contains technical information directly related to the construction and daily operation of the station. Construction permits, major changes in frequency, output power, and a change in the location of the station or the transmitter are typical inclusions. Stations are not required to include minor technical information, such as the type of anchor plates on the new antenna support wires, information about a new control board, or data about the new record racks. A copy of the station's coverage area (contour maps) should be in there, along with reports listing the ownership of the station and any FCC decisions

arising from a hearing on the station's license renewal. A copy of the license renewal and the logs submitted as part of the renewal's "composite week" should also be available.

Politicians might be interested in examining the file's political documents. Most of what a station does in the way of political programming is an open book to the public, including candidates and their opponents. Requests for political time by legally qualified candidates, a record of what was done with that request, and the rate charged for that time are kept for two years from the date of request. The spirit of the law behind the political file is to keep access to the airwaves open to any and every legally qualified candidate.

Other information in the file includes the FCC procedural manual, *The Public and Broadcasting*, and copies of letters from the public unless they are obscene or the sender specifically requests they be confidential. Letters of little importance to the station, such as fan mail for the local anchorperson, may be deleted. What shouldn't be missing is a copy of the latest listing of problems affecting the community as determined from the community needs and ascertainment survey.

Although not considered part of the actual public file, program logs or their copies are open for public inspection, beginning forty-five days after the date on the log. But the inspection requirements for logs are stiffer. To view the logs you'll need to make an appointment, identify who you are and whom you represent, state why you want to see the logs, and say if you are part of a large group of people who wants to view the logs. You can obtain copies of the logs, but again you will probably be asked to pay for reproduction services. You'll have a reasonable time to inspect the logs, but if you want to come back again, the station may charge you for the time necessary for personnel to supervise your efforts.

Care should be taken in keeping a public file neat and even "indexed." An FCC inspector will have little patience for a station manager who can't readily locate a requested item from the file or who keeps the file buried in a pile of papers in a desk drawer.

COMMUNITY NEEDS AND ASCERTAINMENT SURVEYS

Broadcasting stations must conduct regular surveys of the problems facing their communities and develop programming to meet the needs of those problems. Exceptions are stations in small markets and certain low-power stations. The guidelines for conducting these community

needs and ascertainment surveys were first spelled out in the *Primer on Ascertainment of Community Problems*, issued by the FCC in 1971. Further clarifying those guidelines in 1975, the FCC added noncommercial broadcasting stations to the list of those required to conduct the survey.

The ascertainment process consists of three parts. The first is a *demographic profile*. Checking census data, the broadcaster determines the population of the community served by the station, the percentage of males and females in the population, the percentage of minorities, the percentage of older people (over 65), and the percentage of youths (under 17). This demographic profile then shows the broadcaster what proportion of people will provide a good cross section of information about the community's problems. Although the FCC has avoided requiring broadcasters to match their survey precisely with the demographic profile, the profile does act as a guide.

The second part of the survey consists of *community leader interviews*. Here the broadcaster interviews leaders of different elements in the community, drawing upon a general list of community elements established by the FCC:

- | | |
|---|--|
| 1. Agriculture | 12. Minority and ethnic groups |
| 2. Business | 13. Organizations of and for the elderly |
| 3. Charities | 14. Organizations of and for women |
| 4. Civic, neighborhood, and fraternal organizations | 15. Organizations of and for youth (including children) and students |
| 5. Consumer services | 16. Professions |
| 6. Culture | 17. Public safety, health, and welfare |
| 7. Education | 18. Recreation |
| 8. Environment | 19. Religion |
| 9. Government (local, county, state, and federal) | 20. Other |
| 10. Labor | |
| 11. Military | |

If you were the general manager of a radio or television station and were interviewing people who represented your community's *educational* elements, you might interview the local college president or administrators and perhaps some professors. You might also interview local school board members, the principal of a local high school, the principal of a local elementary school, teachers, and officers in the local parent-teacher organizations. How many of these community leaders you

interviewed would depend on the size of your community. A good rule of thumb would be the following combinations suggested by the FCC:

POPULATION OF CITY OF LICENSE	NUMBER OF CONSULTATIONS
10,001 to 25,000	60
25,001 to 50,000	100
50,001 to 200,000	140
200,001 to 500,000	180
Over 500,000	220

You should also place in the station's public file the (a) name and address of the community leader; (b) institution or element he or she represents; (c) date, time, and place of the interview; (d) problems, needs, and interests discussed (although the leader can request confidentiality of this information; (e) name of the person who conducted the interview (if it was a supervised person, the name of the management-level person who reviewed the interview report); and (f) the date the report was reviewed.

The third phase of ascertainment would be to conduct the *general public survey*. Here you need to select a random sample of the community. You would interview each one in that sample either in person, by telephone, or by mail. Whatever method you choose, you would not only want to poll those people on their opinions about the community, but also obtain their demographic characteristics. Again, the information in your demographic profile would be your guide, and you would want to match this as closely as possible to be sure you obtained a representative cross section of the general public. Whatever questions you decide to ask, you would then conduct the survey and organize your results, ranking in importance those problems which affect your community.

When license renewal time arrived, you would need to show the FCC exactly how your programming directed itself toward these problems. Perhaps your station aired a documentary or provided news coverage of a community problem uncovered by the survey. Perhaps a discussion program dealt with one of the problems, or a series of public service announcements were aired. Exactly what type of programming you use is at your discretion, but the programming must not only deal with the problem, it must also present a fair and impartial view of the issue.

SECTION 315

Section 315 instructs broadcasters and candidates for public office on how the electronic media are to be used as part of our political system.

Equal-Time Provision

The most prominent wording of Section 315 is its “equal-time” provision, which states: “If any licensee shall permit any person who is a legally qualified candidate for public office to use a broadcasting station, he shall afford equal opportunities to all other such candidates for that office in the use of such broadcasting station.” The Communications Act defines a legally qualified candidate as:

any person who has publicly announced that he is a candidate for nomination by a convention of a political party or for nomination or election in a primary, special, or general election, municipal, county, state or national, and who meets the qualifications prescribed by the applicable law to hold the office for which he is a candidate, so that he may be voted for by the electorate directly or by means of delegates or electors, and who:

- (1) has qualified for a place on the ballot or
- (2) is eligible under the applicable law to be voted for by sticker, by writing in his name on the ballot, or by other method, and
 - (i) has been duly nominated by a political party which is commonly known and regarded as such, or
 - (ii) makes a substantial showing that he is a bona fide candidate for nomination or office, as the case may be.

In addition to this definition are hundreds of state and local statutes further clarifying political eligibility. If the law says the candidate is qualified and the candidate has publicly announced his or her candidacy, then the equal-time provisions apply.

As a further safeguard against unfair treatment to political candidates, Section 315 expressly prohibits the broadcaster from censoring the content of any political message. The law succinctly states the licensee “shall have no power of censorship over the material broadcast under provisions of this section.”

Exemptions to the Equal-Time Provision

Exempt from the equal-time provisions are appearances by candidates on these types of news programming:

- (1) bona fide newscast
- (2) bona fide news interview
- (3) bona fide news documentary (if the appearance of the candidate is incidental to the presentation of the subject or subjects covered by the news documentary), or
- (4) on-the-spot coverage of bona fide news events (including but not limited to political conventions and activities incidental thereto), shall not be deemed to be use of a broadcasting station within the meaning of this subsection

In the fall of 1975, the FCC added political debates and news conferences to the exemption list as long as they were broadcast in their entirety, and if the broadcaster made a good faith judgment that they constituted a bona fide news event.

Lowest Unit Charge

In addition to granting equal time to candidates, Section 315 also spells out how much they are to be charged for the use of broadcast facilities:

- (b) The charges made for the use of any broadcasting station by any person who is a legally qualified candidate for any public office in connection with his campaign for nomination for election, or reelection, to such office shall not exceed—
 - (1) during the forty-five days preceding the date of a primary or primary runoff election and during the sixty days preceding the date of a general or special election in which such person is a candidate, the lowest unit charge of the station for the same class and amount of time for the same period, and
 - (2) at any time, the charges made for comparable use of such station by other users thereof.

The above is known as the “lowest unit charge” rule. To understand it more clearly, assume a station’s rate card charges an advertiser \$100 to buy a single one-minute commercial in prime time. But an advertiser purchasing two commercials receives a discount and is only charged \$85 per commercial. We’ll assume the rate card permits an advertiser purchasing twenty-five commercials to receive an even bigger discount, each commercial costing \$50. Along comes candidate John Doe who is

running for city judge. Doe wants to buy just *one* commercial to remind his friends he's running for office. He wants to run it in prime time. What will you charge him for the cost of his one commercial? You'll charge him \$50. Even though he is only buying one commercial, the law states you must charge him the "lowest unit charge." If he wanted to purchase a commercial in a fringe-time period where the rates are lower, then you would charge him the "lowest unit charge" for that time period.

Even with the most precise language, court cases, FCC decisions, and amended rules and regulations, Section 315 is and will continue to be in a state of flux. With thousands of broadcasting stations and many more times the number of candidates, the law will continue to be challenged. Questions about its applicability to particular campaigns will continue to keep both station managers and lawyers busy.

THE FAIRNESS DOCTRINE

Related to Section 315 is the Fairness Doctrine. First issued in 1949, the Fairness Doctrine concerns itself with assuring the fair treatment of controversial issues of public importance. An outgrowth of both court cases and FCC inquiries dating back to 1941, the Doctrine has been reexamined by the FCC in 1964, 1974, and 1976.

The Doctrine grew out of hearings by the FCC in 1948 on the subject of editorializing. Out of these hearings came the commission's *In the Matter of Editorializing by Broadcast Licensees* in 1949. It was to become known as the "Fairness Doctrine." In the Doctrine, the commission reasserted a previous commitment to free expression of controversial issues of public importance. The commission stated ". . . that overt licensee editorialization, within reasonable limits and subject to the general requirements of fairness . . . is not contrary to the public interest." At the same time it cautioned broadcasters against abuse of the editorial:

It should also be clearly indicated that the question of the relationship of broadcast editorialization . . . to operation in the public interest is not identical with the broader problem of assuring "fairness" in the presentation of news, comment or opinion, but is rather one specific facet of this larger problem. . . . In the absence of a duty to present all sides of controversial issues, overt editorialization by station licensees could conceivably result in serious abuse.

Red Lion, Personal Attack, and Editorializing

In 1964, the FCC published its "Fairness Primer," which brought together representative FCC rulings dealing with the Doctrine. Stations thus had the opportunity to study the FCC's decisions in light of other stations' practices and policies. The primer revealed where complaints might be warranted and guided stations on how to meet Fairness Doctrine requirements.

A major legal test of the constitutionality of the Fairness Doctrine came in an appeals case in 1967, reaching the Supreme Court in 1969. It was the classic Red Lion decision, involving the Red Lion Broadcasting Company of Red Lion, Pennsylvania. In November, 1964, the Reverend Billy James Hargis lashed out against the author of a book about Barry Goldwater on the Red Lion's radio station. The author, Fred J. Cook, was held in low esteem by Hargis, who detailed what he felt to be unfavorable aspects of Cook's career as a writer. Cook contacted the station for a chance to reply to Hargis. But the station claimed it didn't have to offer free time to Cook unless he could prove there was no commercial sponsorship available to present his views. Cook went to the FCC which ruled in his favor, citing the Fairness Doctrine. In the case of *Red Lion Broadcasting Co. v. Federal Communications Commission*, the appeals court upheld the FCC's decision.

The Radio-Television News Directors Association (RTNDA) appealed the case once more. In the case of *Radio-Television News Directors Association v. United States*, the court sided with RTNDA, stating the Fairness Doctrine's personal attack and editorial rules would "contravene the first amendment." Undaunted, the FCC then took the case to the Supreme Court, which reversed the decision in the RTNDA case. The Fairness Doctrine was now not only a broadcast regulation, but one reaffirmed by judicial precedent in the highest court in the land.

Out of the Red Lion issue came the FCC's personal attack ruling, which became effective in 1967:

- (a) When, during the presentation of views on a controversial issue of public importance, an attack is made upon the honesty, character, integrity or like personal qualities of an identified person or group, the licensee shall, within a reasonable time and in no event later than one week after the attack, transmit to the person or group attacked (1) notification of the date, time and identification of the broadcast; (2) a script or tape (or accurate summary if a script or tape is not available) of the attack and (3) an offer of a responsible opportunity to respond over licensee's facilities. . . .

The rules exempt foreign groups or foreign public figures, certain types of attacks made by political candidates during campaigns, and with the same provisions as Section 315, various bona fide news events. Licensees do, however, have the discretion to determine what constitutes a personal attack.

At this same time, the FCC also spelled out new rules covering editorials:

(c) Where a licensee in an editorial (i) endorses or (ii) opposes a legally qualified candidate or candidates, the licensee shall, within 24 hours after the editorial, transmit to respectively (i) the other qualified candidate or candidates for the same office or (ii) the candidate opposed in the editorial (1) notification of the date and the time of the editorial; (2) a script or tape of the editorial; and (3) an offer of a reasonable opportunity for the candidate or a spokesman of the candidate to respond over the licensee's facilities; *Provided, however,* that where such editorials are broadcast within 72 hours prior to the day of the election, the licensee shall comply with the provisions of this paragraph sufficiently far in advance of the broadcast to enable the candidate or candidates to have a reasonable opportunity to prepare a response and to present it in a timely fashion.

The Fairness Report

The FCC filed a Notice of Inquiry in 1971, seeking opinions on the applicability and usefulness of the Doctrine as well as its interpretation. Out of the inquiry came a statement by the FCC in 1974 commonly known as the "Fairness Report." The commission attempted to clarify some of the issues which had raised problems in more recent interpretations.

