The Shift from Monopoly to Competition in Telecommunications and Broadcasting

Remarks by Clay T. Whitehead at GMU 3/23/04

At the change of administrations in 1969, many big issues were taking shape:

- The Johnson administration had largely ignored telecommunications and broadcasting
- Serious new firms were serious about competing with AT&T
- Data communications was growing rapidly, but ATT was overwhelmingly committed to analog
- International conflicts were growing over the US role in international communications
- New technologies like satellites, cellular, and digital networks were blocked
- The newly-formed CPB was seeking to become the fourth network funded by the US govt
- Cable TV becoming a real industry reaching a significant % of TVHH
- Copyright battles among the networks, local stations, cable TV, and Hollywood had grown more heated
- Pent-up spectrum conflicts between commercial and Federal government uses were coming to a head
- There were calls to reorganize the Executive Branch to deal with multiplying communications issues
- And, there were obvious hostilities between the Nixon political camp and the 3 TV networks

~~Against this tableau of issues, we were faced by~~ the industry as it was:

- Telecommunications was the fastest growing industry in the country, but was monopolized by AT&T, which already took up 25% or more of corporate debt nationwide.
- The three TV networks controlled 90-95% of television viewing.
- A presumption of monopoly had become entrenched in industry and regulatory structure over the course of decades.
- Outside the United States, essentially all of telecommunications and all broadcasting was owned by governments.

Why was the old structure so enduring and so entrenched?

- It gave regulators leverage to impose public interest obligations on both telecom and broadcasting.
- There was a powerful symbiosis between ATT and the government; DoD and the CIA were highly dependent on AT&T and were opposed to the entry new, unfamiliar firms.
- The FCC was interested in telecommunications competition mainly to provide a benchmark for gauging AT&T prices, not as a serious alternative to AT&T or to the established regulatory regime.
- Spectrum assignments for television channels meant that a fourth TV network could reach less than half the country.

- AT&T microwave connections were too expensive for a TV network that could not cover a large percentage of the country's TV households.
- Copyright rules favoring Hollywood and the networks blocked the expansion of new cable channels.
- Antitrust interest was focused on AT&T's manufacturing monopoly, not its monopoly over the provision of telecommunications services.
- Regulators and Congress dealt with issues incrementally, but the issues were no longer incremental.

So where do we go from there?

- OTP came to a set of conclusions that we pushed with industry, FCC, and Congress.
- Competition and open entry had to become the new paradigm in both telecom and TV because technology and service needs were moving faster than the established industry participants and regulators could (or wanted to) adapt.
- Satellite technology had to be introduced into the U.S. domestic market on an open-entry, unregulated basis or there was no hope of serious competition in telecom broadly.
- The monopoly of the 3 TV networks had to be broken to give viewers more choice and to reduce the need and excuse for the government to enact content controls and all the political meddling that invited.
- Expanded choice in TV viewing would be better achieved by large numbers of new TV channels than by the expensive creation of a big new fourth TV network funded by the government.
- Cable TV was the only way a large number of TV channels could be gotten into the home.
- Satellites were the only way to provide affordable distribution of new TV channels to cable systems nationwide, and copyright rules had to be changed to permit the new channels to emerge.
- The heart of the ATT monopoly was its monopoly over telecom services [Vail], not manufacturing.
- Antitrust is a sledgehammer, not well suited to rapidly evolving technology-intensive industries, but the ATT/FCC/DoD/Congressional monopoly mindset was so dominant and so entrenched that nothing short of a sledgehammer seemed likely to work.
- Once we persuaded Justice to support the breakup of the Bell System as a remedy, not just splitting off manufacturing, we supported the filing of the antitrust suit.
- So, that became our agenda at OTP, which we pushed vigorously with industry, the FCC, and the Congress. We had some successes, a few 2x4s upside our head, and not all of our agenda was adopted. But we did have some success in beginning the change from the long-entrenched paradigm of monopoly and incremental change toward one of open entry, competition, and innovation in both telecommunications and broadcasting.

After my run at policy

- (And a year at Harvard to get my head together), I got interested in creating some of the competition we had preached.

- I started Hughes Communications where we created the first non-common carrier satellite service and aggregated a number of new cable networks to distribute their channels to all the cable systems across the country. HC later bought and now is known as PanAmSat.
- I started the first direct-to-home satellite television broadcast service, now called SES Astra. Astra bypassed the government-owned TV stations in Europe to bring large numbers of commercial channels to homes and provide real choice in television viewing.
- Now, having seen telecommunications and television from the inside, in both policy-making and in business, and having some distance now from the heat of the battles, I plan to do some reflection, research, and writing on some aspects of electronic communications that I think are particularly interesting as that field proliferates.
- Some of those topics include:
  - The difficulties and uncertainties faced by those in the early creation of those industries, the cleverness of some and the unwittingness of others in their consolidation, and the awkward coexistence we have now forced on innovation and regulation
  - How the chaos and competition in the creation of these industries got funneled into such extreme concentration and regulation; why the monopoly structure of industry and regulation persisted as long as it did; how we have emerged from that concentration back toward competition and innovation.
  - How the many threads of many current issues can be traced from the creative chaos of the beginning of electronic communications through the monopolistic consolidation, the reintroduction of competition, and the creative chaos of the industry today.
  - Notwithstanding how complex the technology, economics, law, business strategies, and market structure have become, many common threads from the past persist today:
    - Who sets the standards for interconnecting networks, who pays the costs, who gets the revenue?
    - Separation of cost and pricing by business and regulation
    - Privacy expectations and responsibilities
    - The need for standards vs the need for innovation
    - The pressure for regulation before we see how technology will evolve and be used.
    - The tension in regulation between what is "needed", "wanted", or just inherited.
    - The constant erosion of technical, economic, and regulatory distinctions
      - As between broadcasting, cable TV, pay-per-view, and streaming video
      - Or telegraph, telephone, cellular, e-mail, instant messaging, and voice over the internet
      - Or books, newspapers, magazines, web pages, and blogs under the First Amendment
  - How technology, economics, markets, law, business strategies, and public perceptions intertwine to determine what communications capabilities become real businesses, how they get regulated, how they impact us as consumers and our politics, and what that portends for the future.

- So many of you here know so much about the diverse aspects of this fascinating field of electronic communications, and I look forward to exchanging ideas and perspectives with you.

Public Policy and the Evolution of Cable Television: 1950-1990

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The cable television industry evolved from make-shift configurations of antennae and wires serving fewer than one hundred customers in 1950, to an industry serving 50 million subscribers and generating revenues of almost $18 billion by 1990 [30, 31]. Although entrepreneurial ingenuity and technological innovation provided the foundation for this extraordinary growth, the Federal Communications Commission (FCC), U.S. Congress, courts and municipalities also played critical roles in shaping the evolutionary path of the industry.

Public policy with respect to cable television evolved haphazardly as a result of jurisdictional confusion, conflicting notions of the "public interest" in relation to the industry, and shifts in the relative power of key interest groups. In particular, broadcasters, who perceived the upstart business as a competitive threat, exerted significant pressure over time on policy makers to restrict the growth of cable in the name of protecting "free" (advertiser-supported) television. Yet by the mid-1980s, the cable TV industry had successfully challenged the majority of regulatory constraints inhibiting its development, drawing heavily on freedom-of-speech arguments to support its positions. Yet ironically, by 1990, cable operators found themselves in the role of a media incumbent, aggressively lobbying policy makers for regulatory protections against competitive threats from new wireless technologies and from local telephone companies.

The main body of this paper is organized into four sections. Part I covers the first twelve years of the cable industry's existence; Part II encompasses the era of mounting regulatory intervention in the affairs of the industry through the early 1970s; Part III traces the tremendous advances in cable-related technology along with the steady erosion of public policy constraints during the subsequent decade and a half; Part IV highlights the slippery slope of industry success and excess in the late 1980s.

A Blissful Childhood, 1950-61

The first cable television entrepreneurs were electric appliance store owners located in areas where television reception was poor or nonexistent

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due to hilly or mountainous topography [23]. In order to boost television sales, these retailers would erect an antenna at an unobstructed locale to receive broadcast signals off the air and deliver these signals by wire to individual residences. Customers generally paid a one-time installation fee in addition to a periodic maintenance fee for this service, which was known as Community Antenna Television or CATV.

The first commercial CATV system was established in 1950 in Lansford, Pennsylvania, and within two years, 70 systems, each serving an average of 200 customers, had been constructed [30]. In these early years, municipalities welcomed CATV service and typically granted operators a license or franchise to install wires or coaxial cable along public thoroughfares for a nominal fee.

The initial response of television broadcasters to CATV was somewhat mixed. Since broadcasters relied on advertising revenues to finance their operations, audience expansion resulting from CATV signal carriage was generally welcomed. However, the owners of smaller independent stations worried that nearby CATV systems, with capacity typically limited to 3-5 stations, would choose to carry the signals of larger and/or more distant stations, sourcing such signals through the use of long-distance microwave relay technology. This possibility was particularly worrisome since the installation of CATV service could disable a subscriber's reception of any broadcast signal not carried on the system. Even broadcasters whose signals were carried by CATV systems resented the fact that cable operators could profit from broadcasters' program offerings without paying any of the fees or royalties associated with such programming.

In April 1956, a group of thirteen television broadcast stations filed a complaint with the Federal Communications Commission requesting that the Commission exercise regulatory jurisdiction over CATV systems as "communication common carriers" under the Communications Act of 1934. Two years later, the FCC dismissed the complaint, arguing that CATV systems fit neither the definition of a "common carrier" nor a "broadcaster" and thus fell outside its jurisdiction [20].

However, the FCC was concerned about the possible impact of CATV on the future of "free" television and on the long-run viability of local television stations. Therefore in 1959 the Commission urged Congress to pass legislation that would require cable systems to transmit all local area stations that requested carriage and to obtain prior consent from any station whose signals it intended to carry. Although a bill establishing FCC authority over CATV in these areas reached the Senate floor in May 1960, it was defeated by a single vote after vigorous lobbying on the part of individual cable operators and the National Community Television Association [7].

Meanwhile, broadcasters challenged the activities of cable operators through the courts. Yet they failed here as well in the landmark 1961 *Intermountain* case in which a district appeals court ruled that CATV systems had no obligation to compensate TV stations for the carriage of program signals received off the air [17]. Thus, after eleven years of operation and the addition of some 650,000 subscribers [30], the CATV industry remained

largely free of public policy restrictions. Nevertheless, such freedom was not to last.

Parental Guidance Requested, 1962-72

In 1962 broadcasters finally scored their first major victory against CATV. In its *Carter Mountain Transmission Corp.* decision, the FCC denied the application of a common carrier to provide microwave relay services to a cable operator unless the operator agreed to guarantee carriage of the local TV station and to forgo the duplication of any of the local station's programming with distant signals [5]. The FCC had routinely approved such applications since 1954, when some CATV systems had begun to augment or replace off-air antenna reception with microwave relay technology. However, by the early 1960s, the Commission, concerned about fulfilling its mandate to ensure "fair, efficient, and equitable broadcasting" and frustrated with Congress's unwillingness to articulate policy with respect to CATV, decided that even if it could not regulate CATV systems directly, it could regulate them indirectly to the extent that they were dependent on common carrier microwave services to receive broadcast signals. This prerogative was upheld in 1963 by the courts [6].

In 1965, the FCC formally adopted the so-called "must-carry" and "nonduplication" rules introduced in the *Carter Mountain* proceeding for all CATV systems served by microwave common carriers. The Commission also initiated an inquiry into the necessity and feasibility of extending the scope of these and perhaps additional regulations to the CATV industry as a whole [12]. The FCC justified this proactive approach in its 1965 Annual Report by stating that:

> The Commission recognizes the valuable contribution of CATV in bringing new or supplementary service to many places and the desirability of furthering the orderly development of these systems. But at the same time, it holds that CATV service should be supplementary to and not cripple local TV broadcast service or impede the growth of TV broadcasting [32, p. 80].

While some observers took such statements by the FCC at face value, arguing that the FCC was acting in the "public interest" to promote diverse and inexpensive programming for consumers, others claimed that the Commission had in effect been "captured" by the broadcasting industry, a development allegedly facilitated by the appointment of sympathetic Commissioners to the FCC on the part of President Lyndon Johnson, whose family had long maintained broadcasting interests [19, pp. 40-41].

In April 1966, after Congress had failed again to reach a consensus on CATV-related legislation, the FCC asserted jurisdiction over all CATV systems, arguing that the Communications Act of 1934, by requiring the Commission to establish and protect geographic zones served by broadcasters, implicitly gave it jurisdiction over activities of cable operators that affected this mandate [26]. The FCC in turn required CATV systems to carry the signals

of all stations located within an administratively-defined local area and prohibited systems operating in the top 100 broadcast markets from importing any distant signals without a prior hearing at the FCC to determine whether or not such carriage would serve the "public interest".[1] The latter provision created enormous disincentives for CATV development in major television markets where potential subscribers, already enjoying access to a variety of off-air signals, would have little reason to purchase cable service if they did not offer distant signals.

Cable operators challenged these rules in the courts and, by late 1967, had received a favorable decision from the California Court of Appeals, which concluded in the *Southwestern* case that the FCC had overstepped its jurisdiction [36]. However, this victory was short-lived: in June 1968 the Supreme Court reversed the lower court decision, yet emphasized that the FCC's jurisdictional authority was "restricted to that reasonably ancillary to the effective performance of the Commission's various responsibilities for the regulation of television broadcasting" [28].

Ironically, the Supreme Court handed the cable industry a major victory one week later in the *Fortnightly* copyright case [12]. It ruled that CATV operators were under no legal obligation to obtain licenses from or pay fees to any entity holding copyrights to programming received as broadcast signals and delivered to subscribers since each cable system acted as an intermediary "receiver" as opposed to a "performer" of programming [14]. However, the FCC felt that the decision perpetuated "the competitive imbalance between broadcasters who may pay for their program fare and CATV operators who do not pay" [33, p. 66]. To redress this imbalance, the Commission issued an interim order in December 1968 that, in effect, placed a temporary moratorium on new distant signal importation in the top 100 markets while it evaluated a range of policy alternatives [21]. In addition, the FCC issued rules during the following year that required all CATV systems serving over 3500 subscribers to establish so-called "program origination" or "cablecasting" facilities for the local production and presentation of original programs [13].

During the early 1970s, the FCC's micro-management of the cable television industry reach its zenith as the Commission increasingly assumed the characteristics of a central planner. In order to promote the "greatest possible diversity of control over local mass communications"[33, p. 62] the agency issued cross-ownership rules in 1970 that prohibited the ownership of CATV systems by telephone companies in their local exchange areas, by television stations in their local broadcast market, and by the national television networks anywhere in the United States. At the same time, the FCC sought to protect the American viewing audience at large from the erosion of "free" television by issuing so-called "anti-siphoning" rules that

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[1]Other provisions included a prohibition of same-day duplication of locally available programming via importation of distant signals; a grandfather clause exempting signals carried by CATV systems prior to 2/15/66; and a blanket exemption from all carriage and nonduplication rules for all systems serving fewer than 50 subscribers.

prohibited cable operators from packaging old movies, previously broadcast sporting events, and television series into pay TV channels [27].

In February of 1972 the FCC issued its long-awaited *Cable Television Report and Order* [4], which encompassed a complex set of rules designed to "open up cable's potential to serve the public without at the same time undermining the foundation of the existing over-the-air broadcast structure."[33, p.60] The Commission ended the freeze on distant signal importation in the top 100 markets yet capped the total number of broadcast signals that a given cable system could carry according to a "sufficient viewing test." For example, in the top 50 markets, systems were limited to a maximum of three network, three independent and, at most, two additional distant signals. In addition, systems were barred from "leapfrogging" past the geographically closest stations to fill their quota of signals. In the top 100 markets, the FCC required all systems to provide so-called "access channels" for use by local government, educational institutions, the general public, and for lease by commercial entities. To ensure that cable systems would have sufficient capacity to meet these requirements, the FCC ordered all new systems in major markets to include 20 channel capacity, including two-way interactive capability. Existing systems, most with only five to twelve channel capacity, were given five years to upgrade to the new requirements. The remaining provisions of the order dealt primarily with the local franchising process. Although franchising bodies retained the right to regulate the rates charged by cable operators, the new FCC rules standardized maximum length of franchise, franchise fees, construction timetables and various technical requirements. To ensure adherence to these provisions, the Commission required that each new and existing cable system obtain a Certificate of Compliance from the FCC or risk termination of service.

The broad scope of the 1972 rules, although not unexpected at the time, seems extraordinary when viewed in light of the virtually unregulated state of the CATV industry just a decade earlier. However, the FCC, at the urging of broadcasters and with the blessings of the Supreme Court, increasingly tightened its hold on the industry while Congress, in effect, quietly acquiesced. Although the FCC strove to ensure that growth in cable would not come at the expense of traditional broadcasting, the cable industry managed to grow at over 20% per year over the decade in terms of subscriber additions. Yet the industry's potential still seemed largely untapped, as less than 10% of U.S. television household were cable customers in 1972 [30].

Transition to Adulthood, 1973-84

In spite of the highly interventionist nature of the FCC's 1972 rules, the repeal of the "top 100 freeze" provided some impetus for the development of cable systems in many previously unserved major markets. In addition, the Commission issued clarifications of its cable television rules in 1973 and 1974 that eased certain restrictions on smaller systems and limited the scope of several franchise stipulations applicable for all systems. Although these initial steps by the FCC to relax the superstructure of cable regulation were small and tentative, they represented a critical shift in the direction of Commission

policy. These changes could be interpreted on the one hand as a defensive reaction to the Supreme Court's 5-4 decision in the *Midwest Video I* case, which narrowly upheld the FCC's program origination rules in June of 1972 [35]. In spite of the Commission's apparent victory, all parties took note of the concurring opinion by Chief Justice Burger, who stated that "candor requires acknowledgement ... that the Commission's position strains the outer limits of even the open-minded and persuasive jurisdiction that has evolved by decisions of the Commission and the courts" [35, p. 675].

Impetus for a change in policy direction flowed from other sources as well, including a highly-publicized cabinet-level Report to the President on cable television, initiated in the summer of 1971 and released in January 1974 [1]. The report criticized the fact that according to prevailing policy, "cable is regarded simply as an extension of, and not a supplement to, the broadcast television industry" and warned that "the perception of cable's multi-channel capacity as a threat to broadcasting could retard cable growth and even limit full use of all its capacity in order to protect broadcasting's viability." The Report's recommendations included a call for the complete repeal of the FCC's regulations on channel capacity, access, and media cross-ownership [1, pp. 13, 67].

Although the Commission did not adopt these recommendations, it continued to ease or eliminate a number of its cable television rules during the mid-1970s. For example, it granted cable operators more latitude in the carriage of distant signals, exempted smaller systems from various requirements, and extended to 1986 the deadline for compliance with channel capacity rules. It should be noted parenthetically that the actions of the FCC over this period paralleled deregulatory trends initiated during the Ford and Carter administrations with respect to other industries such as airlines, railroads, trucking, natural gas, and electric utilities.

The FCC's stroll down the path of deregulation, however, was too leisurely for some parties. In October 1977, the Supreme Court refused to review a lower court decision in the *Home Box Office* case which struck down FCC restrictions on pay-cable programming and advertising as a violation of freedom of speech [16]. This decision removed an important barrier to the growth of cable television programming via satellite transmission, the cost of which had fallen dramatically in the mid-1970s. In the 1979 *Midwest Video II* case, the court determined that the FCC's rules with respect to channel capacity and special access were "not reasonably ancillary to the effective performance of the Commission's various responsibilities for the regulation of television broadcasting" and thus exceeded the Commission's statutory authority [11]. In the wake of this decision, the FCC adopted several additional rule changes, including the elimination of all restrictions on the number of distant signals carried by cable systems and the substitution of a simple registration procedure for the cumbersome certification process [22,25].

In spite of the substantial dismantling of cable regulatory policy by the early 1980s, the area of local franchising remained a sore point for the cable industry. The rates charged by cable systems continued to be subject to approval by franchising bodies, a requirement that, according to operators,

had become increasingly burdensome and inappropriate. Thomas Wheeler, president of the National Cable Television Association, argued that

> Since the relevant market for cable is the market for all entertainment services, then the market is clearly very competitive, with cable competing with over-the-air television and radio, subscription television, [unregulated wireless alternatives such as] multipoint distribution service and satellite master antenna television, video discs and cassettes, movie theaters, and ultimately direct broadcast satellite service [15, p. 215].

In addition to price regulation, cable operators expressed growing concern about the power of franchising bodies in the franchise approval and renewal process. With over half of existing franchises due to lapse in the mid-1980s, operators feared that local regulators would use the threat of nonrenewal to extract a crippling array of monetary and non-monetary concessions from current franchise holders.

The cable industry took it concerns to Congress in 1982, with the goal of securing comprehensive legislation on cable policy in the form of an amendment to the Communications Act of 1934. Although Congress had failed for over two decades to pass such legislation, it had demonstrated in the late 1970s a new-found willingness to address the industry's problems. As part of the Copyright Act of 1976, Congress had included a provision that affirmed cable operators' right to import distant signals by paying periodic but modest royalties to a central copyright fund, thus diffusing broadcasters' long-time charges of unfair competition on the part of the cable industry [10]. In addition, Congress had passed the Pole Attachment Act of 1978 which ensured cable firms access to utility poles at reasonable rates, a provision long sought by operators [9].

