Chapter One

Why Regulate?

In this chapter, we consider the questions of what spectrum is and why the federal government regulates it.

§ 1.1 Introduction

Section 301 of the 1934 Communications Act announces that the federal government controls the spectrum, and that the government will permit "the use of such channels, but not the ownership thereof, by persons for limited periods of time, under licenses granted by Federal authority." For most readers, the fact that the federal government regulates the "airwaves" is at once familiar and alien.[1] It is familiar in the sense that we all know this is true. News articles regularly refer to the Federal Communications Commission and its decisions about whether a new cellular telephone service will be offered in a given geographic region or whether a television broadcaster will be fined for airing a naughty word. It is alien, however, in that in our daily lives it is rare to pause to think about what we mean when we say that information is traveling over the airwaves, let alone to puzzle about why government regulation of the spectrum is arguably appropriate.

Thus, in this chapter, we set out to lay this groundwork. We begin with a quick primer on the concept of spectrum. As we have already hinted, many technologies transmit information over the airwaves. It turns out that these technologies distinguish themselves by transmitting information at different frequencies (or wavelengths) and the radio spectrum (often simply called "the spectrum") is the term for the full range of frequencies at which information can be transmitted through the air.[2] The purpose of this primer is not to simulate a master class for engineers or physicists. Rather, the idea is to put forward enough information such that readers can appreciate the regulatory and policy materials that follow.

Next, we survey some history, specifically the early history of broadcast regulation. This history provides an important backdrop, introducing readers to the real events that first focused public attention on the various regulatory issues that are the concern of this book. Finally, we consider several possible

[1] Technically speaking, radio waves can travel in free space where there is no "air." Most popular accounts, however, refer to radio waves as using "airwaves," and we will use this convention as well.

[2] The "radio spectrum" is a subset of the larger electromagnetic spectrum, which includes gamma rays, ultraviolet waves, and other forms of electromagnetic radiation.

rationales for spectrum regulation. We focus primarily on the classic argument that spectrum must be regulated because spectrum is a scarce resource; but we also introduce some alternative theories, such as the possibility that spectrum regulation actually benefited and hence was sought by incumbent broadcasters, and the hypothesis that broadcast regulation in particular is necessary to counteract the influence of advertisers.

§ 1.2 Defining Spectrum

There are many ways to communicate at a distance. Young children coordinate from afar by shouting back and forth. Drivers on the road exchange information by using flashers, turn signals, and other visual cues. Ships once communicated through semaphore flags.

Broadcast technologies like radio and television allow individuals to communicate at a distance using radio waves that travel unfettered through the air. This is no small trick. The telegraph used wires to connect people in one city to people in another. The postal service originally carried notes by horseback and wagon. But the information transmitted through broadcast technology requires no carrying case, no dedicated path, and no container.

For the purposes of understanding telecommunications regulation, readers do not need detailed knowledge of exactly how radio-based communication works. Indeed, it is amazing how much of the regulatory infrastructure one can understand simply by reference to a mental image of a mountain climber generating smoke signals to warn other climbers of an approaching storm. Nonetheless, it is helpful to know a few details about how radio waves carry information from place to place.

Characteristics of Radio Waves

Modern communications technologies seem infinitely more advanced than smoke signals, but they have much in common: each transmits information to a receiver that processes the information. In this way, each can very quickly send information over a reasonably long distance. Employing telecommunications technologies rather than smoke signals means that more information can be packed into a second's worth of transmission and that the information can be transmitted over a longer distance. But, in essence, cellular telephony and radio broadcast systems are just the latest in an evolving technology for extending the speed and reach of information transmission.

One important characteristic of radio waves is the frequency of the wave. In normal usage, the word "frequency" refers to the number of times a given event repeats during a specific period. In telecommunications, the word has a similar meaning. Radio waves typically look a lot like any other wave—they start at zero, then move up and down in the pattern of a sine wave before returning to zero. Each movement from zero up to the crest, back through zero and down to the trough, and back up to zero again is a cycle. The unit of measurement of frequency is called a "hertz." A one hertz (Hz) wave completes one cycle every second, and a one kilohertz (KHz) wave accomplishes one thousand cycles in

that same amount of time. The physical distance between the crests of each wave constitute the wave length and it decreases as the frequency increases. Very long waves thus have very low frequencies because they repeat infrequently. Short waves have high frequencies because they recur more often.

For our purposes, we will use the term "spectrum" to refer to the range of radio wavelengths (i.e., frequencies) currently suitable for wireless transmission.[3] Unsurprisingly, the usable spectrum—like chemistry's periodic table—has expanded substantially during the past 100 years. For example, when the FCC was first established in 1934, spectrum capacity was less than 300 megahertz (MHz), which is to say less than 300 million hertz. By the end of World War II, by contrast, usable spectrum had increased to 40 gigahertz (GHz), or 40 billion hertz.

Different frequencies of radio waves have somewhat different characteristics. Broadcasts at the very lowest frequencies require very large antennas because exceedingly long waves must be propagated. Radio waves in the medium frequency, which include AM radio broadcasts, are reflected back to earth by the ionosphere, particularly at night, thus considerably extending the reach of many of these signals.[4] Transmissions in the very high frequency (VHF) and ultra high frequency (UHF) ranges are not reflected back to earth and so can usually be captured clearly only by a receiver that is within the transmitting antenna's line of sight. Above UHF, which includes the super high and extremely high frequencies, the wavelengths are so small that they can be packed into narrow focused beams of electromagnetic radiation, such as are employed in microwave and radar.

The different characteristics of the various frequencies are important to note, but there is no invariable requirement that a particular service use only an exact set of frequencies. Every service can operate on more than one set of frequencies, and every frequency is suitable for more than one service. Radio broadcasting, for example, takes place all the way from 535 KHz to 108 MHz. And cordless telephones operate at four different Commission-approved frequencies: 46-49 MHz, 900 MHz, 2.4 GHz, and 5.8 GHz.

That said, to generate a good quality signal for a given service, some bands are likely to be more desirable than others. Radio propagation characteristics, for instance, make certain frequency ranges more suitable for particular purposes than others. The presence of other services on a frequency also might matter. For example, given current technology, a mobile paging service within one slice of the spectrum can create spillover effects that would render a neighboring slice unsuitable for television (say, causing static) but satisfactory for some less complex or less delicate transmission.

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[3] The radio spectrum is conventionally treated as ranging from 3 KHz to 300 billion hertz (or gigahertz), although only not all of these frequencies are usable with current technology.

[4] This also means that, for signals at these frequencies, the problem of interference is greater at night than during the day.

Separate from its location in the spectrum (wavelength), the extent of the spectrum that a signal occupies (bandwidth) is also often very important. The preferred amount of bandwidth for a particular use depends on the amount and types of information that must be impressed on the radio waves. For example, much more bandwidth is required to carry a color television signal than to carry the human voice. Indeed, because television signals contain an audio component, the point is axiomatic. The preferred amount of bandwidth also depends on the technology being employed. The same information subjected to traditional analog transmission methods will require more bandwidth than if transmitted using digital technology.

Transmitting Through the Air

When transmitting through the air, the radio waves can be radiated in all directions or to only a single point. Conventional broadcast television stations radiate in all directions; a series of microwave transmitters linked together into a 2000 mile hook-up, by contrast, each "radiate" only to a given area. The direction and characteristic of the radiated signal is determined by the size, shape, and direction of the transmitting antenna. Many services intentionally radiate. For example, television stations allow their signals to travel in all directions because their viewers are typically scattered throughout a geographic region. Cellular telephone transmissions similarly radiate, this time in order to make it possible for communication to occur between a moving caller and a stationary cellular tower. Multi-directional transmission similarly allows dispatchers and taxi drivers to converse via radio waves, even though the taxi drivers are constantly changing their geographic positions.

Whether transmitted through wire or air, a signal can be sent or radiated at varying degrees of power. Compare the transmitter in a cordless telephone handset to the broadcast transmitter for a major metropolitan TV station. The amount of transmission power affects both the distance over which the signal can be transmitted and the signal's clarity at its reception point.

A telecommunications system can be designed so that recipients are also transmitters. Where this two-way communication occurs, the system is usually termed "interactive." Ordinary telephone systems are interactive because one can both receive and transmit voice information through the telephone. Conventional television broadcast systems are not interactive, but the addition of a microwave transmitter from the television set to the broadcast station could alter that. Conventional cable television systems (as opposed to more modern ones capable of providing broadband Internet access) typically contain a relatively narrow "upstream" channel from the subscriber to the transmitting head-end that can be used for interactive applications.

Transmitting Using Wires

Just as radio waves can propagate through the air, they also can propagate down a wire. Wire is just a means of guiding electromagnetic signals. With excellent shielding (such as coaxial cable), a wire can convey over a distance a very large range of frequencies. For telecommunications, then, the medium of

transmission can be a wire or the airwaves—and in this text we ultimately will think about both wireline technologies like telegraph, wireline telephone, and cable television and also wireless ones like broadcast television, cellular telephony, and direct broadcast satellite. Historically, the main wire used by consumers has been the unshielded twisted pair copper wires conventionally used by local telephone companies. The advantages of such wires is that they are cheap and easy to splice. One disadvantage is that, because they are unshielded, they are subject to interference from nearby wires. Their bigger disadvantage, though, flows from the fact that different kinds of wires have different propagation characteristics—which means that some wires can carry higher frequencies than can others, resulting in greater capacity or bandwidth. Copper wires cannot transmit at high frequencies and thus have fairly low bandwidth.

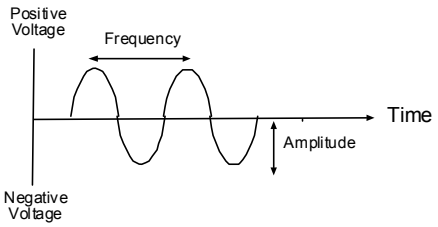
Today, transmitting information by wire at higher bandwidth usually employs one of two technologies. Coaxial cable is a braided metallic cylinder surrounding a wire. The wire carries the radio waves while the cylinder prevents signals from other wires, or outside radiation, from interfering with the signals on the wire. The genius of coaxial cable is that the outside cylinder offers superior noise suppression while the braiding allows the cable to remain flexible. Moreover, the wire inside has greater capacity than do conventional unshielded twisted pair copper wires. Fiberoptic cable, a technology that entered widespread use in the 1980s, uses light traveling through a very thin glass fiber to transmit information. It has even greater bandwidth than coaxial cable. Fiberoptic cable forms the bulk of the long distance telephone network and the Internet backbone. It is particularly well suited for information transmitted at high bandwidth, for transmission over very long distances, and for carrying many signals within one cable.

When information is being transmitted by wire, the system may be designed so that many streams of information are in the wire and the recipient chooses one stream (an example here is cable television) or so that the wire leading directly to the recipient carries less information (wireline telephone for many years carried only one conversation at a time). In the latter case, decisions as to what information is sent to the recipient are made further up the wire by specialized computers called switches and routers.

Signal Modulation

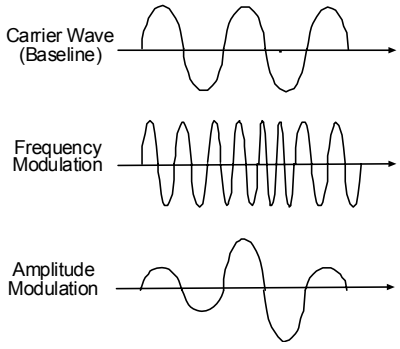
Earlier we drew the analogy to smoke signals and pointed out that modern telecommunications technologies are not so different from this sort of more primitive communication mechanism. Nonetheless, to progress from smoke signals to wireless radio transmissions required that people learn to use electromagnetic radiation to carry information. This is what Marconi taught us. The radio waves he pioneered—waves that today carry sound, pictures, numbers, and other information through the air—are basically sine waves that are generated and modulated by a power source and then transmitted by that power source to a device (the receiver, radio, or TV set) that searches out the

sine wave and demodulates the signal to extract the information.[5] Today, a perception exists that there are almost countless telecommunications products, markets, and technologies available. Yet virtually all of them are defined simply by the modulation technique and the transmission process they employ. That is, telecommunications technologies, and thus telecommunications markets, are usually defined by the manner in which information is modulated and the means by which that information is later demodulated.



Radio Waves. Radio waves are typically transmitted as sine waves. Two important attributes of the wave are its frequency and its amplitude.

Information can be modulated onto sine waves in one of two principal ways: (1) by varying the waves' strength (called amplitude modulation, or AM) or (2) by varying their frequency (termed frequency modulation, or FM). Amplitude modulation is attractive because it requires less of the available spectrum than does FM; amplitudes can be modulated while keeping frequency constant. The charm of FM, by contrast, is that in FM transmissions all of the electrical power necessary to generate the FM signal can also be employed to transmit it. AM "wastes" some power by investing it in varying amplitude.