The report reiterated that the licensee had an "affirmative" responsibility to provide a "reasonable" amount of time for the presentation of important issues. Although it was still up to the licensee to determine how much time to devote to presentations, the report made it clear that the commission believed "the medium can make a great contribution to an informed public opinion." But it was "not prepared to allow this purpose to be frustrated by broadcasters who consistently ignore their public interest responsibilities." The report regarded strict adherence to the Fairness Doctrine as the single most important requirement in the operation of a station and an essential element for license renewal.

Defining a Controversial Issue

One of the most difficult issues confronting the commission and broadcasters alike is what constitutes a controversial issue. If you were a broadcaster, how would you determine this? You'd first check the 1974 report guidelines. For example, the mere fact an issue is newsworthy and receives attention in the press does not necessarily make it subject to the Fairness Doctrine. However, the amount of media coverage *is* something to consider. So is the amount of attention the issue receives from government officials "and other community leaders." But even with these factors, the broadcaster is still faced with "a subjective evaluation of the impact that the issue is likely to have on the community at large." The report specifies, "The licensee should be able to tell, with a reasonable degree of objectivity, whether an issue is the subject of vigorous debate with substantial elements of the community in opposition to one another." Yet broadcasters and the public are cautioned that "the Fairness Doctrine was not designed for the purpose of providing a forum for private disputes of no consequence to the general public."

Reconsidering the Doctrine

In 1976, the FCC again examined the Fairness Doctrine. Coming on the heels of the 1974 report, the commission's action was prompted by petitions filed by citizens groups seeking more access. Overall, the FCC found the 1974 document to be in good health. It reaffirmed its decision to apply the Fairness Doctrine to all programming, including advertisements which deal with public issues, not only those which promote a given product. It also agreed that editorials should come under the Doctrine's regulatory umbrella. The commission ruled that a "tenuous" relationship to an issue would not trigger the Doctrine. In its *Memorandum, Opinion and Order*, it reiterated it would still let the broadcaster decide what was necessary to meet the Doctrine's requirements, and if a broadcaster was found in error, the commission would probably just direct the station to offer time to the opposing issue.

PROVISIONS AGAINST LOTTERIES

Although the FCC avoids telling stations precisely what they can and cannot put on the air, it strictly enforces rules and regulations governing station-conducted contests. Although most stations conduct legitimate contests, if any unscrupulous behavior is indicated, the FCC and the

FTC join in clamping down on illegal practices. The one area that the FCC and the courts keep a particularly sharp eye on is contests which could be construed as lotteries.

Factors Constituting a Lottery

To be considered a lottery, three elements must be present: (1) prize, (2) chance, and (3) consideration. Imagine you are the general manager of a radio station and want to increase your ratings by conducting a contest. In the process you also want to earn the station some money. You devise a scheme whereby listeners can purchase a plastic daisy with a number on it. The daisies cost fifty cents each and can be bought from local stores whose commercials run next to the promotional announcements for the contest. Each hour you draw a number from a hat corresponding to a number on one of the daisies. The person holding the winning number will receive a prize donated by the local stores. Would you be in violation of the law?

Yes, you would be broadcasting a lottery under the definition punishable by law. The three factors constituting a lottery were all present in your contest. You awarded a *prize* to each person whose lucky number was on their daisy. The selection of the winning number was also by *chance*, drawn from a hat. Chance is present in contests using a wheel of fortune, roulette wheel, names of people randomly generated by a computer, or guesses when knowledge isn't necessary. The third element, *consideration*, was also present since you charged fifty cents for a daisy that enabled a person to enter the contest. Deviations of the three elements can still classify as a lottery. If it is necessary to purchase a product at the store, or even implied that the contestant should purchase a product before receiving a daisy, then it's consideration. But keep in mind that a lottery must have *all three* conditions present in order to be defined as a lottery under the law.

SUMMARY

Chapter 7 deals with basic regulations affecting the operation of a broadcasting station. The primary federal agency overseeing broadcasting is the seven-member Federal Communications Commission. The FCC is organized into a series of offices and bureaus carrying out its functions as mandated by Congress in the Communications Act of 1934.

Of all the rules and regulations faced by broadcasting stations, keeping program logs of the day-to-day operation of the station is

vitaly important. These logs require such information as the time of station identifications, start and end times for programs, the titles and sponsors of programs, and the type and source of programs. Operating logs are also kept for the station transmitter, monitoring the power and frequency on which a station is operating and the antenna current and plate voltage, among other readings. The person in charge of the key operating functions of the station must be licensed by the FCC. In order of achievement and responsibility, these licenses include the First, Second, and Third Class Radiotelephone Operators Licenses.

Stations must also maintain a public inspection file. Containing key "public" documents about the station's operation, the public inspection file is open to anyone who wants to see it during regular business hours.

As part of a station's responsibility to its local public, management must conduct regular surveys of problems facing the community. Called community needs and ascertainment surveys, they require that stations contact a specific list of community leaders and conduct a general survey of the community. In addition, management must show how specific programs deal with the issues uncovered by the community needs and ascertainment survey. Every three years the survey becomes a key part of the station's license renewal.

Broadcasters must also adhere to various rules and regulations concerning specific types of programs. Two of the most important and controversial are Section 315 of the Communications Act of 1934 and the Fairness Doctrine. Section 315 concerns itself with political broadcasting, and the Fairness Doctrine applies to the stations' treatment of controversial issues of public importance as well as to editorializing and personal attack.

FOCUS ON FURTHER LEARNING

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8

Broadcasting as a Business



PREVIEW

After completing this chapter, we should be able to:

Discuss what is meant by a station's competitive environment

List and explain the external factors acting on a station's competitive environment

List and explain the internal factors acting on the competitive environment

Explain sales and programming parallels for a saturation schedule, spectrum plan, spot schedule, and fixed position strategy

Know how to read a station rate card

Understand broadcast ratings and their application to broadcast sales

Understand frequency discounts

Explain how discounts apply to bulk, saturation, and weekly buys of commercials

Give examples of a medium promotion, broadcast vs. print promotion, and station promotion

Although stations are charged by the Communications Act to operate in the public interest, commercial stations must also be concerned with making a profit or they can't remain on the air. Even noncommercial stations must raise money from contributors and stay within a budget, or they will not be able to serve the public interest. This chapter will examine broadcasting from a business perspective.

We'll first discuss what is meant by the station's competitive environment: *those external and internal factors which affect how the station competes in a given market and how those factors affect management decisions*. Second, we'll draw parallels between how the station "sells" itself to the listeners and how an advertiser "sells" products. Understanding the competitive environment and recognizing that a station is actually a "product" in the competitive marketplace is fundamental to approaching broadcasting as a business. Third, we'll examine a station's rate card to see how it sells itself to sponsors. Fourth, we'll take a look at broadcast ratings. And finally, we'll touch on the subject of broadcast promotion and the role it plays in garnering station income and audience. For the purpose of discussion, we'll confine most of our discussion to radio, although the principles can also be applied to television.

STATIONS' COMPETITIVE ENVIRONMENT

Figure 8-1 represents a station's competitive environment. By examining the model, we can begin to understand what spells success for a station.

External Factors

The key to effective station operations is to integrate the external and internal factors to produce the most favorable competitive climate. External factors are largely beyond the control of station management. Internal factors, on the other hand, are under the complete control of station management. First, we'll examine the *external* factors.

News Events. Every news director has finished a day saying, "It's been a slow news day." In other words, very little has happened in the community. This doesn't mean every broadcast journalist is interested in sensationalism, but if nothing happens, nothing can be communicated to the public. On a day when things *are* happening, the news programming tends to draw more listeners or viewers than on "slow news days." If the mayor announces an investigation of alleged corruption in the

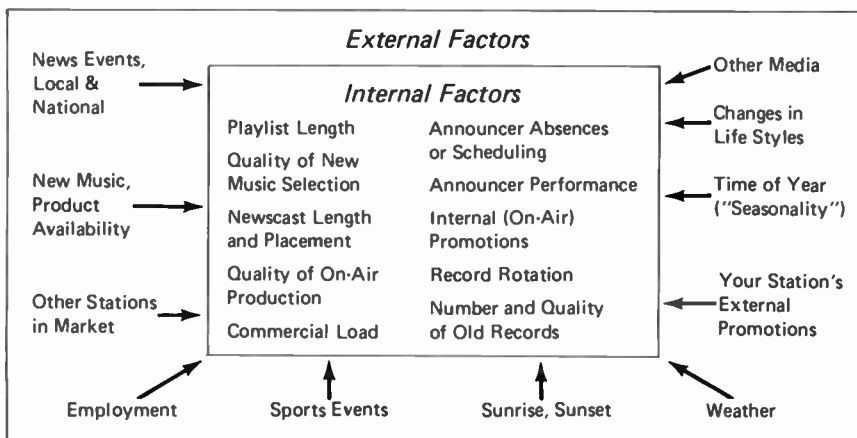


Figure 8-1 A station's competitive environment is made up of many external and internal factors. The combination of these factors, some beyond management's control, works to affect the competitive position of a station in its market. (© The Arbitron Company)

police department, if a flood wipes out a portion of the city, if a plane crashes, if a new school bond passes, or if a local citizen wins a national award, people want to know about it. Essentially, a station and its news programming are at the mercy of news events.

New Music. While the news department is spending time covering events, the programming department is concerned with the latest music or syndicated features. For example, when the disco craze hit, stations that could adjust their formats accordingly could reap the rewards of the disco appeal. Conversely, some stations competing against a disco station found listenership dwindling. In short, the disco station had a new product to sell the public and the sponsors, and it gave the station a competitive edge.

Other Stations in the Market. The number of stations in a market can be one of the biggest factors in determining success. Many small markets have extremely successful stations, partly because they face no competition. Stations in these markets are not overly worried about the format they employ, since there is no competition to take away the broadcast advertising dollar. But consider the station competing with fifteen or twenty other radio stations. Finding a niche is tough, and wooing a particular audience with a particular format can be a very difficult job.

Employment. Employment conditions can affect a station in two ways. First, the level of employment in a community will be related to the overall economy. If people are working, they are buying. If they are

buying, the merchants are making money and in turn can afford to advertise. Second, if there's a large employment pool, the station can find ample talent. Typically, good talent does not exist in small markets to the degree it does in larger ones.

Sports Events. How can sports events affect a station? Coverage of the local high school sports schedules and, if it's a college town, the college sports schedule is an excellent way to attract advertisers. And naturally, a winning team can attract a larger audience and consequently more advertisers than a losing team.

Sunrise, Sunset. Depending on the type of license a radio station is issued, sunrise and sunset times can affect its competitive environment. If a station is a "daytimer," required to sign off the air at sunset, then the total number of hours the station can operate (and air commercials) is dependent on when the sun sets. If the daytimer is in competition with stations able to operate around the clock, then it must definitely hustle in order to regain an audience in the morning that might have been lost the night before.

External Promotions. An external factor a station can control is its external promotions. Billboards, community-sponsored events, and such special activities as Easter egg hunts or Christmas present drives all contribute to a station's visibility. Most stations in highly competitive markets utilize external promotions to their fullest.

Seasonality. For any advertising medium, the season of the year can change the competitive environment. Christmas is a heavy advertising period as stores prepare for the onslaught of shoppers. Primary and general election times bring politicians flocking to buy advertising. August is perfect for back-to-school specials, and gardening shops are ideal spring sponsors.

Changes in Life Style. Closely tied to the season of the year are changes in life style. The opening of a new factory can signal the arrival of a new "blue-collar prime time" as an all-night format keeps company with the assembly line. Smart station managers keep close tabs on the life styles of their communities. When a radio or television station can coordinate programming with a given life style and target audience, then advertisers have a ready-made medium to reach that specialized audience.

Other Media. While other stations in a market are important external factors, so are other media. The most common competitor of broad-

casting is the local newspaper, and in some communities, the economic rivalry between radio and newspaper is rather fierce. City magazines or weekly “shopper” newspapers also contribute to the competition. Station managers must be alert to the advertising that local businesses buy in other nonbroadcast media. Why does an advertiser prefer the local newspaper over radio or television? What can the station do to lure money away from print advertising? These are questions management must ask to survive in the competitive environment.

All of the factors we’ve discussed fluctuate from market to market. The key to broadcasting’s success as a business lies in its ability to understand how each of these external factors relates to a given community and how the station can adapt to them.

Internal Factors

Part of a station’s ability to adapt is also determined by internal factors contributing to the competitive environment.

Playlist Length. In radio, playlist length is the number of different songs played with regularity. Some stations have rather long playlists, which means that in any given week, they’ll play a large number of songs, but each one may be played only once or twice. Stations with short playlists usually play twenty or so songs with regularity. Comparing the two, a short playlist can catch a large number of listeners but not necessarily hold them for any length of time. After all, hearing the same songs over and over can become monotonous. These stations aren’t too concerned with the “dial hoppers.” Rather, their objective is to reach a large number of *different* listeners. On the other hand, a station with a long playlist and more diversified programming may not capture as many different listeners, but those they do have are more loyal and will listen to the station longer. It then becomes the job of each station to convince the advertiser their station is the better buy.

Record Rotation. Another internal factor contributing to the competitive environment is *record rotation*. By record rotation, we mean how often records are changed on the playlist *plus* how frequently they are played on the air. Stations with longer playlists, naturally, have a less frequent rotation.

Quality of New Music Selection. In many markets, good program directors are hard to find. This person must not only be able to supervise people, make out schedules, and publish a playlist, but he or she should also intimately understand the music business. In demand

is the program director who understands trends in music *before* the trend reaches the listener, and who has an “ear” for interpreting this trend by selecting for air play those few songs, from the hundreds released, that will appeal to a wide segment of the listening audience. Talent such as this is rare. The ability to choose music well is an asset and can strengthen the competitive position of any station.

Newscasts. Depending on the amount of news and information programming a station airs, newscasts can run from less than a minute to twenty-four hours a day. News is an important commodity to sponsors, and stations in multistation markets can compete fiercely when each station places heavy emphasis on local news coverage.