Although the struggle for comprehensive cable legislation lasted over two years, on October 30, 1984, the Cable Communications Policy Act was signed into law [2]. The final terms of the law represented an elaborate compromise crafted by key interest groups, including the National Cable Television Association, the National League of Cities, and the U.S. Conference of Mayors [3]. On the one hand, cable operators won a key provision deregulating rates for all cable services by the end of 1986, with the exception of rates for basic cable service in areas in which a cable system was not subject to "effective competition;" the FCC, under the leadership of Reagan appointee Mark Fowler, subsequently determined that the availability of three over-the-air broadcast signals, a characteristic of 96% of U.S. cable markets, constituted "effective competition." The Act also provided cable operators with substantial protection during the franchise renewal process by shifting the burden of proof to franchising bodies to demonstrate that the current operator was unqualified to continue service by virtue of past abuses or inability to provide adequate service in the future.

Local franchising bodies won important concessions as well in the 1984 law. The maximum allowable franchise fee, previously limited by the FCC to

3% of gross revenues per year, was raised to 5%, and the franchiser retained the right to require channel capacity for public, educational, governmental, and commercial use. In addition, the law left all nonrate provisions of existing franchise agreements intact and reassured franchisers that they would not be required to renew franchises automatically.

The Cable Communications Policy Act of 1984 thus represented the culmination of a decade-long liberalization trend in cable television policy, which although dismantling the most restrictive elements of industry regulation, did not completely strip the FCC or franchising bodies of their supervisory authority with respect to cable. Cable subscribership, spurred on both by policy liberalization and by technological advances in satellite transmission and channel capacity, rose dramatically over the period, reaching 31.3 million or 37% of all TV households by 1985 [31].

Impending Mid-Life Crisis, 1985-1990

The passage of the Cable Act unleashed a period of frenzied investment activity in the cable industry in the mid-1980s, a trend that was encouraged even further by a 1985 court decision striking down the FCC's must-carry and nonduplication rules [24]. Acquisition prices for existing cable systems rose dramatically, from less than $1000 per subscriber to over $2500 per subscriber [18], and horizontal integration proceeded briskly as large multi-system operators (MSOs) such as TCI, ATC, and Warner acquired smaller operators. The rapid pace of industry consolidation, reminiscent in some ways of the tremendous growth in public utility holding company systems in the 1920s, resulted by 1990 in the control of over 50% of all cable subscribers by ten companies [29]. At the same time, MSOs pursued horizontal integration to increase their bargaining power vis-a-vis programming and equipment suppliers and to take advantage of scale economies in managerial and technical expertise. They also expanded vertically into program production.

From 1985 to 1990 the number of cable systems in the United States rose 40% and total subscribership reached almost 50 million or 54% of American television households [31]. Over the same period, however, basic cable rates rose by over 60% or triple the rate of increase of the Consumer Price Index [34]. Consumer advocacy groups and cable franchising bodies, outraged by these rapid price increases and by evidence of poor customer service on the part of cable operators, appealed to Congress for reregulation of the industry. The cable television industry, however, defended its record, claiming that the price *per channel* of cable service had actually declined in real terms since 1985 and that the majority of customer service problems could be attributed to the adjustment pressures of explosive growth in subscribers over the period.

Nevertheless, industry critics maintained that cable operators continued to benefit from quasi-monopolistic conditions in their service territories, given the highly imperfect nature of substitute products and services; they also warned that continued vertical integration threatened to extend monopoly control to the programming arena as well. Proposals for policy reform ran

the gamut from the reauthorization of price regulation to quantitative restrictions on horizontal and vertical integration to the repeal of the ban on local telephone company competition in cable television. Some municipalities, taking matters into their own hands, threatened to issue competing franchises for cable service or to construct cable systems themselves in direct competition with existing franchisees [8,37].

Although cable policy reform bills were introduced in Congress in 1990, the likelihood of swift passage of cable legislation appeared remote, given legislators' inability to agree on whether the revival of restrictions or, alternatively, the opening up of competition would best serve the public interest. Yet in spite of these contrasting perspectives, one thing was clear: the cable television industry, long seen a plucky underdog struggling to achieve its potential, had by 1990 become the epitome of the haughty diva in the eyes of consumers and policy makers.

Conclusion

When viewed over its forty year history, policy-making with respect to the cable television industry can be seen as an on-going struggle to reconcile the potential benefits of advances in technology with the costs such advances impose on established interest groups. In this respect, the history of public policy in this sector of the economy mirrors the evolution of policy with respect to many other areas of the U.S. economy, including the transportation, public utility, telecommunications, and financial services sectors.

Through much of the 1950s, Community Antenna Television was a small-scale enterprise perceived by most observers as little more than an novel means for delivering broadcast signals to households that would otherwise go without television service. By the 1960s, however, CATV posed a growing threat to local broadcasters who feared that cable operators would choose increasingly to devote their limited channel capacity to the carriage of broadcast signals from high profile stations in major metropolitan markets. The FCC, charged by Congress with oversight of the broadcasting industry, in time issued rules that imposed substantial restrictions on the signals carried by cable systems in the name of preserving outlets for local self-expression and access to "free" television for those households for which cable was either unavailable or unaffordable.

By the early 1970s, the FCC and local franchise bodies had come to view the cable industry as a technological wonder ripe for exploitation and proceeded to harness these benefits through a wide array of additional regulatory prescriptions, including the mandating of minimum channel capacity, access channels, and other fees and services. However, this intrusive public policy regime came under increasing pressure from both the executive branch and the judiciary over the following decade and, in 1984, Congress provided the capstone to the deregulatory movement with the passage of the Cable Communications Act.

The performance of the cable television industry in the late 1980s raises difficult questions for the future of public policy. While growth in the number of systems, services, and subscribers has been spectacular, cable operators

appear to face only a limited degree of effective competition in their market areas, as reflected by changes in price levels and service quality during this period. In the end, the cable television industry may be forced to accept direct competition from telephone companies and other would-be franchisees or face the reimposition of regulations designed to curb the excesses of natural monopolies.

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Reconsidering Retransmission Consent: An Examination of the Retransmission Consent Provision (47 U.S.C. § 325(b)) of the 1992 Cable Act

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Introduction

The Information Age is upon us. Over the past forty years, the methods and infrastructure for delivering information have greatly expanded. Advances in computers and telecommunication have led the way. Cable television has been an important part of this revolution, greatly expanding the number of information sources available to households throughout the United States.[2] Far from its origins as a service with the primary purpose of extending local broadcast signals to households whose access to the signal was blocked by mountains or buildings, cable television is now available to almost all households in the United States.[3] Over 65 percent of the nation's television households now receive video programming via cable television systems.[4] Cable television operators presently have been experimenting with providing all sorts of advanced services, including voice communications[5] and access to the Internet.[6]

This Article focuses on the most basic of cable television services: retransmission of over-the-air broadcast signals. This service was in fact the first cable service; the legal status of over-the-air broadcast signals and the programming they contain has been an issue since the late 1950s. At one time, cable operators had no obligation to pay or negotiate with anyone for the right to retransmit broadcast signals. Today, cable operators must pay a formula-based fee to the Library of Congress Copyright Office for the value of some rebroadcasted programming and may negotiate with broadcasters for retransmission consent--the right to rebroadcast the broadcaster's signal.

This Article critically examines retransmission consent requirements which were established by the Cable Television Consumer Protection and Competition Act (1992 Cable Act or the Act).[7] The Act made a distinction between broadcast signals and the programming contained on these signals, a distinction some commentators have stated was absurd or unnecessary.[8] While *rebroadcast* of *programs* is governed by section 111 of the 1976 Copyright Act,[9] *retransmission* of *signals* is governed by the new section 325(b) of the 1934 Communications Act.[10] Under the new provision, local broadcasters have two options for signal carriage: (1) they can negotiate with cable operators and give *retransmission consent* to rebroadcast their signals, or (2) they can elect to be covered under *must-carry* provisions also contained in the 1992 Cable Act.[11] Under Federal Communication Commission (FCC or Commission) regulations implementing the 1992 Cable Act,[12] local broadcasters were required to choose one of these two options by October 6, 1993, and to have subsequent "elections" at three year intervals. Because the first three year election period ended in October 1996, it is appropriate to undertake an examination of the statutory scheme and experience under this scheme.

This Article examines the must-carry/retransmission consent choice granted to cable operators in the 1992 Cable Act, focusing primarily on the retransmission consent provisions.[13] The Article first surveys the history of cable television and cable regulation. Next, it examines the history and initial implementation of the 1992 Cable Act to assess Congress's intent in passing retransmission consent. The Article then examines, apart from the legislative history, what theoretical justifications underlie a retransmission consent provision, and lays out arguments for and against requiring retransmission consent. This is followed by a description of the actual

experience with the retransmission consent provisions--in the cable and broadcasting industries and in the courts--over the past three years. Next, the Article briefly discusses the controversial must-carry provisions which are paired with retransmission consent in the 1992 Cable Act. In view of three years of experience with retransmission consent, the policy implications for the arguments previously raised are assessed. In essence, the Article considers what retransmission consent was meant to do and how accurately retransmission consent has done what was intended.

I.Historical Background of Cable Television and Retransmission Regulation

Issues concerning cable regulation in general and present issues concerning the retransmission consent and must-carry provisions contained in the 1992 Cable Act are best understood in the context of the history of cable television and cable regulation in the United States. Cable television, as it is today, is a different product from what was introduced in the late 1940s. It is reasonable to question whether the regulation which has accompanied the service effectively deals with today's economics.[14] Regulation of cable television has grown out of regulation of broadcast television and other transmission technologies.

A. Origins of Cable Television and Cable Television Regulation

Cable television (CATV)[15] essentially began as a retransmission service. Broadcast systems transmit signals over the airwaves where they can be received by anyone with the proper receiver. A cable operator traditionally took this signal from the airwaves using a normal receiver and "retransmitted" the signal, most frequently over a cable, to subscriber households.[16] This retransmission was economically feasible because some areas are not conducive to receiving over-the-air broadcasts. For example, in local areas where skyscrapers or mountains partially or fully block signals, cable television greatly improves reception relative to the over-the-air signal.[17] Cable television initially posed no serious threat to broadcasters, since it largely expanded the range of their programming and advertising.[18] Initial regulatory attempts reflected this view. In 1958, the FCC, the agency charged under the 1934 Communications Act with regulating the broadcast industry,[19] declined to exercise jurisdiction over cable television, stating that CATV was not a common carrier or a broadcaster covered under the 1934 Communications Act.[20] The FCC adhered to this interpretation in a later rulemaking proceeding.[21] The FCC viewed cable's mandate as a "functional technology" for dissemination of broadcast signals, not a new medium for regulation.[22] In fact, the FCC explicitly stated that they did not want to premise regulation of cable upon assertedly adverse general consequences for broadcasting.[23]

As "distant" television signals[24] were more frequently added to cable systems, cable evolved even more clearly into a distinct product valuable to consumers and cable television operators. Local broadcasters began to fear cable as a viable alternative, and regulators saw potential for monopoly and disturbance of its broadcast regulation.[25] The FCC changed its position and decided to regulate cable television, first by placing restrictions on the microwave facilities serving cable operators.[26] In 1965, the FCC announced its intention to regulate all CATV systems, regardless of whether they used microwaves,[27] and announced rules to govern microwave regulation explicitly based upon the possibility of adverse impact upon potential and existing local broadcast stations.[28] In 1966, the FCC determined that all forms of CATV (including those not served by microwave), could be regulated.[29]

In *United States v. Southwestern Cable*,[30] a broadcaster protected by new FCC regulations had asked the FCC to limit carriage of their signals by the cable operator Southwestern.[31] Southwestern Cable responded that the FCC did not have authority to regulate cable television and the Ninth Circuit agreed.[32] The Supreme Court, in upholding the FCC's authority and reversing the Ninth Circuit, addressed only the challenge to the FCC's authority to regulate cable and not the underlying rules.[33] Part of the Court's basis for this decision was the fact that cable retransmission may "'seriously degrade the service offered by a television broadcaster' and thus ultimately deprive the public of the various benefits of a system of local broadcasting stations."[34] In fact, the court restricted FCC regulation to "that reasonably ancillary to the effective performance of the Commission's various responsibilities for the regulation of television broadcasting."[35]

Most of the ensuing regulatory debate concerning cable television in the 1960s and 1970s presumed that cable television, like telephone or electric power provision, was a natural monopoly. Cable rates were regulated "to protect subscribers against monopoly pricing and to ensure adequate access by program providers to cable channels."[36] Although the FCC did participate in some regulatory efforts to protect broadcasters, the primary regulating bodies were county and municipal governments, who often granted exclusive franchises to cable companies in exchange for various concessions such as hookups for public institutions and community programming.[37] The cable industry was not enamored by the franchising process, since it created a "cumbersome and time-consuming process of government approval for rate increases, which discouraged network expansion and development of new programming."[38]

The Cable Communications Policy Act (1984 Cable Act)[39] was the federal government's first attempt at national cable television policy. This law explicitly deregulated cable rates in areas where there was "effective competition."[40] However, because "effective competition" was broadly defined to include any franchise area where three or more unduplicated broadcasting signals were available within a cable operator's service area, almost all cable systems qualified for rate deregulation.[41] Cable prices generally rose throughout the 1980s as a result.[42] Price increases led cable consumers and policymakers to call for reregulation of the industry. Consumer dissatisfaction led first to a stricter FCC standard for competition and later to the 1992 Cable Act,[43] enacted by Congress over President Bush's veto.[44]

B. The Two Sides of Retransmission Regulation

As discussed above, issues of retransmission have been a persistent feature of broadcast regulation. The FCC has dealt with the question of retransmission since it began to regulate cable television in the early 1960s. Two different interests are present in regard to retransmission: (1) the right of the broadcasters in the broadcast signal, and (2) the copyright of the creator of works contained in the signal. This part surveys the history of the two different retransmission interests and their regulatory schemes leading up to the 1992 Cable Act.

1. Regulation to Protect Broadcasters

The first interest the FCC recognized in terms of retransmission regulation--reflecting its historical perspective--is that of the broadcasters. The basic theory behind this regulation was that broadcasters, having been granted an exclusive right by the FCC to broadcast over the

limited broadcast spectrum, might be threatened if others could easily duplicate these broadcasts.[45] Broadcasters claimed that since cable operators did not have to pay for any of the costs of producing the broadcast signal, cable operators had a competitive advantage which would eventually lead to the destruction of the broadcast television industry.[46]

Concern for broadcasters' signals was clearly stated in the Communications Act of 1934 vis-a-vis other broadcasters. Section 325 of the original act states, in relevant part, that "No person within the jurisdiction of the United States shall knowingly utter or transmit . . . any false or fraudulent signal of distress . . . nor shall any broadcasting station rebroadcast the program or any part thereof of another broadcasting station without the express authority of the originating station."[47] Broadcasters may not retransmit another broadcaster's signal without obtaining prior consent. This ensures that one broadcaster does not infringe upon another broadcaster's FCC granted right to transmit its broadcast signal.[48] Section 325 could equally have applied to retransmission by nonbroadcasters, such as cable operators,[49] but the FCC explicitly declined to follow this view.[50]

At least one case examined broadcast rights in the absence of FCC regulation. In *Cable Vision v. KUTV*,[51] a federal district court in Idaho was faced with a situation where a cable operator was clearly competing with the only local television station, KLIX, which had secured exclusive rights from the networks under section 325(a) to rebroadcast signals from Salt Lake City. However, only one signal was rebroadcast at any one time. Cable Vision set up a system which could retransmit all of the Salt Lake City channels at once. Cable Vision sued KLIX on antitrust grounds, and KLIX countersued claiming tortious interference with contract. The court granted KLIX an injunction on the tortious interference grounds although stating that any specific property right by KLIX was derived solely from contract.[52] The court did not recognize any other property right.

Partly because of its initial understanding of cable television's role and its own jurisdiction,[53] the FCC initially declined to regulate retransmission of broadcast signals by cable operators.[54] In its 1959 proceedings, the FCC recommended that Congress pass legislation (1) requiring cable systems to obtain the consent of broadcasters to retransmit (retransmission consent) and (2) requiring cable systems to "carry the signal of the local station . . . if the local station so requests"[55] (must-carry). Congress did not act in response to the request. Once the FCC did decide to regulate cable television, partly because of the perceived threat to broadcast television, the FCC relied upon a series of rules regarding when and how cable operators could retransmit broadcast signals. These rules were called mustcarry, distant signal rules, and syndicated program exclusivity rules. The FCC did not create a property right for local television broadcasters' signals similar to the rights that broadcasters generally had regarding other broadcasters' signals.

The first regulations were promulgated in the mid-1960s. These stated that (1) CATV systems were required to transmit to their subscribers the signals of any station into whose service area they have brought competing signals (must-carry)[56] and (2) importation of distant signals into the 100 largest television markets was prohibited without FCC approval of its necessity.[57] The FCC also promulgated nonduplication rules and again asked Congress to pass a cable analog to section 325(a) and to prohibit cable-originated programming. Again Congress did not act. The regulations were challenged and upheld in *Southwestern Cable*.[58] "The practical effect of the

rules was to freeze most cable retransmission of distant signals."[59] These rules were revised and reissued in 1972, adding rules regarding syndicated program exclusivity, which gave local television stations that had purchased exclusive exhibition rights and copyright holders, the ability to demand that local cable systems delete a program from retransmitted distant signals.[60] Cable operators persistently fought these regulations.

2. The Second Interest: Copyright

A second interest was recognized as being at stake in the retransmission process. Owners of the copyright in programs shown on television felt that while broadcasters had paid for the privilege of showing their works, cable companies had not. Retransmission of broadcasts raised the issue of property rights in the programming carried on the broadcast signal. The 1909 Copyright Act did not explicitly address the issue of retransmission of copyrighted works.[61] Court cases, in fact, established that under the terms of the 1909 Copyright Act, retransmission was not a performance and thus no liability was incurred.

In *Fortnightly Corp. v. United Artists Television Inc.*,[62] the Supreme Court took its initial view of the copyright liability surrounding retransmission of broadcast television by cable operators. In *Fortnightly*, a motion picture copyright holder brought suit against a cable operator alleging copyright violations. The copyright holder noted that although the television stations had licenses, the cable operator did not. The Court found that retransmission of the local broadcast signal was not "performance" and thus no violation.[63] The Court noted that "both broadcaster and viewer play crucial roles in the total television process;" and viewers of performances do not perform.[64] The Court's point was that a cable system was like the homeowner who put a large antenna outside his house and then connected his neighbors as well. The Court said in dicta that "[t]he function of CATV systems has little in common with the function of broadcasters. CATV systems do not in fact broadcast or rebroadcast. Broadcasters select the programs to be viewed; CATV systems simply carry, without editing, whatever programs they receive."[65]

The Court revisited the copyright question in *Teleprompter Corp. v. Columbia Broadcasting Systems, Inc.*[66] In this case, the appeals court had made a distinction between signals already in the community and those that were distant, and allowed copyright liability for the latter.[67] The Supreme Court rejected this view and reaffirmed the holding in *Fortnightly*.[68] Justices Blackmun, Douglas, and Burger dissented.

This outcome was by no means certain. In *Buck v. JewellLaSalle Realty Co.*,[69] the Supreme Court examined an analogous question in regard to radio broadcasts and found copyright liability. In that case, the Court found that a hotel which rebroadcast radio signals to its guests was involved in a "public performance."

In 1976, Congress revised the Copyright Act and expressly addressed cable retransmission. Section 111 established a compulsory licensing scheme. Under this scheme cable operators are allowed to simultaneously retransmit programming but are required to compensate copyright owners for the programming based on a complex formula including gross receipts paid by subscribers to the cable system for the retransmission service and, for larger systems, "distant signal equivalents," which is described as "nonnetwork television programming carried . . . beyond the local service area of the primary transmitter of such programming."[70] Passage of this

legislation was contentious. The legislation did not require any payment for retransmission of local over-the-air signals or retransmission of distant network programming, based on the presumption that neither of these harmed copyright owners.[71] Payments under the 1976 Act are made only to copyright owners and not to broadcasters (except to the extent that they own copyrights).

The 1976 Copyright Act's treatment of cable television was widely criticized. Some claimed that the legislation should have contained "full copyright liability" and that the Act precluded the use of the market to set appropriate prices for the copyrighted materials.[72]

3. Post 1976 Regulation

Partly in response to the 1976 Copyright Act, the FCC began to change its cable regulations. In November 1976, the FCC began looking into abolishing the syndicated exclusivity rules,[73] which were repealed in 1981 despite a court challenge.[74] The Copyright Royalty Tribunal,[75] which administered the rates, made adjustments to reflect the regulatory changes. The Copyright Royalty Tribunal eliminated the adjustments when the FCC reinstated syndicated exclusivity rules in 1990.

In *Maltrite TV v. FCC*, petitioners tried to keep the FCC from repealing certain regulations protecting broadcasters by claiming that the 1976 Copyright Act forbade these changes.[76] However, petitioners also tried to claim that retransmission consent, which had been suggested to the FCC by the National Telecommunications and Information Administration (NTIA)[77] as an effective replacement for the regulations, would not violate the 1976 Act.[78] Although the court refused to keep the FCC from changing the rules,[79] the court seemed to say that FCC-imposed retransmission consent *would* be the same as full copyright liability, which Congress had expressly rejected.[80] However, the court refused to decide conclusively whether retransmission consent would be permissible under the Communications Act.[81]

Further developments in cable regulation occurred during the 1980s. In 1985, the D.C. Circuit invalidated the must-carry regulations as a violation of cable operators' First Amendment rights.[82] The FCC responded with reformulated rules, but these were also found to violate the First Amendment.[83] Retransmission consent was proposed in addition to or instead of the compulsory licensing scheme a number of times.[84]

C. Summary

The history of cable retransmission regulation had two components leading up to the 1992 Cable Act. One had its origin in the protection of broadcasters. This has been exemplified by FCC regulations including the must-carry regulations and other protective regulations imposed by the FCC since the 1960s. However, in 1985, the must-carry regulations were struck down by the courts as a First Amendment violation. The other issue was copyright, which was based on trying to protect the owners of copyrighted works. This was resolved (somewhat) by the compulsory licensing contained in section 111 of the 1976 Copyright Act. The 1992 Cable Act would only further complicate things.