Amplitude and Frequency Modulation. Information can be encoded on sine waves by means of amplitude modulation and also by means of frequency modulation. Compare the AM signal pictured here to the unmodified carrier baseline. Can you see how the amplitude of the AM signal could be used to communicate information? Similarly, compare the FM signal to the carrier baseline. Again, can you see how information might be contained in these patterns?

[5] To "invent" broadcast radio, then, one had to discover how to modulate the human voice onto radio waves and then to demodulate that information at a receiver. Similarly, television requires the ability to break a picture down into bits of data (millions of points of light).

"Analog" and "digital" are terms frequently employed to describe two ways of transmitting information. Analog transmission employs a continuous signal varying the amplitude, frequency, or phase of a sine wave. To transmit a picture by analog signal requires that the carrier wave replicate the information contained in the picture. A digital system encodes the information in a binary digit (or digitized) form for transmission. The digital transmission of a series of pictures requires only that one send the information that differs from one frame to the next. Digital systems thus can compress information and be more efficient than analog systems.

Radio transmissions are subject to interference. Consequently, if a device is communicating information by varying its amplitude, other sources of electromagnetic radiation (say, a microwave oven or lightning) might result in the receiver misinterpreting relatively small changes in amplitude. In general, all background sources of interference are referred to as "noise" and any radio system must take into account the possibility that different sources of inference may exist at any given time. Digital systems are more resistant to such distortions creeping into the signal because they need only distinguish between two digital possibilities (a "1" or "0") as opposed to many possible analog signal levels. Relatedly, because digital technology—that is, the use of binary digits, or bits—is the essence of how computers operate, computer processing power can more easily be used in conjunction with digital transmission systems rather than analog ones. Indeed, computers can facilitate digital communication by engaging in error checking and other forms of digital processing that improve transmission reliability and quality.

To retrieve information that has been modulated, of course, one needs a receiver that can decode the signal. This can create substantial problems, particularly where different firms or individuals own the modulator and demodulator. For example, the benefits of owning an FM radio transmitter are slight if no one owns an FM radio receiver, and of course vice versa.

It admittedly simplifies matters somewhat to describe telecommunication as we have—simply as modulating and electronically transmitting information—but most telecommunications technologies and markets are defined by these two characteristics. Thus, the difference between AM and FM radio is that one uses amplitude modulation and the other uses frequency modulation to modulate the sine waves. Analog television is simply a mixture of both modulation schemes. The visual pieces of information (pictures) are amplitude modulated while the audio pieces of information are frequency modulated.[6] Communications satellites are very tall transmitting and receiving antennas, and CB radios are portable AM radio stations transmitting at very low power. Conventional telephone communication is like AM radio in that it requires little spectrum because it transmits only voice information, but is unlike radio in that it transmits locally by wire and so thus it is somewhat easier to exclude people

[6] Of course, a television signal must convey more data than an FM radio signal, so a television broadcast requires more bandwidth in the spectrum than does an FM radio broadcast.

from listening in on the communication and there is less of a problem with congestion.

Similarly, altering the technology employed in a telecommunications system can change the effects it produces. For example, the extent to which a radio signal creates potential interference with other signals is reduced if the signal is not radiated in all directions, but is transmitted only from one point to another, or it is radiated at less power. The amount of information that can be transmitted through a cable of a certain size can be increased by switching from coaxial to fiber optic cable. The amount of spectrum necessary to transmit a television signal can be reduced if a digital, rather than an analog, signal can be employed. By increasing the power at which a satellite transmits television signals, one can reduce the size of the antenna necessary to receive those signals (and vice versa).

New Wireless Technologies

This book will spend a considerable amount of time discussing broadcasting as a quintessential use of the airwaves. This focus reflects the historical significance of broadcasting, which set many of the basic premises of the current regulatory regime for spectrum. It does not, however, reflect either the current technological or economic landscape. As we discuss in Chapter Eight, broadcasting is of decreasing relevance for most television viewers in that they receive TV programming via either cable or satellite connections. And, while broadcast is obviously still an important spectrum use, modern conversations about spectrum policy by necessity focus just as heavily on newer technologies like cellular telephony and Wi-Fi.[7]

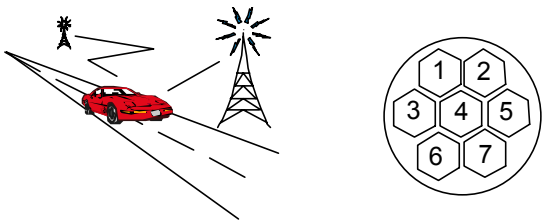
The decline of broadcasting as a medium for transmitting television signals reflects an observation made by MIT Media Lab pioneer Nicholas Negroponte. As Negroponte noted, a generation of Americans who grew up watching TV delivered over the airwaves and talking on telephones connected by wires has given way to a generation who watches TV delivered by wire and talks on telephones linked through the air.[8] As Negroponte appreciated, the airwaves are, relatively speaking, not well suited to delivering high bandwidth video signals, but are excellent for delivering voice conversations. Moreover, mobility in TV sets is not a particularly desirable feature—although there is some allure to carrying a portable television to class, we know; by contrast, Americans have learned to love mobile phones and they are now more popular than their landline counterparts.

The technology that gave rise to mobile telephones was invented at Bell Labs in the middle of the twentieth century. The basic technological insight behind the invention was that wireless communications did not need to be

[7] "Wi-Fi" refers to wireless local area networks that use a particular set of specifications (known as 802.11) developed by the Institute of Electrical and Electronics Engineers or IEEE.

[8] Nicholas Negroponte, Wireless Revisited, Wired (Aug. 1997), http://www.wired.com/wired/archive/5.08/negroponte_pr.html.

broadcast at high power, but rather could be delivered to limited areas at lower power through a "cellular" architecture. The service thus became known as cellular telephony.[9] The FCC has designated spectrum licenses differently, so certain licensees hold rights to provide "cellular" service and others hold the right to provide higher-capacity "personal communications systems" (or PCS). Both services use cells and towers, however, so we will stick to the popular term and refer to mobile telephone service as cellular service.



Cellular Telephony. The panel to the left shows the basic concept: as the portable communications equipment moves away from one receiver, it moves toward another, and thus service is maintained. The panel on the right shows how cells are used to divide a service area into smaller geographic cells. The more cells, the lower the necessary transmission power, and the greater the maximum number of simultaneous users.

As the diagram above indicates, the relevant geographic area ("service area") for mobile telephone systems is broken into discrete "cells," each of which is served by its own receiving and transmitting equipment. Cellular telephones, then, can transmit signals at relatively low power but, because so many cells are established, the transmissions can usually nevertheless be picked up by some nearby cell tower. As the cellular phone moves, its signals are picked up by the (new) nearest cell site, and so the cellular phone can move from site to site while remaining in constant contact with the telephone network. Indeed, so long as there is a cell tower in the vicinity, that tower will pick up the mobile telephone's transmission and relay it to its destination.

The modern architecture of cellular telephone technology took hold in the 1980s and launched what continues to be a revolution in wireless technology. The original systems relied on the basic technology developed in Bell Labs, known as the Advanced Mobile Phone System, or AMPS. The FCC mandated that each licensed provider—and there were two in each geographic area and scores throughout the country—adopt this technology, ensuring that there was one compatible technology through the country. Consequently, customers of different systems could use their handset to operate anywhere by "roaming" on systems operated by a firm other than their provider.

In Europe, the European Telecommunications Standards Institute (ETSI) mandated that all providers adopt the same digital second generation system ("Global System for Mobile Communications" or GSM). In the U.S., by

[9] The FCC classifies all commercially available mobile services in the category of "commercial mobile radio services," or CMRS. *See* 47 C.F.R. §20.3.

contrast, cellular providers were free to adopt any technology they chose (provided they allowed the system to revert to the analog AMPS standard) and a number of different alternatives emerged. The principal rival to GSM is one called "Code Division Multiple Access" (or CDMA). This technology takes advantage of a concept known as "spread spectrum," which uses several frequencies at once, managing them by algorithms that can flexibly allocate bandwidth. By contrast, rival systems like GSM divide up transmissions by time (time division multiple access or TDMA) or by frequency (frequency division multiple access or FDMA) and are generally not as efficient in terms of the bandwidth they consume.

The concept of spread spectrum is hardly unique to CDMA. Many wireless local area networks (for example, Wi-Fi systems) similarly rely on this concept to enable wireless modems to operate effectively and, up to a point, dynamically avoid interference with one another. Similarly, the technique of "frequency hopping," which is often used in spread spectrum systems, enables technology that, among other things, is responsible for the wireless earpieces used in conjunction with cellular telephones.

Another emerging technology is the use of "cognitive radio" systems. Such systems, which often rely on software-defined radios, promise to facilitate greater levels of spectrum efficiency. Traditionally, even for CDMA-based networks, radio transmissions operated using a limited number of frequencies. Cognitive radio systems, by contrast, can be engineered to operate over a broad range of frequencies and to opportunistically use available spectrum otherwise left unused.

The Spectrum as a Resource

In almost every case, more than one telecommunications technology can accomplish a given end. Transoceanic cables can substitute for geostationary orbiting satellites. Telephone calls and television signals can be transmitted by wire or over the air. A weak signal can be strengthened by boosting the power at which it is radiated or by using a relay station to capture and retransmit the signal. In much the same way, coaxial or fiberoptic cables will periodically have repeaters that strengthen the signal over long distances. Multi-channel packages of television signals can be sent to the home by cable or satellite.

Choosing a telecommunications technology is therefore like choosing virtually any other good. One compares price and quality. There are many ways to transfer data from one place to another. For a specific task, some are cheaper, some are faster, some are more reliable. The distinct advantage of spectrum, for instance, is mobility and the absence of the large infrastructure investment associated with wired systems. Wireline communication, in turn, offers enhanced privacy. Should one write, phone, email, or instant message? Presumably, the choice is made by comparing the costs and benefits of each. Further, as new desires arise, new configurations of telecommunications technology will be developed to create cost effective ways of satisfying these desires. Cable television wedded the use of wires and radio technology to serve the desires of viewers for more signals of greater clarity. Cellular telephone

combined the same technologies to increase accessibility at some cost in clarity and in the ability to exclude unwanted listeners.

The government treats spectrum as if it were a natural resource, one to be allocated both to specific uses and assigned to specific users. This is a helpful way to look at spectrum in that it reminds us that spectrum shares many basic properties with other natural resources. For example:

Spectrum can help to create both wealth and value. People are often willing to pay substantial sums for the ability to send or receive large quantities of data quickly and from far away.

Spectrum can be used in varying amounts for the same purpose. To get a television signal from a New York stage to a Los Angeles nightclub one could use no spectrum (send it via wire, door to door), some spectrum (wire from New York to Los Angeles, but broadcast to the nightclub), or nothing but spectrum (transmit directly from stage to satellite, which transmits, in turn, directly to the nightclub).

Spectrum use is costly in that any spectrum committed to one use can no longer be employed toward a different valuable end. If one person is broadcasting a television signal on channel two in New York, that means someone else cannot use those frequencies for mobile telephony, FM stereo, or dispatching ambulances.

Lastly, while the absolute amount of available spectrum is finite, the amount of usable spectrum can be increased with appropriate investments in technology. Not only do improvements in technology add to the range of usable spectrum, but also within any existing range of usable frequencies spectrum capacity can be increased by advances in technology. To pick one notable example, digital compression allows a broadcaster to send much more information over the same amount of spectrum that would otherwise be occupied by an uncompressed analog signal. In short: "With airwaves, as with other media, the more you spend, the more you can send: it all comes down to engineering and smart management."[10]

§ 1.3 The Early History of Broadcast

There are many ways to begin the story of wireless services.[11] One approach would be to start with the work of Joseph Henry and Michael Faraday, two physicists whose work in the late 1800s showed that one device can induce electric current in another without the two sharing any physical connection. Such a story would focus on the scientific marvel at work here—something both the readers and authors of this casebook likely take for granted.

[10] Peter Huber, Law and Disorder in Cyberspace 75 (1995).

[11] Many sources recount the early history of broadcasting. Among the best: Susan Douglas, Inventing American Broadcasting 1899-1922 (1987); Erik Barnouw, A Tower in Babel (1966); Susan Smulyan, Selling Radio: The Commercialization of American Broadcasting 1920-1934 (1994).

Another approach would be to start in 1899, when a young entrepreneur named Marconi showed the world that Henry's and Faraday's scientific accomplishment had significant commercial application as well. Marconi developed what modern audiences might conceptualize as a basic walkie-talkie, and on October 1, 1899 he used it to provide up-to-the-minute news coverage of the America's Cup yacht race. Marconi stationed his men on boats and had them radio information back to dry land. It was for both Marconi specifically and broadcast technology more generally a public relations coup: news coverage of the race focused more on Marconi's amazing "wireless" invention than it did on the race itself.[12]

Our approach, however, is to start not with these key scientific and entrepreneurial events, but instead with the event that first triggered substantial government interest in regulating the radio spectrum. That event was the sinking of the Titanic in 1912. At the time the Titanic went down, the only significant spectrum regulation in effect was a law passed in 1910 that required passenger ships above a certain size to carry wireless sets.[13] The theory behind that law was simple: in the event of an emergency, wireless would allow ship operators to call for help.