In addition to length, placement of a newscast is also important. Most stations have a regular newscast time slot with which the listeners or viewers and sponsors can identify. For new stations, scheduling a newscast at this same time is usually less satisfactory than airing news at a noncompeting time, at least until the station can get a foothold on the market.

Quality of On-Air Production. Almost anyone can sit in front of a radio control board and play records, talk over the microphone, and punch a few buttons to play jingles. The skilled announcer, however, works those controls like an artist. Every word, every song, and every jingle is finely tuned to the second. For the listener, it creates a sound that massages, not irritates. Here again is where the professional announcer who can create and understand on-air production stands out in the competitive environment.

Commercial Load. Some stations have been known to sign on the air and operate for months without commercials just so they can bring the station up in the ratings, then use the data of their increased listenership to sell advertising. Other stations pump their commercial load up so high that little time is left for music. The balance between these extremes is where the station’s optimum income and listenership meet. A heavy commercial load will lose listeners. A light commercial load will lose money.

Announcers. The human factor of any station makes it run. Good announcers identify with their audience, and knowing this, good program directors try to match the two as closely as possible. For example, a Top 40 morning disc jockey may be a complete disaster at midnight, and a soft-talking, easy listening personality may put listeners to sleep in morning drive time. For a station to be successful, the match between

audience and on-air personality must be a good one. And once that match is made, a loyalty grows between the two. Similarly, on-air personalities who care only about collecting a paycheck will usually collect listeners who care little about the station.

Internal On-Air Promotions. Promotions—the contests, exhibits, call-ins, give-aways—especially when well planned and carried out, can generate more listeners and more income for a station. In recent years, broadcast promotion has been seen as vital to a station's overall performance. In fact, the Broadcast Promotion Association has been created especially to devote all its energies to this cause. Many stations are even forming in-house promotion departments, either to take the place of outside advertising agencies or to work in conjunction with them.

In concluding our discussion of a typical competitive environment, in this case for radio, keep in mind that every station is different and every market is different. A unique combination of economic and human factors act upon each other.

COMPETING IN PROGRAMMING AND SALES

Now that we understand the forces which affect the competitive environment, let's apply them to programming and sales, two important aspects of the broadcasting business. Once again we'll use radio as our example. We'll want to examine four advertising strategies used in broadcasting. At the same time we'll draw a parallel between the advertising strategy and the programming strategy.

Keep in mind that while the station airs commercials which sell sponsors' products, the station's programming is itself a product being "sold" to the listener or viewer. Thus, programming against competing stations in the competitive environment and planning a broadcast advertising campaign for a client have many similarities. Using the four advertising strategies employed in *Arbitron Radio's Research Guidelines for Programming Decision Makers*, we can draw our programming parallels designed to "sell" the station to the listeners. The four strategies as listed in Arbitron's copyrighted report are:

A. Saturation Schedule: A heavy load of commercials aired over a short period of time. This is used by an advertiser to make a strong impression for a short-lived event, such as a weekend sale.

Programming Parallel: An extraordinarily heavy play of a new release by a very popular artist.

B. Spectrum Plan: A medium level of commercials distributed equally throughout the broadcast day. It is designed to give product exposure to a great number of different people, but each listener may only hear the commercial one or two times per week. This can be used for a consistent advertiser who is reminding the listener that he or she is still around.

Programming Parallel: Playing of a familiar hit, one that was hot on the charts a few weeks ago and is still liked by the listeners, but that may have already peaked in sales at record stores.

C. Spot Schedule: A series of commercials aired in one or two day-parts only. The schedule is designed to reach a particular target audience which is most available during that day-part.

Programming Parallel: Programming by day-parts; gearing your programming to appeal to a particular group of listeners who have a tendency to listen at high levels during certain time periods.

D. Fixed Position: A commercial placed at the same time every day. Listeners become accustomed to hearing the commercial daily in this time slot. Fixed position commercials are sometimes associated with particular programs, such as a morning sports show or a daily drama program.

Programming Parallel: Airing of a feature vignette at the same time every day as part of an air personality's regular show. As an example, the morning show may air the lunch menu for the public schools for that day.

Notice how we were able to make a parallel between sales and programming. We could continue making these parallels for the frequency with which news stories are aired, the placement of newscasts, the record rotation for oldies, or how many times station on-air promotions are played. Remember, the station's product is its programming.

THE STATION RATE CARD

How successfully a station is competing in the marketplace and selling its product to the audience is reflected in its rate card—the listing of how much a given unit of commercial time costs. Successful stations reaching a large segment of the population can charge more than

stations in the same market that reach similar but smaller audiences. And not only do rates differ from station to station, but they also differ from market to market, ranging from the thousands of dollars for a one-minute TV commercial in large markets to under fifty dollars for their small-market counterparts. To understand rate cards, we'll examine one used by a small-market radio station (Figure 8-2).

Frequency Discounts

Notice this particular rate card gives the advertiser considerable flexibility in purchasing commercials at bulk rates. The first discount occurs when the advertiser jumps from buying one commercial to three commercials. But not all stations are that generous. Some may require a much more substantial purchase before instituting a discount.

An additional look at the rate card reveals that a discount also applies to the number of weeks the schedule of commercials airs. For instance, if we purchased a single commercial per week for thirteen weeks, we would receive a discount of \$1 per commercial. Each commercial would thus cost us \$13 instead of \$14. If we purchased twenty-eight commercials per week for fifty-two weeks, each commercial would cost us only \$5.

Most stations also have different rates for different times of the day. For example, a station might charge a high rate if the commercial ran

60 SECOND ANNOUNCEMENTS				
SPOTS PER WK	1 WK	13 WKS	26 WKS	52 WKS
1X	\$14.00	\$13.00	\$12.00	\$11.00
3X	13.00	12.00	11.00	10.00
7X	12.00	11.00	10.00	9.00
10X	11.00	10.00	9.00	8.00
14X	10.00	9.00	8.00	7.00
21X	9.00	8.00	7.00	6.00
28X	8.00	7.00	6.00	5.00

BULK ORDERS		
	60's	30's
200X	\$9.50	\$8.00
500X	8.50	7.00
1000X	6.50	5.00
IMPACT PLAN (30 DAY SATURATION)		
100X	30's	\$450
100X	60's	550

WEEKLY PLAN		
50X	30's	\$275
50X	60's	\$325

Figure 8-2 Effective station rate cards are simple, direct, and easily understood. Rate cards which are too complex often confuse the average local advertiser unaccustomed to making complex media buys. Although to keep our example simple we have limited the different rates and combinations, keep in mind that many rate cards use 10, 20, and 30 second announcement rates in addition to those listed here. (Tim White and WAIK Radio)

in the 6:00 A.M. and 9:00 A.M. “drive time,” when people are driving to work, have their car radios on, and the listenership is high. It might charge a less expensive rate for a commercial that aired in the early afternoon.

Bulk, Saturation, and Weekly Plans

Another purchase package is “bulk rate.” By purchasing two-hundred sixty-second commercials, the cost is \$9.50 per commercial. A rate of \$5 per commercial applies to a bulk order of one-thousand commercials.

Remember the saturation schedule we discussed when comparing programming and sales parallels? An advertiser wanting to saturate the market with a large number of commercials over a short period of time could purchase this station’s “impact plan,” whereby one-hundred thirty-second commercials would cost \$4.50 per commercial. Similarly, buying one-hundred sixty-second commercials would cost \$5.50 per commercial. Still another saturation option is the “weekly plan.” An advertiser wanting to purchase during a single week fifty commercials that were thirty seconds in length could do so at a cost of \$275. The same package with sixty-second commercials would cost \$325.

The published rates on a rate card, however, are not necessarily the actual dollar figures the station receives. For example, commercials placed through an advertising agency are sold at approximately 15 percent discount. The discount is to “pay” the agency for its business. Similarly, some stations charge local business people less for a commercial than they do advertisers outside their market area. In addition, advertising sold through a station representative, a firm which negotiates bulk advertising, reflects a commission for that representative. Trade-out advertising is reflected in goods or services, not money (Figure 8-3).

Good rate cards are simple and easy to read. If they’re not easy to use and contain too many confusing options, then the advertiser will simply switch to another station or another medium. The size of the market, the number of competing stations, and what the competition is doing will all have an effect on a station’s rate card.

UNDERSTANDING BROADCAST RATINGS

Broadcast ratings have become the gauge by which stations measure their success. Measuring the size of listening and viewing audiences, these ratings have been regarded suspiciously by those who don’t



TRADE OUT A SCOUT®

For a Limited Number of Radio and Television Stations

These tough, four wheel-drive Scouts are perfect to use as contest giveaways, news vehicles, mini-remote units, merchandising incentives, equipment transports, or any one of a hundred other uses.

Hurry! If you are in one of the 100 largest ADI's, CALL or write to us on your letterhead immediately. This is the first time International Harvester has ever traded Scouts nationally.

International Scout will use much of its air time during first quarter. Scout assures us that this special program will not disrupt its normal cash expenditures.

Exclusive agent for this promotion:

Network Programming Concepts, Inc.
10 South LaSalle Street
Suite 725

Chicago, Illinois 60603

Call TOLL FREE, 24 Hours:

800-621-1466 ext. 6039

(in Illinois 800-972-1966 ext. 6039)

Figure 8-3 Trade-out advertising provides the station with goods or services in place of cash. Many stations trade out vehicles with local automobile dealerships. Contest give-aways and merchandising or sales incentives are just some of the uses for trade-out goods or services. Some stations shy away from such arrangements, feeling it cuts down on advertising dollars the station would normally earn without a trade-out. This is one of the reasons the advertisement shown here states: "Scout assures us that this special program will not disrupt its normal cash expenditures."

understand the strict methodology and procedures a good service uses. When our favorite television program is taken off the air, we suspect that those ratings are not accurate. Actually, they are very accurate, and they play an important part in determining how much a station can charge for advertising.

Basic Methodology: The Sample

Ratings are basically surveys conducted to obtain *an estimate of the number of people who are watching or listening to a station*. Since it would be impractical if not impossible to survey every individual living in the geographic area (Figure 8–4) covered by the station, a rating selects only a small sample of the population and queries these people about their viewing or listening habits. Based on this small sample, the rating service then predicts the total number of people tuned to a station. To be an accurate estimate, however, everyone in the entire population must have an equal *chance of being selected* for the survey. Thus, random samples are selected in different ways using everything from census data to telephone numbers to zip codes, depending on the methodology employed.

Collecting Data

Different methods are used to collect data on audience viewing or listening habits. One popular method is the *diary* (Figure 8–5). Here, a household keeps a record of the stations viewed or listened to by each member of the household. Another method utilizes a *meter* (Figure 8–6), which is attached directly to the television set and electronically monitors which stations are being viewed. A third method employs trained *interviewers*, who either contact members of the sample in person or by telephone.

Research has shown that all three methods—diary, meter, and interview (whether by telephone or in person)—can provide reliable estimates of the viewing and listening audience, as long as a true random sample is employed and the interviewers, when used, are trained carefully to ask the same questions in the same way.

Understanding Key Terms

Once the data is collected (Figure 8–7), the process of making an estimate of the actual audience begins. Here, key terms in the rating process become important.

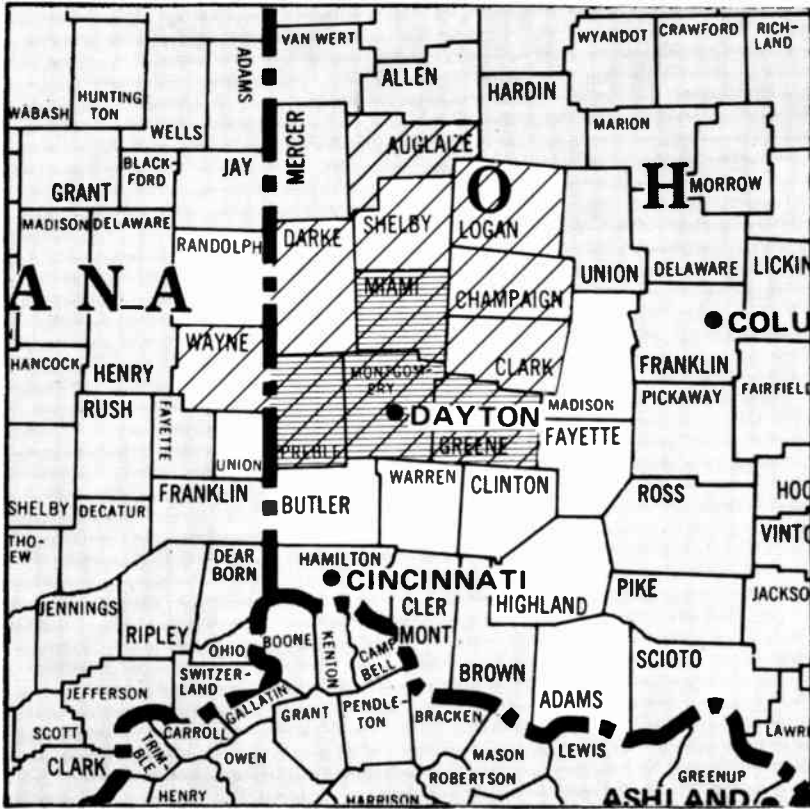


Figure 8-4 Special geographic areas are used by rating services to estimate the listening or viewing audience of radio and television. The area in white represents the largest area surveyed and it's commonly designated the Total Survey Area (TSA). The smaller areas, represented by the diagonal lines, are areas where local stations are predominantly viewed. This portion of the survey area is commonly called the Area of Dominant Influence (ADI). The smallest area, covered by horizontal lines, represents the area which in some regions closely resembles the city boundaries. This area is commonly referred to as the Metro Service Area (MSA). A more detailed and specific analysis and explanation of the various survey areas can be obtained by writing or consulting one of the publications of the major survey company. (© The Arbitron Company)