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Which Broadband Nation?

By Philip J. Weiser and Thomas Bleha

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The FCC's Real Wrongs

PHILIP J. WEISER

Like monetary policy and antitrust regulation, telecommunications policy is a major driver of economic growth rarely debated in public. During the last presidential campaign, for example, issues related to the United States' technological leadership were either marginalized or ignored altogether. By highlighting the importance of this overlooked topic, Thomas Bleha ("Down to the Wire," May/June 2005) performs an important public service. Unfortunately, in criticizing Washington's approach to the issue, he misidentifies the challenge and offers a problematic solution.

TOKYO STORY

The essence of Bleha's argument is that under President George W. Bush, the United States dropped "the Internet leadership baton," allowing Japan to "pick it up" and guide broadband innovation. Bleha cites Japan's progress in spurring high-speed Internet access connections via both wires (using digital subscriber line [DSL] and fiber-optic technology) and wireless spectrum. He predicts that Japan and other technology-savvy countries, such as South Korea, will reap "the benefits of the broadband era" while the United States will be left behind.

It is beyond dispute that Japan has succeeded wildly in stimulating the rollout of DSL connections. Japan's recent regulatory policies, along with the entrepreneurial gusto of the venture-capital firm Softbank (which underwrote the investments made by Yahoo! BB), have brought faster, cheaper, and more innovative broadband services. The number of DSL connections in Japan surged from 100,000 in 2001 to more than 9 million just three years later, with the established providers offering only 40 percent of these. Regardless of whether this success owes more to government regulations or to Softbank's risky investments, Japan's experience is worth examining.

Bleha argues that the day of reckoning will come for Washington, not only because Japan's success has eclipsed U.S. progress but also because of what he describes as U.S. policy failures. Unfortunately, he misstates the record. Bleha blames Michael Powell, the former chair of the Federal Communications Commission (FCC), for making a series of convoluted regulatory decisions and for failing to encourage broadband deployment by requiring that all broadband networks be shared with competitors. Under Powell, the fcc did exempt telephone companies from having to share newly built fiber-optic connections with rivals, but it did so to encourage companies to invest the billions of dollars necessary to lay down the expensive cables in the first place. Bleha, moreover, overlooks the fact that to promote competition, Powell did support the Japanese model and a "line-sharing" policy that would have given new providers access to existing copper wires. Unfortunately, as part of a compromise designed to guarantee access to existing voice telephone networks, a majority of the fcc rejected Powell's position, making a policy mess. Contrary to Bleha's criticism of Powell, Washington failed to follow the Japanese model because it focused on the old voice network, not because Powell lacked the vision necessary to promote DSL competition.

OUT OF COMMISSION

As Bleha correctly notes, U.S. broadband policy focuses on encouraging platform rivalry, with DSL and cable modem providers taking the lead. Soon, however, they will face competition from wireless services such as next-generation mobile phones or fixed wireless technologies such as WiMax. According to Bleha, the Powell fcc failed to facilitate the rollout of such technologies; instead, he charges, the fcc "only tinkered with spectrum policy around the edges."

Once again, his indictment misses the mark. The current fcc is not to blame for the lack of spectrum available for wireless broadband; U.S. broadband policy is hamstrung by a series of protectionist decisions that Congress and earlier commissions made years ago to govern the transition from analog to digital television. These decisions, intended to protect U.S. television manufacturers from Japanese competition, dedicated large swaths of spectrum to television broadcasters, which now reach only approximately 15 percent of their viewers "over the air" (as opposed to via satellite or cable connections).

The challenges of reforming U.S. spectrum policy appear lost on Bleha. For starters, the United States remains committed to simultaneously broadcasting television shows in both the analog and digital formats, which requires reserving valuable spectrum even as fewer Americans watch over-the-air television. Worse, broadcasters cannot sell or lease to wireless broadband providers the spectrum they currently use, for example, for uhf stations. In other words, it is the rigid requirements (most mandated by Congress) restricting the use and transfer of spectrum that are stifling wireless broadband development today. If anything, the fcc deserves credit for taking, despite these conditions, a number of very important steps, including promoting secondary markets for spectrum, spurring the use of spectrum on an unlicensed basis for technologies such as WiMax, and calling for other innovative spectrum policy reforms, such as those designed to take advantage of software-defined radio technology.

CROSSED SIGNALS

Bleha's most troubling argument is his claim that the U.S. government should support certain technologies as part of its economic development strategy. To appreciate how risky the proposal is, consider the rise of advanced television and advanced mobile-phone service, both of which prompted regulatory strategies of the kind Bleha champions -- and both of which ultimately backfired.

It was the threat of Japan's rise in the 1980s that spurred the course toward digital television that the United States still follows today. Washington committed wide swaths of spectrum to digital television, leaving U.S. mobile-phone providers with less bandwidth than they needed and only about half the amount of their European counterparts. The entire effort assumed that Americans would continue to watch television shows broadcast over the air. Yet over the past two decades, more U.S. consumers have begun to watch cable and satellite television, undermining the rationale for this expensive policy, which has also delayed innovation and imposed unjustifiable costs on the nation.

Meanwhile, the European regulatory authority decided that the advent of digital, second-generation cell phones required governments to promote the technology known as the global system for mobile communications, or gsm, to ensure a compatible system throughout Europe. Wisely, the United States refused to favor any given technology and instead allowed marketplace experimentation to guide development. That strategy yielded the superior code division multiple access (cdma) technology developed by the California company Qualcomm, which uses spectrum more efficiently. The transition to the next generation of mobile telecommunications standards (which are based on cdma technology) will be much smoother for those U.S. companies that have adopted cdma, such as Verizon Wireless and Sprint PCS, than for their European counterparts.

Bleha also urges Washington to commit to supporting the installation of ultra-high-speed fiber connections to one-third of U.S. households by 2010. But his proposal may be foolhardy: even though fiber appears to be a promising technology today, such technologies have failed in the past for a variety of reasons, leaving investors with little to show for their money. (Remember digital audio tape recorders?) The U.S. government should be leery of endorsing particular technologies -- or even certain transmission speeds -- before it knows more about them and whether the market can support them.

SAFE AND SOUND

Bleha correctly identifies an important and often overlooked concern: the critical role of technological development in the economy. The Bush administration has done too little to promote broadband development and adoption. But even though it should do more to support the migration to digital broadband technologies, the government should avoid picking and choosing among technologies. Instead, it should educate consumers about the opportunities that broadband presents and facilitate the development of new technologies (such as WiMax and software-defined radio) by reforming spectrum policy and funding basic research. Some government support may ultimately be necessary to help drive broadband, but the

government should not rush to judge where, when, and how to support a particular technology. After all, Americans are adopting broadband faster than they have adopted almost any other technology in history. About 80 percent of Americans connected to the Internet already enjoy broadband access at work, and more subscribe to broadband services than to narrowband at home. Last year, the number of U.S. consumers and businesses adopting broadband jumped by 34 percent, to about 38 million lines.

To be sure, some aspects of U.S. regulatory policy are antiquated, and they may not be updated soon enough. The Telecommunications Act of 1996 did not even address the development of broadband. Although the fcc is working to create a regulatory framework that would promote technological innovation, it remains to be seen whether the effort will succeed. The commission is also trying to encourage flexibility and dynamism in spectrum policy, but its hands are tied by congressional decisions that, among other things, continue to support broadcast television that few Americans watch.

Over the next few years, Congress will revisit the decisions it made in 1996. To the extent that Bleha's argument spurs thoughtful deliberation and an appreciation for the significance of broadband technology, it will serve U.S. policymakers well. Unfortunately, it could just as well spark efforts, much like the sponsorship of digital television in the late 1980s and early 1990s, that could prove counterproductive.

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Bleha Replies

Philip Weiser and I agree on some basic matters. We both believe that broadband and wireless policies are important. We agree that these technologies can drive economic growth. We both think the Bush administration has done too little to promote broadband in the United States. And we agree that spectrum policy needs reform. Weiser did not address my central conclusion that Japan and its Asian neighbors will lead the broadband era and be the first to enjoy its economic and quality-of-life benefits. So we may agree about that as well.

Still, we have significant differences. We assess the FCC's record under Powell differently. As Weiser states, Powell did favor, although secondarily, promoting DSL competition. But it was Powell's failure to convince a majority of his fellow commissioners to go along with him that left the country with what Weiser calls (and I agree) "a policy mess." The mess was made worse by the Bush administration's refusal to appeal a court case that might have preserved some DSL competition. It was made still worse by a recent Supreme Court decision (in the case National Cable and Telecommunications Association v. Brand X Internet Services) that ruled out competitive access to residential cable television lines.

As for spectrum policy, Weiser credits the FCC for promoting (modest) secondary markets, spurring the use of unlicensed spectrum for new technologies, and other less important reforms. To my mind, these policies amount to minor tinkering. I agree that the Powell FCC was hamstrung by earlier decisions taken by Congress and other commissioners and that the challenges of reforming spectrum policy are formidable. But a presidential task force called for spectrum reform more than a year ago; it is past time for the government to take action. The Bush administration has shown that when it wants to, it can take momentous steps.

Weiser and I also disagree about the nature of the challenge the United States now faces. Weiser is far less concerned about how slow, expensive, and unreliable the basic broadband service currently available to American households (1-3 megabits per second) is. If I am right, four large new markets for Internet applications, products, services, and content will develop in the foreseeable future. These markets -- for high-speed broadband (10-50 megabits per second), ultra-high-speed broadband (up to 100 megabits per second), third-generation mobile videophones, and fourth-generation mobile broadband phones -- will emerge in countries where there are about ten million subscribers to each of these services. Markets for high-speed broadband and third-generation mobile phones already exist in Japan, and a third market for ultra-high-speed broadband is in the offing. The emergence of these markets is years away in the United States, however, because political leadership and a national strategy to promote them are lacking. Unless the United States adopts a new approach, it will forfeit the innovation, new jobs, international competitiveness, economic growth, and improved living conditions that come with these new markets.

Weiser warns against government support for a particular technology. Although this generally is a wise rule, I believe that deploying a fiber infrastructure should be an exception to it. New wireless technologies are only as fast as their link to the Internet. There are now thousands of WiFi hotspots capable of sustaining data transfer at 11 megabits per second and more that deliver only 1 megabit or so because they are limited by the capacity of the DSL line serving them. The same applies to WiMax. Creating new fiber connections would eliminate these constraints. Wired connections, preferably fiber, are also needed to handle long-distance mobile-phone services. Fiber, moreover, is the only type of connection that allows subscribers to be truly interactive: to upload as well as download data at ultrahigh speeds. But this is not to rule out other complementary technologies. The fiber infrastructure need not be brought directly to the premises. Population density might determine whether fiber is brought all the way to households and businesses, the curb, the neighborhood, or the region.

There are several ways to develop a fiber infrastructure, but most of them require significant government involvement to ease restrictions, create competitive conditions for new markets, and give tax incentives and even subsidies to companies that deploy it. I agree with Weiser that supporting a fiber infrastructure would involve some risk. But maintaining the present course is also risky: without government support, fiber rollout is likely to be slow and entail considerable duplication, and it is unlikely to reach rural and poor areas.

The government will also have to confront another fiber-related issue. The FCC's decision to exempt telephone companies from sharing their fiber networks has postponed consideration of what applications, products, services, and content these new fiber networks will transmit. Should Verizon or Comcast, for example, control all of the content on their fiber network? Is it reasonable to expect a family to subscribe to two or three networks so it can have access to the services and content it wants?

This brings me to a more profound difference: Weiser and I disagree on the extent of government involvement that is desirable. Weiser would limit the government's role to educating consumers about the benefits of broadband, reforming spectrum policy, funding basic research, and perhaps down the road modestly supporting broadband deployment. I believe the United States needs top-level political leadership, a national broadband strategy with bold deployment goals, and strongly competitive broadband markets now. Until the government moves decisively in this direction, the United States will continue to slide in global broadband rankings -- with unfortunate economic and social consequences. (The International Telecommunication Union recently announced that as of December 2004, the United States had slipped again, from 13th place to 16th place, in rankings of broadband usage worldwide.) President Bush has promised all Americans affordable broadband by 2007. The new FCC chair, Kevin Martin, says this goal is his top priority. Now the United States needs top-level political leadership to inject a sense of urgency into reaching these fine objectives.

POLICING THE SPECTRUM COMMONS

Philip J. Weiser* and Dale N. Hatfield**

I. Introduction

Some of the bands of spectrum originally designed for unlicensed uses (such as garage door openers) were widely regarded as "garbage bands." As for the band of frequencies around 2.4 gigahertz (GHz), for example, many industry observers concluded that the assorted unlicensed uses—mostly industrial, non-communications uses like microwave ovens—crowded the spectrum sufficiently such that no reliable service could operate in that range. Undettered by the crowded nature of the spectrum, the Institute of Electrical and Electronics Engineers (IEEE) developed a standard for wireless broadband that would operate in the 2.4 GHz band of spectrum. The subsequent success of the 802.11 standard, popularly known as Wi-Fi, has demonstrated that unlicensed spectrum can be big business.[1] In 2003 alone, for example, equipment manufacturers sold more than $2.5 billion in Wi-Fi-related devices.[2] And in 2004, it is expected that "public Wi-Fi hot spots will increase [] to almost 140,000 worldwide, with some 30 million users."[3] To top it off, wireless broadband using unlicensed spectrum is now being touted as a financially viable approach to delivering broadband services to rural areas.[4] Not bad for a garbage band.[5]

Wi-Fi's commercial success has raised a series of important questions for policymakers and has forced the Federal Communications Commission ("FCC") to take seriously the promise of technologies that use "commons access spectrum," such as the unlicensed 2.4 GHz band that facilitated the success of Wi-Fi.[6] First, advocates of a "spectrum commons" are now pressing the FCC to make available additional bands of commons access spectrum, including for a next generation "WiMAX" technology. Second, Wi-Fi's success raises the question of whether commons access spectrum can be used effectively to provide commercial services, such as those now offered by "wireless Internet Service Providers," or WISPs, who use commons access spectrum to offer broadband services to customers. Third, as WISPs and other firms using commons access spectrum begin to provide broadband services (particularly in rural areas), the FCC is evaluating whether commons access spectrum, as a common resource owned by no individual firm, is prone to overuse and "tragedy of the commons"-type concerns. Fourth, as the FCC adapts to the demands placed on it with respect to commons access spectrum, it has begun to consider whether new models of regulation are warranted, including how to address tragedy of the commons-type concerns.

Proponents of increased commons access spectrum have not developed careful solutions for ensuring that commons access spectrum can be used to provide commercial services without confronting tragedy of the commons-like concerns.[7] At best, they have suggested that social norms, cooperation on developing the relevant protocols (through standard setting bodies like the IEEE), or the FCC's current regime for certifying technologies (i.e., its Part 15 rules) can prevent such problems from emerging.[8] Those more mindful of the need to guard against behavior that would undermine the viability of such services have suggested that common law courts can adjudicate tort actions to police the use of commons access spectrum.[9] Yet others have suggested that local property owners should be permitted to manage commons access spectrum on their premises or that the FCC should establish certain etiquette standards (such as "listen before you talk") to prevent tragedy of the commons-like concerns.[10] In all events, however, the debate over how—if at all—to regulate access to the spectrum commons is only beginning.[11]

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[1] *See, e.g.*, Wiley Rein & Fielding, Wi-Fi – The Shape of Things to Come? (July 2002), available at http://www.wrf.com/db30/cgi-bin/pubs/WiFi_Primer_Final.pdf.

[2] Insight Research Corporation, Wi-Fi Market Forecast, available at http://www.enterprisewirelesstechnology.com/page.cfm/link=62.

[3] Nikhil Hutheesing, *Wi-Fi Buys*, FORBES.COM (June 6, 2004), available at http://www.forbes.com/wireless/2004/06/03/cz_nh_wifi04_buys.html.

[4] *See* Mingliu Zhang & Richard S. Wolff, Crossing the Digital Divide: Cost-Effective Broadband Wireless Access for Rural and Remote Areas (2004), available at http://www.coe.montana.edu/ee/rwolff/Divide-rev4.pdf (concluding that based on "reasonable assumptions for equipment costs, customer adoption rates, services prices and market share, a Wi-Fi-based broadband Internet access network is financial viable in a rural area"); *see, e.g.*, Stephen Lawson, *Wi-Fi Brings Broadband to Rural Washington*, INFOWORLD (August 23, 2004), available at http://www.infoworld.com/article/04/08/23/HNwifiwash_1.html (reporting on use of Wi-Fi system in 2.4 GHz band to provide wireless broadband service over a 3,700 square mile area in rural Washington and providing estimate of 8,000 such offerings throughout the United States).

[5] Significantly, the 2.4 GHz band (along with other bands such the 900 MHz band) supports an array of other unlicensed uses, ranging from cordless phones to garage door openers. For purposes of this paper, however, we will focus on wireless broadband applications. For a discussion of the array of uses of unlicensed spectrum, see Kenneth R. Carter et al., Unlicensed and Unshackled: A Joint OSP-OET White Paper on Unlicensed Devices and Their Regulatory Issues, Federal Communications Commission, OSP Working Paper Series (No. 39) (May 2003), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-234741A1.pdf.

[6] In general, the term "commons access spectrum" is used interchangeably with "unlicensed spectrum." There are, however, alternative licensing arrangements—i.e., licensing widespread spectrum access by rule or providing members of the public with "non-exclusive licenses"—that afford parties access to spectrum in a very similar manner to unlicensed spectrum. To encompass this broader concept of commons access, we will use the term "commons access spectrum" to refer to all spectrum bands that are open to public use (or at least to categories of the public) unless we refer specifically to unlicensed bands, such as the 2.4 GHz band. Moreover, some commentators refer to "open spectrum" or "open access spectrum," but we prefer using the commons concept to underscore that "commons access spectrum" may include certain restrictions whereas open access generally suggests unrestricted access.

[7] Yochai Benkler, a leading advocate of a spectrum commons approach, readily acknowledges that he has not addressed such issues and that they are "an important area of study." Yochai Benkler, *Overcoming Agoraphobia: Building the Commons of the Digitally Networked Environment*, 11 HARV. J.L. & TECH. 287, 361 (1998); *see also* Stuart Buck, *Replacing Spectrum Auctions With A Spectrum Commons*, 2002 STAN. TECH. L. REV. 2, ¶39 (noting that Benkler's advocacy of a spectrum commons is not coupled with a description "in any great detail" of the measures necessary to make it work).

[8] *See, e.g.*, Stuart Buck, *Replacing Spectrum Auctions With A Spectrum Commons*, 2002 STAN. TECH. L. REV. 2.

[9] *See, e.g.*, Kevin Werbach, *Supercommons: Toward a Unified Theory of Wireless Communication*, 82 TEX. L. REV. 863 (2004).

[10] *See* TAN __, __.

[11] We note that there are two other forms of spectrum commons that we will not address explicitly in this paper, although those contexts raise some related issues to the ones we address here. In particular, the FCC has begun to consider whether to make available "spectrum underlays" within licensed bands (such as those made available for ultrawideband technology) and whether to authorize opportunistic uses of otherwise licensed spectrum when not being used by the licensee. *See* First Report and Order, *Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems*, 17 FCC Rcd. 10505 (2002)

This paper both underscores the imperative of and develops the analytical framework for regulating the use of commons access spectrum. In particular, it rejects the argument by many spectrum commons advocates that commons access spectrum can prosper without FCC oversight and argues that the FCC should develop a regulatory program that integrates the efforts of end user groups, interested companies, private standard setting bodies, and its own enforcement tools.[12] Historically speaking, the FCC's strategy for enforcing limits on the uses of commons access spectrum has focused on equipment certification requirements, specialized rules of operation, and, in some rare cases, penalizing those who use spectrum illegally. But where standards are increasingly embedded in software and users are not easily identified, this approach needs to be refined.

In short, we focus on two central reforms: developing additional proactive measures to limit the potential for interference and improving the FCC's system of back-end enforcement. To set the stage for these reforms, Part II outlines the basics of the current spectrum management regime and Part III discusses the alternative possible approaches—i.e., other than public regulation—for policing commons access spectrum. In recommending regulation of commons access spectrum (in Part IV), we recognize that the measures we propose will require considerable effort to implement, but we believe that a failure to address these issues would be the Achilles' heel of the commons model of spectrum management. At the same time, we recognize that if the FCC institutes overly restrictive regulations of commons access spectrum, it may risk sacrificing some of the benefits of commons access spectrum and allow such spectrum to fall prey to some of the failings of the legacy command and control model.

II. The Radio Spectrum and the Current Spectrum Management Regime

To understand the issues raised by the debate over how to police the spectrum commons, we must first outline the structure of the current regulatory system. Part of the challenge facing the FCC as it seeks to adapt to the changing technologies that make possible more efficient uses of spectrum is both that its statutory authority to regulate spectrum dates back to the 1930s and that reforming regulation invariably threatens incumbent interests. But before we can explain the current regulatory model, we must first explain what the "radio spectrum" is.

A. A Succinct Primer on Spectrum Technology

The radio spectrum refers to electromagnetic waves that travel through space within a frequency range of 3,000 cycles-per-second and 400 billion cycles-per-second. These "frequencies," which are measured in Hertz and abbreviated as "Hz," form the basis of wireless communications. In particular, a given range of frequencies can be used

(authorizing underlays for ultrawideband); Notice of Proposed Rulemaking, *Facilitating Opportunities for Flexible, Efficient, and Reliable Spectrum Use Employing Cognitive Radio Technologies*, 18 FCC Rcd 26,859, ¶ 36 (2003) (inquiring into possible uses of cognitive radios to facilitate opportunistic uses of licensed spectrum). Similarly, we do not discuss the issues raised by "private commons" that are managed by a firm with a spectrum license.