The Titanic tragedy suggested, however, that this sort of light-handed regulation was insufficient. There were two significant problems with the existing regulation. First, while the law required ships to carry wireless sets, it imposed on those ships no obligation to keep their wireless sets manned or even operational. So the California—a ship that was a mere twenty miles away from the Titanic on that fateful night—never heard the Titanic's distress call. The California had cut its engines in order to more slowly navigate the dangerous waters that both it and the Titanic faced, and the wireless device on board had no independent power supply.

Second, the law as it stood in 1912 focused only on wireless equipment, saying nothing about the airwaves the equipment used. This led to what might be thought of as the second tragedy of the Titanic: not only did the ship sink, but information about the sinking was significantly misreported in the days following the accident. In one case, for example, the question "are all Titanic passengers safe?" was mistakenly interpreted by an amateur wireless operator and reported in the news media to be the affirmative statement that all passengers were in fact safe.[14] In another, congested airwaves caused a message from the ship that picked up Titanic survivors to be combined with an unrelated message about a failed oil tanker, the result being an errant report that the Titanic was being safely towed to Halifax.[15] This confusion and misinformation surely added to the heartache for concerned friends and families; it also contributed to a general sense that it was time to regulate spectrum—in particular broadcasting—more significantly.

[12] Douglas, *supra* note 11, at 19.

[13] 36 Stat. 629 (1910).

[14] Douglas, *supra* note 11, at 227.

[15] *Id*.

Not that Congressional leaders were reluctant to regulate. The Navy had for some time been calling for further government intervention, its concern being that "outside unrecognized stations" (i.e., amateur forerunners to radio stations) were cluttering the airwaves and drowning out official military messages. And the Navy had also by this time fallen victim to several hoaxes where one or another amateur wireless operator would impersonate a Navy official and give a ship false orders. Even before the Titanic, then, Navy officials had been pushing for increased regulation—even military control—of the airwaves.

The sinking of the Titanic provided a focal point for action, however, and so a few months after that tragedy Congress passed the Radio Act of 1912.[16] As Thomas Krattenmaker and Lucas Powe explain in the excerpt below, this would turn out to be a key piece of legislation in that it established several concepts that continue to influence spectrum policy through the present day:

> First, the federal government would control broadcasting. No one could broadcast without a license. Second, the spectrum would be allocated among uses and users. Thus the military obtained excellent wavelengths. Ships were given their own block. And amateurs, those unrecognized stations, were relegated to oblivion. They could listen anywhere along the spectrum, but could transmit only on what at that time were technologically unusable short waves. Third, some communication was more important than others and the government would determine which was which. Distress calls took precedence. Then came the Navy; operators near a military installation had to reduce transmitting power to just one kilowatt. If war came, there was no doubt about military paramountcy. After the military, commercial use was next; amateur was last.[17]

A few years later, World War I would reaffirm these priorities and principles. Wireless communication was a military tool during wartime, with the Navy using wireless both to coordinate the fleet in battle and to pass timely information to the troops. Wireless played a significant propaganda role as well. German authorities used friendly wireless operators in the United States to disseminate information from the German perspective, at least until April 1917 when federal authorities seized the handful of wireless stations then in operation (approximately eighty in total) and stopped the German transmissions. Perhaps the war's most significant effect on spectrum policy, however, was the fact that many American soldiers were trained in the use of the wireless. When the war ended, those soldiers returned to civilian life and brought with them an enthusiasm for, and understanding of, wireless broadcast.

[16] 37 Stat. 302 (1912).

[17] Thomas Krattenmaker & Lucas A. Powe, Jr., Regulating Broadcast Programming 6 (1994).

Herbert Hoover and the Early Growth of Radio[18]

All this led to the airing of the 1920 presidential election results by Westinghouse's station KDKA and the Detroit News' WWJ. Their broadcasts made the medium famous. Yet despite these successes, there were only five new applications for station licenses during the next year.[19] Then, following the broadcast of the 1921 World Series between the Yankees and the Giants on WJZ, broadcasting as we know it took off.

One important reason for the early growth of commercial radio broadcasting was that it found a sympathetic champion in its licensor, Secretary of Commerce Herbert Hoover. Hoover remolded the Radio Act of 1912 from its original emphasis on wireless point to point telegraphy to one that fostered a wider use of the newly emerging technology. The Radio Act had created a division among military, commercial (meaning for profit, for example telegraphy), and amateur uses. Hoover subdivided the commercial category, creating a separate grouping called "broadcasting" to satisfy the needs of the thousands of Americans purchasing receiving sets.[20] True amateurs were forced to use undesirable wavelengths under 200 meters, but the "more powerful and sophisticated amateur stations" were re-licensed under this new "commercial" category and authorized to use 360 meters (833.3 kilocycles).[21] "Broadcasting"—propagating a signal for all to receive—thus became a permissible commercial venture, just as "telegraphy"—transmitting personal messages from point to point—had been for some time.

As both champion of the new industry and the official in charge of licensing, Hoover now faced a problem that would plague him and the industry throughout the early years: signal interference. The periodical Radio Broadcast editorialized in both October and November of 1921 about the crowding of the air and its "resulting interference of signals between the several stations, which made listening no pleasure."[22] The problem would only get worse as demand grew. In 1922, seventy-seven broadcast licenses were issued in March, followed by seventy-six in April, ninety-seven in May, seventy-two in June, and seventy-six in July. By the end of 1922, nearly six hundred stations were on the air and interference was pervasive.

Attempting to achieve both consensus and legislation, Hoover called, in 1922, what would be the first of four National Radio Conferences. Hoover keynoted the Conference and actively participated in its deliberations, which emphasized the public good that came from this new service.

Hoover thought broadcasting used "a great national asset" (the spectrum) and believed "it becomes of primary public interest to say who is to do the

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[18] This material is adopted, with permission, from Krattenmaker & Powe, *supra* note 17.

[19] Lucas A. Powe, Jr., American Broadcasting and the First Amendment 52-54 (1987).

[20] Barnouw, *supra* note 11, at 91.

[21] Douglas, *supra* note 11, at 301.

[22] Powe, *supra* note 19, at 54-55.

broadcasting, under what circumstances, and with what type of material."[23] Hoover opened the Conference by noting "this is one of the few instances where the country is unanimous in its desire for more regulation."[24] At its end, the conferees—broadcasters, manufacturers, and a handful of other important players—unanimously resolved: "It is the sense of the Conference that Radio Communication is a public utility and as such should be regulated and controlled by the Federal Government in the public interest."[25]

When Congress did not act, Hoover took action on his own. In December 1922, Hoover expanded the frequencies available for commercial broadcasting from enough to support two stations per city to three and reassigned broadcasters to these frequencies.[26] To prevent further congestion resulting from added applications in the expanding industry, he would either deny applications or require some form of time sharing between broadcasters. Hoover's policies, however, were undermined two months after they were announced. In Hoover v. Intercity Radio Co., 286 F. 1003 (D.C. Cir. 1923), the U.S. Court of Appeals for the District of Columbia Circuit held that Hoover had the discretion under the Radio Act to select a frequency and set the hours of use, but that he lacked discretion to deny any application for a license.

With chaos looming again, Hoover called a second National Radio Conference. When it convened in late March 1923, Hoover had its recommend-dations already prepared.[27] They included invasion of the areas reserved for the government, moving maritime uses to a lower frequency than the Radio Act prescribed, and creating three different power levels for stations. Ignoring the contrary conclusion of Intercity Radio, the Conference declared, as Hoover had planned, that he had full authority "to regulate hours and wavelengths of operation of stations when such action is necessary to prevent interference detrimental to the public good."[28]

Following the Conference, Hoover once again reallocated broadcasters, this time squarely contrary to the express language of the Radio Act. He moved commercial users into spectrum reserved for government. The Navy was also moved from its statutory spectrum space, but voiced no objections because the move necessitated purchasing new and better equipment.[29] Broadcasters were placed between 550 and 1365 kilocycles. In an article entitled "Secretary

[23] "Speech to the First National Radio Conference," February 27, 1922. Document No. 209 Hoover Collection, Stanford University, quoted in Daniel E. Garvey, "Secretary Hoover and the Quest for Broadcast Regulation," 3 Journalism History No. 3 at 66, 67 (1976).

[24] George Archer, History of Radio to 1926, at 249 (1938).

[25] Hearings Before the Committee on the Merchant Marine and Fisheries, House of Representatives on H.R. 11964, 67th Cong. 4th Sess. 32 (1926).

[26] Phillip T. Rosen, The Modern Stentors 54 (1981).

[27] *Id.* at 56.

[28] Barnouw, *supra* note 11, at 121.

[29] Rosen, *supra* note 26, at 58.

Hoover Acts," Radio Broadcast noted that the broadcast interference problem had been "suddenly remedied" without passage of any legislation.[30]

The expanded band, combined with a downturn in radio revenues, allowed Hoover to give licenses to all who asked.[31] Half of the outlets were associated with either manufacturers or retailers of electrical appliances.[32] Newspaper publishers were another typical sponsor.[33] Sales of radio sets mushroomed and 10 percent of the population owned one by the end of 1924.[34]

The Rise and Fall of Hoover's Policies

By the end of 1925, 578 stations were broadcasting, and the band was full again.[35] Furthermore, as the industry matured, stations began to broadcast for longer hours and with increased power, resulting in widespread interference. Hoover first addressed this problem by urging stations to work out time sharing agreements or to agree to have one station buy the other's license. Often these measures worked; sometimes they did not. In Cincinnati, two stations on the same frequency could not find a satisfactory solution and simply broadcast simultaneously for weeks.[36] When private parties could not agree, Hoover again stepped in. Sometimes he ordered time sharing. Sometimes he demonstrated how excruciatingly slow the application process could be.[37] Eventually, after the fourth National Radio Conference in November 1925, Hoover announced that no more applications (including those for increased power) would be granted.[38]

Hoover thus completed an administrative tour de force, creating a working policy directly contrary to the one enshrined in law—one that ignored both the Radio Act and Intercity Radio. But it was not to last.

Hoover's outlaw edifice came tumbling down in December 1925 when the Chicago-based Zenith Corporation jumped from 930 KHz to 910 KHz for its Chicago broadcasts. Hoover had assigned Zenith 930 KHz. But, because this was the same frequency that General Electric had previously obtained in Denver, Hoover had limited Zenith to Thursdays between 10 p.m. and midnight, and only if GE chose not to broadcast then. Finding the limitations unacceptable, Zenith bolted for clearer air at 910 KHz, a Canadian frequency,

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[30] Quoted in *id*. at 57.

[31] Powe, *supra* note 19, at 57.

[32] Rosen, *supra* note 26, at 62.

[33] Newspaper publishers got involved with radio in part as a way to sell newspapers. The idea: listeners might purchase newspapers in order to find out what times particular radio programs would air. A famous newspaper-backed station (WGN, or "World's Greatest Newspaper") is considered later in these materials.

[34] *Id.* at 69.

[35] Powe, *supra* note 19, at 58.

[36] *Id.* at 59.

[37] Thomas W. Hazlett, The Rationality of Broadcast Regulation, 33 J. Law & Economics 133, 146 (1990).

[38] Rosen, *supra* note 26, at 79-80.

ceded by treaty.[39] When Hoover, now without options, moved against Zenith, his whole regulatory house of cards collapsed. The federal district judge read the Radio Act as the D.C. Circuit had in Intercity Broadcasting; Hoover's duty was to license, not to impose restrictions.[40] He could encourage time sharing, but imposing it was beyond his power.

Hoover did not appeal; instead he arranged for the acting attorney general to state that the Zenith opinion was correct.[41] The next day, Hoover ran up the white flag and announced that he was out of the business of regulation.[42] The result of this capitulation, which Hoover knew was inevitable, was chaos.

Louis Caldwell, the first general counsel of the Federal Radio Commission, described the six months following Zenith: "Nearly 200 new broadcasting stations crowded into channels already congested with about 550 stations. Existing stations 'jumped' their waves and increased their power at will; reception was practically ruined for the listening public, and anarchy reigned in the realm of radio."[43] As the Supreme Court subsequently noted, "the result was confusion and chaos. With everybody on the air, nobody could be heard."[44]

The Radio Act of 1927

The manufactured dispute between Zenith's president, Eugene McDonald, and Hoover produced what both wanted: action by a Congress heretofore unwilling to act.[45] The Radio Act of 1927, 44 Stat. 1162, enacting ideas that had been in the legislative hopper since the first National Radio Conference, replaced the statute enacted after the Titanic disaster and gave the nation a legal regime focused on the newly emerged commercial radio broadcasting industry.

The new Radio Act put first things first. Although the 1912 Act had required a license to use the air, it had been silent on the issue of ownership of the airwaves. The 1927 Act was not. It bluntly declared that there could be no private ownership of the airwaves; they were public and use could only occur with the government's permission. That permission, in the form of a license, would be granted without charge, but for no more than three years.