Rating. Although the word rating has tended to become an umbrella term encompassing the entire realm of viewer and listener measurement, a more precise operational definition is employed in the broadcasting industry. For example, in radio, a rating can be defined as: *an estimate of the percentage of the total population tuned to a given station.* Notice we used the term *estimate*. Since we employ a random sample of a smaller portion of the population, we estimate the number of people

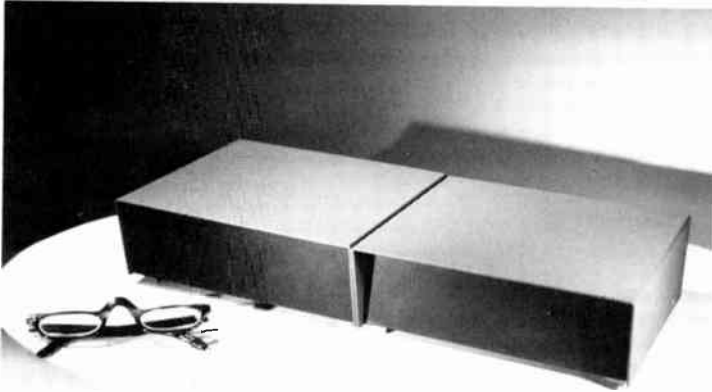


Figure 8-6 Meters are another method of data collection. Seen here is equipment used by the A. C. Nielsen Co. The small metal boxes are connected to the home television receiving set. (A. C. Nielsen)

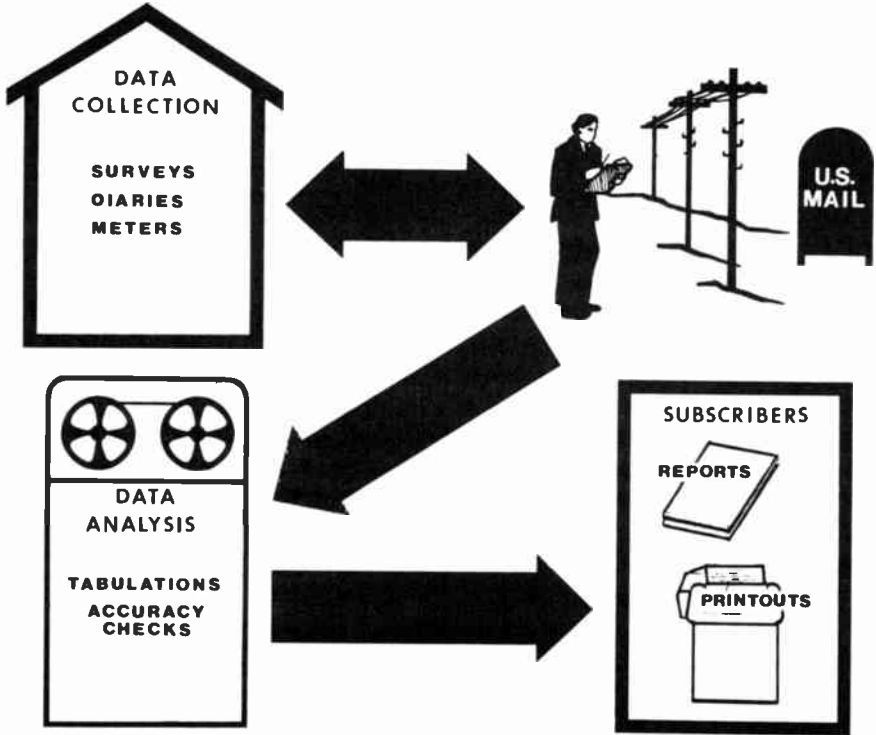


Figure 8-7 The total data collection process involves a combination of surveys, diaries, and meters. The information is then sent for data analysis and printouts, and reports are made available to subscribers.

except that television households are commonly used rather than population. (Although sophisticated audience survey methods can measure television viewing habits in the population as well.)

Share. The station's share of the audience is different than its rating. For example, in radio, a station's share of the market is figured by dividing the audience of a single station, not by the population, but by the total number of people who are listening to radio in a given geographical area. For example, if WXXX garners 2,000 listeners, WYYY has 1,000, and WZZZ has 1,000, we know the total number of listeners is 4,000 ($2,000 + 1,000 + 1,000 = 4,000$). WXXX's share is .50 or fifty percent (WXXX's 2,000 listeners divided by the total number of listeners for all three stations which is 4,000).

In television, instead of the total number of people viewing television, we measure Households Using Television (HUTs). (Or, in some complex surveys, people viewing television.) Simply defined, an HUT is the percent of all television households in the geographic area surveyed with one or more sets in use.

Average Quarter-Hour Persons. Most rating services use a one quarter-hour time segment as the standard block in which to compute a rating or share. Consequently, the term most frequently employed is average quarter-hour persons: *The average number of people tuned to a station for any one quarter-hour.* To understand the principle, let's assume a survey of WXXX shows that between 8:00 A.M. and 9:00 A.M. 2,000 people listened between 8:00 and 8:15 A.M.; 1,000 people listened between 8:15 and 8:30; 3,000 people listened between 8:30 and 8:45; and 6,000 people listened between 8:45 and 9:00 A.M. (to be counted, a person must usually listen for at least five minutes).

Taking the above information, we first add all of the listeners for each quarter hour between 8:00 and 9:00 A.M. The answer is 12,000 ($2,000 + 1,000 + 3,000 + 6,000 = 12,000$). Next, we divide the total (12,000) by the number of quarter-hours between 8:00 and 9:00 A.M., which is four (four fifteen-minute periods equals one hour). We thus find WXXX's average quarter-hour audience between 8:00 and 9:00 A.M. to be 3,000 ($12,000 \div 4$).

In summary, to find average quarter-hour persons, take the total number of listeners a station has and divide it by the number of quarter-hours over the time period measured.

Keep in mind that our discussion has been one of generality more than specifics. Among the various segments of the broadcasting industry, with its many stations and rating services, the terms' precise meanings

can be blurred. In addition, there are many more terms and concepts than we have talked about here.

Cume. In average quarter-hour persons, we discussed the average number of persons tuned to a station over a given time period. It is also important for stations and advertisers to know the number of *different* persons reached during a given time period. This concept is commonly referred to as cume persons, although the terms “cumulative audience,” “unduplicated audience,” “reach,” and “circulation,” are frequently used in place of or to define cume persons. Cume persons are counted only one time during a given time period. If a person listens to WXXX for an entire hour and another person listens for five minutes, and we are figuring cume for that hour, we count each person only once.

Another way to understand cume is to compare it to newspaper circulation. We only count a newspaper subscriber one time when figuring circulation, regardless of whether the person reads the paper for one hour, five minutes, or reads the paper at different times during a given time period.

Cume persons become important for advertisers who want to know how many different people a commercial reaches during a given time period.

Survey Areas

Most rating services identify three types of geographic areas, some overlapping, from which to draw a random sample. The Metro Survey Area (MSA) generally corresponds to the Standard Metropolitan Statistical Areas (SMSA) set up by the United States government. In some cases, these correspond to the city boundaries. The Total Survey Area (TSA) is somewhat larger and includes the Metro Survey Area plus certain counties located beyond the MSA. The Area of Dominant Influence (ADI) generally defines a television market which is exclusive of all other markets and based on specific measurable viewing patterns. Each county in the United States, with the exception of those in Alaska and Hawaii, is allocated to a specific ADI.

Reporting Ratings

Figure 8–8 shows an actual page from a rating book for average quarter-hour listening estimates between 7:00 A.M. and 8:00 A.M. Notice that the survey is further broken down into such demographic age categories as people 12 years of age and older (expressed as 12+), as well as breakdowns for men and women. Since the estimates are

AVERAGE PERSONS—METRO SURVEY AREA, IN HUNDREDS																	
STATION CALL LETTERS	TOT. PERS. 12 +	MEN							WOMEN							TNS. 12- 17	
		18- 34	18- 49	25- 49	25- 44	35- 44	45- 54	18 +	18- 34	18- 49	25- 49	25- 44	35- 44	45- 54	18 +		
WAAA	2009	217	469	391	313	174	183	957	139	417	378	295	203	106	977	75	
WWBB	87	19	22	16	13		3	46		12	12	12	12	9	41		
WWCC	1266	145	341	287	239	148	131	635	114	285	285	248	134	81	563	68	
WWDD FM	145	24	36	36	31	7	8	86	4	42	22	22	2		56	3	
WWEI	225	26	43	17			29	68	4	42	38			38	124	41	
WWFF	387	45	56	29	28	10	3	65	38	83	76	68	29	21	103	139	
WWGG FM	268	43	49	17	11		7	50	94	116	63	57	16	6	127	91	
WWHH	484	14	164	164	97	83	74	254	30	73	55	39	27	59	145		
WWII	1328	148	285	150	141	48	35	275	350	548	389	238	119	107	649	404	
WWJJ	35	2	9	9	9	7	9	24		5	5	1	1	4	11		
TOTAL	188	38	46	26	26	8	4	62	9	34	30	30	25	4	38		
	135	48	55	35	35	15	13	86	9	39	35	31	26	8	49		
		11637	1698	3216	2457	1989	1050	901	4896	1565	1335	2600	2088	1258	1053	5539	1282
TOTAL LISTENING IN METRO SURVEY AREA																	

Figure 8-8 A typical survey report lists the stations and the estimated listener or viewership for various subcategories of the population. Depending on the rate card, buying commercials on a given station means examining the size of the station audience against the cost of reaching the audience. (© The Arbitron Co.)

expressed in hundreds, we can see by looking in the upper right corner of the table that station WAAA has 200,900 listeners 12 years of age and older, more than any other station in the market. Keep in mind these are estimates of the total listening audience, since the data is projected from a smaller random sample of the population.

APPLYING RATINGS TO BROADCAST SALES

Perhaps the most immediate use of ratings is for the station to try to improve its position if it is not satisfied with it. A second application is to show advertisers how many people will hear their commercials and how many impressions (number of commercials aired times number of listeners) they're buying.

Selling Demographics

By looking at the sample ratings table, you might immediately be glad you're not selling advertising for a low-rated station such as WWII. But look closer. Among women 18 to 34 years of age, WWII captures first

place in the market with 35,000 listeners. If you were selling cosmetics, jewelry, dresses, or any other product bought by women, WWII could easily be your strong choice as an advertising medium. Even if a department store customarily did not advertise on WWII, as a WWII account executive you could argue strongly for running a special sale on merchandise appealing to women and running a saturation campaign on your station.

Selling CPM

Examining our rating table still further, we can see that other stations have their own sales advantages. For example, the cost-per-thousand (CPM) of one station might be less than that of others which reach a larger audience. Cost-per-thousand is the *cost of reaching 1,000 people*. Locate stations WWEE and WWGG-FM on our sample survey. Notice under the category of men 18+ (column 8), we see WWEE reaches 6,000 persons. WWGG-FM reaches 5,000. At first glance, we might think WWEE would be a better buy since it reaches 1,000 more persons than WWGG-FM. But let's examine a hypothetical rate card of each station. We'll assume the cost of a single sixty-second commercial on WWEE costs \$10 and the cost of a single sixty-second commercial on WWGG-FM costs \$8.

Now let's figure the cost-per-thousand and see which station would be the most economical buy. Since it costs \$10 to reach 6,000 people on WWEE, its cost-per-thousand is \$1.67 (\$10 divided by 6). Remember, we are determining the cost-per-thousand, not the cost-per-person. Thus, we divide \$10 by 6 and not by 6,000. Let's compare our cost-per-thousand of \$1.67 for WWEE with the cost-per-thousand for WWGG-FM. Dividing \$8 (cost of a single sixty-second commercial on WWGG-FM) by 5 (the number of "thousands" of persons reached by the station), we find the CPM for WWGG-FM is \$1.60 or seven cents cheaper than WWEE. An astute account executive for WWGG-FM would point this out to an advertiser, explaining that even though WWEE reached more people, WWGG-FM was a more economical buy.

A smart account executive will know the CPM for the competition and have data to make comparisons for an advertiser. But even though the CPM is a better buy in one age category does not necessarily mean it holds true in all age brackets. Perhaps the survey shows a certain station has a more economical CPM in the category of women aged 18 to 34. Or perhaps in the category of men 12 years old or older, your station's CPR is the most economical. The key to using the ratings is to find your station's strength and use it in the most beneficial way possible to sell advertising.

Stop and consider the marketing plans you could develop using the sample survey in the text. What products would appeal to what age categories? Which stations reach those categories? Consider the competitive environment we discussed earlier. How could various internal factors be changed to improve the positions of different stations in different age categories? By completing such exercises, you can begin to use a rating survey most effectively.

Our example dealt with the basic characteristics of a ratings survey, but there are more aspects to ratings than these basics. By consulting literature explaining the methodologies used by the different rating services and learning more about how they're conducted and how their results should be interpreted, you'll be well on your way to competing in the broadcast marketplace.

BROADCAST PROMOTION

As we learned earlier, broadcast promotion is becoming an increasingly important part of a station's total overall operation. Broadcast management is realizing that good promotion requires skilled people establishing goals and implementing a promotional campaign to reach these goals.

Promoting the Medium

In single-station markets where the main competitor for the advertising dollar is usually the local newspaper, a station can improve its position in the competitive environment by promoting the medium itself. If we're dealing with radio, good promotional literature to potential advertisers could include graphs and charts explaining the advantages of radio in general, not necessarily selling a particular station. Consider the following charts which are part of a station's prospectus. A simple well designed graphic, Figure 8-9, communicates three pieces of information: the percent of households using radio, the percent of automobiles with radios, and the fact that the average person owns two radios.