[12] In this sense, we build on some of the conclusions offered by Ellen Goodman. *See* Ellen P. Goodman, *Spectrum Rights in the Telecosm To Come*, 41 SAN DIEGO L. REV. 269, 403-04 (2004) (calling for greater development of the necessary regulatory strategy to facilitate the effective use of commons spectrum).

to communicate information over distances without wires or other physical media. In the case of analog cellular services, for example, a voice channel of 30,000 Hz (or 30 kiloHz, or kHz) can provide sufficient bandwidth to establish a reliable communications link.[13] Significantly, a provider can use a particular 30 kHZ channel to provide analog cellular service on one day and then still have the same amount of radio spectrum available for use tomorrow, meaning that spectrum is infinitely renewable.[14]

The radio spectrum can be shared in its frequency, time, and space dimensions. In theory at least, additional users of spectrum can always be accommodated—particularly through the use of smart "cognitive radio" technologies (discussed below) that enable enormous flexibility in spectrum use. But even taking advantage of such technologies, there are practical considerations in terms of cost and complexity that limit the number of users that can be served in a given geographic area at one time and, in that sense, the radio spectrum is a scarce resource. Thus, despite being infinitely renewable, spectrum often has significant economic value, especially in geographic areas with intense demand for wireless communications.

When commentators discuss the radio spectrum, they generally focus on the set of frequencies that are most suitable for commercial uses. Notably, because different frequency ranges ("bands") within the radio spectrum have different technical characteristics, some bands are more attractive for particular purposes than others. In particular, most notable uses of spectrum rely on the frequencies between 300 MHz and 3 GHz because the physical dimensions of the required antennas are reasonable, the associated transmitting and receiving devices are less costly, and, more fundamentally, the radio waves are less susceptible to being blocked or attenuated by natural or manmade obstacles such as hilly terrain or tall buildings. But technological change can overcome such obstacles and the range of usable spectrum has thus expanded over time.

When commentators use the term "spectrum management," they generally refer to the broad array of activities associated with the regulation of this somewhat unusual natural resource. The term thus includes activities such as (1) *allocating* bands of frequencies for certain purposes (e.g., television broadcasting, terrestrial mobile radio services, or unlicensed spectrum not designated for a particular use); (2) *assigning* the licenses that authorize individuals or firms to use particular bands of spectrum (e.g., generally through an auction process); (3) *developing the rules* and regulations (e.g., maximum transmitter power) that govern the use of a channel or group of channels within a band in a specified geographical area; and (4) *enforcing* the associated rules and regulations once they are adopted. As we discuss below, advocates of a spectrum commons generally focus on the first two functions—i.e., allocation and assignment—and downplay or ignore the issues associated with the last two—i.e., service rules and enforcement.

[13] One KHz is one thousand Hz, one MHz is one million Hz, and one GHz is one billion Hz. Historically, the greater number of frequencies used for a particular communications link correlated with greater power levels and increased bandwidth. Accordingly, a transmission for a broadcast television station uses 6 MHz, or 200 hundred times as much bandwidth as an analog cellular voice channel. As we discuss below, new digital technologies have begun to undermine these historic patterns of spectrum usage.

[14] Like air or water, however, the radio spectrum resource can be "polluted" by interference generated by natural sources of electromagnetic waves (e.g., lightning strokes) or by spurious emissions from radio transmitters or other man-made devices (e.g., florescent lights).

B. The FCC's Spectrum Management Regime

In 1934, when Congress created the FCC (in the Communications Act of 1934) and instituted an approach for regulating access to the radio spectrum, the concept of "spectrum management" generally equated with the role of overseeing licenses to operate broadcast stations (initially for radio and later for television). But over 70 years later, the importance of wireless technologies that use the spectrum—and the FCC's management of that resource—goes well beyond what Congress envisioned in 1934. Unfortunately, the 1934 Act continues to form the basis of spectrum policy, as the FCC still mostly uses the generations old "command and control" model of regulation that tightly prescribes what users can and cannot do with a spectrum license.

Under the legacy command and control model, companies live and die by the FCC's decisions about how the spectrum can be used. Consequently, the allocation of spectrum for particular uses and the development of specific technical and service rules governing those allocations is a crucial determinant of industry structure and performance. In the mobile telephone industry, for example, the FCC initially allocated only enough spectrum for two operators in each geographic area and it generally restricted the uses permitted under other spectrum licenses so that the bands not previously designated for mobile telephony could not be used to compete against the two authorized providers. In this environment, innovation in wireless technologies is inhibited, as FCC Chairman Powell put it in 2002, "by the 'mother may I' phenomenon—businesses must go to the FCC for permission before they can modify their spectrum plans to respond to consumer demand."[15]

Over the last fifty years, as firms increasingly sought access to spectrum to provide new services, the command and control model came under increasing criticism. Traditionally, the FCC made spectrum available by reallocating spectrum from lower value to higher value uses. Using this technique, the FCC follows the "wise man theory of regulation," under which it is deemed "capable of deciding what [uses of spectrum are] best for the public."[16] The FCC, for example, has long reserved wide swaths of spectrum for use by the broadcasters (including the often underused UHF frequencies) even while mobile telephone operators clamored for more spectrum. The reason for the FCC's limited success in reallocating spectrum already designated for particular uses is readily understandable: few incumbent licensees will give up an entitlement to use spectrum without getting something in return. To use the economic term, the fight among incumbent and potential users of spectrum is a form of *rent seeking* in that spectrum licensees (and would-be licensees) press vigorously for regulatory decisions that give rise to economic rents for themselves.[17]

The limitations of the command and control model have long troubled observers of the FCC's legacy spectrum management regime. In particular, Nobel Laureate Ronald Coase observed in the 1950s that the FCC's command and control regulation of spectrum

[15] Michael K. Powell, Broadband Migration III: New Directions in Wireless Policy (October 30, 2002), available at http://www.fcc.gov/Speeches/Powell/2002/spmkp212.html.

[16] Douglas W. Webbink, *Frequency Spectrum Deregulation Alternatives*, FCC WORKING PAPER 10 (October 1980), available at http:/www.fcc.gov/Bureaus/OPP/working_papers/oppwp2.pdf.

[17] For a discussion of the rent-seeking aspects of spectrum regulation, see Thomas W. Hazlett, *The Wireless Craze, the Unlimited Bandwidth Myth, the Spectrum Auction Faux Pas, and the Punchline to Ronald Coase's "Big Joke": An Essay on Airwave Allocation Policy*, 14 HARV. J.L. & TECH. 335 (2001).

prevented numerous "win-win" (or, in economic terms, "pareto efficient") trades from taking place.[18] Notably, if the FCC allowed incumbent licensees—such as UHF broadcasters—to sell or lease their spectrum licenses free of any use restrictions, more productive users of the spectrum—say, mobile telephone operators—could purchase those licenses and thereby enhance consumer welfare. Indeed, from the 1950s until the 1990s, the FCC's failure to embrace this "property rights" model gave rise to a cottage industry of scholarship that castigated the agency for its misdirected regulation of spectrum.[19] As the next Section makes clear, however, the FCC has not only begun to act on such proposals, it also has begun to consider other fundamental reforms of its traditional spectrum management regime.

C. Beyond Command and Control and the Commons Model

Over forty years after Coase first argued for it, the FCC is beginning to reform its traditional spectrum management regime and to treat licenses in a more property-like manner. In particular, the FCC began to heed such calls for reform in the early 1990s and, following the congressional cue to use auctions to assign spectrum licensees, the agency has embarked on a number of initiatives to move spectrum policy towards a property rights model.[20] Moreover, in its recent Spectrum Policy Task Force Report, the FCC signaled its interest in moving in that direction and has since followed up its rhetoric with a Secondary Markets initiative.[21] To date, however, the market-based reforms have confronted a series of obstacles, many of which relate to the difficult question of how to transition from a command-and-control framework to a market-based one. In particular, policymakers continue to debate whether (1) to allow incumbent licensees additional freedom to sell or lease their rights to others who place a greater value on the spectrum; or (2) to prevent incumbent providers from reaping "windfalls" from the enhanced value of the additional flexibility—at the risk of leading those incumbents to maintain their grip on their spectrum.[22]

Around the same time that the FCC initiated a number of market-based reforms, a notable list of commentators, including Internet pioneer David Reed and law professors Yochai Benkler and Lawrence Lessig, began arguing for a model of spectrum

[18] *See* Ronald Coase, *The Federal Communications Commission*, 2 J. LAW & ECON. 1 (1959).

[19] *See* Ellen P. Goodman, *Spectrum Rights in the Telecosm To Come*, 41 SAN DIEGO L. REV. 269, 271 n.3 (2004) (listing property rights advocates).

[20] *See* JONATHAN E. NUECHTERLEIN & PHILIP J. WEISER, DIGITAL CROSSROADS: AMERICAN TELECOMMUNICATIONS POLICY IN THE INTERNET AGE __ (forthcoming 2005) ("DIGITAL CROSSROADS").

[21] Federal Communications Commission, Spectrum Policy Task Force Report, ET Docket No. 02-135 (Nov. 15, 2002), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-228542A1.pdf; Report and Order, *Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, 18 FCC Rcd. 20,604 (2003).

[22] For a discussion of the transitional challenges in moving toward the property rights model, see DIGITAL CROSSROADS, *supra*, at __; *see also* Gerald R. Faulhaber & David Farber, *Spectrum Management: Property Rights, Markets, and The Commons* (http://rider.wharton.upenn.edu/~faulhabe/SPECTRUM_MANAGEMENTv51.pdf) ("*Spectrum Management*"); Evan Kwerel & John Williams, *A Proposal for a Rapid Transition to Market Allocation of Spectrum*, OPP WORKING PAPER SERIES NO. 38, at iv (FCC 2002) (http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-228552A1.pdf).

management based on treating spectrum as a "commons."[23] Under this model, which builds off of the FCC's reservation of swaths of spectrum as unlicensed (such as the 2.4 GHz band), anyone can gain access to a block of spectrum or set of channels subject only to certain basic rules. Such a "spectrum commons" approach is thus somewhat analogous to grazing lands that are used in common by herdsmen in a community or to public parks or hunting lands that can be accessed by anyone. And by pushing for such a model of spectrum management, commons advocates have joined forces with property rights advocates in criticizing the command and control model, but have advocated a different prescription for addressing the rigidities and inefficiencies it causes.

In advocating for a commons model, many commentators highlight the increasing significance of digital technologies that use spectrum efficiently and avoid interference in ways that earlier, "dumb" radios could not. Two notable examples of such technologies are "spread spectrum" and "cognitive radios," both of which can be used to avoid creating large "white spaces" (i.e., unused or underused bands) in the spectrum. Spread spectrum employs digital technologies to spread signals over a wide band of spectrum, sometimes enabling the signals to avoid particular channels depending on which frequencies are being used.[24] Cognitive radios are a distinct innovation that may or may not be used in conjunction with spread spectrum. Such radios enable users to manipulate transmission devices—or for devices to be programmed to self-adjust—so that they can operate at any frequency, power level, modulation technique, or transmission format.[25] Significantly, such radios will be defined and controlled by software (i.e., "software defined radios") as opposed to the traditional hardware-based (and "hard-wired") radios.[26] To be sure, these technologies typically involve some tradeoffs in terms of quality, equipment complexity, or battery life (as opposed to traditional spectrum technologies), but as the price of computing power continues to fall, these techniques are likely to become increasingly important.

In arguing for increased swaths of commons access spectrum, commons model advocates point to the success of devices using the 2.4 GHz band. Like the 2.4 GHz band, a block of spectrum can be designated as commons access spectrum so that any member of the public can use it. Unlike spectrum regulated under the command and control or property rights model, however, users of commons access spectrum have no assurance against interference from other such users. Moreover, users of commons access spectrum must comply with specified technical standards (e.g., maximum power restrictions) and, in some cases, specialized requirements (e.g., do not transmit on a

[23] For an early articulation of this position, see Yochai Benkler, *Overcoming Agoraphobia: Building the Commons of the Digitally Networked Environment*, 11 HARV. J.L. & TECH. 287 (1998). For later ones, see David Reed, Why Spectrum is Not Property, The Case for an Entirely New Regime of Wireless Communications Policy (Feb. 27, 2001), available at http://www.reed.com/dprframeweb/dprframe.asp?section=paper&fn=openspec.html; LAWRENCE LESSIG, THE FUTURE OF IDEAS 222 (2001).

[24] The two most common types of spread spectrum, direct sequence spread spectrum and frequency hopping spread spectrum, both involve the widening of the basic signal and fall within the FCC's definition of the term. *See* 47 C.F.R. § 2.1.

[25] *See generally* Notice of Proposed Rulemaking, *Facilitating Opportunities for Flexible, Efficient, and Reliable Spectrum Use Employing Cognitive Radio Technologies*, 18 FCC Rcd 26,859 (2003).

[26] The FCC recognized the development of software defined radios and set forth a certification policy for them in Report and Order, *Authorization and Use of Software Defined Radios*, 16 FCC Rcd 17373 (2001).

particular channel if you detect that it is already in use). Such requirements are set forth in the FCC's Part 15 rules, which are generally enforced through a certification regime whereby manufacturers must demonstrate that their device (say, a baby monitor, cordless phone, or garage door opener) satisfies a number of specifications. Finally, the Part 15 rules require that any unlicensed device cease operating if it causes interference to its licensed counterparts.

The traditional Part 15 regime, which governs the use of unlicensed devices, is a paradigm of regulatory minimalism. The central goal of this regime is to enable users of unlicensed spectrum to operate without causing harmful interference to licensed uses. Traditionally, the Part 15 rules have regulated the permissible power requirements of any authorized device to safeguard against such concerns and have assigned liability to manufacturers for failing to follow the applicable certification requirements. In a notable revision of these rules in the late 1980s and early 1990s, the FCC raised the power level requirements to facilitate the use of spread spectrum technology in certain unlicensed bands and added additional bands for unlicensed uses.[27] In addition to spurring the development of more sophisticated cordless telephones, these decisions also set the stage for the explosive growth of Wi-Fi systems.

The success of Wi-Fi systems using the 2.4 GHz band reflects a virtuous cycle that continues to drive adoption of the technology. In particular, with the initial Wi-Fi standards in place and the continuing rapid growth (and falling prices) of the necessary equipment, entrepreneurs have recognized an opportunity to offer broadband access to the general public through wireless access points located at high traffic volume locations such as airports and other transportation hubs, hotel lobbies, and coffee shops. Sometimes the access is offered for free as a way of attracting customers to the location (e.g., the coffee shop) or in exchange for a one-time charge or a longer term subscription. In addition, WISPs and other entrepreneurs have recognized the possibility of using basically the same technology but with more sophisticated external antennas to extend broadband internet access to homes or small businesses that were not able to get DSL or cable modem service via wired facilities. For example, a WISP in a small farming community might install an access point with a relatively sophisticated antenna on a high structure such as a water tower and thereby offer high speed internet access to an entire cluster of homes and small businesses. Because no radio license is required, only the use of widely available, competitively priced, approved equipment, these WISPs can roll out service quickly and at low cost. Various manufacturers have recognized this as a potentially large market and have developed even more sophisticated, "carrier-class" systems that operate over an extended range using commons access spectrum.

Commons advocates point to the spectacular success of Wi-Fi as a harbinger of what can be expected under a commons model of spectrum management. In particular, they argue that the technical architecture of technologies using commons access spectrum can promote innovation far more rapidly than spectrum subject to the traditional command-and-control or even a property rights model. To do so, they point to the Internet's architecture as a model for spectrum, highlighting that in the Internet environment, anyone can create a new service by installing software residing in

[27] *See, e.g.*, First Report and Order, *Revision of Part 15 of the Rules Regarding the Operation of Radio Frequency Devices Without an Individual License*, 4 FCC Rcd 3494 ¶ 130 (1989).

computers (e.g., in clients and servers) external to the "dumb" portion of the network controlled by the carrier or provider. Indeed, the most popular applications that have driven the success of the Internet–email, the Worldwide Web, Instant Messaging, and file sharing to name just the most prominent–have evolved in exactly this way.[28] In short, not only do advocates of the spectrum commons approach envision using decentralized intelligence to dramatically increase the efficient use of spectrum (through shared access based on new technologies), but also as a way of shifting greater control over service development (as well as content creation, distribution, and consumption decisions) to the general public.

Whereas the initial success of the spectrum commons approach largely reflected a happy historical accident, policymakers are now giving this model of spectrum management a closer look. When the FCC reserved spectrum at 2.4 GHz for unlicensed uses, for example, it had no idea that such spectrum would facilitate wireless broadband applications like Wi-Fi. But in the current spectrum policy debates, there is a widespread awareness that the FCC's decisions about making available more commons access spectrum (i.e., whether as unlicensed, licensed to a class of users by rule, or available to all under a non-exclusive license) could spur increased broadband connectivity. The FCC's Spectrum Policy Task Force Report, for example, recognized the commons model as a peer to the property rights model that had long been the sole rival to the traditional command-and-control approach.[29] And major information technology companies like Intel are picking up the mantle of arguing for increased commons access spectrum, advocating, for example, that the FCC designate frequencies in the 700 MHz range—now used by UHF stations—as unlicensed spectrum.[30] Indeed, the FCC has recognized that WISPs have requested additional spectrum for unlicensed uses at higher power levels to enable them to provide "broadband access networks serving individual customers in sparsely populated areas."[31]

At present, the FCC has only begun to recognize that it may to reform its regulation of commons access spectrum to protect commons access users from interfering with one another. As commercial providers like WISPs increasingly offer services using commons access spectrum, however, the FCC will need take seriously the argument that the commons model of spectrum management—at least without additional

[28] As Andrew Odlyzko has observed, "[i]n spite of many attempts, the established service providers and their suppliers have an abysmal record in innovation in user services . . . . The real 'killer apps,' such as email, the Web, browsers, search engines, IM, and Napster, have all come from users." ANDREW ODLYZKO, TELECOM DOGMA AND SPECTRUM ALLOCATIONS 7 (June 20, 2004) (http://wirelessunleashed.com/papers/TelecomDogmas.pdf).

[29] *See* Policy Statement, *Principles for Promoting Efficient Use of Spectrum By Encouraging the Development of Secondary Markets*, 15 FCC Rcd. 24178, 24181 (2000) ("[T]he best way to realize maximum benefits from the spectrum is to permit and promote the operation of market forces in determining how spectrum is used."); *see also* News Release, *FCC Issues Guiding Principles for Spectrum Management* (Nov. 18, 1999) (not even mentioning unlicensed uses), available at http://www.fcc.gov/Bureaus/Engineering_Technology/News_Releases/1999/nret9007.html.

[30] Michael Singer, *Intel: Spectrum is the New Frontier*, INTERNET NEWS.COM (July 30, 2004), available at http://www.internetnews.com/wireless/article.php/3388811.

[31] Press Release, FCC Begins Rulemaking Proposing To Allow Wireless Broadband Operations in The 3650-3700 MHz Band, 2004 WL 828417 (Apr. 15, 2004).

regulatory oversight—will give rise to the famed "tragedy of the commons."[32] On this argument, a resource that is designated for common usage is prone to despoliation as individual users increase their consumption of the resource without taking care to ensure that they do not overuse the resource.[33] In the spectrum context, a notable concern is that users of commons access spectrum will increase the performance of communications links by increasing their transmitter power, but at the expense of causing more interference to—and reducing the performance of—links operated by other users. Faced with diminished performance, other users will then retaliate by raising their own transmitter powers to compensate for the increased interference. With this concern in mind, the FCC should look for ways to prevent such vicious cycles before embracing fully the commons model of spectrum management.

III. Ensuring A Sustainable Spectrum Commons

The regulatory debate over whether a spectrum commons can avoid tragedy of the commons-type concerns is only beginning and commentators have just begun to address this question. The resolution of this issue will depend on whether some form of regulation can prevent users of commons access spectrum from descending into mutually antagonistic forms of behavior like that described above. Notably, regulation can take a variety of forms, including (1) social norms that limit certain types of behavior; (2) market ordering that creates incentives for and against certain types of behavior; (3) technical architectures that limit the range of possible behavior; and (4) traditional law enforcement that punishes certain types of behavior.[34] In general, commons advocates focus on some combination of the first three modes of regulation, often contending that FCC regulation is unnecessary or only minimally necessary to enable the commons model of spectrum management to succeed. To evaluate this claim, we consider each of the first three modes in turn and judge whether they prevented tragedy of the commons-type concerns in the commons-like "ham radio" (formally known as the amateur radio service) and citizen's band (CB) spectrum.

A. Social Norms

The importance of social norms as a form of regulating the use of commons access spectrum is potentially enormous. For years, commentators often invoked the tragedy of the commons concern without investigating whether actual commons gave rise to such concerns.[35] But recent scholarship has reversed this trend and suggested that commons regimes can operate effectively under certain circumstances. In particular, Robert Ellickson famously observed that ranchers in Shasta County settled disputes with

[32] *See* Stuart Benjamin, *Spectrum Abundance and the Choice Between Private and Public Control*, 78 N.Y.U. L. REV. 2007, 2031 (2003).

[33] *See* Garrett Hardin, *The Tragedy Of the Commons*, 162 SCI. 1243 (1968).

[34] *See* Lawrence Lessig, *The New Chicago School*, 27 J. LEGAL STUD. 661 (1998).