Congress knew that these licenses could not be granted to all comers. Thus, unlike the old Radio Act, the 1927 Act had to give the licensor guidance as to which applications should prevail. Any number of standards was possible: for example, first come, first served; a lottery; or an auction. Congress, however, had determined that the license should be free, so the idea of an auction was out. Adopting the idea that Hoover had articulated at the first National Radio Conference, Congress instead required licensees to render public service in

[39] Powe, *supra* note 19, at 59.

[40] United States v. Zenith Radio Corp., 12 F.2d 614 (N.D. Ill. 1926).

[41] 35 Opinions of the Attorney General 126 (1926).

[42] NBC. v. United States, 319 U.S. 190, 212 (1943).

[43] Louis Caldwell, Clearing the Ether's Traffic Jam, Nation's Business, Nov. 1929, at 34-35.

[44] NBC v. United States, 319 U.S. at 212.

[45] Rosen, *supra* note 26, at 93-95.

exchange for the privilege of using the now federally owned spectrum. Licenses would be granted according to the needs of the "public interest, convenience, or necessity"—a standard already in use in the public utilities and transportation areas.

The House of Representatives wanted to leave licensing power with the Secretary of Commerce. The Senate did not, instead preferring an independent regulatory commission. The Act reflected a compromise between the two. For one year, a geographically balanced five member commission was to exercise the government's licensing function; then that function would revert to the Secretary of Commerce. Senator Clarence Dill of Washington, the Senate's expert on radio and a key figure in drafting the Act, liked the compromise because, understanding both Congress and bureaucracy, he believed "if we ever got a Commission we would never get rid of it."[46] He was right. Congress ultimately abandoned the provision to return powers to the Commerce Department, and the successor to the "one year agency," the Federal Communications Commission, remains with us.

Finally, Congress understood that it did not want to create a National Board of Censors. Thus, section 29 of the Act made it plain that the licensing power did not include the power of censorship and licensing therefore could not "interfere with the right of free speech by means of radio communications."[47] Congress did not clarify how the mandate in section 29 would mesh with the equally strong mandate to award licenses in the public interest. By default that issue was left for future resolution by the Commission and the courts.

Principal Features of the 1927 Act

This background reveals that a central feature of the 1927 Radio Act was its deliberate choice to preclude private ownership of spectrum rights while licensing those rights for brief periods to private users free of charge. As we will see later in the book, nothing in the nature of broadcasting or the electromagnetic spectrum made that choice inevitable, but in fact no other alternatives were seriously considered. Senator Dill stated that "the one principle regarding radio that must always be adhered to, as basic and fundamental, is that government must always retain complete and absolute control of the right to use the air."[48] A contemporaneous analysis in the Yale Law Journal stated: "the idea that the 'government owns the ether' was an *idée fixe* in the debates of Congress."[49] Enacting this idea meant that administrators would parcel out, among competing technologies, permitted uses of the spectrum. Administrators also would select, from among competing applicants, which subset would become spectrum licensees. In short, government ownership meant government control—a point probably not lost on lawmakers of the time.

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[46] Quoted in Barnouw, *supra* note 11, at 199.

[47] 44 Stat. 1162, at 1171, Section 29 (1927).

[48] Clarence Dill, A Traffic Cop for the Air, 75 Review of Reviews 181, 184 (1927).

[49] Note, Federal Control of Radio Broadcasting, 39 Yale L. J. 244, 250 (1929).

Congress deferred most issues to the future, of course, choosing the relatively amorphous public interest standard as a codification of whatever standards would ultimately be applied. This was probably a welcome result from Hoover's perspective. Hoover had always understood that there would be some sort of amorphous quid pro quo for licensing: "It becomes of primary public interest to say who is to do the broadcasting, under what circumstances, and with what type of material."[50] And in broadcast—as distinct from comparable regulations applicable to transportation or public utilities—that public interest quid pro quo would determine not only the issues of the need for service and who would provide it, but also the somewhat novel issue of what the service itself would be.

The broadcast establishment, which accurately assumed that regulation would prefer its interests to those of the marginal stations and potential entrants, fully concurred in a public interest regulatory scheme. Each National Radio Conference endorsed Hoover's program. When Hoover, in 1925, stated that "we can surely agree that no one can raise a cry of deprivation of free speech if he is compelled to prove that there is something more than naked commercial selfishness in his purpose,"[51] the National Association of Broadcasters agreed: "The test of the broadcasting privilege [must] be based on the needs of the public."[52]

House sponsor Wallace White of Maine echoed the point after House passage of the Act. Under the Radio Act of 1912, an individual could "demand a license whether he will render service to the public thereunder or not." No longer. One of the "great advantages" of the 1927 Act is the requirement of service to the public.[53] As his Senate counterpart, Clarence Dill, so vigorously put it, "Of one thing I am absolutely certain. Uncle Sam should not only police this 'new beat'; he should see to it that no one uses it who does not promise to be good and well behaved."[54]

The Federal Radio Commission

What did the public interest mean? That would be left to the Federal Radio Commission (FRC). The charm of the public interest standard, Dill noted, was its vagueness and breadth: "It covers just about everything."[55]

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[50] Speech to first National Radio Conference, quoted in Garvey, *supra* note 23, at 67.

[51] Opening address to the fourth National Radio Conference, reprinted in Radio Control, Hearings Before the Senate Interstate Commerce Committee, 69th Cong. 1st Sess. 56 (1926).

[52] Resolution of the National Association of Broadcasters (NAB), presented at the fourth National Radio Conference, quoted in *id.* at 59.

[53] Wallace White, "Unscrambling the Ether," The Literary Digest, March 5, 1927, at 7.

[54] Dill, *supra* note 48, at 181.

[55] Quoted in Powe, *supra* note 19, at 61. William Mayton, The Illegitimacy of the Public Interest Standard at the FCC, 38 Emory L.J. 715 (1989), presents a contrary argument, suggesting that the Communications Act (which was based on the Radio Act) did not intend to give the FCC anything more than the powers of a traffic cop. This neglects the significance of the National Radio Conferences as well as the statements of Dill and White

The FRC, with but one confirmed member, no staff, and no appropriation, got off to a shaky start. But its First Annual Report defined the task ahead in a manner that set the regulatory agenda for decades: section 29 prohibits censorship, but "the physical facts of radio transmission compel what is, in effect, a censorship of the most extraordinary kind. There is a definite limit, and a very low one, to the number of broadcasting stations which can operate simultaneously." Consequently, some applicants must be told "there is no room for you." In making these determinations, the key policy question would be how to "measure the conflicting claims of grand opera and religious services, of market reports and direct advertising, of jazz orchestras and lectures on the diseases of hogs."[56]

The answer that unfolded over the next three years was a two step process. In its first step, the FRC reclassified and reordered broadcast stations while refusing to expand the broadcast band. The outcome continued Hoover's policy of favoring larger, established commercial broadcasters. The second step was acknowledging that programming counted and weeding out those stations that aired the less favored types. The first step slew the weak; the second destroyed the different.

Structuring the Broadcast Industry

The initial task facing the Commission was to decide how many stations to allow on the air, where they would be located, and under what conditions they would be operated. This task was made more complex by a 1928 amendment to the Radio Act that mandated an equalization of stations across five geographical zones.[57] Offered by Congressman E.L. Davis of Tennessee, it sought to replace stations in the more populous East with newcomers in the South and West. Toward the end of the summer of 1928, the FRC issued General Order Number 40, which enunciated the general principles to govern the allocations of frequencies and power nationwide.

Possibly the most important decision made at this time was the decision not to increase the broadcast band.[58] Instead, the Commission simply changed the assignments of 94 percent of all broadcast stations, making assignments that favored applicants with superior technical equipment, adequate finances, experienced personnel, and the ability to operate without interruption. These were Hoover's policies, and they favored established commercial broadcasters.[59] The Commission knew that there would be a reaction to all the redistributions, and it "launched an educational and public relations campaign to counteract this threat. Its press releases explained that the familiar broadcasting band originally

about control. The Commission may well have reached for even more power than it was granted, and perhaps compliant courts, especially the Supreme Court, too readily rubber-stamped the Commission, but the FRC understood it would have to look at programming and there was ample legislative support for just such a view.

[56] Federal Radio Commission, First Annual Report 6 (1927).

[57] 45 Stat. 373 (1928).

[58] Hazlett, *supra* note 37, at 155.

[59] Rosen, *supra* note 26, at 133.

established by Secretary Hoover had been retained in order to reduce inconvenience to listeners."[60] That is, listeners would not be troubled by having to choose between retaining their old sets limited to the stations already available on them or purchasing newer ones that could receive added stations (made available by broadening the band).[61]

With the implementation of General Order Number 40, the Commission finished its dealings with the traditional aspect of the public interest: determining whether a service shall be offered and quantitatively what it shall be. Next it turned to a new question: qualitatively, what shall the service be?

Defining Permissible Broadcasting

By the summer of 1928, the Commission believed that whatever section 29 might say about censorship, the Commission had to evaluate programming:

> Since the number of channels is limited and the number of persons desiring to broadcast is far greater than can be accommodated, the Commission must determine from among the applicants before it which of them will, if licensed, best serve the public. In a measure, perhaps, all of them give more or less adequate service. Those who give the least, however, must be sacrificed for those who give the most. The emphasis must be first and foremost on the interest, the convenience, and the necessity of the listening public, and not on the interest, convenience, or necessity of the individual broadcaster.[62]

The Commission then admonished those stations playing phonograph records, because such a station would not give the public anything it could not receive elsewhere in the community.[63]

Over the next year, the Commission turned on what it called "propaganda stations (a term which is here used for the sake of convenience and not in a derogatory sense)."[64] A year earlier it had warned New York socialist station WEVD (named for the socialist leader Eugene Victor Debs) to "operate with due regard for the opinions of others."[65] The Commission, relying on scarcity, asserted that stations should aim their programs at everyone. There was "not room in the broadcast band for every school of thought, religious, political, social, and economic, each to have its separate broadcasting stations, its mouth piece in the ether. If franchises are extended to some it gives them an unfair advantage over others, and results in a corresponding cutting down of general

[60] *Id.* at 135.

[61] Hazlett, *supra* note 37, at 155-56.

[62] Statement of the Commission, August 23, 1928, reproduced as Appendix F in Second Annual Report 166, 170 (1928).

[63] *Id.* at 168.

[64] FRC, Third Annual Report 34 (1929) (reporting Great Lakes Broadcasting).

[65] FRC, Second Annual Report 156 (1928) (reporting decisions of August 22, 1928).

public service stations."[66] Thus when the Chicago Federation of Labor applied for an increase in power and hours for its station WCFL, arguing that it broadcast programs of particular interest to organized labor and that there were sufficient listeners to justify the increase, the Commission responded that "there is no place for a station catering to any group. All stations should cater to the general public and serve public interest against group or class interest."[67]

The Commission campaigned against what it feared would be a balkanizing of the dial. "If, therefore, all the programs transmitted are intended for, and interesting or valuable to, only a small portion of that public, the rest of the listeners are being discriminated against." Broadcasters should strive for "a well-rounded program" where the needs of all potential listeners are met.[68] It did not matter whether there were several stations in the area. Each station was required to serve all potential listeners.

It was also not relevant whether the station was popular. If the station was not meeting the needs of its community, then it could be replaced even if it was highly popular. Commission actions against the Reverend Bob ("Fighting Bob") Shuler[69] and the famous "goat gland doctor," John R. Brinkley,[70] illustrate this principle. Further, each case generated appellate litigation that fully vindicated the FRC, setting a judicial pattern of deference that continued over the decades.

The Shuler Case

In 1926 a wealthy widow from Berkeley, impressed by one of Shuler's indignant sermons, gave him $25,000 to purchase KGEF Los Angeles, a one kilowatt station broadcasting 23½ hours a week on a shared frequency. Shuler broadcast his sermons each Sunday and took two additional weekday hours for himself. On Tuesdays he hosted the "Bob Shuler Question Hour" and on Thursdays he gave "Bob Shuler's Civic Talk."

As a rigid moralist with an intense dislike for prostitution and alcohol, Shuler found an incredible array of targets in prohibition era Los Angeles. During his two evening hours he railed against local corruption. Over the years Shuler built such a following that commercial stations were unable to sell advertising time opposite these two programs. Question Hour was the fourth most popular show in the market, and audience surveys showed that "Fighting Bob" reached an audience of about 600,000 as he lashed out at an imperfect world.

Shuler's application for renewal in 1930 stated that KGEF had "thrown the pitiless spotlight of publicity on corrupt public officials and on agencies of immorality, thereby gladly gaining their enmity and open threats to 'get' this station's license." No lie. The FRC hit Shuler with a hearing that aired charges

[66] FRC, Third Annual Report at 32.

[67] *Id*. at 36 (reporting Chicago Federation of Labor).

[68] *Id.* at 34.

[69] All of the facts about Shuler are taken from Powe, *supra* note 19, at 13-18.