Promoting Broadcast vs. Newspapers

In addition to promoting their medium, many stations make competitive comparisons with newspapers. Figure 8-10 shows a sample promotional graphic comparing the weekly reach, daily time, and circulation (listeners for radio) of newspapers and radio. Again, the graphic is simple,

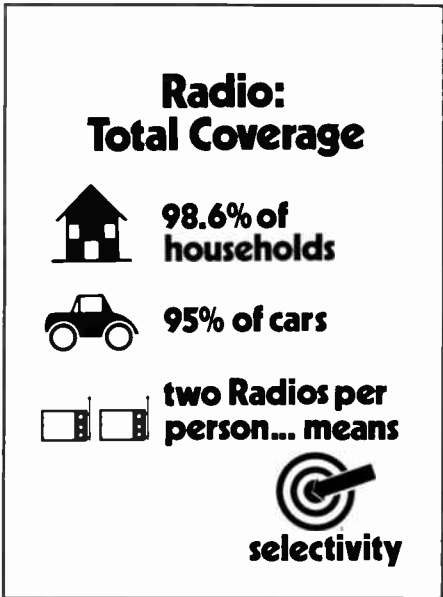


Figure 8-9 From small to large markets, various promotional opportunities exist for stations. Here, the promotion centers on the *medium* in a simple graphic explaining radio's penetration.

Compare...

	<u>Radio</u>	<u>Newspapers</u>
weekly reach	95%	89%
daily time	3.5 hrs.	37 mins.
circulation (since 1970)	up 23%	down 2%

Figure 8-10 Without coming head-to-head with the local newspaper, a radio station can still offer a comparative analysis between two different media, showing the effectiveness of each.

straight-forward, and easily understood. Figure 8–11 carries this beyond audience to cost-per-thousand with a hard-hitting graphic showing CPM for newspapers up 90 percent over radio.

We should hasten to add, however, that newspaper promotions can counter with campaigns equally favorable to the print media. It is because of the increased sophistication of promotional efforts in all media that promotion is becoming a vital station operation.

Promoting the Station

In both single-station and multistation markets, broadcast promotion offers a wide range of options which can make a station visible beyond its on-air sound or picture. Countless promotional campaigns have been developed, many with exceptional results. Perhaps most familiar are station contests whose prizes run the gamut of world tours to window cleaners. Community activities are also effective. Christmas shopping sprees, Easter egg hunts, special olympics, and other participation promotions keep the station in the minds of listeners and viewers.

Some broadcasters are producing special publications to promote the station and its personalities. Taking the form of newspapers or one-page flyers, these “off-the-air” publications carry tidbits on the lifestyles of air personalities, photographs of the station’s facilities, news of special awards, and other information displaying the station as an active,

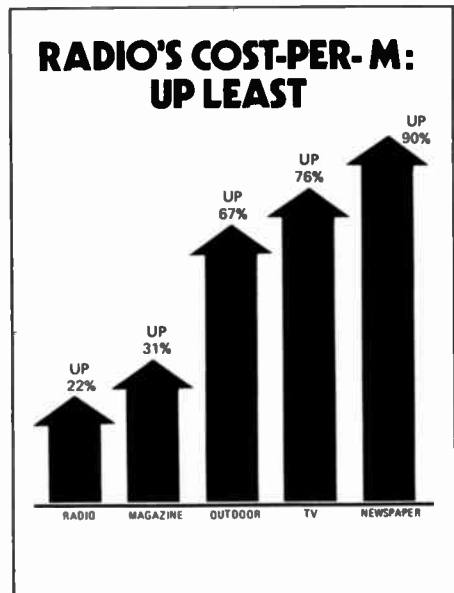


Figure 8–11 Of special interest to advertisers is this promotional graph showing the cost per thousand between different media. (Figures 8–9, 10, 11: Tim White and WAIK. Also, courtesy the Radio Advertising Bureau)

healthy, economic entity. Some of these off-the-air newspapers even carry advertising, and combination rates are available for advertisers who want to purchase time on the station and print ads in the station's publication.

Where the ratings show a station in a favorable position among competing stations, then its promotional literature takes a more direct approach, listing comparisons and call letters of competing stations. These comparisons can be displayed everywhere from leaflets and flyers to billboards.

We started our chapter by examining the competitive environment of broadcasting. The parallels between selling advertising and selling a station are all related to the effectiveness of both on and off-air promotional efforts. Remember, how a station fares in the ratings and how much it can charge for advertising are all a reflection of how well it promotes itself to its public and its sponsors.

SUMMARY

To understand broadcasting as a business is first to understand the external and internal factors which make up its competitive environment. External factors include news events, new music, other stations in the market, employment, sports events, sunrise and sunset times, external promotions, seasonality, changes in life style, and other media. These external factors interact with the internal factors of playlist length, record rotation, the quality of new music selection, newscast length and placement, the quality of on-air production, commercial load, announcers, and internal on-air promotions. Their combination affects how a station succeeds in the marketplace. With this in mind, we can draw parallels between the strategies used by advertisers to sell their products and the strategies used by the station to "sell" its programming to the public, such as with saturation schedules, spectrum plans, spot schedules, and fixed position programming.

How successful a station is in selling itself to the public will determine how much it can charge for advertising. These charges are reflected in the station's rate card, which also details advertising frequency discounts as well as bulk, saturation, and weekly plans.

The number of people tuned to the station is reflected in broadcast ratings. Ratings are estimates of the total listenership based on a random sample of the population. By examining a station's strengths found in the data of an audience survey, sales strategies can be developed to compete with other stations and other media. Successful promotion is an integral part of these sales strategies and can improve the station's position in the ratings.

FOCUS ON FURTHER LEARNING

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9

Broadcasting as a Profession



PREVIEW

After completing this chapter, we should be able to:

Comprehend the scope of the broadcasting industry

List some of the job titles common to broadcasting

Identify some general career fields within broadcasting

Explain the rewards of management and ownership

Know what qualities are necessary to succeed in broadcast sales

Tell what skills a television and radio journalist should have

Discuss opportunities in sports broadcasting

Discuss the work of a disc jockey and program director

Know job opportunities in educational and industrial television

Understand what a promotion director does

Discuss the work of a station engineer

Know the personal and professional attributes needed to work in broadcasting

Outline steps necessary to land a job in broadcasting

Careers in broadcasting can range from a disc jockey in a small-market radio station to the vice-presidency of an international bank responsible for financing satellite communication systems. Abilities can range from the creative talents of a Hollywood producer to the analytic skills of a computer scientist. Broadcasting can mean low pay and a great deal of visibility or high pay and anonymity. In between are literally hundreds of different jobs and career opportunities to fill every ambition, satisfy every challenge, and accomplish every goal.

THE SCOPE OF THE INDUSTRY

With all of these different jobs and career choices, where do we start? Clearly this concluding chapter cannot touch on every niche one can find in broadcasting. Hundreds of different jobs can exist in a single network news operation. Hundreds more can be involved in the behind-the-scenes work of a major syndicated talk show. Even in smaller stations, individual departments can have a wide range of employees.

What we will do in the pages that follow is to survey the *general* fields of the broadcasting industry. And although we won't deal with them in this chapter, don't forget the many allied fields of broadcasting: advertising, public relations, marketing, and the recording industry, to mention just some. Many people also find employment in the retail and wholesale broadcast equipment fields. Virtually every big city has an electronic supplier where people knowledgeable about the broadcasting industry can be an asset when the supplier must solve equipment problems for the broadcast professional.

If these first few paragraphs have broadened your interest, consider some of the statistics of the broadcasting industry. Along with the networks and the thousands of stations we're all so familiar with, there are almost four hundred producers and distributors of radio programs and over seven hundred television program producers and distributors. Moreover, close to one hundred fifty professional associations serve members of various industry-related interests, many of which employ large staffs of highly specialized professionals skilled in everything from technology to communication law. Well over two hundred station representatives are "brokers" for advertising time, and more than five hundred companies are involved in some way in producing commercials for radio and television. Manufacturers, engineers, research services, lawyers, consultants, and many, many other career opportunities dot the field.

CAREER AREAS

A national broadcasting professional organization, the American Women in Radio and Television (AWRT), surveyed its membership about positions in broadcasting and allied fields, and compiled a list of job classifications. As you read through the list, remember that even these detailed listings can have subclassifications representing even more career areas associated with broadcasting and its allied fields. The job classifications listed in the AWRT survey include:

Account Executive	Librarian
Actress	Management Executive
Administrative Assistant	Media Director/Buyer/Supervisor
Advertising and Promotion	Merchandising Marketing
Announcer	News Anchor/Co-Anchor
Artist	News Reporter
Associate/Assistant Program Director	News Director
Associate/Assistant Producer	News Editor/Writer
Attorney	On-Air Talent
Business/Financial Manager	Operations
Camera Operator	Personnel Director or Writer
Casting Director	Producer
Community Service Director/Manager	Production Manager
Continuity Director	Program Director/Manager
Copywriter	Program Information & Analysis
Director	Public Affairs Director/Manager
Disc Jockey	Public Service Director/Manager
Editor/Writer	Publicist
Educator	Reporter
Emcee	Research
Engineer	Sales Management
Film Distribution	Sales Service
Film Director-Manager	Script Writer
Film Editor	Technical Director
Film Writer	Technician
Free Lance Talent	Traffic
Home Economist	Unit Manager

An interesting sidelight to the survey was a further breakdown of the types of programs represented by AWRT members who were actually

on the air. Included in the list were discussion programs, news programs, women's programs, variety shows, filmed commercials, music programs, children's shows, and panel shows.

But don't stop with this AWRP survey. Visit different stations in different markets and talk to different people about careers in broadcasting. A friendly note of caution, however. Many loyal alumni have a tendency to think their alma mater and, in particular, a specific major is the only suitable preparation for a particular job. Be sharp and keep an open mind. Among different schools and different faculty members are many different specialties and strengths that could easily have developed even within a few years after an industry professional has graduated. Moreover, titles of departments and curricula can be confusing. What one person studied in a broadcasting department, another might have studied in economics, journalism, communication, speech, or even engineering.

Let's look at some of the general career areas in broadcasting.

Management and Ownership

Some call it "lonely at the top," but the rewards of management are great, both in satisfaction and money. In major markets management positions require proven leadership qualities and experience. But smaller stations are willing to take chances on extremely promising younger individuals. And even though top management is the "least populated" area of broadcasting, at every one of the thousands of stations there's an opening for those with a desire and the talent for management positions. Moreover, good management is in great demand. If you can make a station operate with precision and profitability, then you'll find many offers at your doorstep, giving you the chance to manage a station in a larger market or for a higher income.

By going one step further—into ownership—an individual can experience both monetary reward and personal satisfaction with the added benefits of being "in charge" and seeing your work increase the station's overall value. Some people combine ownership and management; others hire managers to oversee their properties. Many individuals have gone on to develop very successful chains of stations. Not all are located in large markets. Many owners skilled at managing a small-market station realize their success formula will work in other small markets. Although the overall billings may not be as great, neither is the overhead, and many a small-market station supports a very stately home. Both management and ownership carry with them the satisfaction of making decisions and guiding the station toward a predetermined goal.

Broadcast Sales

All commercial stations employ sales personnel. Called "account executives," they customarily receive the highest salaries outside of management. The reason for this is that on their shoulders rests the responsibility of keeping the station in business.

What qualities are needed for a successful career in sales? First and most important, the sales executive must be self-disciplined. He or she must be able to work long hours without constant supervision and must be familiar with every aspect of a station's function. Persistence is another key quality. President Calvin Coolidge once said,

Press on! Nothing in the world can take the place of persistence. Talent will not; nothing is more common than unsuccessful men with talent. Genius will not; unrewarded genius is almost a proverb. Education alone will not; the world is full of educated derelicts. Persistence and determination alone are omnipotent.

Those words ring especially true when handling disgruntled clients, store owners too busy to talk advertising, and long hours. They must all take second place to persistence and the ability to shrug off discouragement and keep going.

More and more women are entering radio and television sales. Industry studies are predicting that by 1985 women account executives will be responsible for half of all broadcast sales. Why? Experts say it's because women have the ability to listen attentively when talking with prospective clients.

Many account executives move on to station management. The move is a natural, for when all is said and done, if a station isn't profitable, it doesn't stay on the air. And sales personnel know how to keep the station profitable. This does not mean stations need to sacrifice public service, but making ends meet must come first. Similarly, since sales personnel have worked with many different types of people in many different situations, they are adept at meeting the public as well as other business executives who may have a stake in the station's successful operation. They also know how to motivate people, having had to motivate themselves. All of these qualities add up to management ability.

Television News

Because of the glamour associated with it, television news is one of the most popular goals for aspiring professional broadcasters. Stories about

the glamour and money are partially true, and successful television journalists in large markets earn very high incomes. But the career opportunities are restricted to those who can write well and make news judgments, to those who can speak clearly and condense pictures and written copy into minutes and seconds when the news event may consume days. In some stations, being a television journalist may also involve looking attractive on camera; but more and more stations are realizing that looks are no substitute for intelligence.

Not everyone works in front of the cameras. Writers, directors, producers, and numerous news support personnel hold off-camera jobs. In small-market television stations, many of the anchorpersons also report "from the field" and may produce two or more individual stories which are incorporated into every evening newscast.

The advent of electronic news gathering (ENG) has made the ability to work under pressure and in "live reporting" conditions a must. No longer does the news have an early afternoon deadline, one which brought the film crews back to the station so that the rest of the day could be spent developing and integrating film into a story. Now the television reporter can go on the air live from virtually any place in the world. The ability to report the story right the first time is critical.

Radio News

Simple mathematics shows us that with over eight thousand radio stations in the United States, there are far more opportunities to break into radio news than television news. Like television news, radio news also demands the ability to write well and compress hours of information into minutes and seconds. And as with ENG, a radio news story can be aired in the amount of time it takes to dial a telephone or pick up the microphone of a two-way radio. But professional radio news is more than gathering, writing, and airing news copy. The tape recorder has become the radio reporter's typewriter. Skillful interweaving of audio actualities with narration of the news results in a truly professional newscast. It can make the difference between simply landing a job and keeping it, between remaining stationary or jumping to a larger market with more responsibilities. Careers in radio journalism abound, and surprisingly enough, the market is still uncrowded for those who are talented and willing to start in smaller markets.