[35] The tragedy of the commons concern is closely associated with the underlying phenomenon of the "free rider problem" whereby individuals decline to take any action that would advance the collective interest. On this account, individuals only safeguard their narrow self interest, which means that any collective action issues—such as maintaining common property—are unlikely to be addressed effectively. For the classic argument that the free rider problem has this impact, see MANCUR OLSON, THE LOGIC OF COLLECTION ACTION 2 (1965) (arguing that "rational, self-interested individuals will not act to achieve their common or group interests").

one another through a series of social norms about how to use such property—even in the absence of formal legal rules to govern their behavior.[36]

To explain the collaboration necessary to maintain a commons, students of game theory have advanced the argument that participants act very differently—and are far more likely to cooperate—when engaged in a repeat playing game. In such games, participants may well realize that if they deviate from a norm of cooperation in one instance, it might well come back to haunt them in another one.[37] Indeed, in some communities—whether neighboring ranchers or businesses—the resort to legal formalities and self-interested behavior is unlikely to be constructive; as Stewart Macaulay quoted a purchasing sales agent over forty years ago, "'you don't read legalistic contract clauses at each other if you ever want to do business again.'"[38] Not surprisingly, Macaulay's landmark study of business relations found that the most common type of dispute to end up in an appellate court is a fight over the ending of a business relationship—i.e., an action for the wrongful termination of a franchise agreement.[39]

In short, the game theory literature suggests that social norms that address and prevent counterproductive behavior may well arise in repeat games situations, but there are no such guarantees where parties are not likely to interact with one another on a regular basis.[40] Moreover, social norms are also effective in environments where a firm's reputation plays an important role in discouraging tragedy of the commons-like behavior.[41] Consequently, the combination of repeated interaction between parties and widespread reputation effects can help to explain how certain markets, such as diamond trading, are characterized by a remarkable degree of trust and a commitment by firms not to press their legal rights to the hilt.[42] At the same time, the absence of such forces in

[36] ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHORS SETTLE DISPUTES (1991).
[37] *See* ROBERT AXELROD, THE EVOLUTION OF COOPERATION (1984) (repeated interaction between two players will lead to cooperation); David Hirshleifer & Eric Rasmusen, *Cooperation in a Repeated Prisoners' Dilemma with Ostracism*, 12 J. ECON. BEHAV. & ORG. 87, 90-94 (1989) (same).
[38] Stewart Macauley, *Non-Contractual Relations in Business: A Preliminary Study*, 28 AM. SOC. REV. 55, 61 (1963).
[39] *Id.*
[40] *See* Eric Posner, *The Regulation of Groups: The Influence of Legal and Nonlegal Sanctions on Collective Action*, 63 U. CHI. L. REV. 133 (1996). There are still important unanswered questions about how social norms work in practice, including how they are developed, how quick they adapt to serve their purpose, and how they are enforced, but we can assume for our purposes that such norms are reasonably effective in regulating behavior under certain conditions. *See, e.g.*, Richard H. McAdams, *The Origin, Development, and Regulation of Norms*, 96 MICH. L. REV. 338, 352 (1997) (highlighting how the effort necessary to enforce social norms presents a collection action problem of itself).

[41] *See* Jason Scott Johnston, *The Statute of Frauds and Business Norms: A Testable Game-Theoretic Model*, 144 U. PA. L. REV. 1859, 1874-75 (1996) ("Within suitably dense and homogenous communities, the harm to the breacher's reputation and lost future dealings with third parties that she will suffer when the aggrieved party tells others in the community about her breach may supplant the second party sanction of relationship termination."); Lewis A. Kornhauser, *Reliance, Reputation, and Breach of Contract*, 26 J. L. & ECON. 691, 699 (1983) ("[I]n a simple world with reputations, the rule of law does not matter.").

[42] *See* Lisa Bernstein, *Opting Out of the Legal System: Extralegal Contractual Relations in the Diamond Industry*, 21 J. LEGAL STUD. 115, 126-27 & n.26 (1992) (citing Leon Finker, Inc. v. Schlussel, 469 F. Supp. 674 (S.D.N.Y. 1979)) (noting that, in the diamond industry, patent infringement suits are accepted, but

other contexts explains why legal enforcement can and may well be necessary to ensure that individuals act in a constructive fashion.[43]

In the wireless context, the significance of social norms is quite obvious. For two neighbors, for example, concerns about interference in spectrum usage can often be resolved amicably and effectively. Moreover, equipment manufacturers have strong incentives both to minimize interference with related equipment and to enable users to identify what users are degrading one another's uses of commons access spectrum. Moving to the analogy of the public park, the role of social norms can be quite powerful where local neighbors are all able to know who does and who does not, say, clean up after their dog—and that they all benefit from following certain established social norms.[44] Indeed, social sanctions—be they collective shunning or "tit for tat" behaviors (say, not cleaning up after one's dog on a neighbor's property)—can be remarkably effective means of encouraging compliance with a social norm (in this case, cleaning up after one's dog). In the spectrum context, there are reports both that users of Wi-Fi-like services and users of air-to-ground radio channels—i.e., in contexts of limited numbers of users who are known by one another—have worked with one another constructively to avoid interference. But when anonymous users send signals that travel wide distances in dense areas, there are strong reasons to believe that social norms will break down. After all, when only small communities of individuals used the Internet to communicate with one another, "Netiquette" was a plausible means of curbing spam; in today's Internet environment, however, social norms about email usage barely make a dent in stemming the tide of spam.[45]

B. Free Market Solutions

For many Internet age problems like spam, some commentators argue that free market solutions can solve collective challenges and obviate the need for public regulation.[46] More generally, some commentators argue that "[c]ompetitive private institutions offer the potential for the development of mechanisms that can reduce the cost of achieving communication, coordination, and commitment to support transactions on the Internet."[47] In the spam context, for example, there are commercial services that maintain a "blackhole" list of ISPs who send copious amounts of spam as well as filtering programs that users can install to regulate who can send them email. But such solutions are proving to be imperfect at best, with some suggesting that such techniques are actually blocking up to 35% of legitimate email and only 25% of spam messages.[48] After

contract suits are not); *see also* Lisa Bernstein, *Merchant Law in a Merchant Court: Rethinking the Code's Search for Immanent Business Norms*, 44 U. PA. L. REV. 1765, 1799-1800 (1996).
[43] *See* Robert E. Scott, *A Theory of Self-Enforcing Indefinite Agreements*, 103 COLUM. L. REV. 1643, 1644, 1647 (2003) (noting that conditions of repeat playing games and significant reputation effects are "stringent" and when those conditions are not met, "legal enforcement is necessary").
[44] ELINOR OSTROM, GOVERNING THE COMMONS THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 136, 138-39 (1990).
[45] Paul K. Ohm, *On Regulating The Internet: Usenet, A Case Study*, 46 UCLA L. REV. 1941, 1983-84 (1999) (describing Netiquette).
[46] *See* David Post, *What Larry Doesn't Get: Code, Law, and Liberty in Cyberspace*, 52 STAN. L. REV. 1439, 1440-42 (2000) (arguing for market responses to spam).
[47] Gillian K. Hadfield, *Privatizing Commercial Law: Lessons From ICANN*, 6 J. SMALL & EMERGING BUS. L. 257, 287 (2002).
[48] William G. Schwab, *Take Back Your In Box*, 14 WTR-EXPERIENCE 34, 35 (2004).

years of hesitating in part because of claims that market solutions could address the issue, Congress finally instituted a legal regime to regulate spam—the CAN SPAM Act of 2003[49]—although its effectiveness remains to be seen.

For market-based solutions designed to limit interference between uses of commons access spectrum to render public regulation unnecessary, they will need to prove more effective than they have thus far in the battle against spam (which is, admittedly, an imperfect analogy). At this point, however, firms have only begun to develop such technologies, so it is too early to tell how effective they will be in facilitating effective use of commons access spectrum. Consider, for example, Propogate Network's "swarm logic software," which enables different access points to communicate with one another to choose non-conflicting frequencies or adjust their power levels to eliminate overlap.[50] If this technology were able to reach a critical mass of adoption, even in localized areas, it could conceivably minimize any transaction costs necessary to adapt to neighboring uses of commons access spectrum. And for neighboring buildings with scores of Wi-Fi transmitters, such technologies could prove very important, as they would ensure that different signals did not overlap and interfere with each other, thereby slowing data transmission and possibly triggering the destructive cycle of behavior noted above. Moreover, one can also imagine related technologies that would lower enforcement costs by enabling neighbors to identify those who deviated from accepted social norms in using commons access spectrum. Indeed, collective efforts—such as the Broadband Access Network Coordination (BANC)—have already taken root to facilitate joint and controlled efforts to limit interference.[51]

Another marketplace response worth following is the effort by the Wi-Fi Alliance to develop a community of equipment developers, service providers, and users of commons access spectrum all of whom will be certified as good actors. Like the case with informational privacy for those engaging in Internet commerce, members of this community have a stake in building the confidence of the customers who use (or might use) either equipment or services that rely on commons access spectrum. In this case, the initiative appears to stem (at least in part) from a dispute between two companies where Broadcom claimed that products manufactured by Atheros prevented Broadcom's products from working properly. To prevent future such episodes and to ensure that all companies who produce Wi-Fi-related equipment do so in a manner that does not impede the operation of equipment from manufactured by other vendors, the Wi-Fi Alliance has threatened to withhold or revoke the certification—and the right to use its logo—from those any offending companies.[52] At this point, however, the Alliance has not begun policing such possible abuses, so it is too early to tell what type of impact its policy will have. Nonetheless, at least based on the case of Internet privacy, the Alliance is likely to confront a number of challenges—ranging from effective consumer education efforts to

[49] *See* 15 U.S.C. § 7701.
[50] *See* http://www.propagatenetworks.com.
[51] *See* Broadband Access Network Coordination, available at http://www.wbanc.com; Gerri Blackwell, *BANC on Non-Interference*, WI-FI PLANET (February 6, 2004), available at http://www.wi-fiplanet.com/columns/article.php/1781_3318281_1.
[52] Mark Hackman, *Wi-Fi Group Cracks Down on Incompatible Extensions*, PC WEEK (June 19, 2004), available at http://www.pcmag.com/article2/0,1759,1625097,00.asp.

reliable self-regulatory efforts—that will need to be addressed for this initiative (or others like it) to be effective.[53]

In essence, the challenge confronting market-based responses to interference concerns related to the use of commons access spectrum is whether they will be able to overcome the distance and large number issues that prevent social norms from addressing such concerns effectively. To be sure, marketplace developments are likely to enhance the abilities of parties who can easily contact—or at least are reasonably proximate to—one another to work out mutually acceptable arrangements. But where parties are not so easily identified, just like the spammers who are easily able to hide from the solutions aimed at limiting their effectiveness, it is quite likely that any privately developed approaches will fall short in preventing tragedy of the commons-type concerns. Like in the spam context, the challenge in addressing the behavior of bad actors—whether malicious or simply maximizing their own economic advantage—is that they are not interested in cooperating with a collective solution that would be in the interests of the entire community of users of commons access spectrum. This challenge is exacerbated when there are disparate interests using disparate devices operating disparate services.

C. Architecture

In analogizing the potential for commons access spectrum to succeed in a manner similar to the Internet, many commons advocates suggest that the development of the basic protocols that facilitate technologies such as Wi-Fi can be self-enforcing in terms of their effectiveness in combating destructive behavior. On this argument, the network effects phenomenon—where certain technologies become entrenched because they facilitate a wide variety of uses dependent on them[54]—can ensure that a suite of protocols not only are widely adopted, but are adhered to. The challenge in developing protocols that can limit interfering uses is that engineers have proved ingenious in circumventing all sorts of protocols that would otherwise limit behavior condemned by the original inventor. Moreover, this argument overlooks that the basic design ethos of the Internet is *not* to limit the potential uses of its basic enabling technologies. Rather, the Internet pioneers embraced an "end-to-end" ethos that shifts control to the edges of the network precisely so that users can introduce new innovations regardless of their effect on others or their social impact.[55]

In short, the effectiveness of technical architectures in limiting the potential for interfering uses of commons access spectrum depends on a regulatory regime that requires all equipment to be certified as compliant with certain basic protocols. The current certification regime, embodied in the FCC's Part 15 rules, only safeguards the rights of licensed spectrum users and provides no protection to commons access users. Indeed, a "Wi-Fi Hog," which undermined all Wi-Fi systems in a particular area but did

[53] Paul M. Schwartz, *Beyond Lessig's Code For Internet Privacy: Cyberspace Filters, Privacy-Control, and Fair Information Practices*, 2000 WIS. L. REV. 743, 767-69.
[54] *See, e.g.*, Michael Katz and Carl Shapiro, *Technology Adoption In The Presence of Network Externalities*, 92 J. POL. ECON. 822 (1986).
[55] Stated simply, the end-to-end ethos is a commitment to (1) openness (both in terms of its basic standards and in the culture of the standard-setting organizations themselves); (2) modularity and protocol layering; and (3) a shifting of control over the relevant applications to the edge of the network. *See* Dale Hatfield, *Preface*, 8 COMMLAW CONSPECTUS 1, 1 (2000).

not disrupt any licensed users, satisfies Part 15's requirements.[56] Moreover, even if all developers of Wi-Fi transmitters agreed to certain protocols to prevent destructive uses such as the Wi-Fi Hog, it would not be difficult for skilled hackers to circumvent such limitations. Indeed, as transmitters increasingly rely on software, the possibilities for "hard-wiring" protections against noxious uses into the equipment itself will quickly evaporate.[57] Consequently, without a back-end enforcement regime of some kind, the flexibility made possible by software defined radios will not only increase the efficient use of spectrum, but will also facilitate counter-productive uses of flexible radios.

D. Case Studies: The CB and Ham Radio Experiences

In arguing for a spectrum commons approach, a number of commentators have suggested that past experiences with commons access spectrum underscore that the above techniques—social norms, marketplace responses, and technical architecture—can limit the potential for destructive behavior. In particular, Stuart Buck and Ting, Bauer, and Wildman make this very argument.[58] As we discuss below, however, their accounts of these episodes overstates the success of these technologies, minimizes the degree to which tragedy of the commons-type behavior took place in the absence of governmental protections against them, and fails to appreciate the unique circumstances that made cooperation possible in those instances.

1. Ham Radio

What is notable is that in the ham radio environment, volunteer leaders have taken on the role of policing the use of the spectrum. In many parts of the country, voluntary "spectrum management leaders," who call themselves the amateur auxiliary of the FCC, are able to police illegal conduct somewhat effectively by using an implicit threat—with official looking notifications—that they will spur FCC action to go after bad actors who fail to heed their warnings.[59] Significantly, such leaders are taken seriously by ham operators and thus, when the observer sends a registered letter saying that an operator does not get back on the air, the channel will be given to someone else, it generally triggers a response. In addition to the importance of official observers who work in conjunction with the FCC, a distinct group of frequency coordinators oversees the use of repeaters in ham radio transmissions, thereby facilitating coordination between different users.

In arguing for an increased reliance on the commons model, Stuart Buck invokes the example of ham radio—or more precisely, the development of similar practices at the

[56] This Wi-Fi Hog is not a hypothetical device, but one that has already been invented. *See* http://www.mle.ie/~jonah/projects/wifihog.html.

[57] The flexibility of software defined radios built using open source software will be particularly amenable to modification—for good and for ill. *See, e.g.*, Sam Williams, *Radio Free Software*, SALON.COM (Dec. 18, 2002) ("We're pretty much turning all hardware problems into software problems [and] want to facilitate evolution in the radio area.") (quoting Eric Blossom, Founder of the GNU Radio Project), available at http://www.salon.com/tech/feature/2002/12/18/gnu_radio/print.html.

[58] Carol Ting et al., The U.S. Experience With Non-traditional Approaches to Spectrum Management, TPRC (2003); Buck, supra note __.

[59] Dave Hassler, Observing the Official Observers, available at http://www2.arrl.org/qst/2003/07/0307047.pdf; *see also* The Amateur Auxillary of the FCC, available at http://www.arrl.org/FandES/field/org/am_aux.html.

dawn of ham radio's development.[60] As Buck acknowledges, however, this history—as the CB radio saga underscores—most significantly demonstrates that *under certain conditions*, social norms and forms of private enforcement can obviate the need for public enforcement. Indeed, the FCC's decision to ban the sale of amplifiers separate from a radio transmission devices underscore the fragility of commons access spectrum environments protected only by social norms and private oversight.[61]

2. The CB Radio Saga

For a brief period in the mid-1970s, the use of citizen's band (CB) radios broke through to the public consciousness. Prior to that time, the band was largely used by distinct communities of enthusiasts and, more famously, truckers (think "10-4, good buddy"). Once the band became more popular, and attracted a more diverse community of users, the previous social norms broke down (including a commitment to refrain from vulgar language and harassment) and users began, among other things, attaching amplifiers to their transmitters to make themselves, in effect, broadcasters. The crowding out of the previous informal communications thus soon boomeranged and the brief explosion of popularity for CB radios ended once new users discovered that the advertised attraction of informal communication among enthusiasts had been displaced.

In evaluating the rise and fall of CB radio, Ting, Bauer, and Wildman choose to focus on the flip side of the story. Rather than suggest that the overuse of the band and the rise of amplifiers confirms concerns about tragedy of the commons-like results, they argue that the relative success and workability of the band before and after its rise in popularity actually undermines the case for tragedy of the commons-type concerns. As they put it, "[i]nterference caused by illegally amplified signals has always been and still is a common complaint [among CB users but], unlike during its peak, channel congestion is not a problem anyone, even in metropolitan areas."[62] Moreover, to the extent that individuals violate FCC rules for using this band, they acknowledge that those violations almost invariable go unaddressed, as "the FCC has never devoted sufficient resources to [] deter violations of its usage rules or violations of its technical specifications."[63]

In short, the lack of effective enforcement by the FCC undoubtedly contributed to the rising complaints about interference during CB radio's peak years of 1974-1976 and the dramatic falloff in users after that time frame. In particular, the number of complaints escalated from 30,000 to 100,000 during that time. In explaining this fact, Ting, Bauer, and Wildman suggest that the misbehavior was confined to a small subset of users who, in violation of the rules of the band, acted as broadcasters rather than individual communicators.[64] Even accepting this explanation, however, the bottom line of the CB radio story is that—as game theory would predict—outside entrants into a community who faced neither social norm pressures nor legal enforcement were prone to disruptive

[60] Buck, supra note __, at para. 80.

[61] *Modification of Parts 2 and 15 of the Commission's Rules for Unlicensed Devices and Equipment Approval*, ET Docket No. 03-201, paras 26-28 (July 12, 2004).

[62] Carol Ting et al, *The U.S. Experience With Non-Traditional Approaches To Spectrum Management* 6, available at http://quello.msu.edu/wp/wp-03-05.pdf.

[63] *Id.* at 12.

[64] *Id.* at 17.

behavior and thus limited the potential of that form of commons access spectrum.[65] By analogy, if the story of CB radio's rise and fall were to be repeated for WISPs, most observers would consider the FCC's effort to promote WISPs to be a failure.

IV. Public Regulation and Moving Beyond The Traditional Part 15 Regime

As Part III explained, non-public regulation is unlikely to be fully effective in guarding against tragedy of the commons-type concerns.[66] In terms of the role of social norms, we believe that they are quite promising, but that they will be of limited effectiveness in addressing relations between distant and anonymous users of commons access spectrum. As for market forces, there are strong reasons to question their effectiveness insofar as they will likely operate in both directions—not only protecting cooperative behavior, but in creating incentives for "cheating" and not getting caught. Finally, as for designing specific technical architectures, the increased uses of software defined and more flexible radios will facilitate the circumvention of prescribed protocols, making it important to oversee the behavior of individual users, and not simply that of equipment manufacturers. In short, the success of the commons model is likely to depend, at least in part, on the ability of regulation to guard against the tragedy of the commons and counterproductive uses of commons access spectrum.

The mere fact that forces other than legal regulation are unlikely to be fully effective in addressing tragedy of the commons-like concerns does not mean that the role of social norms, technical architectures, and marketplace responses is unimportant. Rather, it simply suggests that, on their own and without the backstop of law enforcement, they are unlikely to address such concerns effectively. To be sure, even without law enforcement assistance, it is quite possible that commons access spectrum could still be used effectively. But as rival commercial services utilize commons access spectrum and the distance of uses for commons access spectrum continues to expand—and the record for a Wi-Fi transmission is already in excess of 55 miles[67]—the need for public regulation is likely to become more pronounced. Indeed, the FCC appears to

[65] The FCC adopted the broader explanation of congestion—i.e., without assigning blame to a limited class of users—in evaluating the unfortunate fate of CB radio. *See* Notice of Inquiry, *Creation of an Additional Personal Radio Service*, 72 F.C.C.2d 453, 455 (1979) (explaining that "complaints that the level of congestion (at least in major urban areas) has reached the point where reliable communications area becoming increasingly difficult to achieve").

[66] In evaluating the effectiveness of non-public regulatory approaches, we have declined to evaluate whether they are open to criticism on other grounds, such as being illegitimate or an undemocratic means of developing information policy. Such arguments, for example, are commonly leveled at the Internet Corporation for Assigned Numbers and Names (ICANN), which is a private, non-profit corporation that manages access to the Internet's domain name system. *See, e.g.*, Jonathan Weinberg, *ICANN and the Problem of Legitimacy*, 50 DUKE L.J. 187 (2000); *see also* Steven L. Schwarcz, *Private Ordering*, 97 NW. U. L. REV. 319, 322, 329 (2002) (observing that "commercial private ordering is rarely restricted" by traditional safeguards that confer legitimacy on public bodies, but that "[w]here efficiency is the sole goal of regulation, unrestricted private ordering can be legitimate"); *but see* Jonathan R. Macey, *Public and Private Ordering and the Production of Legitimate and Illegitimate Legal Rules*, 82 CORNELL L. REV. 1123, 1125 (1997) (suggesting that private ordering is more likely to produce legitimate rules and thus should be preferred over public ordering).