[70] The facts about Brinkley are also taken from *id.* at 23-27.

that he had used his station irresponsibly in attacking virtually all aspects of Los Angeles city government. The hearing lasted sixteen days, and at its end the hearing examiner ruled for Shuler.

Shuler's opponents then went to the full Commission, which reversed and ordered KGEF off the air immediately. The Commission concluded that Shuler had used his station as a forum for outrageous and unfounded attacks on public officials "which have not only been bitter and personal in their nature, but often times based upon ignorance of fact for which little effort has been made to ascertain the truth. [Shuler] has vigorously attacked by name public officials and individuals whom he has conceived to be moral enemies of society or foes of the proper enforcement of the law. He has believed it his duty to denounce by name any enterprise, organization, or individual he personally thinks is dishonest or untrustworthy. Shuler testified that it was his purpose 'to try and make it hard for the bad man to do wrong in the community.'" The finding was, in the Commission's words, that his broadcasts were "sensational rather than instructive."[71]

The Brinkley Case

The FRC believed "Fighting Bob" Shuler had been operating KGEF as a personal outlet, a category that the Commission had ranked even lower than propaganda stations. That spelled nothing but trouble for Brinkley, the "goat gland doctor," whose KFKB was a personal outlet par excellence. Yet it was also the most popular station, not just in central Kansas, but in the entire United States, out-polling the runner up by a four to one margin. KFKB blanketed the area between the Rockies and the Mississippi and beyond, and Brinkley held his audience with an astute combination of fundamentalist theology and medical information. It was with the latter that Brinkley gained notoriety.

Brinkley's initial fame had come from his efforts to rejuvenate the male sex drive by implanting the gonads of a young Ozark goat in the patient's scrotum. A public spirited man, he even sponsored a Little League baseball team nicknamed the Brinkley Goats. Yet Brinkley understood that there was a limited future in goat gland transplants, and by the late 1920s his medical business focused on the prostate. Using both the mails and KFKB, Brinkley attempted to reach "the prostate man" and convince him that he had a problem that Brinkley could solve. "It certainly behooves a man who has an enlarged prostate to consider it, and we are indeed glad to hear from such men for we are convinced we can render [them] a real, genuine, and lasting service."

On a typical day Brinkley took to the air twice (after lunch and dinner) to speak on medical problems. The evening program would be a gland lecture, explaining the male change of life. "Our bodies are not holding up as well as those of our forefathers did. Enlargement of the prostate is on the increase." His other program was his "Medical Question Box." This grew out of his enormous daily mail. Typically he would pick up some letters on the way to the microphone, leaf through them, and choose which to read on the air. He would then

[71] Trinity Methodist Church v. FRC, 62 F.2d 850 (D.C. Cir. 1932).

quickly give his diagnosis, and prescribe the medicine required—by number, e.g., "Brinkley's 2, 16, and 17. If his druggist hasn't got them, he should write and order them from the Milford Drug Company, Milford, Kansas." As this indicates, Brinkley had expanded into the pharmaceutical business.

Predictably, the "goat gland doctor" drew the ire of organized medicine which challenged both his right to broadcast and his right to practice medicine. On a single unlucky Friday the thirteenth, in June 1930, he lost both. The FRC found that Brinkley's "Medical Question Box" diagnosis "upon what symptoms may be recited by the patient in a letter addressed to him, is inimical to the public health and safety, and for that reason is not in the public interest"; furthermore, KFKB was a "mere" adjunct to his medical practice and insufficiently attuned to the needs of Kansas.[72]

The Commission and the Courts

Both Shuler and Brinkley appealed to the D.C. Circuit. Both lost. These initial appellate decisions set a tone that would be adopted by the Supreme Court a decade later.

The court reviewing Brinkley's appeal agreed fully with the Commission that broadcasts should have a "public character. Obviously, there is no room in the broadcast band for every school of thought."[73] Broadcasting is "impressed with the public interest," and therefore the Commission "is necessarily called upon to consider the character and quality of the service to be rendered." The court summarily dismissed Brinkley's argument that the Commission had engaged in forbidden censorship. Section 29 went exclusively to prior scrutiny. What the Commission did, by contrast, was exercise its "undoubted right" to look at past performance. The court stated that, "in considering an application for a renewal of the license, an important consideration is the past conduct of the applicant, for 'by their fruits ye shall know them.' Matthew VII: 20."[74]

The court treated Shuler's appeal similarly. There was no censorship or denial of free speech, "but merely the application of the regulatory power of Congress in a field within the scope of its legislative power."[75] Shuler remained free to "inspire political distrust and civic discord"; he simply couldn't demand

[72] KFKB Broadcasting v. FRC, 47 F.2d 670, 672 (D.C. Cir. 1931). *See also id.* at 671 (noting the FRC's statement that "the operation of Station KFKB is conducted only in the personal interest of Dr. John R. Brinkley. While it is to be expected that a licensee of a radio broadcasting station will receive some remuneration for serving the public with radio programs, at the same time the interest of the listening public is paramount, and may not be subordinated to the interests of the station licensee."). On Dr. Brinkley, *see* R. Alton Lee, The Bizarre Careers of John R. Brinkley (2002).

[73] *KFKB*, 47 F.2d at 672. The Commission might have contrasted KFKB with a Gary, Indiana station that prevailed over a Chicago station because its programs were "musical, educational and instructive in their nature and [stressed] loyalty to the community and the Nation." *FRC v. Nelson Bros. Bond & Mortgage*, 289 U.S. 266, 271 (1933).

[74] *KFKB*, 47 F.2d at 672.

[75] Trinity Methodist Church, 62 F.2d at 851.

to use an instrumentality of interstate commerce "for such purposes."[76] The Commission was duty bound to look at Shuler's past broadcasts, and its conclusion that the public interest would not be served by re-licensing him was hardly arbitrary and capricious.[77]

NOTES AND QUESTIONS

1. Telecommunications in Context. The evolution of telecommunication regulation is best understood in context. Real events focused public attention on the various issues that are the concern of this textbook; and those events inevitably influenced the debates that followed. The early history of spectrum regulation crystallizes this point well. For example, did you notice how Marconi and his contemporaries used the term "wireless" instead of, say, "radio" or "broadcast"? Do you see how these terms emphasize different aspects of the technology? How that emphasis might matter when it comes time to make important policy and regulatory choices?

2. Localism and Diversity. The early history of broadcast regulation exposes themes that will stay with us throughout the entire text. Two themes in particular are worth special mention here. First, notice the emphasis on localism, evidenced in these early materials by Congressman Davis's legislation mandating an approximate equalization of broadcast radio stations across five geographic zones. Localism in the broadcast setting (arguably) serves two goals: (1) by restricting the number of stations in large markets, it increases investment in broadcast infrastructure in smaller markets, thus ensuring that no one is left too far behind in the broadcast revolution; and (2) to the extent localism means local owners, localism helps to ensure that broadcasters will be part of, and thus perhaps more responsive to, the local community. Second, these early materials also emphasize the importance of diversity—phrased here as an obligation that each broadcaster strive to present a well-rounded menu of offerings that would appeal to a broad group of listeners. Diversity in all of its form is a central theme in broadcast regulation, a point later materials will reveal.

3. *Shuler* and *Brinkley*. What are we to make of the *Shuler* and *Brinkley* decisions? If Brinkley had chosen to write a newspaper column where readers would write in for advice and he would choose some subset of the letters and respond in print, would the Commission have had any power to stop him? Would the government have acted against him? Was there something special to the case because Brinkley was using the airwaves instead of the newspaper? Would Shuler have been treated differently were he writing a newspaper column instead of giving talks on the radio?

[76] *Id.* at 853.

[77] *Id.* at 852.

4. The 1934 Act. The Communications Act of 1934 ultimately replaced the Radio Act of 1927 and substituted the Federal Communications Commission (FCC) for the Federal Radio Commission. The 1934 Act made only minimal changes in broadcasting law; its principal purpose and effect was to take federal regulation of interstate telephone and telegraph service away from the Interstate Commerce Commission (ICC) and lodge those powers with the FCC.

5. Fundamental Issues. It is truly remarkable how the fundamental issues concerning spectrum regulation today are the same as they were back in the early days of broadcast. The early radio acts confronted such questions as: What rules and processes should govern allocation of spectrum rights to new technologies? Should government "own" the spectrum? Give it away? On the basis of comparing the merits of various programs? Measuring "merit" by its appeal to the public generally or to specific, "deserving" segments of the public? If the issues today are the same, but they lead to different policy responses, what might explain the change? Is it a function of differences in the technology? How the technology is perceived? Are we just more experienced today than we were back in 1927?

§ 1.4 Rationales for Regulation

Thus far we have discussed the history of spectrum regulation and the nature of spectrum. As to the latter, section 1.2 of this chapter pointed out that wireless frequencies are just a resource employed in assembling telecommunications services, much as wood pulp is a resource used in the production of newspapers and cotton fiber is a resource used in the production of shirts and socks. What remains to be explained is why the federal government is so involved in the allocation of frequencies given that—beyond establishing some basic property rules—it is not very involved at all with wood pulp or cotton fibers.

It may seem tempting to say that the federal government controls the spectrum because it "owns" the airwaves but does not own other resources.[78] But that just begs the question why the government asserts ownership over all the spectrum. The government once owned huge chunks of land that it sold (or gave) to settlers. Why shouldn't it have done the same thing with spectrum? The government could assume ownership of any property for public use via eminent domain so long as it paid just compensation. Why does it make sense for the government to do so with respect to the airwaves and not with respect to other resources?

To answer that question, we focus on the classic argument that has been made in favor of government regulation of spectrum: that the spectrum is scarce. Note that this argument arose principally in the broadcast context—as that was the main use of spectrum for much of the 20th century)—but it applies

[78] The relevant federal statute, 47 U.S.C. §301, does not explicitly claim government ownership of the spectrum, but instead asserts government control. That, however, is not central to the problem with this argument.

to spectrum regulation more generally. As you consider this argument, see if it helps you to answer the following questions: Why did the federal government decide to seize the spectrum and give an administrative agency, rather than producers, ultimate control over how producers would deliver information products over the air to consumers? Why did the government likewise give that same federal agency influence over the content of the information transmitted instead of simply allowing consumers to determine content through their viewing and purchasing decisions? Are there good reasons that we allocate spectrum to broadcasters through an administrative agency but ration their other equipment—say, antennas—through conventional markets?

§ 1.4.1 Scarcity/Interference

Two parties cannot broadcast on the same frequency, at the same time, in the same place, in the same direction without causing one another at least some interference. If two parents simultaneously call for their respective children from the same porch, on the same street, at the same time, the two messages will likely become incomprehensively garbled. Similarly, if one person starts tapping his finger in a pond, the ripples will travel cleanly until someone else starts tapping in that same water, at which time both patterns will likely be lost. One goal of telecommunications policy is to ensure that broadcasters do not interfere with one another in comparable ways, rendering each other's communications incomprehensible.

That goal turns out to be difficult to achieve. One problem is that interference can be caused not merely by other broadcasters, but also by natural phenomenon like thunderstorms. Lighting, after all, is an energy wave that propagates through the air, and to date the government has had no luck convincing lightning to confine itself to particular frequencies at particular times. Neon signs similarly put out electromagnetic waves that can interfere with licensed broadcast technology, as do the aforementioned garage door openers, let alone Wi-Fi modems. This means that any regulation designed to avoid interference between radio waves has to consider much more than just the obvious telecommunications sources.

A second complicating factor is that patterns of interference can arise in unexpected ways. For instance, radio station A might not interfere with radio station B at a time when those are the only two stations using the airwaves, but radio station A might interfere with station B when a new station C joins the spectrum. This problem is known as intermodulation. Similarly, stations A and B might not interfere during the day, but they might interfere at night, because radio waves travel differently depending on whether the sun is out. Policing interference is thus no simple matter; any rules must be sensitive to and account for various interactions between proximate radio waves.

Low levels of interference are ubiquitous. Every transmitter creates some interference, so even turning on a light creates a tiny amount of interference for nearby users of nearby frequencies. In some cases the interference is so small that it does not create a noticeable loss of signal quality. The real fear is of more

significant interference—one set of radio waves overlapping with another set to a sufficient degree that a receiver can hear neither clearly.

The reality of interference implies that there is another problem lurking in the policy space: scarcity. If two radio stations cannot both broadcast on the same frequency at the same time, and if there are a limited number of frequencies at which radio communication can take place, then at some point demand might exceed supply. How soon that constraint is reached depends heavily on government policy. If the government sets a low price for spectrum use, demand will quickly reach unsustainable levels. If the government pressures private parties to use wireline communications technologies where possible, a given amount of spectrum might be enough to serve all comers. Note that the government can also encourage firms to in essence increase the amount of spectrum available. After all, spectrum is just a fancy term for the range of frequencies at which today's technologies can communicate without wires. To the extent government policies encourage and reward research, any given range of frequencies can likely be further optimized to carry additional information, and new ranges of frequencies can surely come into productive use.