In both radio and television, successful news directors have been given the opportunity to assume management responsibilities. In some stations, the head of the news department is a top-level executive, compensated as well as many general managers.

Sports

If you like sports, have the ability to speak clearly, and understand a game inside and out, a career in sports broadcasting may interest you. Here, again, the competition is stiff, and you must start in smaller markets. Understandably, the station's popularity and your success may be tied to the popularity of the home team. Sports fans who eagerly follow every game of a winning team will also listen to radio and watch television coverage of the team. A losing team, just as it hurts attendance at the stadium, will also affect ratings.

In recent years, women have been making big inroads as sports announcers. Women sports announcers have also gained greater acceptance on local radio and television stations. There have been a few obstacles as well as humorous moments in this transitional period for women sportscasters, but most athletes and audiences have now grown accustomed to women in this traditionally all-male field.

The Disc Jockey

Another of broadcasting's popular career areas is the radio disc jockey, the personality who plays the records, talks to the audience, ad libs the one-liners, and stops at just the right moment to give way to music, a jingle, or a commercial. Real stardom has been achieved by some. In major markets, disc jockeys command huge audiences and are as well known and have as loyal a following as the biggest television stars. Names like Larry Lujack, Dick Biondi, Murry the K, Clark Weber, and Fred Winston are household words to many people.

Major market stars command big salaries. But small-town disc jockeys may work for minimum wage. If you have decided on a career in this field, be prepared for tough competition. You'll need real talent to develop the skill necessary to capture an audience in metropolitan area markets. Many disc jockeys who understand the complete gamut of radio programming move to careers as program directors, where they supervise the overall programming of the station.

Program Director

Responsible for the overall programming of the station, program directors are usually in charge of all on-air personalities. In radio, they need the ability to manage creative talent. And creative talent can be difficult to manage at times. These people may respond to a completely different system of rewards; they may not consider money to be extremely important. And they almost always must be given the oppor-

tunity to both try new approaches and be rewarded for their creative efforts.

In radio, understanding the music industry is another important quality of program directors. Most major market stations publish a playlist developed by the program director; even if the station does not publish one, the program directors have considerable control over their formats. Being able to pick hits, judge the number of times a record should be played, and understand how the rotation of songs both holds listeners and competes with other stations are all part of the program director's job.

In television, a program director must be able to select entire shows and schedule them against the competition's shows. The television program director keeps in close contact with syndicators since being the first station in the market to be offered a new syndicated package keeps a station one step ahead of the competition.

Television Production

For a person with creative flair, television production offers the opportunity to plan and produce programs which may range from a local station's evening news to network or syndicated productions. Persons skilled in production have learned every phase of the technical side of production from operating cameras to controlling consoles. In small stations production personnel must know everything from theater set design to lighting and scenery arrangements. In larger stations these individual tasks can be delegated to specialists trained in each area. Production houses which create television programming for syndication also need people skilled in production as do networks and even business and industry. There are opportunities with local children's shows, variety shows, news magazine formats, and talk shows. Highly skilled professionals in these areas can move on to positions as producers and directors of larger, nationally distributed productions.

Educational and Industrial Television

Although we've primarily been discussing work associated with radio and television stations, we shouldn't forget that broadcasting plays a major role in education. Many school systems have instructional media centers complete with portable tape recorders, videotape equipment, and even full-scale television production facilities. And these centers can be found at all levels of the system. Teachers are now apt to supplement their lectures with locally produced learning modules, and trained personnel can help these educators use television to its full

potential. Take the opportunity to examine your own school. Find out which people work with broadcasting and what their backgrounds are. You may gain some firsthand knowledge about broadcast production right at your own institution.

At the same time, find out if any nearby large corporations use television. Many large companies have television production facilities that rival the commercial network. Corporate training programs and public relations features are but two types of programming produced by corporate television. The manufacturer of John Deere tractors, for example, has a modern television facility at its corporate headquarters in Iowa. IBM and Xerox also have major television production facilities. There are more major corporations using television for internal corporate communication than there are commercial television stations in the United States. Thus, we can quickly see the career opportunities that exist in this fast growing but seldom mentioned area of television.

Broadcast Promotion

For years stations have realized the importance of communicating their image to the public. Promotions for programs, new personalities, special events, awards, and countless other information are vital to a station's success. And as we learned in chapter 8, if the public is aware of a station and its programs, it is more apt to watch or listen to that station.

In the past many stations delegated the promotional responsibilities to an interested employee who may or may not have been skilled in this area. The results were often sloppy attempts that lacked professionalism. The next trend was to let advertising agencies handle the station's promotions. Many stations still find this an excellent way to project their image, but others are also establishing full-time promotion departments, either to work with or take over the functions of the agency. In-house promotion departments have some distinct advantages, since the "on-location" promotion personnel can work closely with other staff members, especially the station manager. The interchange of ideas can be constant.

The backgrounds of promotion department employees vary, but most have had some experience in advertising and public relations. Knowing how to set objectives and design a campaign to meet those objectives is paramount. Understanding how to purchase time on radio or television or buy space in newspapers is also important. An eye for the "artistic" side of graphics design helps, as does an awareness of good radio and television production. Broadcast promotion will become a growth area in broadcasting's future. As stations realize the value of "selling" their product to the public, skills in station promotion will become more in demand.

Engineering

Every radio and television station must employ a qualified, FCC-licensed person who assumes responsibility for both the maintenance and overall operation of the station's equipment. The broadcast technician fills the role. The same person in a supervisory role has the title of engineer or chief engineer.

An engineer's regular duties include special frequency measurements and other equipment monitoring functions. An engineer also needs skills in computer technology. Along with responsibility for the station's transmitting equipment, engineers are also charged with maintaining such items as amplifiers, tape recorders, antenna systems, turntables, mobile radio equipment, and similar electronic hardware. In television the slightest distortion is a major problem, and in radio the slightest interference in a station's sound must be remedied immediately. Subtle visual or aural disturbances can prompt thousands of listeners or viewers to change stations. Thus engineers are responsible for quality broadcast programming to a much greater degree than most people realize.

An engineer may also be an inventor. Every station has its own peculiar characteristics that require a unique piece of equipment to handle a special broadcasting need. The engineer must be able to understand these needs and build the special equipment to do the job.

Jobs as broadcast technicians and engineers almost always require a First Class Radiotelephone Operator's license, issued upon successful completion of an examination. But merely having the FCC First Class license does not mean that an engineer is qualified to repair and build equipment. These skills come from regular study in four-year or community colleges offering engineering courses. Both associate and bachelor degrees are available. Others who have the ability and who want advanced training may attend graduate schools. An ability to grasp mathematical principles and work formulas is essential. Enjoying working on electronic equipment is a prerequisite.

PERSONAL AND PROFESSIONAL ATTRIBUTES

Many managers the author has spoken with over the years have continually stressed the need for students to realize some of the basic "human" elements which make a good employee. For example, few people have managed a successful career in broadcasting without having a positive attitude. This doesn't mean you must run around the office with a smile on your face every minute. It does mean that you accept

challenges without complaining. Every job, no matter how highly paid or how exciting, has its drawbacks. Accepting those drawbacks as a part of life is much better than continually spouting off about how terrible the equipment is, how mean the boss is, or how difficult the clients are. Many broadcasters simply don't like to have people with a negative attitude around the station. It tears down team spirit and tends to lower the morale of the entire organization. If the job becomes unbearable, move on. But remember, every job you leave will carry with it a recommendation that could follow you throughout your career. You'll build a much better foundation for yourself by being positive right from the start.

A second important quality is professional and personal integrity. That may seem like common sense, but too many people have learned the lesson too late and have been out of a job. For example, regardless of how much you think you are worth to an employer, realize you still owe the employer your time and devotion when you are on the job and on the payroll. No employer resents employees who try to better themselves and move on to another job. Employers do, however, resent employees who, because they feel they aren't getting paid enough, decide to loaf on the job or produce inferior work. A producer who takes short cuts on a television commercial, a disc jockey who doesn't care what the public thinks or hears, and an account executive who cares little about how she or he looks and how it affects sales all lack personal and professional integrity. Don't fall into these very immature traps. Above all, take pride in yourself.

LANDING A JOB

There are no hard and fast rules to landing a job in broadcasting. Every individual has different strengths and different weaknesses. Similarly, every job has different demands and responsibilities. The key is to match the individual with the job, plugging in the external variables of fair pay, job satisfaction, geographic location, and other factors which matter to the employee's life style. But to secure that position, you need to be marketable for it.

Gaining Experience

In broadcasting, one of the most desirable prerequisites for a job is experience. But how do you obtain that experience without a job in the first place? The key is to use your ingenuity.

An internship is one of the best ways to gain on-the-job experience

before you graduate. Some schools have well-developed intern programs which are an important part of broadcast training. If your school does have such a program, take advantage of it. Even better, participate in more than one internship experience at more than one station.

The advantage is two-fold. First, you meet people in the broadcasting industry, people who can help you locate a job later. You may even be hired by the station where you served as an intern. After all, if you were a manager with a position to fill, you would feel more comfortable hiring someone you knew. Second, even if you don't land a job at that particular station, you will still have gained valuable experience that you can list on your resume.

If your school doesn't have an internship program, take the initiative on your own. Contact a station, and ask if you could spend part of your summer interning there. Don't expect to be paid for the experience, although you might be. The object of an internship is not to earn money but to earn experience, even if you must do it in the evening after a paying summer job.

Part-time work experience is another way to gain experience. While involved in part-time work, volunteer to work extra hours. Like the internship, the part-time job will be an impressive addition to your resume.

Making Contacts

The saying, "It's not what you know but who you know that counts" is not totally accurate, but contacts *are important*. How do you meet management? One of the best ways is through local broadcaster conventions. State broadcast associations usually welcome students at their meetings. Don't pass up these opportunities and don't wait until you're ready to seek a job before becoming actively involved.

The Resume

A resume communicates *everything* about you. It can mean the difference between never hearing from an employer or being invited to appear for an interview. Every word contributes toward an impression.

There are many different types of resumes. The example in Figure 9-1 is a good one. It is concise, direct, and presents the important background information without going into unnecessary detail.

In all resumes, certain guidelines apply. First, make sure your resume is neat and that it's typed *perfectly*, even if this means having it professionally printed. Show your completed rough draft to *at least* four other people for their evaluation. Have them check spelling and

JANE A. DOE

PRESENT ADDRESS

**600 Anderson Avenue
Laramie, Wyoming 82070
(307) 766-0000**

PERMANENT ADDRESS

**1 Hilltop Drive
Vernal, Utah 84078
(801) 789-0000**

PERSONAL DATA

Born April 7, 1958, in Vernal, Utah.
Attended the public schools of Vernal, Utah.

EDUCATION

University of Wyoming, Laramie, Wyoming 82070
B.A. in Communication, 1981.

PROFESSIONAL EXPERIENCE

WAZY, Lafayette, Indiana—January 1979. Internship in the news department. Involved in writing and on-air announcing.
KBOI, Boise, Idaho—January, 1978. Internship in the news department. Assigned as a police beat reporter.
KUWR—FM, University of Wyoming—1977 to 1978. Responsible for supervising news department personnel and reporting local news.

ORGANIZATIONAL MEMBERSHIP AND ACTIVITY

Society of Professional Journalists, Sigma Delta Chi—1979—Women in Communication, Inc.—1978—

HONORS AND AWARDS

Wyoming UPI Broadcasters—Best Radio Documentary—1978.

An audition tape is included.

5/80

content. If they spot an item that's confusing, *change it*. For example, many colleges and universities have campus organizations with Greek names that mean absolutely nothing to someone who has never belonged to those organizations. The Beta Beta Society may be a Thursday night poker club for all an employer knows. Be specific. If the type of organization is *easily* identifiable by the title, such as Society of Professional Journalists, Sigma Delta Chi, then let it stand. If it is something that is not self-explanatory, then explain it.

Second, include dates on your resume. Don't list the fact that you have received a bachelor's degree without listing the date you graduated.

Third, in most cases, use a chronological order to your resume, listing the most recent activities first, so that a manager glancing over your resume can pinpoint your progress. If you were involved in several activities simultaneously, then list the most important activity first, especially those that apply to the job you're seeking.

Sometimes the chronological resume may not suit your particular needs. If you're a woman, this order accentuates employment gaps you may have had or will have bearing and raising children. The *functional resume* on the other hand, enables you to organize your qualifications according to skills, rather than to periods of time, and to arrange them in order of importance to your prospective job. With this type of resume, you can eliminate job titles that do not reflect all you did in a particular job and instead write a brief description of the job responsibilities.

References are another important part of a resume, but they must be chosen very carefully. People you know well are going to give you a better recommendation than slight acquaintances. Names and titles don't always make the difference. Even though you might list an administrator at your school as a reference, a teacher you've worked closely with will be much more likely to give you an honest, detailed recommendation.

Figure 9-1 Good resumes should be meticulously typed and completely free of even the tiniest error or typing mistake. Even a single smudged letter is unacceptable. A good electric typewriter with carbon ribbon is by far the best choice, and heavy bond, non-erasable paper makes the best presentation. Don't pad your resume, but don't hesitate to use more than one sheet if your experience warrants it. Good margins aid readability, and references should always be included along with the business and home telephone number of the reference. Many broadcast managers are too busy to correspond with references or even college placement services. Don't fold your resume. Send it in a larger envelope with cardboard backing and always include a cover letter addressed to a key management person. Never use "Dear Sir" or "Dear Madam" unless answering a box number. Mass mailings can end up in the wastebasket. A single misspelling can also cost you the job.