[67] Kim Zetter ,*Wi-Fi Shootout in the Desert*, WIRED (Aug. 3, 2004), available at http://www.wired.com/news/culture/0,1284,64440,00.html.

recognize the need to act in this area, as evidenced by Chairman Powell's remark that such regulations are necessary to "protect against interference meltdown,"[68] such as those caused by tragedy of the commons-like concerns.

In developing its regulatory regime for commons access spectrum, the FCC should recognize the importance of these non-regulatory protections against interference, work in tandem with them where possible, and be sure not to displace them. Significantly, there is a risk that external rules and monitoring by the FCC could, if not carefully developed, prove counterproductive by crowding out constructive cooperative initiatives such as those discussed above.[69] In general, the FCC's regulatory tools for ensuring cooperation in the use of commons access spectrum fall into two categories: proactive requirements and reactive enforcement measures. Before discussing these options, however, we will first address two proposals for taking the job of enforcement responsibility away from the FCC.

A. Alternatives to FCC Regulation

To date, two principal proposals challenge the possible role that the FCC should play in overseeing the use of commons access spectrum. One proposal, which draws its inspiration from the property rights model, would be to allow either local property owners or those who aggregate such rights to police the use of commons access spectrum. Another proposal would be to treat abusive uses of commons access spectrum as common law violations to be addressed in judicial forums. After explaining how each proposal deviates from existing law, we will explain why we view them as inferior to a regulatory regime superintended by the FCC.

1. The FCC's Exclusive Jurisdiction Over Spectrum

Increasingly, rival users of commons access spectrum are looking to different authorities to settle disputes between them. If, for example, rival services using commons access spectrum at airports bring complaints to the airport authorities, that authority will be tempted to adjudicate such disputes and regulate commons access spectrum use at airports like other concessions. Similarly, if a user is unable to use her device at home because a neighbor's device is incompatible—and they are unable to resolve their dispute amicably—the frustrated user might be tempted to bring an action in court claiming that her neighbor's use of commons access spectrum constitutes a "nuisance" and should be enjoined. In either case, however, the airport authority or the court would lack jurisdiction over the dispute, as the Communications Act clearly assigns such matters to the FCC.

[68] *Powell Tells CES That FCC Must Understand and Protect VoIP This Year*, Communications Daily (January 12, 2004).

[69] *See* Elinor Ostrom, *Collective Action and the Evolution of Social Norms*, 14 J. ECON PERS. 137, 147 (2000) (reporting on experiments that demonstrate this possibility).

As a legal matter, it is generally accepted that the FCC enjoys exclusive authority over spectrum matters.[70] In particular, the courts have regularly concluded that the FCC's authority in this area "preempts the entire field" of possible regulation, thereby ousting any other regulatory efforts in this area.[71] In so doing, they have paid heed to the relevant legislative history of Congress' last enactment in this area (i.e., the House Conference Report of the Communications Amendments Act of 1982), which explained that "exclusive jurisdiction over [radio frequency interference] incidents (including pre-emption of state and local regulation of such phenomena) lies with the FCC."[72] Consequently, when individuals have brought actions claiming that a particular operator's transmissions interfered with their home appliances and thus constituted a nuisance, the courts have declined to hear such cases.[73]

On the normative level, some argue that the FCC's stranglehold on spectrum should be addressed by Congress as soon as possible. To be sure, the FCC's management of spectrum has been and continues to be highly imperfect, but we are even less sanguine about a model of purely private ordering or common law development. In terms of private ordering, the airport authority case is one of the more plausible contexts in which a band manager could ensure some level of cooperation over a broader geographic area, but even that environment underscores a risk of leaving the oversight of commons access spectrum to local landowners. In particular, airport authorities are likely to view their managerial role as an opportunity to collect rents from those wishing to operate Wi-Fi-like services. Reflecting this concern, the Industrial Telecommunications Association urged the FCC to reject a petition by airport authorities to oversee such spectrum, explaining that "the 'sole motivational goal' of those efforts 'is to increase airport revenue.'"[74] In line with its long line of precedent, the FCC Staff accepted this

[70] We say "generally accepted" because, although the Supreme Court has not addressed the matter, all federal courts of appeals to have considered the matter have agreed that the FCC enjoys complete authority in this area. *See, e.g.*, Freeman v. Burlington Broadcasters, Inc., 204 F.3d 311, 320 (2d Cir. 2000) (reviewing authority and concluding "that federal law has preempted the field of [radio frequency] interference regulation"), *cert denied*, 531 U.S. 917 (2000); Memorandum Opinion and Order, *Petition of Cingular Wireless L.L.C. for A Declaratory Ruling*, 18 FCC Rcd 13,126 ¶ 13 (2003) ("The Commission and the federal courts have consistently found that the Commission's authority in the area of [radio frequency interference] is exclusive and any attempt by State or local governments to regulate in the area of [radio frequency interference] is preempted.").

[71] *See* Rice v. Sante Fe Elevator Corp., 331 U.S. 218, 230 (1947) (field preemption appropriate when federal regulatory regime "so pervasive" and federal interest "so dominant" as to leave no room for state regulation).

[72] H.R. Conf. Rep. No. 97-765, at 23 (1982), reprinted in 1982 U.S.C.C.A.N. 2261, 2267; *see also id.* at 33, 1982 U.S.C.C.A.N. at 2277 ("[T]he Conferees intend that regulation of [radio frequency interference] phenomena shall be imposed only by the Commission.").

[73] *See, e.g.*, Broyde v. Gotham Tower, Inc., 13 F.3d 994, 996 (6th Cir. 1994) (ruling that nuisance action, based upon allegations that radio signals exceeded federal standards, could not be brought in federal or state court and noting that all courts to consider the matter have so held).

[74] Bob Brewlin, *Airlines Win Wi-Fi Management Battle With Airports*, COMPUTERWORLD (June 25, 2004), available at http://www.computerworld.com/mobiletopics/mobile/wifi/story/0,10801,94124,00.html.

argument and concluded that only it, and not airport authorities, had exclusive jurisdiction over the commons access spectrum within airport terminals.[75]

To their credit, the ability of airport authorities to effectively coordinate the use of commons access spectrum makes their claim to such oversight more compelling than the argument that individuals should be afforded oversight over commons access spectrum on the real estate they own. In particular, for a would-be WISP, such a regime would force it to acquire easements from all in a neighborhood before providing service to any customer. Such a requirement would not only create enormous transactions costs, it would also invite hold-out type behavior—i.e., to be the last property owners to sign up (and reap a premium for finally doing so)—because it would not be easy to avoid transmitting a signal that would cross a non-consenting property owner's domain. To be sure, if one believed that commons access spectrum could only be used in the home, this proposal might have some merit,[76] but the increasing distances that can be reached using even today's technologies undermine that argument.

The second alternative to the FCC is common law courts. Notably, Kevin Werbach recently advanced a version of an argument previously promoted by Peter Huber, arguing that common law courts can oversee access to spectrum.[77] Huber, however, maintains that courts can enforce property rights to use spectrum whereby Werbach argues that courts can ensure that individuals and firms use commons access spectrum without unduly interfering with one another. The essence of Huber's argument, and presumably Werbach's as well, is that the FCC is unable to manage questions of spectrum interference effectively. To Huber, for example, such authority invites micromanaging, as the FCC is as an "army of federal employees hanging around indefinitely to meddle and mess up" the industry.[78]

To date, the courts who have evaluated whether to proceed in such actions have recognized that the issues involved in spectrum management are highly technical and that there is a great need for national uniformity and consensus. After all, equipment manufacturers and service providers rely on pre-set rules to develop their offerings and would confront considerable uncertainty if left to defend them in the various forums that different litigants might select. In short, courts lack both the expertise and ability to

[75] Public Notice, *Commission Staff Clarifies FCC's Role Regarding Radio Interference Matters and Its Rules Regarding Customer Antennas and Other Unlicensed Equipment*, DA 04-1844, 1 (June 24, 2004), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-04-1844A1.pdf ("[T]he FCC has exclusive authority to resolve matters of radio frequency interference [RFI] when unlicensed devices are being used, regardless of venue."); *id.* at 2 ("We also affirm that the consumer protections for the installation and use of consumer antennas under the FCC's Over-the-Air Reception Devices (OTARD) rules apply to unlicensed devices.").

[76] This appears to be Thomas Hazlett's assumption. *See* Thomas Hazlett, *Missing The Next (Radio) Wave*, BARRONS (Aug. 2, 2004), available at www.manhattan-institute.org/html/_barrons-missing_the_next.htm (arguing that the key to success of unlicensed uses are control of the relevant space and that broader applications for unlicensed spectrum are misguided).

[77] *See* Werbach, supra note __; PETER W. HUBER, LAW AND DISORDER IN CYBERSPACE: ABOLISH THE FCC AND LET COMMON LAW RULE THE TELECOSM (1997).

[78] PETER HUBER *ET AL.*, FEDERAL TELECOMMUNICATIONS LAW 402-03 (2d ed. 1999).

develop determinate rules that the FCC possesses.[79] And to the extent that the FCC makes substantive misjudgments in this area, we view that as an argument for better regulatory strategies, not a different institutional actor.

Even if courts could develop more determinate and expertly guided rules for spectrum policy (say, as the Federal Circuit has for patent policy), there are two other notable reasons to opt for a model of public regulatory enforcement. First, as we will discuss below, the FCC enjoys the ability to work in tandem with the non-legal forces discussed above and to develop proactive approaches in ways that courts cannot. Second, the ability of private actors to remedy nuisance-like violations is notoriously difficult, as they must internalize the relevant enforcement costs. To be sure, there are solutions to this dilemma—including class actions or public prosecutors—but one effective mechanism of addressing this issue is to authorize agency oversight, as, say, the Federal Trade Commission does for consumer protection issues.

B. Proactive Requirements Superintended by the FCC

In regulating commons access spectrum, the FCC's legacy regime centers on enforcing a set of certification requirements that restrict power levels and thereby guard against interference to licensed operators. As the importance to the economy of commons access spectrum increases, and as it is used to provide carrier-level services, the FCC will face increasing pressure to develop measures that will limit interference between rival users of commons access spectrum. Building off of its Part 15 rules certification regime, there are two notable proactive requirements that the FCC is now considering to address such concerns: (1) the imposition of spectrum etiquette rules; and (2) database registration requirements. We will discuss each in turn.

1. Etiquette standards

The FCC first experimented with the use of a prescribed etiquette standard for equipment using commons access spectrum when it established the rules for unlicensed PCS spectrum in the early 1990s. In particular, it mandated that all unlicensed PCS equipment must "monitor the spectrum before transmitting and to use a specific transmission format"—i.e., such devices must "listen before they talk."[80] Later, after the American National Standards Institute (ANSI) developed a measurement procedure to ensure that manufacturers complied with such requirements, the FCC incorporated this procedure into its rules.[81]

As commons access spectrum applications have proliferated, the FCC has begun to consider whether it should mandate spectrum etiquettes more broadly. In particular, in considering how it can reform its rules governing commons access spectrum in order to facilitate wireless broadband, the FCC asked whether it should impose certain etiquette standards. In response, Microsoft advocated a set of etiquette standards—including "listening before you talk," ceasing "transmissions if there is no information to be sent" and using "the minimum transmit power necessary to complete a communications

[79] *See* Philip J. Weiser, *Federal Common Law, Cooperative Federalism, and the Enforcement of the Telecom Act*, 76 N.Y.U. L. REV. 1692, 1715-18 (2001); DIGITAL CROSSROADS, *supra*, ch. 12.
[80] *Review of Part 15*, 16 FCC Rcd 18,205 ¶ 33 (2001).
[81] *Review of Part 15 and Other Parts of the Commission's Rules*, 18 FCC Rcd 14,741, 14,781 (2003).

link"[82]—on all uses of commons access spectrum in order to limit interference. To date, Microsoft's proposal has proved quite controversial, with a number of commentators arguing that for bands already replete with commons access uses (such as the 2.4 GHz band), these requirements would prove quite costly. After acknowledging such concerns, the FCC declined to implement any such proposal, but suggested that such a proposal had merit for bands yet to be dedicated to commons access uses and indicated that it would consider the concept seriously in the future.[83]

As to new bands, the primary concern voiced by critics of spectrum etiquette requirements is that they are likely to limit innovation by demanding compliance with a particular standard. In short, detailed restrictions—no matter how well intended or well crafted—can reduce the ability of the inventors and others to innovate without seeking changes in the associated rules and regulations. Whether to develop such etiquette standards thus becomes a difficult question, as more restrictive requirements—which could limit the ability of innovators to use licensed spectrum quickly and effectively—may well trade off long term innovation in favor of short term utilization. Indeed, the codification of certain etiquette standards to govern the use of commons access spectrum would undermine the freewheeling development that has traditionally governed such spectrum and facilitated experimentation and innovation. Consequently, we recommend striking a balance by preserving certain bands of spectrum for more wide-ranging uses while experimenting with etiquette standards on other bands. In particular, we believe that it would be a mistake to impose "listen before talk" (and other spectrum etiquette) requirements on all bands, but such measures clearly have merit insofar as they can enable WISPs to provide levels of service quality associated with carrier-class service.

For the FCC, the challenges associated with standard setting (including those associated with setting etiquette standards) are familiar ones from the transition to digital television (among other such efforts). In setting telecommunications standards such as an etiquette standard that governs commons access spectrum, the FCC should be careful to institute only functional requirements and, where possible, to utilize the experience of established standard setting bodies to define and enforce the relevant criteria. Over recent years, the FCC's standard setting oversight has moved in this very direction both in superintending aspects of the transition to digital television and in other areas as well, such as the enforcement of its Part 68 Rules that govern what equipment may be attached to the telephone network.[84]

Managed optimally, the FCC's use of standard setting bodies to develop the necessary spectrum etiquette standards can both leverage the expertise of such standard setting bodies and maintain a degree of oversight to be sure that such standards are adopted. Left to their own devices, by contrast, standard setting bodies may fail to adopt or be able to enforce compliance with a particular standard, as they lack any formal

[82] *See Modification of Parts 2 and 15 of the Commission's Rules for Unlicensed Devices and Equipment Approval*, 2004 WL 1542207, ¶53 (2004) (describing Microsoft's proposal); *see also* Comments of Microsoft Corp., *Modification of Parts 2 and 15 of the Commission's Rules for Unlicensed Devices and Equipment Approval* (Jan. 23, 2004), available at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6515583646.
[83] *Id.*, ¶54.
[84] For a fuller explication of this point, see DIGITAL CROSSROADS, *supra*, ch. 11.

authority.[85] Finally, the FCC also is in a position to ensure that standards developed by standard setting bodies are adopted based on a fair process. Moreover, in supporting this model, the government may well need to fund the collective development (and enforcement, as discussed below) of such standards, as they facilitate collective benefits—i.e., efficient use of spectrum—that are not internalized fully by any individual user of spectrum.[86] In pursuing this model, however, the government should realize that developing and enforcing proactive requirements embodied in spectrum etiquette rules might, if managed ineffectively, replicate the failings of the command and control model—i.e., its associated rigidities, inflexibility to change, and invitations to rent-seeking behavior.

2. Registration Requirements

Over the last twenty years, the FCC has increasingly moved away from the laissez faire Part 15 regime to adopt limitations that could increase its confidence that devices using commons access spectrum will not interfere with licensed uses and, in some cases, commons access ones. In addition to the development of etiquette rules, another innovation is the use of registry whereby anyone interested in using a particular band must register their commitment to do so. In substance, this regime imposes a licensing requirement—and a non-exclusive one, to be precise—that all users must provide certain information before using the designated spectrum. In the so called "millimeter wave" proceeding, for example, the FCC adopted such a requirement, instituting a site-specific coordination and registration process that would be superintended by a third party entity that would serve as a clearinghouse for access to this spectrum.[87] In theory, this approach will provide an effective means of facilitating cooperation and creating incentives for good behavior (as well as a significant stick to punish bad behavior).

The use of a registration regime for a spectrum commons raises a host of issues that the FCC will need to consider carefully in the years ahead. In discussing a registration regime, for example, the cautionary tale of ICANN immediately comes to mind. In that case, a government-sponsored—but not regulated—entity gained control over the important role of overseeing domain names.[88] But like a stock exchange's role in facilitating the raising of capital, and unlike ICANN's role *vis a vis* domain names, the registration regime envisioned by the FCC would not cover access to all spectrum. In this sense, the FCC could facilitate competition between registrars and oversee registrars in a manner similar to how the Securities and Exchange Commission oversees the stock exchanges. Of course, as observers of the recent wave of scandals are aware, that model is not without cautionary tales either, as it can, for example, enable the registrar to limit competition or extract rents that raise the price paid by end users.

[85] For a discussion of this model of standards development, see Philip J. Weiser, *Standard Setting, Internet Governance, and Self-Regulation*, 28 N. KENT. L.J. 822 (2001).
[86] *See* Philip J. Weiser, *The Internet, Innovation, and Intellectual Property Policy*, 103 COLUM. L. REV. 534, 573-75 (2003).
[87] *Allocations and Service Rules for The 71-76 GHz, 81-86 GHz and 92-95 GHz Bands*, 18 FCC Rcd 23,318 ¶¶ 48-51 (2003)
[88] Among other things, ICANN's status as a government-sponsored, but not regulated registrar gives rise to a series of nettlesome issues. *See* MILTON MUELLER, RULING THE ROOT (2002); Jonathan Zittrain, *Book Review, What's In A Name*, 55 FED. COMM. L.J. 153, 155 (2003).

C. Reactive Measures Superintended By the FCC

Whereas the proactive measures discussed above are more recent innovations, the FCC's traditional enforcement efforts related to commons access spectrum has involved the reactive role of ensuring compliance with the Part 15 certification requirements.[89] But as noted above, there are lots of scenarios—ranging from incompatible equipment to a Wi-Fi-Hog to intentional jamming—that can compromise the use of commons access spectrum. In part, Wi-Fi's open standard leaves it vulnerable to hacking of all kinds, including intentional jamming using off the shelf equipment.[90] Indeed, even certified equipment can easily be used—either unintentionally (e.g., hogging) or intentionally (e.g., jamming)—to disturb adjacent commons access spectrum uses. Consequently, a question for the FCC is whether it will take on the role of prosecuting cases of jamming. Although the FCC's Chief Engineer has indicated that the agency intends to "get serious" about unauthorized use of commons access spectrum and will "go after abusers of unlicensed spectrum,"[91] neither its relevant rules nor its enforcement apparatus have been set up to do this job.

Under its broad enabling authority, the FCC is free to regulate behavior between users of commons access spectrum. The FCC could, for example, begin enforcing certain broad standards—such as no willful and malicious interference—or specific rules (like etiquette standards). To do so, it would simply use its authority under the Communications Act to "govern[] the interference potential of devices" using radio frequencies.[92] More particularly, it could enforce the Act's command, in the commons access spectrum environment, that "[n]o person shall willfully or maliciously interfere with or cause interference to any radio communications of any station licensed or authorized" by the FCC.[93] But construing users of commons access spectrum as authorized operators and enforcing this command effectively—something the FCC has yet to do—will present the agency with a number of challenges.

For a number of reasons, the devices that use commons access spectrum are fundamentally different than their licensed spectrum counterparts, making enforcement efforts measurably more difficult. First, the sheer number of devices involved and the decentralized nature of the networks make it difficult to carryout enforcement activities. Thus, like the issues related to digital content distributed illegally via the Internet, it will often be difficult for enforcement authorities (either public agencies or private actors) to track down relevant violators and demonstrate their violation of the relevant requirements.[94] Second, unlike the audible or visible forms of interference associated with traditional radio and television broadcasting, interference in a data network may manifest itself in the form of slower or more erratic performance, often making the source of the degradation difficult to ascertain. For example, slower data downloads

[89] *See, e.g.*, Datel Design and Development, Inc., 19 FCC Rcd. 17 (2004) (fining Datel Design and Development $10,000 for importing equipment that radiated emissions beyond that authorized by the Part 15 rules).
[90] *See* Patrick Gray, *New Flaw Takes Wi-Fi Off The Air*, THE REGISTER (May 13, 2004), http://www.theregister.co.uk/2004/05/13/wifi_security_flaw.
[91] *OET Chief Sees Potential Solution For "White Spaces" TV Proposal*, Communications Daily (April 19, 2004).
[92] 47 U.S.C. § 302a.
[93] 47 U.S.C. § 333.
[94] *See, e.g.*, Verizon v. RIAA Internet Services, 351 F.3d 1229 (D.C. Cir. 2003).

might be caused by a legally operated, close-by cordless telephone or an illegal data network device operating at high power system a kilometer away. Third, distinguishing between benign hogging (e.g., based on inferior equipment) and malevolent jamming will not always be easy—let alone demonstrable for enforcement purposes.[95] Finally, to engage in effective enforcement efforts, the FCC—possibly in conjunction with other actors—will need to invest in monitoring equipment and be sufficiently effective to create real deterrent effects, as the recording industry has attempted to do with questionable success. Notably, in the CB radio case discussed above, the failure of the FCC to pursue effective enforcement efforts contributed to the use of illegal amplifiers and the unfortunate fate of that service.