This idea—that spectrum is subject to interference and thus scarce—has long been the most common argument put forward in favor of government regulation of spectrum. The Supreme Court itself adopted this rationale in its earliest case addressing the government's control over the spectrum, NBC v. United States, 319 U.S. 190 (1943). The Court stated that

> [There are] certain basic facts about radio as a means of communication—its facilities are limited; they are not available to all who may wish to use them; the radio spectrum simply is not large enough to accommodate everybody. There is a fixed natural limitation upon the number of stations that can operate without interfering with one another. Regulation of radio was therefore as vital to its development as traffic control was to the development of the automobile. In enacting the Radio Act of 1927, the first comprehensive scheme of control over radio communication, Congress acted upon the knowledge that if the potentialities of radio were not to be wasted, regulation was essential.

Id. at 213. As we will see in Chapter Five, the Supreme Court adopted similar reasoning in Red Lion Broadcasting Co. v. FCC, 395 U.S. 367, 399 (1969).

The Court was understandably concerned that interference would destroy the utility of the spectrum as a resource. As we have stressed, if two transmitters broadcast at the same time, on the same frequency, from the same location, in the same direction, and at the same power, neither of them is likely to be heard. But every rivalrous resource is subject to interference. If two people try to sit in the same desk chair at the same time they will interfere with each other. That's why we call such goods "rivalrous." Saying that wireless frequencies are scarce because of interference does not distinguish them from virtually every other good.

The Supreme Court in *NBC* and *Red Lion* emphasized that there was excess demand for the free broadcasting licenses provided by the government, and suggested that this highlighted the scarcity of spectrum. But, again, every productive resource—labor, steel, land, investment capital—is scarce in that (a) if given away at no charge people would request more of it than is available and (b) if we could create more of it, that additional increment also could be put to productive use. To say that spectrum is scarce in this way is quite true, then, but the statement fails to distinguish spectrum from virtually every other resource, most of which are not regulated.

One might want to argue that wireless frequencies are different from other resources in that the frequencies are finite, and most other resources are not. But, as we noted in section 1.2, the throughput of spectrum has increased dramatically over the years. Improvements in technology have greatly increased the range of usable spectrum, as higher and higher frequencies can be used to send data. And technology has also enabled us to send more and more data over the same swath of frequencies (through, for example, digital compression). Besides, at any given point there are only so many trees in the world, so many pounds of steel, and so on. Just as we could expend more resources to get more newsprint, we could expend more resources to increase the communications capacity of the spectrum.

The foregoing addresses the question whether spectrum is unusually scarce. The argument does not stop there, of course; the key assertion is that scarcity justifies government control. But to say that spectrum is "scarce" is only to say that the use of spectrum must be allocated among those who desire it. Use of any scarce resource must be allocated. In the U.S. economy this allocation usually is accomplished by prices set in open markets. It is unsatisfying, then, to say that administrative allocation of spectrum is necessary because of spectrum scarcity. The real issue seems to be whether spectrum is "scarce" in some special way (unlike, say, land or iron ore) that peculiarly requires a non-market allocation mechanism.

To return to the chair example above, two people cannot comfortably sit at the same time in the same desk chair, yet that fact has not led government to regulate chair use. Rather, ownership of the chair is taken to confer the authority to exclude others from sitting in it, and, with that property right in place, government regulation is deemed unnecessary. Thomas Hazlett puts the point this way: "The interference problem is [rightly understood to be] one of defining separate frequency 'properties,' but it is logically unconnected to the issue of who is to harvest those frequencies. To confuse the definition of spectrum rights with the assignment of spectrum rights is to believe that, to keep intruders out of (private) backyards, the government must own (or allocate) all housing. It is a public policy non sequitur."[79]

[79] Thomas W. Hazlett, The Rationality of Broadcast Regulation, 33 J. Law & Econ. 133, 138 (1990).

A property rights approach was in fact taken early in the history of spectrum regulation. In Tribune Co. v. Oak Leaves Broadcasting,[80] the Chicago Tribune Company alleged that WGN (a radio station it owned) had been broadcasting daily for two years, had expended substantial money on equipment, and had a large and regular audience; and that the defendant, Oak Leaves, after jumping frequencies twice, had landed within 40 kilocycles of WGN's frequency. WGN asserted that Oak Leaves had moved in so close because it was an unpopular station. According to WGN, Oak Leaves' hope was that some of WGN's listeners would tune to the wrong station by accident. Oak Leaves essentially responded that the separation was ample and therefore it had not harmed WGN.

It is obvious from the opinion that the "thousands of affidavits"[81] filed by the parties allowed the trial judge to learn a considerable amount about a new and complex industry. His opinion notes the local mores whereby all the Chicago stations went silent on a specific night so that their listeners could tune in distant stations. It also notes that the public had become educated in the use of radio and knew how to obtain the type of programming it desired. This would prove difficult, the judge concluded, unless at least a 50 kilocycle separation was maintained within a 100 mile radius.

The trial judge thus resolved the issue by defining property rights. Drawing analogies to the law of unfair competition and also the law of water rights, the judge concluded that, by reason of use and expenditure of money and effort, the plaintiff had under the Common Law acquired something "generally recognized" as property.[82] According to the judge, 40 kilocycles was not a sufficient separation to respect that property, and so judgment came down in favor of the plaintiff.

Of course, the property rights approach did not carry the day. The federal government today regulates the spectrum, and the main justification put forth in support of that regulation is scarcity/interference. Thus, the question of whether something about telecommunications makes scarcity and interference unique deserves a closer look. It is to that endeavor we now turn, beginning with remarks given in 1959 before the FCC by Nobel Prize-winning economist Ronald Coase.

WHY NOT USE THE PRICING SYSTEM IN THE BROADCAST INDUSTRY?

Ronald Coase, Testimony before the FCC, December 1959
Reprinted in 4 Study of Radio & T.V. Broadcasting (No. 12782) (1959)

I appear before you with a strong conviction and a bold proposal. My conviction is that the principles under which the American economic system generally operates are fundamentally sound. My proposal is that the American broadcasting industry adopt those principles.

[80] Tribune Co. v. Oak Leaves Broadcasting Station (Ill. Cir. Ct. 1926), reprinted in 68 Cong. Rec. 215, 215-19 (1926).

[81] *Id.* at 218.

[82] 68 Cong. Rec. at 219.

In presenting my case, I suffer from the disadvantage that, at the outset, I must attack a position which, although I am convinced it is erroneous, is nonetheless firmly held by many of those most knowledgeable about the broadcasting industry. Most authorities argue that the administrative assignment of radio and television frequencies by the Commission is called for by the technology of the industry. The number of frequencies, we are told, is limited, and people want to use more of them than are available.

But the situation so described is in no sense peculiar to the broadcasting industry. All resources used in the economic system are limited in amount and are scarce in that people want to use more of them than exists. This is so whether we think of labor, land, or capital. However, we do not ordinarily consider that this situation calls for government regulation. It is true that some mechanism has to be employed to decide who, out of the many claimants, should be allowed to use the scarce resources. But the usual way of handling this problem in the American economic system is to employ the pricing mechanism, and this allocates resources to users without the need for government regulation.

This is the system under which broadcasting concerns obtain the labor, land, and capital equipment they require. There is no reason why the same system could not be adopted for radio and television frequencies. If these were disposed of by selling or leasing them to the highest bidder, there would be no need to use such criteria as proposed or past programming as a basis for the selection of broadcast station operators. Such a system would require a delimitation of the property rights acquired, and there would almost certainly also have to be some general regulation of a technical character. But such regulation would not preclude the existence of private rights in frequencies, just as zoning and other regulations do not preclude the existence of private property in houses.

Such a use of the pricing mechanisms would bring the same advantages to the radio and television industry as its use confers on the rest of the American economy. It would avoid the need for much of the costly and time-consuming procedures involved in the assignment of frequencies by the Commission. It would rule out inefficient use of frequencies by bringing any proposal for the use of such frequencies up against the test of the market, with its precise monetary measure of cost and benefit. It would avoid the threat to freedom of the press in its widest sense which is inherent in present procedures, weak though that threat may be at the moment. And it would avoid that arbitrary enrichment of private operators of radio and television stations which inevitably follows from the present system. A station operator who is granted a license to use a particular frequency in a particular place may be granted a very valuable right, one for which he would be willing to pay millions of dollars and which he would be forced to pay if others could bid for the frequency. We sometimes hear denunciations of giveaways and their corrupting influence. You, gentlemen, are administering what must be one of the biggest giveaways of all.

It has been my experience that such a suggestion as I have made horrifies my listeners. I am told that it is necessary to choose those who should operate radio and television stations to make sure that the public interest is served and that programs of the right kind are transmitted. But, put this way, the case for governmental selection of broadcast station operators represents a significant shift of position from that which justifies it on technological grounds. It is, of course, a tenable position. But if the object of the selection is, in part, directly or indirectly, to influence programming, we have to face squarely the issue of freedom of the press so far as broadcasting is concerned.

But in any case it may be doubted whether an indirect attempt to influence programming through the selection of broadcast station operators could ever be very effective. For over 30 years, the federal government has been selecting broadcast station operators on the basis, among other things, of their good character and their devotion to the public interest. By now one would expect the broadcasting industry to be a beacon of virtue, shining out in a wicked world. Such, I am afraid, is not the case.

NOTES AND QUESTIONS

1. Defining Property Rights. In order for a market system to work, the government would need to delimit specific bundles of rights that could then be recognized in particular users. Just as land ownership includes, among other things, the right to exclude others under certain circumstances and rights with respect to the use of natural resources above and below ground level, spectrum ownership, too, would have to be articulated in terms of specific rights to use and exclude. How difficult would that articulation be? More difficult than it is in other settings? Enough to explain why we regulate spectrum but not wood pulp? (Does the current system suffer from the same difficulties, or does government involvement mean that there is less of a need for clearly delimited rights?)

Think specifically about how you would define property rights in spectrum. Perhaps in terms of inputs, with the government recognizing in a particular party the (transferable?) right to build a tower of a certain height, at a particular location, transmitting a signal at a particular frequency and power level, during particular times, and in a particular direction? Indeed, a group of scholars in 1969 proposed just such a definition of spectrum property rights based on parameters of time, geographic area, power, and wave frequency.[83] What drawbacks do you see to such a style of rights definition? Are there other approaches that might prove more workable? What further parameters would need to be articulated beyond these technical ones in order to complete the definition of property rights in radio spectrum?

[83] Arthur S. Devan et al., A Property System for Market Allocation of the Electromagnetic Spectrum: A Legal-Economic-Engineering Study, 21 Stan. L. Rev. 1499 (1969).

2. The Coase Theorem. Coase is perhaps most famous for his work on the importance of transaction costs. Yet, might it be argued that, in his remarks before the FCC, Coase neglected the important role transaction costs play in the market for telecommunications services? Think about how many parties use spectrum on both the national and international level, both as suppliers of telecommunications services and as consumers of those services. Or how even a single radio signal at a relatively low energy level can still interfere with dozens of signals hundreds of miles away. Does Coase jump over this point too quickly? Are transaction costs a good reason for government regulation of the spectrum?

3. Zoning. Thus far, the theme of this section has been to point out that scarcity/interference is a common problem to which the typical response is not to regulate but instead to define property rights and then defer to market interactions. With respect to land ownership, however, government does regulate—in the form of zoning laws, tort suits for nuisance, and so on. Does Coase's attack call all these "regulations" into question? Conversely, does the existence of zoning law make you wonder whether Coase has missed something in his analysis of spectrum allocation?

Looked at another way, is there something special about both land and spectrum that distinguishes them from other goods? For example, the government uses land for public purposes (say, government buildings and public parks) and the government also has significant demand for spectrum (for example, military use and police radio). Does this fact help to explain why, in telecommunications and land use, scarcity/interference has led to government regulation whereas elsewhere it has led to more market-based solutions?

4. For Further Consideration. What is lost by the use of an administrative agency instead of market forces? Are there corresponding gains? Are traditional worries about markets—say, the fear of monopoly or concerns about wealth effects—somehow more salient in the telecommunications context? Can a market work in telecommunications given that, for services like broadcasting, the equipment that transmits signals is typically owned by one group (broadcasters) whereas the equipment that receives those signals is typically owned by another, independent group (consumers)? Is this why we regulate? If we ask broadcasters to bid for spectrum, would they consistently underbid, on the theory that broadcasters who rely on commercial advertisements for revenue likely are willing to pay less for the right to air any given program than viewers would pay were they paying for content directly? (If that is the case, is it an argument against free broadcast and in favor of subscription television instead?) Does regulation perhaps preserve for the government more flexibility than a market regime would? Given the newness of the technology, was that a good justification for at least the early pattern of regulation?