Sixth, include a neatly typed introductory letter. Moreover, take the time to find out the *name of the station manager* by a quick phone call or a check in *Broadcasting Yearbook*, thus avoiding the impersonal “Dear Sir.” The introductory letter is the first impression management will have of you. While the resume is a source of information, the introductory letter communicates an image of you sitting in the office and carrying on a conversation. Will management enjoy talking to you, or will you just be another person who happens to be taking up time?

The Interview

The interview is the time to put your best foot forward. This includes being prompt and being prepared. It also includes being well dressed. You’re viewed not only as the person who can do the job, but the person who will represent the station. Thus, pay close attention to such important details as clean hair, shined shoes, clean fingernails, and pressed clothes.

When you meet management people for the first time, greet them by name if you’re sure of the pronunciation. Here again, a quick phone call to the station’s receptionist will provide you with the proper pronunciation. However, avoid being chummy. Nicknames and first names are out unless you have known that person for a long time. If the manager moves to shake hands, return the action as if you mean it. Shaking hands is appropriate for both men and women and communicates a positive attitude.

Be prepared for all sorts of questions. Be honest and sincere, but be on your toes. A few favorite openers include, “What can I do for you?” “Tell me about yourself,” and “Why are you interested in this station?”

Be prepared to discuss salary. You won’t be at a disadvantage because you’re a woman or a member of a minority, but you may be at a disadvantage if you insist upon an unreasonably high starting salary. Remember, your first job is your important “foot in the door.” You may start with low pay and long hours. The hours come with the job; the pay is most likely what you’re worth to the station. As an unknown, you cannot command either a large salary or the luxury of naming your hiring price. If you are offered the job and you’re unsure about accepting it, courteously ask for time to think it over.

Follow up the interview with a prompt, personal thank you letter. You may also want to express your continued interest. If you don’t land that particular job, your letter of thanks will leave one more positive impression on management. You may want to approach the station in the future, and the letter of thanks could make the difference in getting a second chance.

Applying for On-Air Positions: The Audition Tape

For jobs such as disc jockeys, anchorpersons, radio and television correspondents, and other work where you are on the air or in front of the camera, the audition tape will become a critical part of your credentials. Just as the resume and interview “sell” you to management, the audition tape must also convince them that you should be hired. Thus, it must be perfect and completely free from flaws. It must be as professional as possible and free from any errors whatsoever. Anything less will mean that another competing audition tape which is flawless will be ranked higher than yours. More than anything else, an audition tape must stand out from the crowd. Consider it a work of art and take pride in it.

Some basic guidelines: direct the audition tape to the type of job for which you’re applying. Don’t record a newscast if you’re applying for a job as a disc jockey. Even worse, don’t apply for a position as a newscaster by including examples of your ability to run a record show. Some positions *do* require you to be skilled in *both* of these areas; in this case including *both* examples *is* appropriate. Similarly, keep in mind that the station is hiring you, not the country’s top rock group or the local mayor. Thus, don’t include complete records or long running news actualities in audition tapes. Keep the tape “meaty” with your work, and don’t waste management’s time by making them listen to extraneous material. In most cases they won’t, and you won’t be considered. Finally, keep the audition tape short. Usually about five minutes is enough to give management an idea of your talents. A busy program director usually won’t listen to more than about two or three minutes of your tape.

Some other important hints: In radio, keep the format of the station in mind. Don’t cut an audition tape with a rock music format if you’re applying for a position on a classical music station. Similarly, don’t include stories about the local dog catcher in a news tape if you’re applying for a job in a major market. Also, make sure the audition tape has variety. Most people can stand in front of a microphone and read. The tape should show how you work with news actualities and integrate them into the newscast. A music tape should show how a disc jockey coordinates records and commercials as well as how that person sounds.

Finally, after the audition tape is complete, have it critiqued by at least three other people. Your teachers or other working professionals can be a big help, but be sure they understand it’s improvement you desire. Ask the person listening to the tape to offer candid and honest criticism and seriously consider the advice. Preparing an audition tape

can be immensely frustrating, but it is well worth the effort and painstaking care that must go into its production.

SUMMARY

Broadcasting represents a wide-ranging industry with many different job and career opportunities. Recent surveys have listed more than fifty job titles in broadcasting alone. Still more general areas discussed in Chapter 9 include management and ownership, offering the opportunity to direct a station and watch its value grow; broadcast sales, which requires persistence and self-discipline; and television and radio news, requiring the ability to condense hours of information into minutes and seconds. Sports broadcasting offers new opportunities for women, the disc jockey requires creative talent and timing, and being a program director involves supervising on-air personnel. Television production opportunities abound in local stations and larger production houses, educational and industrial television are rapidly growing areas of broadcasting, and research offers possibilities for those with analytical skills. Broadcast promotion is yet another area which is closely related to advertising and public relations.

Landing a job and being a success in broadcasting takes more than education and an awareness of career areas. You must have a positive attitude and take personal and professional pride in your work. Gaining experience through internship programs and making contacts with working professionals are two steps toward securing a position. A well prepared resume, a successful interview where you put your best foot forward, and a good audition tape for on-air positions are also prerequisites to landing a job in broadcasting.

FOCUS ON FURTHER LEARNING

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Glossary

A

AAAA American Association of Advertising Agencies.

ABC American Broadcasting Company. The network evolved from the NBC Blue network which Edward G. Noble purchased in 1943.

A.C. Nielsen a major research firm conducting media research. Most noted for its television ratings.

Access channels cable television channels for general public use. Also called "public access channels" or "local access channels."

Accountable programming term used in educational television to describe a program meeting a specified set of instructional objectives.

ACT Action for Children's Television. Public interest group concerned about children's television programming. Large, well organized, and a strong lobbying force.

ADI rating term used to describe Area of Dominant Influence. Primarily a geographic market

design that defines each television market exclusive of others based on measurable viewing patterns.

Advertising agency an organization which develops a campaign to sell products. Responsible for placing commercials on radio and television.

Affiliate a broadcasting station bound by contract to associate with a particular broadcasting network or wire service.

AFTRA American Federation of Television and Radio Artists.

Agency commission the commission, usually 15%, paid to the advertising agency by the television station, radio station, network, or other media for the placement of a client's advertising dollars with that media.

All-channel receiver receiver capable of receiving AM and FM radio signals.

Alternator developed by Ernst Alexanderson at the General Electric Laboratories. Used to modulate early voice broadcasting during World War I and immediately thereafter.

AM amplitude modulation. The amplitude of the carrier wave varies (as opposed to frequency modulation).

AM stereo dual-channel broadcasting on AM frequencies. A common method is to use one channel as amplitude modulation and the other as frequency modulation.

Amateur radio operator person who operates a radio or television receiving station as a hobby and not a commercial enterprise. Also called ham radio operators, the stations are not standard broadcast systems, but used for point-to-point communication.

Analog a nominally continuous electronic signal varying in amplitude or frequency in response to change of sound, light, heat, position, or pressure. Transmits voice telephonically in continuous electrical waves similar to sound waves carried through the air.

Annual billings broadcast station's total billings to advertisers for commercials carried over a one-year period.

AP Associated Press.

AP Radio radio network of the Associated Press started in 1974. Subscribers pay a fee for the service and then insert commercials.

Aperture opening of a lens commonly measured in f-stops.

ARB Arbitron, a major survey company.

Arbitron a major research firm

conducting media research. Most noted for its television ratings.

ASCAP American Society of Composers, Authors, and Publishers.

ATS Application Technology Satellite. Used for educational broadcasting and experimental data transmission.

Audience flow trends in gains or losses in an audience from program-to-program or day-part-to-day-part.

Audio actuality the recording of the "actual" sounds in the news for incorporation into radio newscasts.

Audion three-element vacuum tube invented by Lee de Forest. The tube revolutionized much of electronic communication, including motion pictures. A "grid" between the filament and plate precisely controlled the flow of electrons.

Audition usually a performance or tape of someone's on-air talent.

AWRT American Women in Radio and Television.

B

Back light light from behind an object and usually opposite the camera. Creates a visual separation between the subject (in the foreground area) and the background.

Balance sheet at a specific point in time, a ledger of the net worth of a company based on assets and liabilities.

Banks or “buses,” groups of control switches on a master control console used to program various portions of an audio or video production.

Barn door metal “doors” or “flaps” attached to the front of lighting instruments and used to control light distribution.

Barter advertising agreement where goods or services (including programs) are provided for the station in exchange for advertising time.

BBC British Broadcasting Corporation.

BEA Broadcast Education Association. Formed originally in 1955 as the Association for Professional Broadcast Education (APBE). Became BEA in 1972.

Bidirectional commonly refers to a microphone pattern which can pick up sound equally in two directions.

Blocking rehearsal of the complete human and hardware movements of a show.

BMI Broadcast Music Incorporated, a music licensing organization.

Body mount a mounting device strapped to a camera operator permitting flexible movement of the camera with minimum vibration.

Bona fide newscast program exempt from the Section 315 provisions of the Communications Act. A broadcaster is not required to provide equal access for a political candidate for pro-

gramming aired on a bona fide newscast. Bona fide newscasts are not exempt from the Fairness Doctrine requirements.

Boom microphone supported by a long metal bar and elevated on a support tripod permitting it to be out of view of the camera.

BRC Broadcast Rating Council.

Broadcast broker much like a real estate agent, a broadcast broker deals in the transaction of buying or selling broadcast or cable properties.

Buses see *banks*.

C

Cardioid a microphone pick-up pattern in the shape of a heart.

Cartridge tape a reel of magnetic tape self-contained in a plastic case. Wound in a continuous loop, a cue tone is recorded on the tape, permitting the tape to automatically stop when the cue passes the playback head.

Cassette tape (cassette or cassette cartridge tape) a small dual-reel magnetic tape self-contained in a plastic case.

CATV community antenna television, or cable TV.

CBC Canadian Broadcasting Corporation.

Chain broadcasting term used to describe early network broadcasting.

Chart of accounts accounting procedure where each expenditure is assigned a category number.

Chroma key using a special “key

color," one image from a video source is electronically superimposed over the key color wherever it appears. A frequent everyday use of chroma key is to project images related to a news event behind an anchor person.

Circulation the number of different television households tuned to a station during a given time period, such as a week or month.

Coaxial cable cable consisting of an inner wire core surrounded by a layer of plastic, metal-webbed insulation, and a third layer of plastic. Futurists predict fiber optics will replace coaxial cable in many applications.

Coincidental rating information about viewing or listening habits obtained by telephone interviews at the time of, or immediately after, a broadcast.

Columbia term used in early broadcasting which included an identifying label for such companies as the Columbia Broadcasting System (CBS) and the Columbia Phonograph Broadcasting System, Incorporated.

Commercial protection a minimum amount of time separating commercials for two competing products aired on the same station.

Commission money earned by an employee or agency as the percentage of total sales.

COMSAT Communications Satellite Corporation. Formed by the Communications Satellite Act of

1962. A quasi government corporation established to develop satellite communication. Also the manager of INTELSAT.

Construction permit permission granted by the FCC to begin construction of a broadcast facility.

Co-op advertising a split in the cost of advertising, usually between a retail outlet and the manufacturer.

Co-ops (1) broadcast news networks, also called "informal networks," created by a group of radio or TV news personnel, (2) trade-out advertising agreements usually between the manufacturer and the retailer selling the product.

Coverage area geographic area covered by a station's signal.

CPB Corporation for Public Broadcasting. Quasi government corporation established to administer government funds to non-commercial radio and television stations. Formed by the Public Broadcasting Act of 1967.

CPM cost per thousand. Cost of reaching 1,000 persons.

CTS Communication Technology Satellite. High technology satellite used for data and direct broadcast purposes.

Cume (or cumulative audience), the number of different persons or households watching or listening to a given station or program during a certain time period. Can be compared to newspaper or magazine circu-

lation. Typically, to be counted in Cume, a person or household must listen or view a station at least once and at least for five minutes during the reported time period.

D

Day parts specific segments of a broadcast day.

Daytimers radio stations required by the FCC to sign off at sunset to avoid interfering with other stations.

Demographics age, sex, education level, income, and ethnic background of an audience. As opposed to psychographics (considering such things as attitude, opinions, likes, dislikes, etc.).

Depth of field the area between a camera lens and an object in which the object appears in focus.

DGA Director's Guild of America.

Diary method method of data collection in a rating survey utilizing a diary. Other primary methods are meter and interview.

Digital a pulse or sequence of pulses, containing information transmitted at high rates of speed. Transmits data in its pure form; translates sound waves into on/off pulses and back to sound waves.

Dimmer controls the amount of electrical power to a lighting instrument.

Direct broadcast satellite a satellite

capable of transmitting a signal intended for direct reception by the public.

Directional antennas a group of strategically placed broadcast antennas transmitting a signal in a specific direction to form an irregular rather than a circular contour. Employed to avoid interference with other stations.

Directional stations radio stations primarily in the AM band with directional antennas to keep their signals from interfering with those of other stations.

Director the person primarily responsible for the audio and video portions of a radio or television program. In smaller settings, may also serve the dual role of the producer, while in larger settings, the director is subordinate to the producer.

Direct-wave propagation radio waves travelling in a direct line-of-sight path from the antenna.

Disc another name for a phonograph record.

Disc jockey individual who plays records or tapes at a radio station.

Dissolve smoothly changing from an image produced by one video source (such as a camera, film or slide chain, or video tape) to an image produced by a second video source.

Dolly moving a camera on its pedestal closer to or farther away from a subject.

Double billing fraudulent practice of double charging advertisers.

The practice can develop in co-op advertising where both the manufacturer and retail outlet are billed for the total cost of the commercials.

Drop cable cable from the sub-trunk of a cable system to the home terminal.

Dub the making of an electronic copy of a video or audio tape. The playback output of one machine is fed into the recording input of another

E

Earth station earth-based satellite receiving and/or transmitting antenna system. Also called "ground station."