As the FCC considers how to devise an effective enforcement regime to prevent certain uses of commons access spectrum, it is critical that it look to enlist good actors in local communities to assist their efforts. In so doing, it can follow the model used in the ham radio environment discussed above in which the FCC empowers voluntary overseers by backing up their exercise of unofficial authority.[96] Indeed, the model of empowering private individuals to work together to solve disputes before entering the fray is one the FCC has employed in other contexts. In particular, the FCC has long facilitated such cooperation among users of licensed spectrum by demanding that parties work together to coordinate their use of a set of frequencies—i.e., to establish operating procedures for those using the same spectrum—through the coordination and licensing requirements set forth in Part 101 of its rules.[97] In effect, the Part 101 rules empower private frequency coordinators to settle disputes cooperatively by insisting that the relevant parties work through issues cooperatively before bringing them to the FCC for resolution.[98] Significantly, this regime succeeded in spurring the establishment of cooperative institutions that enable self-enforcement through a collective memory and a market for reputation that requires actors to act reasonably over time.[99] In short, this regime reflects an excellent model of using public regulation to instigate and enforce private ordering, reflecting the possibilities for facilitating private cooperation to ensure that a common resource is protected and used appropriately.[100]

To enforce adherence to proactive requirements, as well as to oversee malicious uses of commons access spectrum, the FCC should both enhance its own spectrum

[95] This challenge relates more generally to the difficulties associated with defining "harmful interference." *See* R. Paul Margie, *Can You Hear Me Now?: Getter Better Reception From The FCC's Spectrum Policy*, 2003 STAN. TECH. L. REV. 5.

[96] http://www.colossus.org/n8fn/fcc.html (quoting FCC official as stating that "[t]he volunteer work of these Official Observers is a critical element of the Commission's enforcement program,").

[97] *See generally* Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish A New Part 101 Governing Terrestial Microwave Fixed Radio Services, 11 FCC Rcd 13,449 (1996).

[98] Schroeder Manatee Ranch, 16 FCC Rcd 5722 ¶ 3 (2001) (under the relevant FCC rules, licensees "are expected to cooperate in the use of frequencies and resolve any 'harmful interference' by mutually satisfactory arrangements").

[99] For an example of an association that facilitates reputational sanctions, see Lisa Bernstein, *Private Commerical Law in the Cotton Industry: Creating Cooperation Through Rules, Norms, and Institutions*, 99 MICH. L. REV. 1724 (2001).

[100] ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 136, 138-39 (1990) (detailing how a collective institution for water management arose).

enforcement capabilities as well as empower other entities to do so.[101] In particular, standard setting bodies, the frequency coordinators and the volunteer coordinators in the ham radio environment all provide models for the FCC to utilize in the commons access spectrum context. A critical challenge for the FCC in this context is to select entities to aid its enforcement efforts. In some contexts, such as standard setting bodies, there will be obvious candidates, such as the IEEE. In others, social norm entrepreneurs will self-select for such responsibility. Finally, the FCC can consider delegating such responsibility to registrars or band managers who would be overseen by the FCC. Given the minimal experience with the above approaches, the FCC would do well to utilize all of the above models to determine which works best.

V. Conclusion

The promise of the spectrum commons approach is one of the more exciting and unanticipated developments in information policy. As the FCC moves ahead to build on the initial unexpected success of this model, it should consider carefully what measures it should take to guard against tragedy of the commons-like concerns. In an increasingly technologically dynamic environment, there are numerous challenges that the FCC will face in developing an effective model for reliable enforcement. As we discuss, no one single approach—and particularly no approach that does not involve FCC oversight—is likely to be successful. Consequently, the FCC should continue moving ahead to implement different proactive and reactive measures that will provide users of commons access spectrum important assurances that new services and products will not be compromised either by bad actors or poorly coordinated services. If it fails to do so, however, it risks allowing the promise of WISP-like services to follow the unfortunate boom-and-bust path of CB radio.

[101] Stuart Buck argues for a spectrum commons with rules enforced by local management associations. *See* Buck, *supra* note __, at para 76. While we believe that such an approach must be coupled with other measures as well, both his argument and our endorsement of such a point appreciate that there are considerable benefits to relying on subsidiary entities to enforce basic standards announced by the FCC *See* Philip J. Weiser, *Federal Common Law, Cooperative Federalism, and the Enforcement of the Telecom Act*, 76 N.Y.U. L. Rev. 1692, 1698-1703 (2001).

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)
	)
Principles for Promoting the Efficient Use of Spectrum	)
by Encouraging the Development of Secondary Markets	)
	)

POLICY STATEMENT

Adopted: November 9, 2000 **Released:** December 1, 2000

By the Commission: Commissioners Ness and Furchtgott-Roth issuing separate statements; Commissioner Tristani approving in part, dissenting in part and issuing a statement.

I. INTRODUCTION

1. This Policy Statement sets forth the Commission's plans for facilitating secondary markets for radio spectrum that will allow and encourage licensees to make all or portions of their assigned frequencies and/or service areas available to other entities and uses. The Commission envisions that secondary markets can flourish by facilitating arrangements such as leasing[1], franchising, and joint operating agreements, and improving the conditions for transferability of spectrum usage rights through, for example, partitioning or disaggregation. Our Policy Statement outlines in general terms a series of initiatives that the Commission intends to undertake to promote secondary markets for spectrum usage rights. The Commission's current policies concerning transfer, assignment, disaggregation and partitioning of licenses allow certain licensees to market portions of their spectrum usage rights to others. In this new effort, we seek to significantly expand and enhance the existing secondary markets for spectrum usage rights to permit spectrum to flow more freely among users and uses in response to economic demand, to the extent consistent with our other statutory mandates and public interest objectives.

2. We believe that an expanded system of private sector markets will serve the public interest by creating new opportunities for increasing the communications capacity and efficiency of spectrum use by licensees. Such secondary market transactions will thereby complement the primary assignment function performed by the Commission through its spectrum auctions and licensing processes. While secondary markets are not a substitute for finding additional spectrum when needed and should not supplant our spectrum allocation process, a robust and effective secondary market for spectrum usage rights could help alleviate spectrum shortages by making unused or underutilized spectrum held by existing licensees more readily available to other users and uses and help to promote the development of new, spectrum efficient technologies.

[1] For purposes of discussion here, we use the term "leasing" to refer to all arrangements by which a licensee makes spectrum or capacity available to another entity while retaining its license. Thus, leasing in this context could also include franchising and sharing/pooling arrangements for both spectrum and capacity on infrastructure.

II. BACKGROUND

3. In recent years, the need for spectrum has increased dramatically as a result of the explosive growth in wireless communications technologies and consumer demand for services. This increased demand is being propelled by a host of developments including the growing shift of our economy towards the service sector, the increasing mobility of our workforce, and the convenience and increased efficiency produced by mobile/portable communications combined with improved performance and the falling costs of wireless devices. Increasing spectrum requirements for public safety and for national defense systems, satellite services, private users, amateur radio, and the dramatically growing interest in accessing the Internet are compounding the shortages of spectrum.

4. In mobile telephony services alone, the number of subscribers in the United States has grown from just over 90,000 in January 1985 to more than 86 million, or approximately 32 percent of the country's population, at the end of 1999.[2] Growth in wireless subscribership has been accompanied by an increase in wireless usage. For example, the Cellular Telecommunications Industry Association estimates that average monthly minutes-of-use (MOUs) by mobile telephone subscribers rose to 180 in the period between July and December 1999, an increase of 38 percent from the 130 MOUs during the same period in 1998 and some analysts estimate that current average MOUs at about 220 per subscriber.[3]

5. To date, demand for mobile voice service has been the principal driver of the growth of mobile telephony services. As of early 2000, analysts estimated that data accounted for just 2 percent of mobile traffic.[4] Many analysts believe, however, that the growth of mobile data services is likely to accelerate in the near future. According to one analyst's forecast, for example, the number of subscribers using some form of mobile data service will grow to 100 million by 2007, while another analyst estimates that wireless data subscribers will outnumber wireline data subscribers by 2002.[5] The rapid growth of Internet usage and data traffic on wireline networks in the United States is taken as evidence that the potential size of the mobile Internet and data market is likewise very large.

6. While current subscriber numbers for fixed wireless services remain small by comparison with mobile wireless services, analysts expect the market for fixed wireless high-speed services to grow significantly over the next three to five years.[6] In particular, analyst projections for residential use

[2] Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, FCC 00-289, at 9, 22-23 and B-2 (rel. August 18, 2000) (*"Fifth Report and Order"*).

[3] *Id.* at 22-23.

[4] *Id.* at 33-35.

[5] *Id.*

[6] Existing fixed wireless technologies already have the capability to provide high-speed Internet access as well as basic telephone service. A fixed wireless access system thus allows a wireless provider to compete with both traditional incumbent local exchange carriers (ILECs) and broadband service providers relying on digital subscriber line (DSL) or cable modem technology to deliver high-speed Internet access. There are several different bands of spectrum over which fixed wireless providers offer their services, with the largest commercial deployment of fixed wireless systems focused on the "upper bands" of the spectrum, in the 24 GHz, 28 GHz and 39 GHz ranges. *Id.* at E-11.

of fixed wireless high-speed services range from 2 to 2.6 million subscribers in 2003 and from 3 to 4.4 million subscribers in 2004, while projections for business use of such services range from 364,000 to 450,000 subscribers in 2003.[7]

7. Notwithstanding the introduction of more efficient digital technologies that increase the potential capacity of spectrum to provide communications services, continuing expectations regarding increased demand raise the concern that spectrum may be a limiting factor for new technology and services. In the United States, virtually all spectrum, particularly in the most sought after bands below 3 GHz, has been allocated for various services. Consequently, with the exception of several small bandwidth segments of only a few megahertz each that are not sufficient to support high volume operations, there is very little unencumbered spectrum available for new uses or users. In order to provide spectrum for new services, we now have to find ways for such services to share spectrum with existing services or to reallocate spectrum from existing services to new services and technologies. In the latter case, we have sometimes implemented plans that relocate incumbent operations to other, generally higher frequency bands, and other times simply reduced the amount of bandwidth available for a service.[8]

8. The Commission has previously taken a number of steps towards the development and implementation of comprehensive plans for effectively managing the spectrum based on the increasing demands of new services and its recognition that, in general, the best way to realize the maximum benefits from the spectrum is to permit and promote the operation of market forces in determining how spectrum is used. A principal tenet of this market-based approach is that in order for competition to bring consumers the highest valued services in the most efficient manner, competing users of spectrum need flexibility to respond to market forces and demands. In recent years the Commission has undertaken several efforts to address the growing complexities of spectrum management and how best to build upon general market-based principles. For example, in March 1996 and April 1999, the Commission held *En Banc* Hearings on Spectrum Management.[9] In November 1999, the Commission issued a *Policy Statement* on "Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium" (*Spectrum Policy Statement*).[10] In addition, the Commission has adopted specific rules to

[7] Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, *Second Report*, CC Docket No. 98-146, FCC 00-290, at 79 (rel. Aug. 21, 2000). Projections for business use of fixed wireless high-speed service beyond 2003 vary widely.

[8] For example, in the 1992 Emerging Technologies proceeding the Commission reallocated spectrum in the 2 GHz region from existing non-Government Fixed uses to new services, *see First Report and Order and Third Notice of Proposed Rule Making* in ET Docket No. 92-9, 7 FCC Rcd 6886 (1992); in the 1997 proceeding on Reallocation of TV Channels 60-69 the Commission reallocated the 764-806 MHz band from the Broadcast Television Service to Fixed and Mobile Services, *see Report and Order* in ET Docket No. 97-157, 12 FCC Rcd 22953 (1998); and in the 1997 proceeding on Allocation of Spectrum at 2 GHz for Mobile-Satellite Service the Commission reallocated spectrum from the Broadcast Auxiliary Service and Fixed Service to the Mobile-Satellite Service, *see Second Report and Order and Second Memorandum Opinion and Order* in ET Docket No. 95-18, 15 FCC Rcd 12315 (2000).

[9] *See* http://www.fcc.gov/realaudio/enbancs.html for *En Banc* Hearing Transcripts.

[10] *Policy Statement on Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium*, 14 FCC Rcd 19868 (1999) (*Spectrum Policy Statement*), available at http://www.fcc.gov/oet/headlines.html.

enhance flexibility in cellular and other commercial mobile radio services.[11] The Commission has also convened a Technological Advisory Committee (TAC) to provide expert advice to the Commission on how to respond to rapid advances in technology, with a particular focus on spectrum management.[12]

9. Information presented at the two *En Banc* hearings provided insight from industry and academia on their views of how the Commission's spectrum management responsibilities should evolve. Two key focus areas emerged: 1) promote greater efficiency in spectrum use and 2) make more spectrum available. Flexibility was again emphasized for both allocations and service rules. Other key suggested initiatives include: negotiated interference, new spectrum efficient technologies; innovative and streamlined assignment mechanisms; and a more active secondary market.[13] Additional steps necessary to respond to the explosive growth in wireless communications and the resulting increased pressure for spectrum are identified in the *Spectrum Policy Statement*. In the *Spectrum Policy Statement*, we stated that an active secondary market will facilitate full utilization of spectrum by the highest value end users. We also indicated our intent to pursue a number of approaches for expanding secondary spectrum markets by bringing together prospective buyers and sellers.

10. Throughout these efforts, we have attempted to address the problem posed by spectrum scarcity through various initiatives aimed at increasing spectral efficiencies in the use of radio spectrum.[14] To meet the spectrum needs of new and existing services and users in this growing market, we need to continue to look for innovative approaches that will ensure the most efficient and effective use of spectrum so as to maximize opportunities for new technologies, services, and users. In this regard, we believe that it is important to continue to develop and take affirmative new steps to ensure that spectrum scarcity does not hinder the growth of wireless services and use. In developing such plans, we recognize that some services such as public safety, educational services, private wireless, amateur radio, and other important services, may have spectrum needs that are not addressed under a market approach. For most spectrum, however, we continue to believe that the most effective way to achieve these goals is to allow market forces to direct the distribution of spectrum resources among specific users and uses, subject of course to appropriate technical standards to control interference. Consistent with this approach, we have successfully moved to a more market-oriented approach for assignment of spectrum. The assignment of spectrum through competitive bidding has facilitated more efficient and rapid licensing of spectrum to those who value it the most.[15] We have also adopted more market-based principles with regard to technical

[11] *See* Geographic Partitioning and Spectrum Disaggregation by Commercial Mobile Radio Services Licensees, *Second Report and Order* in WT Docket No. 96-148, (rel. May 19, 2000).

[12] For additional information on the TAC, see http://www.fcc.gov/oet/tac/.

[13] *Spectrum Policy Statement* at pp. 3-5.

[14] *See, e.g.*, Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them, *Report and Order* in PR Docket No. 92-235, 10 FCC Rcd 10,076 (1995) ("*Refarming Proceeding*").

[15] We have conducted over 30 auctions since the program's inception in 1994. For example, we have licensed spectrum in the Personal Communications Service (PCS), Wireless Communications Service (WCS), and 700 MHz Guard Band Service, and broadcast stations through our competitive bidding procedures.

standards by permitting licensees to negotiate interference agreements, where possible.[16] Also, in adopting rules for new services we have attempted to provide flexibility for licensees in both the services that may be provided and the technologies that are used for operations.[17] In general, we expect that this flexibility and the economic need to make the most effective use of investments will lead wireless licensees to maximize the use of their spectrum consistent with their particular business and operating plans.[18]

III. THE NEED FOR EFFECTIVE SECONDARY SPECTRUM MARKETS

11. The information presented to the FCC at our *Public Forum* and in other contexts suggests that existing licensees may not be fully using all of the spectrum that has been assigned to them.[19] This could occur for a number of reasons. For example, a licensee's business plan, even considering future growth, may not encompass some portion of its assigned frequencies or geographic service area. It is also possible that in establishing a new service, a licensee may not need to use all of its spectrum for a period of years, as it grows its customer and operating base. In addition, a licensee may face problems in equipment availability that affects its ability to rapidly buildout services as manufacturers look for a clear indication of communications businesses that will support equipment orders. Holding spectrum unused in such circumstances may serve legitimate business needs and would not be inefficient unless it excluded higher valued uses. The preclusion of higher valued uses might occur if service flexibility is restricted by rule or the cost of trading is high. When considered across our many services, these factors may leave a substantial amount of spectrum unnecessarily lying fallow, especially in rural areas. At the same time, substantial unmet demand for spectrum for various applications exists in many areas, including such potentially high-valued uses as broadband fixed and mobile services. For example, there is continuing growth in demand for spectrum for new data networks and advanced services such as third generation mobile services that offer much faster mobile data speed.

12. We continue to believe that an effective way to make unused spectrum held by existing licensees available to others may be through secondary markets. An effectively functioning system of secondary markets would encourage licensees to be more spectrum efficient by freely trading their rights to unused spectrum capacity, either leasing it temporarily, or on a longer-term basis, or selling their rights to unused frequencies. Increased efficiency would contribute significantly to our ongoing efforts to make additional spectrum available. We also believe that secondary market transactions could contribute to increasing the amount of spectrum available to prospective users, uses, and new wireless technologies by making more effective use of spectrum that is currently assigned to existing licensees. This would provide

[16] *See e.g.*, 1998 Biennial Regulatory Review – Streamlining of Radio Technical Rules in Parts 73 and 74 of the Commissions Rules, *First Report and Order* in MM Docket 98-93, 14 FCC Rcd 5272 (1999).

[17] *Spectrum Policy Statement* at ¶ 9.

[18] We recognize that licenses issued for broadcast services under Parts 73 and 74 have unique and substantial public interest considerations that must be weighed carefully to ensure their objectives are not undermined in advancing our secondary markets policy. In developing this policy statement, we have not attempted to strike that balance. Moving forward, however, we will be careful to give such considerations adequate weight in pursuing our secondary markets policy.

[19] For example, at the Commission's May 31, 2000, *Public Forum* on secondary markets a number of panelists described situations where existing licensees are not fully utilizing their assigned spectrum. Materials related to the May 31, 2000, *Public Forum* are available at http://www.fcc.gov/oet/.

opportunities for the development and operation of new services and competition. In addition, as licensees move to more efficient digital technologies they are likely to have more capacity that can be made available in secondary markets. It is also possible that by facilitating leasing, the Commission will create an economic incentive to develop and deploy efficient technologies because licensees will be able to realize a profit from their available spectrum. If a licensee knows that it has an economic opportunity by conserving and leasing rights to excess spectrum, it may make strong business sense to be more spectrum efficient.

13. The Commission has already begun the process of exploring how we can facilitate the development of more active and effective secondary markets in spectrum. The Office of Engineering and Technology convened a *Public Forum* on May 31, 2000, asking specific questions on the need for secondary spectrum markets, comparisons to other commodity markets, and FCC actions that could facilitate secondary spectrum markets. Panelists at the forum included representatives from academia, equipment manufacturers, service providers, and the legal community.[20] The overwhelming consensus at the *Public Forum* was that a more active secondary market in spectrum is desirable and the Commission should foster opportunities in this area. Among the specific areas noted by the panelists as barriers to successful operation of secondary spectrum markets are: 1) FCC transfer of control policies that inhibit spectrum leasing and other similar arrangements; 2) high transaction costs; 3) interference; 4) equipment availability; 5) buildout requirements; and 6) limitations on service flexibility. One possible example of how a secondary market transaction could make more effective use of the spectrum would be in cases where spectrum was leased on a short-term basis. For example, a licensee holding commercial or private mobile radio spectrum or fixed wireless access spectrum in anticipation of its own growth could lease spectrum to another entity to allow the latter to meet a temporary need. This spike in demand might be produced by the presence of a major public event in the area such as a national political convention or a major sporting event. Arrangements such as these would produce a "win-win" result for everyone involved. The lessor would realize income while maintaining control of spectrum that it might need to meet long term strategic objectives, while the lessee would be able to make a profit by providing service to otherwise under-served customers. Users would benefit from the availability of the service and manufacturers would potentially benefit from the sale of products. The public interest would benefit from greater and more efficient use of the spectrum. These same types of benefits could accrue in situations where mid-term or longer-term leasing is implemented as well.

14. In many respects, our existing rules already provide flexibility to allow some licensees to make all or unused portions of their spectrum available to others through transfer arrangements. For example, our rules for Commercial Mobile Radio Services, *e.g.*, cellular telephone service, PCS, and advanced paging systems, allow licensees to partially transfer, subject to regulatory approval:[21] 1) portions of their right to use frequency bands across their service area (disaggregation); 2) their rights to use frequency bands in portions of their service area (partitioning); or 3) portions of their right to use frequency bands in a portion of their service area (a combination of both disaggregation and partitioning). These provisions allow licensees to tailor their operations in accordance with the spectrum needs and service areas in their business plans as well as promote the availability of unused spectrum for use by others. In other instances, our rules expressly allow leasing or resale arrangements in which a third party can use licensed spectrum without the licensee transferring its rights outright. For example, our rules allow the lease of

[20] *See* Public Notice "FCC Announces Agenda For Public Forum On Secondary Markets In Radio Spectrum", DA 00-1139, 15 FCC Rcd 18667 (2000).

[21] *See* 47 CFR § 1.2111, implementing Section 310 of the Communications Act, as amended 47 U.S.C. 310.

spectrum between Multichannel-Multipoint Distribution Service (MMDS) and Instructional TV Fixed Service (ITFS) licensees, resale of satellite transponder capacity[22], and Private Land Mobile Radio Services (PLMRS) licensees may share the use of their facilities by permitting persons not licensed for the station to operate the station for their own purposes pursuant to the licensee's authorization.[23]

15. Notwithstanding the existing potential for secondary market activities and the economic incentives that primary licensees would be expected to have to either make their spectrum usage rights available to others, the secondary market remains underdeveloped. On the one side, there appears to be reluctance on the part of existing licensees to trade in rights to the unused portions of their assigned frequencies and service areas under current Commission rules. As with any scarce resource there are incentives for licensees to hold on to their right to use spectrum, especially when there may be no established mechanism to offer spectrum usage rights for a limited time period. These incentives could derive from: 1) concerns they will need spectrum for future capacity; 2) speculation that future increases in values make it worthwhile to hold on for higher prices later; 3) a perception that disaggregation or partitioning would reduce the value of their spectrum usage rights; or 4) a desire to forestall competition. Licensees may also believe that administrative requirements create transaction and opportunity costs that exceed potential benefits that may accrue from making all or part of their spectrum license available to others. Licensees have also indicated that they fear that any available excess capacity they might identify would be reclaimed by the Commission. Licensees may be further unwilling to engage in lease agreements because they believe that such agreements are prohibited under Section 310(d) of the Communications Act of 1934 as amended or Commission policy. Some panelists at the *Public Forum* indicated that the reluctance of attorneys to issue a legal opinion that proposed leasing arrangements comply with applicable regulatory standards creates regulatory uncertainty and thus creates a disincentive to secondary market participation. These barriers to secondary market trading may be affected by several factors, including, for example, whether spectrum is licensed on a site-by-site or geographic area basis or whether the license was acquired through payment, *i.e.* auctions or purchase vs. no cost other than a license application fee. On the other side, demand for leasing appears to be affected by the price of spectrum usage rights when they are available, uncertainty regarding lease term and regulatory requirements, high transactions costs due to other legal uncertainties, equipment availability, and the lack of mechanisms for identifying available spectrum.