§ 1.4.2 Special Interest Protectionism

If scarcity/interference does not provide a convincing account for why it is that the government regulates spectrum, perhaps a more convincing account centers on the politics of government regulation. In the excerpt that follows, Thomas Hazlett offers an interpretation of the 1927 Act under which the primary motivation for the Act was not to reduce interference among broadcasters by asserting control over the airwaves, but rather to distribute the monetary rewards from broadcasting among certain politically dominant claimants. The 1927 Act was not, in his view, about efficiency, scarcity, or interference; it was about simple, run-of-the-mill rent seeking—albeit rent seeking with important First Amendment implications.

THE RATIONALITY OF U.S. REGULATION OF THE BROADCAST SPECTRUM

Thomas W. Hazlett, 33 J. Law & Econ. 133, 134, 143-44, 147-170 (1990)

[Spectrum rights were for many years awarded to private users on a no fee basis, thus conferring significant economic rents on private parties at substantial opportunity cost to the fisc. Moreover, Federal Communications Commission policies openly sought, virtually throughout the agency's entire life span, to restrict the number of licensed broadcasters in any given area to something below the number technically possible. These regulations were justified on an interference rationale. Economists, political scientists, and lawyers generally agree that the interference rationale for licensure is nonsensical. They describe the licensing policy as a logical but naive mistake in response to the "chaos" that existed before 1927.][84]

This article seeks to revise such thinking about the "wrongheadedness" of U.S. regulatory policy toward the broadcast spectrum. Rather than stumbling into a legal structure under erroneous pretenses, a careful examination of the early radio broadcasting market and the legislative history of the Federal Radio Act of 1927 reveals that subsequent decision making under the "public interest, convenience, or necessity" licensing standard was a compromise designed to generate significant rents for each constituency influential in the process. Most fundamentally, the nature of rights in the "ether" was precisely understood; the regulatory approach adopted chose not to reject or ignore them but to maximize their rent values as dictated by rational self interest.

I. A Market for the Ether

In the early days of radio (that is, pre-1927), there existed a very lively market in broadcast properties, sold with frequency rights attached. Station licenses were known to be scarce, were commonly taken to confer exclusive rights, and were traded freely, often at prices reflecting considerable rents. Indeed, the spectrum policy problem of this era (1923 26) was that the

[84] [Ed. For clarity and brevity, we paraphrase Hazlett here, using many of his phrases. Readers interested in Hazlett's fuller articulation of these introductory points are encouraged to consult the original article.]

Secretary of Commerce had been ordered to issue licenses to all comers, and the Secretary in the end relied on market transactions to solve that problem, minimizing broadcasting disruptions by engaging in the sorts of negotiations predicted by the Coase Theorem.

II. The "Breakdown of the Law"

The extent to which the businessmen, lawyers, and policymakers of the era understood that establishment of property rights in spectrum constituted the necessary and sufficient condition for the efficient functioning of the pricing system is revealed by the anticipation of, and reaction to, the seminal policy regime switch embodied in United States v. Zenith Radio Corp., which found the existing licensing method to be without force of law.[85] Secretary of Commerce Herbert Hoover had been assigning frequencies on a "first-come–first-served" (or "priority-in-use") basis, either withholding licenses to late-comers or issuing them only on a time-sharing arrangement, and he was openly enforcing license transfer via sales of stations. As this was the case, the great calm prevailing in broadcasting prior to the *Zenith* decision (and the confirming opinion of the attorney general) was abundant proof that no "public interest" licensing standard was necessary to eliminate the externality problem. That the sole solution to interference lay in enforceable, excludable rights was a commonplace; Hoover was commended enthusiastically (indeed, fawningly) by the broadcast industry for enabling a smoothly functioning market, despite imposing no more than a noninterference rule for license issuance. It was not until the Radio Act of 1927 that any public interest standard was adopted, yet the market was thought to have worked well until July 8, 1926, when the acting Attorney General sided with Zenith and declared the federal government without authority to define rights to spectrum.

In fact, the federal court's overruling of Secretary Hoover's rights-definition rule in Zenith, not the "free market," was then universally credited with creating anarchy in radio broadcasting. A typical press report explained the property rights dilemma rather succinctly, if colorfully in December 1926:

> Until last July, order was maintained on the broadcasting highways by the Department of Commerce, which assigned a channel to each station on which it could operate without bumping its neighbors. After the wave lengths were all assigned, the Department refused to create confusion by licensing more stations. Then court decisions and Attorney General's opinions denied the right of the Department to regulate in any respect, and threw open the radio door to every-one who wished to enter. The air was declared free—that is, free to the broadcasters; but it is not free to the listening public, who now have no liberty of choice in radio reception. They may be able to get a desired station, but they receive its programs only to the tune of disturbing squeals, whistles, or jumbled words from some unwelcome intruder. For as

[85] 12 F.2d 614 (N.D. Ill. 1926).

> soon as the bars went down, the expected occurred. Since July, some seventy-five new stations have pushed their way into the crowded lanes, and a like number have added to the jumble by shifting wave lengths, all jostling each other and treading on the toes of the first comers, who, from the height of their respectability, style the intruders "pirates" and "wave jumpers." The disturbed public uses still stronger appellations.[86]

So widespread was this understanding of the allocational importance of private property rights without a public interest award standard that a Yale Law Journal article of 1929 wrote plainly that, "in 1926, after a second adverse decision to the effect that the Secretary of Commerce had no power under the Act of 1912 to restrict the time of operation or frequency of any station, there came a period of unregulated confusion generally known as the 'breakdown of the law.'"[87] Similarly, Frank Rowley noted that "Until April, 1926, the situation was fairly well in hand. There was some interference, due to the surplus of stations over the number of available channels, but in almost every case, station owners showed a willingness to cooperate in making beneficial adjustments. In April, however, the comparative security of the broadcasting situation was disturbed by a decision in the Federal District Court for Northern Illinois in the case of United States v. Zenith Radio Corporation."[88]

III. An Innocent Solution Preempted

As interference plagued much of the broadcast spectrum during the "breakdown" period, an end to radio interference was being crafted not only in Washington but also in the courts. If the common resource problem was clearly identified by contemporary analysts, so was its solution: "establishing legally the priority to an established wave length," as Radio Broadcast magazine then put it.[89] In the fall of 1926, a simple and compelling state court decision did just that.

[Hazlett here introduces Tribune Co. v. Oak Leaves Broadcasting Station, discussed earlier in this chapter.] Chancellor Francis S. Wilson decided Oak Leaves wholly within the spirit of a property rights solution to a common resource problem. The decision found that "unless some regulatory measures are provided for by Congress or rights recognized by State courts, the situation will result in chaos and a great detriment to the advancement of an industry which is only in its infancy."[90] It went on to analogize the right in broadcast frequencies to other long protected propertied interests.

While it is true that the case in question is novel in its newness, the situation is not devoid of legal equitable support. The same answer [that no rights in air

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[86] The Survival of the Loudest, Independent 623 (December 11, 1926).

[87] Federal Control of Radio Broadcasting, 29 Yale L. J. 247 (1929).

[88] Frank S. Rowley, Problems on the Law of Radio Communication, 1 U. Cin. L. Rev. 5 (1927). This explanation became official doctrine in the Federal Radio Commission's first annual report. See Federal Radio Commission, Annual Report 10 (1927).

[89] The Courts Aid in the Radio Tangle, Radio Broadcast 358 (February 1927).

[90] 68 Cong. Rec. 219.

space exist] might be made, as was made in the beginning, that there was no property right, or could be, in a name or sign, but there has developed a long line of cases, both in the Federal and State courts, which has recognized under the law known as the law of unfair competition, the right to obtain a property right therein, provided that by reason of their use, he has succeeded in building up a business and creating a good will which has become known to the public and to the trade and which has served as a designation of some particular output so that it has become generally recognized as the property of such person.[91]

Using the further analogy of riparian rights, the Chancellor concluded "that a court of equity is compelled to recognize rights which have been acquired by reason of the outlay and expenditure of money and the investment of time. We are of the further opinion that, under the circumstances in this case, priority of time creates a superiority in right."[92] Judge Wilson then issued an admonition to the respondents, pending a final hearing, for the "pirate" broadcaster to keep a distance of at least fifty kilocycles from the established WGN frequency. Owing to his fundamental understanding of radio law and the crucial nature of Oak Leaves to the policy outcome, I quote the magistrate's findings at length.

So far as broadcasting stations are concerned, there has almost grown up a custom which recognizes the rights of the various broadcasters, particularly in that certain broadcasters use certain hours of the day, while the other broadcasters remain silent during that particular period of time. Again, in this particular locality, a certain night is set aside as silent night, when all local broadcasters cease broadcasting in order that radio receivers may be able to tune in on outside distant stations.

Wave lengths have been bought and sold and broadcasting stations have changed hands for a consideration. Broadcasting stations have contracted with each other so as to broadcast without conflicting and in this manner be able to present their different programs to the waiting public. The public itself has become educated to the use of its receiving sets so as to be able to obtain certain particular items of news, speeches, or programs over its own particular sets.

The theory of the bill in this case is based upon the proposition that by usage of a particular wave length for a considerable length of time and by reason of the expenditure of a considerable amount of money in developing its broadcasting station and by usage of a particular wave length educating the public to know that that particular wave length is the wave length of the complainant and by furnishing programs which have been attractive and thereby cause a great number of people to listen in to their particular programs that the said complainant has created and carved out for itself a particular right or easement in and to the use of said wave length which should be recognized in a court of equity and that outsiders should not be allowed thereafter, except for good cause shown, to deprive them of that right and to make use of a field which had

[91] *Id.*

[92] *Id.*

been built up by the complainant at a considerable cost in money and a considerable time in pioneering.[93]

In other words, private rights in the airwaves under common law were immediately recognized as a solution to the interference problem. Radio Broadcast noted in its February, 1927 issue that the case was key in "establishing legally the priority to an established wavelength," and concluded that "it establishes a most acceptable precedent."[94] Other stations beleaguered by spectrum trespassers quickly moved to file similar claims in state courts.

It was clear that a system of excludable, transferable property rights in spectrum (1) was widely understood as necessary and desirable so as to efficiently solve the radio allocation problem and (2) could well be expected to come by way of common law, via the priority in use principle. A single trial court decision would in no definitive way answer the national property rights question, but the analysis—and its political implications—were clear.

IV. The Agenda of The Regulators[95]

The Congress responded to Oak Leaves instantly. After years of debate and delay on a radio law, both houses jumped to pass a December 1926 resolution stating that no private rights to the airwaves would be recognized as valid, mandating that broadcasters immediately sign waivers relinquishing all rights and disclaiming any vested interests. The power to require such was the Interstate Commerce Clause, but the motive was that Congress was nervous that spectrum allocation would soon be a matter of private law.

Should those common law principles apportion the spectrum to private users, the "breakdown of the law" would be remedied, but the federal government's ability to control or even influence broadcasting would vanish. Compromise legislation was quickly hammered together; a bill creating an independent five member regulatory commission was passed by both houses, endorsed by Hoover, and signed by President Coolidge.

The policy debate was led by men who clearly understood—and articulated—that interference was not the problem, interference was the opportunity. The efficiency issues were demarcated from political distributional questions both in their words and their actions. In 1925, Herbert Hoover explicitly separated the respective issues of rights definition and political control over licensees thus:

> It seems to me we have in this development of governmental relations two distinct problems. First, is a question of traffic

[93] *Id.* at 217.

[94] Radio Broadcast, *supra* note 89.

[95] [Ed. We have renumbered and also reordered sections of Hazlett's article so as to make it more accessible to new readers. Part IV, for example, was Part VII in the original, and it came before our Part V, which Hazlett put as Part VI. We have taken great care so as to ensure that Hazlett's argument is not in any way distorted by these changes, but readers are of course welcome to consult the original document.]

> control. This must be a Federal responsibility. From an interference point of view every word broadcasted is an interstate word. Therefore radio is a 100 percent interstate question, and there is not an individual who has the most rudimentary knowledge of the art who does not realize that there must be a traffic policeman in the ether, or all service will be lost in complete chaos of interference. This is an administrative job, and for good administration must lie in a single responsibility.
>
> The second question is the determination of who shall use the traffic channels and under what conditions. This is a very large discretionary or a semi-judicial function which should not devolve entirely upon any single official and is, I believe, a matter in which each local community should have a large voice—should in some fashion participate in a determination of who should use the channels available for broadcasting in that locality.

Senator C.C. Dill authored the bill that finally gained passage in 1927. He was equally unconfused as to the purpose of federal licensing. "Of one thing I am absolutely certain," he declared. "Uncle Sam should not only police this 'new beat'; he should see to it that no one uses it who does not promise to be good and well behaved."[96]

Dill's concerns were devoted to monopoly and political fairness over the airwaves, both derived from his belief that radio broadcasting would become an important, powerful medium of expression. Instead, therefore, of rushing to protect this sector from regulation under the shield of the First Amendment, Dill saw his alternative priority clearly. "The principle regarding radio that must be adhered to, as basic and fundamental, is that the Government must always retain complete and absolute control of the right to use the air."[97]

V. The Agenda of the Radio Broadcasting Interests

Broadcasters' agenda focused on "the non issuance of additional broadcasting licenses, the freedom from further division of time with other broadcasters, [and] the maintenance of the present distribution of frequency channels," as the 1925 Radio Conference's resolution put it.