Efficiency refers to the relative cost-per-thousand of reaching a viewing or listening audience. Increased efficiency would mean reaching more people for the same amount of money.

Effects bus special banks on a video switcher controlling various electronic effects.

Electromagnetic spectrum the range of levels of electromagnetic energy.

Electromagnetic waves continuous waves of electromagnetic energy where radio waves and light waves are located at the low and high ends of the spectrum, respectively. Serves to identify the location (frequency) of electromagnetic waves travelling through space at the speed of light and used to transmit such things as radio and television signals. Where microwave is used to link

remote camera set-ups with the television station.

Electron gun creates an electron beam which in turn scans the photo sensitive portion of a television camera pick-up tube.

ENG Electronic News Gathering. Where microwave links connect remote camera set-ups with the television station.

Equal time rule part of Section 315 of the Communications Act requiring equal time to opposing political candidates for the same office.

ETV educational television.

F

F-stop refers to the opening (diaphragm) of a camera lens.

Fade change in audio or video intensity (volume).

Fairness Doctrine FCC rule requiring equal air time for controversial issues.

FCC Federal Communications Commission.

Feed audio or video signals travelling between any two points. In most applications, it refers to the audio or video signals sent from a network control center to local affiliates.

Fiber optics the use of thin strands of glass where light waves are used to carry radio, television, or data communication.

Filament element in a three-element vacuum tube. The other two are plate and grid. Early tubes used just a plate and filament.

Fill light supplemental light to

- "fill" in dark areas of a set. Can help eliminate shadows created by a key light.
- Film chain** any film projector used in the control area to reproduce film or slides in television.
- Filter** in audio, a device which filters out some sound frequencies while letting others through. In video, a gelatin or glass cover over a camera lens or spotlight which can change the intensity or color or light.
- Flat** muslin-covered frame used as scenery.
- Floodlight** light covering a wide area. Lighting instrument producing a flat diffused light.
- Floor manager** the person communicating the commands of the director to the performers.
- Floorplan** a studio drawn to scale and used for planning a television production.
- FM** frequency modulation.
- Focus** when a picture is considered sharp and clear as it appears on a television screen or monitor. A production command used to bring a picture into focus.
- Footage** a portion of a film.
- Footprint** the area of the earth's surface within which a satellite's signal can be received. Similar to the coverage area of a radio or television station.
- Format** the type of music played by a radio station. Usually for the majority of the broadcast day.
- FRC** Federal Radio Commission.
- Frequency** (1) broadcast rating term indicating how often a viewer has tuned to a given station, (2) position on the electromagnetic spectrum indicating how fast carrier waves re-occur each second.
- Fringe time** time period before and after a television peak viewing time.
- G**
- Gain** amplifying an audio or video signal.
- GE** General Electric Company.
- Gel or gelatine** colored plastic placed in front of a camera lens or lighting instrument.
- GHz** gigahertz. One billion hertz or cycles per second. (See kHz and MHz.)
- Graphics** visuals used in a television production.
- Grid** element in a three-element vacuum tube. The other two are filament and plate. A lighting grid commonly positioned at the top of a studio or theatre stage and used for hanging lights.
- Ground station** another name for a satellite earth station used to receive or transmit programming or data.
- Ground wave** waves adhering to the earth's surface.
- H**
- Head end** the human and hardware combination responsible for originating, controlling, and processing signals over a cable system.

Hertz (Hz) last name of Heinrich Rudolph Hertz; commonly used as an abbreviation for "cycles-per-second" in referring to electromagnetic energy.

Heterodyne circuit improved detector of radio waves invented by Reginald A. Fessenden.

Home county a county in which a radio or television station is licensed.

Home terminal (1) a device used in the home to control the selection of cable TV transmissions in one-way or two-way cable systems, (2) device connecting the drop cable of a cable system to the receiving set.

Hue actual color of light or pigment.

HUT households using television.

Hypoing promotion efforts used to increase the size of an audience during a rating period.

I

ID station identification.

Image the public's overall view of a station or personality.

In the can a production already completed and ready for airing.

Incondescent lamp lamp employing filaments which are heated and glow to produce light.

Independent station a radio or television station not affiliated with a network.

Induction process by which a current in one antenna produces a current in a nearby antenna.

Informal networks broadcast news networks created by a profes-

sional group of radio or TV news personnel. These networks also are called co-ops.

INTELSAT International Telecommunications Satellite Organization. Organization responsible for administering an international satellite system used for cooperative communication among nations. COMSAT serves as the manager of INTELSAT.

Interviewer bias when an interviewer knowingly or unknowingly influences the answers to a question.

Ionosphere upper level of the atmosphere reflecting radio waves back to earth.

ITV instructional television, programming specifically designed for direct or supplemental teaching.

J

Jack a socket in which a plug is inserted. A stage brace used to support a flat.

Joy stick a hand operated control stick on a video switcher permitting the operator to position a video insert.

K

kHz kilohertz. One thousand hertz or cycles per second. Measurements of a position on the electromagnetic spectrum..

Kill stop or eliminate a portion of a performance or an audio or video feed.

L

License FCC authorization for a station or operator.

Light waves electromagnetic waves visible to the naked eye. Light waves generally travel in straight lines except when channeled via such transmission methods as fiber optics.

Log record of a station's programming or transmitter operations.

Logo in broadcasting, a station or network's visual identification symbol. Examples would be the CBS eye or the NBC peacock.

Look angle the angle above the horizon that a satellite earth station is pointed. The greater the look angle, the lesser the chance for interference.

Lowest unit charge minimum charge on a station rate card. Used frequently in political broadcasting, where Section 315 imposes certain lowest unit charge requirements on the station when selling time to legally qualified candidates for public office.

M

Market primary metropolitan area served by a radio or television station. Usually considered the area from which the majority of local advertising revenues originate.

Master antenna main receiving antenna of a cable system and part of the head end.

Master control console heart of a

television control room operation through which both the audio and video are fed and processed. Serves a similar function in radio.

MBS Mutual Broadcasting System. A network originally owned by stations and started as a cooperative arrangement between WGN, WOR, WXYZ, and WLW.

Media plural of medium.

Meter method a broadcast ratings measurement in which a monitoring device installed on TV sets is connected to a central computer, which then records channel selection at different times of the day.

Metro Rating Area a survey area generally corresponding to the Standard Metropolitan Statistical Areas (SMSA) as defined by the United States Department of Commerce, Bureau of Census.

MHz megahertz. One million hertz or cycles per second. (See kHz and GHz.)

Microwave a very short wave of higher frequency than that of standard broadcast transmission. Usually measured in billions of cycles per second or gigahertz.

Mike short for microphone.

Minicam small television camera frequently used in electronic news gathering applications.

Mix to join and separate the pictures of various television cameras for a composite "on-air" image.

MPATI Midwest Program for Air-

borne Television Instruction. Experimental educational television system where programs were transmitted from an airplane.

Multi-set penetration Arbitron term for households with more than one television set.

N

NAB National Association of Broadcasters.

NAEB National Association of Educational Broadcasters.

NARB National Advertising Review Board.

NATPE National Association of Television Program Executives.

NBC National Broadcasting Company.

NCTA National Cable Television Association.

NET National Educational Television.

NPR National Public Radio.

NTI Nielsen Television Index.

O

Omnidirectional microphone pickup pattern equally sensitive to incoming sounds from all directions.

Oscillation valve term used by inventor J. Ambrose Fleming to describe an early tube which constituted the main component in a wireless receiver.

Overnights survey data available to clients the day after the survey is conducted.

Owned & operated (O&O) radio or

television station owned and operated by a network.

P

P & L statement (profit & loss statement) accounting of the income and expenses for a station which determines the amount of profit or loss during a given accounting period.

Pan moving a television camera horizontally on a stationary pedestal.

Pay cable a system in which cable subscribers pay a fee in addition to the standard monthly rental fee in order to receive special programming.

Payola illegal payoffs to disc jockeys to promote records on the air.

PBS Public Broadcasting Service.

Pedestal camera support mechanism to raise and lower a camera. Command to a camera operator to raise or lower the camera.

Perigee the closest point to the earth of a satellite's orbit.

Period term used in satellite communication and referring to the time necessary for a satellite to make one complete revolution of its orbit.

Piggyback term used to denote two 30 second commercials from the same client but advertising two different products. The commercials run back-to-back.

Plate one of three elements in a three-element vacuum tube.

The other two are filament and grid. Early tubes used a plate and filament.

Playlist radio station's ranking of hit records in a particular market. Usually corresponds to the songs most frequently played on the air at a particular station.

Pot varies the volume by varying the resistance in a circuit. Short for potentiometer.

Preempt one program in favor of another.

Production companies commonly called production houses, these businesses produce programs for adoption either by networks or individual stations through syndication.

Program managers persons responsible for selecting programs for airing, scheduling their air time, and overseeing the production and direction of locally produced programs.

Projection an estimate of the characteristics of a total universe based on a sample of that universe.

Promo announcement announcement made by a station or network promoting certain programming or personalities.

Public broadcasting the operation of the various non-commercial radio and television stations in the United States.

Public service advertising (PSA) designed to support a non-profit cause or organization. Most of the time for this advertising is provided free as a service to the public by the

print or broadcast media. Some corporations have actually "purchased" advertising for public service messages, although, for FCC and financial accounting, these are still considered "commercials" in the traditional sense.

Q

Quad abbreviation for quadraphonic.

Quadraphonic four-channel sound.

R

RAB Radio Advertising Bureau.

Random sampling selection process in which each unit of the larger portion has an equal chance of being selected.

Rating Percentage of all television households or all people within a demographic category within the survey area who are tuned to a specific program or station. The percentage is based on the population of a given survey area.

RCA Radio Corporation of America.

Rear screen screen with a translucent surface. Slides are projected from the rear of the screen and seen from the front.

Relay satellite a device capable of bouncing messages back to earth. Echo I was the first.

Repeater satellite satellite that can both receive and retransmit signals back to earth. The United State's Courier I-B was the first of the series.

Respondent the person responding to a survey.

Riser a platform used in a studio to elevate the talent, props, or scenery.

Rolling refers to an audio or video tape that is "rolling," meaning the reels and tape are in motion and can be used for playback or recording.

RPM revolutions per minute.

Run of the station (ROS) the sale of advertising, usually at a lower rate, where the station has full control over when the commercials will air.

Run-through rehearsal.

S

Sales networks a group of broadcasting stations linked together by a financial agreement to benefit all member stations by offering advertisers a joint rate.

Sampling the process of examining a small portion of something to estimate the characteristics of the larger portion.

Satcom domestic satellite system operated by RCA American Communications, Inc.

Satellite a man-made object orbiting the earth.

Satellite station a station usually hooked by microwave to the parent station and duplicating some or all of the programming of the parent station.

Scoop term for a floodlight.

Section 315 affords legally qualified candidates for a public office equal access to the station

as that given other legally qualified candidates for the same office.

Share a percentage of the total households using television or people listening to radio during a specified time period. A percentage of the listening or viewing audience, as opposed to "rating" based on a percentage of the population whether or not they are listening or viewing.

Sky wave propagation radio-wave transmission pattern in which the signals travel up, bounce off the ionosphere, and rebound to the earth in a continuing process.

SPC Station Program Cooperative. Program acquisition method used in public television.

SPJ, SDX Society of Professional Journalists, Sigma Delta Chi.

Spot commercial message.

Storyboard collection of pictures or drawings showing sequence of a programming segment.

Subtrunk secondary cables branching out from the main trunk in a cable TV system to carry the signal to residences beyond the reach of the main trunk.

Superheterodyne circuit improvement on Fessenden's heterodyne circuit. Developed by Edwin H. Armstrong.

Supering positioning a picture from one video source over a picture from a second video source.

Sweep a survey of every county in the United States and conduct-

ed four times a year. Three primary sweeps occur in November, February, and May, with a secondary sweep in July.

Switcher or “technical director,” person responsible for operating the master control console.

Synchronous or “geostationary,” a satellite traveling at a speed in proportion to that of the earth’s rotation, thus appearing to remain stationary over one point of the earth.

Syndication distributing a radio or television program direct to stations.

Syndicator company supplying syndicated programming to networks or local stations.

T

Target audience given segment of the population that an advertiser attempts to reach to best sell a product.

Teleprompter a device which can consist of either a roll of paper with the script typed on it or the projection from a closed-circuit camera focused on the script and seen by the talent, thus permitting the talent to read the script while retaining eye contact with the camera lens.

Television household a broadcast rating term used for any home having a television set, as distinguished from a household actually using a television.

Telstar early satellite used for the

first transatlantic television broadcast.

Toll broadcasting early term for commercial broadcasting first started on WEAFL.

Transponder the part of a satellite which receives the earth signal, changes its frequency, amplifies it, and retransmits it back to earth.

Tripod three-legged support for a television or film camera.

Truck moving the camera and dolly.

U

UHF ultra high frequency. Refers to television channels 14 through 83.

Unidirectional microphone pattern picking up sound from a single direction.

Universe the total population group being studied in a rating survey. Also the total population from which a random sample is selected.

UPI United Press International.

UPI Audio radio network of United Press International.

Upscale high income audience, or products targeted to that audience.

V

VHF very high frequency. Channels 2 through 13.

VOA Voice of America.

VTR video tape recorder.

VU meter meter registering the volume level of sound.

W

Walk-through a preliminary television rehearsal where the talent and production crews “walk-through” the major movements called for in the script.

Wipe moving a picture across the screen, “wiping” out the picture preceeding it.

Wireless microphone a small microphone connected to a portable transmitter permitting wireless

operation of the device and greater freedom of movement for the talent. A common application is to have referees wear wireless microphones during a sports broadcast.

Z

Zoom changing the focal length of the lens.

Zoom lens variable-focal-length lens.

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PROFESSIONAL BROADCASTING

A BRIEF INTRODUCTION

JOHN R. BITTNER

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