This agenda was artfully accomplished. When the Federal Radio Commission (FRC) was born out of the Federal Radio Act of 1927, it immediately grandfathered rights for major broadcasters, while eliminating marginal competitors and all new entry. Indeed, the FRC restored order out of chaos by ordering stations to "return to their [original Commerce Department] assignments,"[98] thus revealing much about the previous rights regime and the privatization of airwave properties achieved in "the public interest."

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[96] C.C. Dill, A Traffic Cop for the Air, 75 Rev. of Revs. 181 (February 1927).

[97] *Id.* at 184.

[98] Philip T. Rosen, The Modern Stentors: Radio Broadcasting and the Federal Government 1920-1934, at 125 (1980).

Still, the industry was most concerned about how the FRC would deal with "such dangerous propositions as the pressure to extend the broadcast band; the fatuous claims of the more recently licensed stations to a place in the ether; and the uneconomic proposals to split time on the air rather than eliminate excess stations wholesale," as one trade journal forthrightly summarized.[99]

Radio men were quickly assured that the newly appointed commission was politically sensitive to their needs and aspirations. Only two months after its inception they could be relieved that the commissioners had acted wisely. "Broadening of the band was disposed of with a finality which leaves little hope for the revival of that pernicious proposition; division of time was frowned upon as uneconomical; the commissioners were convinced that less stations was the only answer."[100]

And in the official rights allocation under the Federal Radio Commission in 1927-28, the agency chose to employ the market success standard of public interest—in essence, a simulated auction, with awardees keeping rents.

The commissioners agreed that the prevailing scarcity of channels required that those available be used economically, effectively, and as fully as possible. In practical terms, this meant that they favored the applicants with superior technical equipment, adequate financial resources, skilled personnel, and the ability to provide continuous service. According to this interpretation, established broadcasters with demonstrated ability best fulfilled the public interest standard. In most instances, priority and financial success guided the FRC in favoring one operator over another.[101]

VI. The 1927 Radio Act as an Equilibrium Political Solution

Although licensing control passed into the hands of an independent commission, economic allocation was not much affected vis-à-vis the rights established in the pre "breakdown" period. By virtually all accounts, the commission made legal what Secretary Hoover had accomplished via extralegal authority: it recognized priority in use rights to spectrum space, with discretionary power and time assignments favorable to those broadcasters serving larger audiences. Marginal broadcasters with irregular transmissions were expropriated altogether; nonprofit institutions were relegated to crowded spectrum "ghettos" where time was scarce and listenership difficult to attract. Many such licenses were soon withdrawn by their owners due to unsustainable financial losses.

The commission's "public interest" solution to the property right problem essentially accomplished the following:

> (1) it served to establish quickly and cheaply de facto property rights to spectrum based on the priority-in-use rule;

[99] Welcome to the Radio Commission, Radio Broadcast 555 (April 1927).

[100] Stabilizing the Broadcast Situation, Radio Broadcast 79 (June 1927).

[101] Rosen, *supra* note 98, at 133.

> (2) it thinned out the spectrum by failing to renew licenses of 83 broadcasters in July 1927 and gave reduced power and time assignments to nonprofit organizations;
>
> (3) it awarded enhanced power assignments (as high as 50,000 watts—up from 5,000 watts) to some fortunate large broadcasters, generally network affiliated;
>
> (4) it established a rights enforcement mechanism, wherein license holders were to self police the airwaves by filing complaints against interfering broadcasters;
>
> (5) it froze AM band width at essentially its 1924 size, using less than five percent of the then utilizable capacity for broadcasting.

This solution represented an optimum politically because each of the influential parties was given a share of the rents created in proportion to their political influence, making each better off than they would fare in alternative nonlicensing arrangements. Such rents emanated from the allocation of spectrum rights to private users on a nonfee basis and from entry restrictions enhancing the values thereby created. In that vested rights were developing, and lengthy, costly litigation would have followed had an expropriation of major broadcast license holders occurred, an outright nationalization of airwave property was not a desirable alternative for regulators. Such a course would also have carried the opportunity cost of an immediate loss of support by major broadcasters. It was far better for regulators to award broadcasters generous rents subject to "public interest" discretion in the licensing process that could be partially apportioned by incumbent officeholders.

What was evident was that the issuance of zero priced franchises could stimulate an effective rent seeking competition from constituencies willing and able to pay for the broadcasting privilege. For instance, Congress immediately acted to regulate content with such incumbent protectionist devices as the equal time rule (codified in the Radio Act), and the commission very quickly found it could exercise authority over broad forms of content, such as "fairness." And, of course, pure influence peddling in the procurement of licenses could yield both legal and extralegal benefits for incumbent Congressmen.

In summary, private spectrum rights were not rejected in favor of government allocation out of "ignorance" but were actually established as part of a hybrid regulatory system that respected vested rights in broadcast spectrum and even enhanced them in value via supply restriction. Such private rights were "purchased" by broadcaster subsidies to "public interest" concerns, a tax which initially amounted to little more than nominal acquiescence to (and political support for) a federal licensing authority but would, over time, include significant payments to unprofitable local programming, "fairness doctrine" regulation, extensive proof of commitment to "community" in station renewals, and the avoidance of broadcasting content offensive to the political party in power.

NOTES AND QUESTIONS

1. Evidence or Counter-Evidence? Private spectrum rights came to be politically unimaginable by the middle of the 20th century. Perhaps the most striking evidence is that, right after Coase delivered the talk excerpted earlier in this chapter, the floor was opened for questions and then-FCC Commissioner Philip Cross opened the question period by asking Coase, in all seriousness, "Are you spoofing us? Is this all a big joke?"[102] When Coase wrote up those same ideas in a paper for the Rand Corporation, one referee who reviewed the document advised Rand to kill the project entirely, and another "stated that, by definition, the spectrum was a public good and consequently a market solution was not appropriate and that the project represented a waste of Rand's resources."[103] Does this suggest that policymakers in 1959 did not understand the possibilities for private ordering that Hazlett suggests policymakers had understood in 1927? Consider the following statement from the memorandum rejecting Coase's paper for Rand: "I am afraid that to issue [Coase's paper] . . . is asking for trouble in the Washington/ Big Business maelstrom because we haven't in the first place measured up to the intellectual requirements of the problem selected for study."[104] Were those in power unable to imagine private spectrum rights, or merely unwilling to part with the power that government control of the spectrum created?

2. Implications. Suppose, however, that Hazlett is correct and that, in 1927, the policy debate was indeed "led by men who clearly understood—and articulated—that interference was not the problem, interference was the opportunity." Where does that leave us? Should the newly-discovered motivations of the creators of the regulatory structure raise First Amendment concerns about that structure? In short, what should we do with the historical evidence Hazlett uncovers in this research?

§ 1.4.3 Consumer Preferences

In most markets, we assume that consumer preferences should be respected. That is, if consumers want their MTV, they should get it—even if that means fewer viewers are watching the nightly news or listening to congressional debates on C-SPAN. There is reason to wonder, however, whether the broadcast marketplace should, in fact, so completely respect consumer preferences, or whether instead regulation ought to constrain and mold consumer choice.

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[102] Ronald Coase, Comment on Thomas W. Hazlett: Assigning Property Rights to Radio Spectrum Users: Why Did FCC License Auctions Take 67 Years?, 41 J. Law. & Econ. 577, 579 (1998).

[103] *Id.* at 580.

[104] Id.

There are two principal arguments to consider here. First, there is what might be thought of as the paternalistic argument that, when it comes to information consumption, consumers don't know what is in their own long-term best interests. Cass Sunstein has made this argument, although he seems to object to the "paternalism" label:

> What people now prefer and believe may be a product of insufficient information, limited opportunities, legal constraints, or unjust background conditions. People may think as they do simply because they have not been provided with sufficient information and opportunities. It is not paternalistic, or an illegitimate interference with competing conceptions of the good, for a democracy to promote scrutiny and testing of preferences and beliefs through deliberative processes.
>
> It may seem controversial or strange to say that there is a problem for the Madisonian system if people do not seek serious coverage of serious issues. Perhaps this suggestion is unacceptably paternalistic; perhaps we should take people however we find them. But the system of deliberative democracy is not supposed simply to implement existing desires. Its far more ambitious goal is to create the preconditions for a well-functioning democratic process.[105]

Second, there is an externality argument that similarly might cause us to question consumer sovereignty in broadcast markets, to wit: one person's consumption of broadcast content may affect another person's well-being. For example, some people believe that repeated exposure to television violence causes viewers to become more violent.[106] If that is true, then this is a negative externality, and because of this externality it might not be wise to allow viewers to determine for themselves how many hours of violent television they watch each week. Each viewer's choice, after all, neglects the harm that decision imposes on others.

A similar point can be made with respect to the decision to watch (and, in a subscription system, pay for) children's educational television. Educational television arguably creates a positive externality in that these programs help young viewers become more informed, and hence more productive, citizens. Because of this externality, if left to make their own decisions, children might not watch as much educational television as would be optimal from a societal perspective.[107]

NOTES AND QUESTIONS

1. Distinctions. Are the "paternalistic" and "externality" arguments different, or does one simply recast the other in new words? Similarly, is there really a distinction between a "positive" and a "negative" exter-

[105] Cass R. Sunstein, Demoracy and the Problem of Free Speech, 19-21 (1993).

[106] We consider televised violence in Chapter Five.

[107] We also consider children's television in Chapter Five

nality in this setting, or does that distinction also collapse, depending on your political perspective?

2. Remedies. To whatever extent we find the paternalistic and externality arguments convincing, what types of responses might they justify? Consider, for example, educational television. If the FCC believes that it would benefit society to have more children watching educational television, is it a sufficient response for the government to increase the amount of educational television available—perhaps by, say, offering more funding to PBS? Must the government do more, perhaps both funding PBS and restricting the simultaneous broadcast of programs that children prefer? After all, merely having virtuous programming available will not change anything if nobody watches. Consider in this light news analyst Jeff Greenfield's remark that, "when you no longer need the skills of a safecracker to find PBS in most markets, you have to realize that the reason people aren't watching is that they don't want to."[108]

3. Federal Support of Noncommercial Broadcasting. The federal government supports noncommercial programming in a variety of ways. First, since 1939 for radio and 1952 for broadcast television, the FCC has reserved frequencies explicitly for noncommercial educational uses.

Second, and as alluded to above, in addition to the spectrum licenses that all broadcasters received at no charge until 1997, noncommercial broadcasters receive direct government funding—most prominently through the Corporation for Public Broadcasting, a federally chartered nonprofit corporation that receives money from Congress and in turn funds various radio and television stations, including stations that are affiliated with the Public Broadcasting Service (PBS). This funding has been a source of periodic controversy, with some members of Congress suggesting that the federal government could better spend its money in other ways, and private parties at times challenging the government's relationship with noncommercial broadcasters on First Amendment grounds. One particularly notable controversy involved a statutory provision that forbade any noncommercial educational broadcasting station that received a grant from the Corporation for Public Broadcasting from "engag[ing] in editorializing."[109] A sharply divided Supreme Court found the provision violative of the First Amendment in FCC v. League of Women Voters, 468 U.S. 364 (1984). More recently, after a state-owned public television broadcaster included in a congressional debate only those candidates with substantial popular support, a candidate who had little popular support filed suit alleging that the station had violated his First Amendment rights by excluding him from the debate. The Supreme Court ruled that the debate was a nonpublic forum from which the public broadcaster could exclude the candidate because it had engaged in a viewpoint-

[108] Quoted in Krattenmaker & Powe, supra note 17, at 314.

[109] Section 399 of the Public Broadcasting Act of 1967, Pub.L. 90-129, 81 Stat. 365.

neutral exercise of its journalistic discretion. Arkansas Educational Television Comm'n v. Forbes, 523 U.S. 666 (1998).

Third, several federal statutes give special treatment to noncommercial programming. For instance, the statute requiring cable operators to carry local broadcasters has a separate provision requiring cable operators to carry "noncommercial educational television stations," 47 U.S.C. §535; similarly, a statute governing direct broadcast satellite (DBS) providers requires that they devote a portion of their channel capacity "exclusively for noncommercial programming of an educational or informational nature," 47 U.S.C. §335.

4. Implications for Other Media. Neither the paternalistic argument nor the externality argument is specific to broadcast, or even to telecommunication more generally. Any form of communication (television, movies, street theater, even good old-fashioned conversation) can affect participants in ways they themselves might fail to account for and can also affect other people, even those not directly involved in the communication. As you read the remaining materials in this book, consider on what basis we might distinguish among different forms of telecommunication, and between telecommunication and communication more generally, and what sort of regulations those various distinctions might justify. Is broadcasting uniquely powerful? If so, is that an argument in favor of greater regulation, or greater freedom from regulation? Assuming that scarcity and interference do distinguish broadcasting, does that justify limiting non-meritorious programming, subsidizing meritorious programming, or both?