16. The policies and initiatives outlined in this Policy Statement are aimed at encouraging both the supply and demand for spectrum usage rights and to generally facilitate the development of an efficient secondary market in such rights. In particular, we seek to identify ways to encourage licensees, *i.e.*, the supply side, to overcome their resistance to sell or lease unused spectrum usage rights. For example, we believe that leasing of spectrum usage rights (as opposed to transfer) could address licensee concerns regarding future capacity requirements and speculation on value. We hope that the planned initiatives discussed below will lead to greater regulatory certainty that will mitigate general resistance to resale or leasing. We intend to examine a number of possible means to encourage greater licensee participation in the secondary market.

[22] See 47 CFR 21.934 and 21.935 (MMDS), 47 CFR 74.990-74.992 (ITFS). *See also* Streamlining the Commission's Rules and Regulations for Satellite Application and Licensing Procedures, *Report and Order* in IB Docket 95-117, 11 FC Rcd 21581 (1996).

[23] Shared use of the frequencies may be on a non-profit, cost-shared, or for-profit private carrier basis. The licensee is responsible for ensuring that the authorized facility is used for purposes consistent with the requirements of our rules. *See* 47 CFR § 90.179.

17. We believe that a secondary market for spectrum resources can develop as it has for wireline bandwidth, which is now being actively traded like traditional commodities such as oil, gas, and grains.[24] We believe that the limited secondary market activity in spectrum usage rights is the result of a combination of factors that include: 1) regulatory constraints, 2) the availability of equipment for operation, and 3) the lack of adequate systems and information for the conduct of effective trading and market operations. We believe that it is possible to achieve improvements in each of these areas, and thereby to move towards a more freely functioning system of secondary markets for spectrum usage rights. In developing specific initiatives for improving secondary markets, we believe it is appropriate to rely on the general economic theory of markets. Certain essential elements that need to be present for a market system to operate most effectively include: 1) clearly defined economic rights; 2) full information on prices and products available to all participants; 3) mechanisms for bringing buyers and sellers together to make transactions with a minimum of administrative cost and delay; 4) easy entry and exit to the market by both buyers and sellers; and 5) effective competition, with many buyers and sellers.[25]

IV. SECONDARY MARKETS INITIATIVE

A. Goals and Principles

18. Spectrum management is one of the Commission's core functions.[26] In the *Spectrum Policy Statement*, we recognized that "[w]ith the increased demand for a finite supply of spectrum, the Commission's spectrum management activities must focus on allowing spectrum markets to become more efficient and increasing the amount of spectrum available for use."[27] In exercising our spectrum management role, consistent with our licensing authority and the public interest obligations in the Communications Act, we plan to substantially enhance the system of secondary markets for spectrum usage rights. Our goal in this effort is to promote the operation of competitive markets for the sale and lease of spectrum usage rights by licensees, and thereby facilitate both the transfer of the right to use spectrum for existing services to new, higher valued uses and the availability of unused and underutilized spectrum to those who would use it for providing service. We also seek to foster market structures and incentives that will encourage more sellers to make spectrum available. This will bring unused spectrum to the market, allow sellers to apply the resource value of that spectrum to other aspects of their businesses, and provide buyers with more opportunities for choice in frequencies and service areas and lower prices.

19. To achieve these goals, we intend to pursue a broad range of policies that will develop and support efficient market systems. A major focus of our secondary markets efforts will be to remove, relax or modify our rules and procedures to eliminate unnecessary inhibitions on the operation of secondary

[24] *See* testimony of Sharon Crowe, Vice President, Bandwidth Markets, Williams Communications at *Public Forum*, available at http://www.fcc.gov/realaudio/presentations/2000/053100/welcome.html.

[25] Of course, real world markets rarely satisfy fully all the conditions of perfect competition. They nonetheless often perform effectively. In particular, less-than-perfectly competitive markets can constitute mechanisms for generating public benefits superior to non-price mechanisms such as reliance on regulatory or administrative processes.

[26] The Commission's authority and responsibilities with regard to spectrum management and licensing for domestic radio communications services are generally set forth in 47 U.S.C. 301-337. See also *Spectrum Policy Statement* at ¶ 6.

[27] *Spectrum Policy Statement* at ¶ 12.

market processes and to promote flexibility and fungibility (exchangeable or substitutable) in the use of spectrum. In order to remove barriers to entry and to promote seller participation for spectrum usage rights, we also intend to encourage advances in equipment that will facilitate use of available spectrum for a broad range of services. An additional element of this effort will be to encourage mechanisms, including information sources, spectrum exchanges, and brokers, that bring together buyers and sellers and effect transfers of the right to use spectrum in a timely and cost effective manner. In developing policies under each of these elements, we will seek solutions that will bring to spectrum markets the essential characteristics that need to be present for effective and efficient market operation. This effort is a substantial undertaking that will examine the potential for improving secondary market operations in as many of our spectrum-based services as possible.

20. We also recognize that for secondary markets to operate effectively, licensees and users must have certain rights and responsibilities that define and ensure their economic interests. In developing our secondary market policies, we intend to apply the following principles concerning licensee rights and responsibilities where consistent with our licensing authority and the public interest obligations of the Communications Act:

- Licensees should generally have clearly defined usage rights to their spectrum, including frequency bands, service areas, and license terms of sufficient length, with reasonable renewal expectancy, to encourage investment.[28]
- Licenses and spectrum usage rights should be easily transferable for lease or sale, divisible, or aggregatable.
- Licensees/users should have flexibility in determining the services to be provided and the technology used for operation consistent with the other policies and rules governing the service.
- Licensees/users have a fundamental obligation to protect against and the right to be protected from interference to the extent provided in the Commission's rules.

21. We note that a policy promoting secondary markets for radio spectrum licenses, and rights thereunder, through leasing or other arrangements, inevitably raises larger issues surrounding spectrum licensees' rights and obligations. At our public forum, some of the panelists recommended that the Commission implement a more property-right based system as part of its secondary market initiatives.[29] Specifically, panelists noted that markets functions best when property rights and liability rules are clearly

[28] In this context, any transferees and lessees will have the same rights to protection against interference and incursions by other operators as the licensee from which they acquire the spectrum. For example, a transferee or lessee would have the same rights to protection against interference from operations under the experimental radio service (Part 5 of the rules, *see* 47 CFR 5) or from operation of unlicensed radio devices (Part 15 of the rules, *see* 47 CFR 15) as the primary licensee. We also take this opportunity to advise that the Experimental Radio Service is not intended for meeting short-term commercial needs. While entities may be authorized to operate temporarily on licensed frequencies under our Part 5 Experimental Radio Service rules, the purpose of this service is to allow experimentation in radio art or essential communications for research for radio projects.

[29] *See* Testimony of FCC Commissioner Furchtgott-Roth; Tom Hazlett, Resident Scholar, American Enterprise Institute; and Peter Cramton, Chairman, Spectrum Exchange, and Professor of Economics, University of Maryland at our public forum.

defined.[30] Section 301 of the Act states that the purpose of the Act is "to maintain the control of the United States over all the channels of radio transmission" and "to provide for the use, but not the ownership thereof."[31] The Act also recognizes that use of spectrum is temporary, limited, and subject to withdrawal in a wide variety of circumstances.[32] Further, Section 304 of the Act requires that any applicant seeking to use spectrum, must waive any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States.[33] These provisions make it clear that spectrum ultimately belongs to the public and not to individual licensees. Sections 302 and 303 of the Act authorize the Commission, consistent with the public interest, convenience, and necessity, to make reasonable regulations to protect against interference and to classify radio stations, assign frequencies, and establish service rules.

22. While individuals cannot "own" spectrum pursuant to statute, a license to use spectrum confers certain rights to use the spectrum, which we have referred to as "spectrum usage rights." The spectrum usage right is defined within the terms, conditions, and period of the license at the time of issuance.[34] In light of the statutory limitations, we seek to develop policies that define the contours of the "usage rights" granted within the license terms and conditions. We believe that clarifying a licensee's spectrum usage rights will facilitate markets and open an important dialog about our spectrum management policies.

23. In our efforts to remove impediments to the efficient use of spectrum, we may also want to consider ways in which a licensee may be able to maximize its own efficient use of spectrum. One approach would be to consider ways licensees could leverage the value of their retained spectrum usage rights to increase access to capital. Access to capital, especially for smaller businesses, affects the licensee's ability to use its spectrum resources under its license. Specifically, we plan to evaluate our policies prohibiting security and reversionary interests in licenses.[35] We will also explore other financial mechanisms that licensees could use in order to facilitate the provision of service to the public. For example, we intend to consider whether newer market-based mechanisms applicable to other interests such as asset-backed securitization may further assist licensees' capital formation efforts.

24. While we are committed to promoting viable and effective secondary markets for the

[30] Id.

[31] 47 U.S.C. § 301

[32] Id.

[33] 47 U.S.C. § 304.

[34] Indeed, Section 301 states that no radio license "shall be construed to create any right, beyond the terms, conditions, and periods of the license. 47 USC § 301.

[35] The Commission has recognized that licensees can give a security interests in the proceeds of the sale of licenses. See *Walter O Cheskey*, 9 FCC Rcd. 986 (1994); *Beach Television Partners v. George F. Mills, Jr.*, 38 F.3d 535 (11th Cir. 1994); and Letter from William E. Kennard, General Counsel, FCC, and Michele C. Farquhar, Chief, Wireless Telecommunications Bureau, FCC, to Leonard J. Kennedy, Esq. and Richard S. Denning, Esq., DA 96-2123, (Dec. 17, 1996). Nevertheless, the FCC does not allow licensee to give a security interest in the license itself. The Commission has not taken a position on whether this policy is statutorily mandated or solely dictated by regulatory policy.

right to use spectrum based on policies that provide for licensees' discretion to use and trade their right to use assigned frequencies and service areas, we emphasize here our statutory authority and ultimate administrative control over spectrum. Section 303 of the Act, for example, requires the Commission "from time to time, as public convenience, interest, or necessity requires, " to set service rules, band assignments, interference protection, and station operator qualifications, among other things.[36] Because spectrum is a vitally important and scarce public resource, we must maintain authority and administrative control to safeguard the interests of the public and other licensees. In order to protect these interests while promoting the efficient and effective use of the spectrum, we must carefully balance our exercise of authority with the ability of licensees to freely trade their spectrum usage rights. Here we affirm the exercise of our authority in, for example, the allocation of spectrum in instances where the economic benefits available in the marketplace do not directly support the provision of necessary services such as public safety services. We must also promulgate technical rules to protect against interference and take action to allow sharing with existing services where new uses can operate without harmful interference to existing services. Moreover, in fulfilling our responsibilities under the Communications Act, we have implemented a number of economic based rules and policies, e.g. limits on aggregation, interconnection with other providers, resale, roaming, as well as regulations to promote other public interests such as E911 rules for mobile telephony providers. In implementing our secondary markets initiatives, we must also seek to ensure competition in services and address the impact of relocating existing services to new frequencies on consumers of those existing services and on their choice in the range of services available.

B. Focus Areas and Initiatives

25. In this Policy Statement, we indicate, in general terms, possible initiatives that could facilitate secondary markets. While most of these initiatives would be undertaken by the Commission, some would more appropriately be implemented by others such as private sector organizations. Specific proposals for implementing initiatives undertaken by the Commission will be addressed in separate rule making proceedings. Interested parties will be provided opportunity to comment on our proposals and related issues in the context of those proceedings. Our efforts will focus on initiatives in the following three areas:

1) Eliminate unnecessary regulations and administrative requirements

26. Secondary markets can be expected to function best when licensees are free to transfer spectrum usage rights to different uses and users with a minimum of administrative review. Restrictions on the kinds of services that may be provided on licensees' right to use spectrum reduce the scope and potential of secondary trading and, at a minimum, impose additional cost and delay as licensees must seek waivers or rule changes. To the extent service flexibility can be increased consistent with statutory authority and regulatory goals, the efficient operation of secondary markets will be enhanced. Given greater opportunities to profit from their spectrum usage right, licensees' incentives to participate in secondary market trading and to employ efficient technologies will be similarly strengthened. In this regard, examples of the types of activities we plan to consider include:

- Harmonization of operating rules for similar services to promote spectrum fungibility.
- Modifications to our service definitions, where appropriate, to increase flexibility and maximize spectrum efficiency. Flexibility will allow multiple services to operate in the same spectrum. This may help mitigate the inclination to avoid participating in secondary markets for anti-competitive reasons.
- Identification of circumstances where we will favorably consider waivers or forbearance from service and technical rules that increase flexibility and maximize spectrum efficiency.

27. As a threshold matter, we must address statutory limitations on the kinds of arrangements into which licensees may enter with third parties without Commission approval. In particular, licensees may not enter into arrangements that would violate Section 310(d) of the Act.[37] Before a licensee can transfer control of its license (or parts of the license, where permitted[38]) to a third party, Section 310(d) requires that the licensee and the third party gain Commission approval to transfer or assign the license (or parts thereof).[39] One of the most problematic areas affecting secondary market activity identified at the *Public Forum* concerns the Commission's interpretation of Section 310(d). Section 310(d) addresses both reassignment of licensed spectrum from one party to another and transfer of control without conveyance of license. Our rules and policies pursuant to Section 310(d) require that assignment or transfers of control of licenses be approved by the Commission and that licensees maintain control over and responsibility for their assigned spectrum, equipment, and operations. In overseeing license transfers, we seek to ensure that the transferee is eligible to hold the license and that radio facilities are operated in compliance with applicable technical and service rules.

28. The primary focus of concern at the *Public Forum* was a Commission test for unauthorized *de facto* transfer of control of commercial wireless licensees. This test was established in a 1963 decision involving a point-to-point microwave service operator, *Intermountain Microwave* (*Intermountain*). The *Intermountain* test sets forth six factors for determining whether there has been an unauthorized *de facto* transfer of control of a license.[40] This test is widely applied in cases involving wireless services and in some instances involving satellite services.[41] Industry representatives have

[36] 47 U.S.C. § 303.

[37] Section 310(d) of the Act provides: "No construction permit or station license, or any rights thereunder, shall be transferred, assigned, or disposed of in any manner, voluntarily or involuntarily, directly or indirectly, or by transfer of control of any corporation holding such permit or license, to any person except upon application to the Commission and upon finding by the Commission that the public interest, convenience, and necessity will be served thereby." 47 U.S.C. § 310(d).

[38] This would include the partitioning, disaggregation, or partial assignment of licenses.

[39] *See Lorain Journal Co. v. FCC*, 351 F. 2d 824, 828-29 (D.C. Cir. 1965), *cert. denied*, 383 U.S. 967, 86 S. Ct. 1272, 16 L.Ed. 2d 308 (1966) ("control" under Section 310(d) refers to both *de jure* and *de facto* control); *Telephone and Data Systems, Inc. v. FCC*, 19 F. 3d 42 (D.C. Cir. 1994).

[40] See *Intermountain Microwave*, 12 FCC 2d 559 (1963). The six factors set forth in Intermountain for determining whether there has been an unauthorized transfer of control in violation of Section 310(d) are as follows: 1) does the licensee have unfettered use of all facilities and equipment; 2) who controls the daily operations; 3) who determines and carries out policy decisions, including preparing and filing applications with the Commission; 4) who is in charge of employment, supervision, and dismissal of personnel; 5) who is in charge of payment of financing obligations; 6) who receives monies and profits from the operations of the facilities? These factors are only guidelines, and determinations are made on a case-by-case basis.

[41] The Commission uses a different test, *e.g. the Motorola test*, with regard to private radio licenses. This test provides that no transfer of *de facto* control occurs where the licensee owns the most significant equipment and a third party performs management functions pursuant to the supervision and instructions of the licensee, who can (continued....)

indicated that, in the context of spectrum leases and management and affiliation agreements, *Intermountain* can pose constraints, especially where the prospective lessee or manager seeks to control daily operations, personnel and profits.[42] These parties asked that we reduce these barriers by modifying the *Intermountain* factors to facilitate spectrum leasing and/or simplifying the process for obtaining waivers and Commission approval of license transfers. They stated that additional flexibility is desirable to facilitate secondary market leasing of unused portions of licensed spectrum.

29. In this regard, we intend to consider a range of possible options for allowing third parties to operate and control leased facilities. For example, we recently adopted rules permitting leasing of spectrum though band manager licensees in allocating the "guard bands" frequencies of the 746-806 MHz commercial bands. We defined a Guard Band Manager as a commercial licensee that has the ability to lease access to its licensed spectrum to other eligible users. Subject to technical, operational, and other rules that govern the band, spectrum use by the end users is by private contract between the Guard Band Manager and the end user.[43] We believe we can build upon our Guard Band decision by exploring broader steps that we can take in other bands to provide additional flexibility in our transfer of control rules and policies to further secondary market activity.

30. A second area of our rules that was raised at the *Public Forum* as a constraint on transfer and leasing of spectrum usage rights is the Commission's buildout requirements. Buildout requirements specify that a licensee must build and operate to serve a specified portion of its service area or the population in its service area on a fixed schedule. These requirements are intended to ensure that licensees make productive use of their spectrum usage right in a timely manner and to further our general universal service and competition goals. Licensees have indicated that they are concerned that if they were to lease portions of their spectrum usage right, they would not be able to meet their construction requirements unless they were able to count the lessee's service towards fulfilling those requirements. They note that the rules currently are unclear on whether a lessee's service would count towards a licensee's buildout requirements.

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terminate the governing agreement. *See Applications of Motorola, Inc. for 800 MHz Specialized Mobile Radio Trunked Systems in California, New York, New Jersey, Maryland and Virginia and Application of Motorola, Inc. for Assignment of Authorization of Specialized Mobile Radio Station WRG-B16 at Mount Tamalpela, California, File Nos. 507505 et al., Order* (issued July 30, 1985). The Commission also uses another test, *e.g. Choctaw Broadcasting Corp.*, 12 FCC Rcd 8534 (1997), for determining transfer of control involving licenses for mass media services. The *Choctaw* decision is a three-factor test that examines: 1) who controls the station's programming; 2) who hires and supervises its personnel; and 3) who controls its finances.

[42] See Public Notice, "Wireless Telecommunications Bureau Seeks Comment On Request For Clarification Of De Facto Control Policy And Proposed Spectrum Lease Agreement" DA 00-1953, 15 FCC Rcd 15885 (2000); see also testimony of Carrie Bennet, Counsel for the Rural Telecommunications Group; Morgan O'Brien, Vice Chairman, Nextel Communications; Michelle Farquhar, Partner, Hogan and Hartson; and Robert Shiver, Chairman and Chief Executive Officer, Securicor Communications at the Public Forum.

[43] *See* In re Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, *Second Report and Order* in WT Docket No. 99-168, 15 FCC Rcd. 5299, ¶¶ 25-51 (1999) (700 MHz Proceeding). The Band Manager's contracts with end users must include provisions that apply to existing licenses, such as the end users' agreement to comply with the Commission's rules, accept our oversight and enforcement, and cooperate with any investigation or inquiry that the Band Manager or the Commission may conduct.

31. We recognize that additional flexibility on buildout requirements may be desirable in certain circumstances. For example, in some services, we have shifted from incremental buildout milestones to an assessment of whether substantial service exists at license renewal time in order to increase a licensee's ability to respond to marketplace demands.[44] The efficient use of spectrum through leasing may be furthered if we took steps to allow licensees to meet their buildout obligations through service provided by lessees in appropriate circumstances. In examining issues relating to spectrum transfer and leasing, we plan to review our buildout requirements for alternatives that will promote leasing and resale consistent with our other regulatory concerns.

32. Licensees and their representatives have also indicated that minimizing administrative delays by eliminating inefficiencies in our rules and application processes would reduce transaction costs and facilitate the development of secondary markets. Taking into account these comments, a fundamental goal in developing our secondary market initiative is to streamline the existing rules in order to facilitate an incumbent's ability to lease or transfer portions of its capacity. In this regard, we plan to:

- Assess how changes to Commission rules and processes could further facilitate transferability of spectrum usage rights and re-packaging. Our plan to evaluate our test for *de facto* transfer of control is one possible such change.
- Consider whether modification or waiver of eligibility restrictions and licensing rules could be appropriate in certain circumstances, to facilitate trading.
- Evaluate ways to minimize administrative overhead and processing time. As part of this effort we will identify and implement more efficient processing techniques and procedures.
- Revise our technical rules to define the rights and obligations of lessees with regard to interference and other technical issues. Consider areas where waiver of technical requirements may be appropriate.

33. Another issue that was raised at the *Public Forum* concerns the rights of spectrum lessees with regard to occupancy, including the length of the contract term. This impacts their ability to raise capital and willingness to invest in infrastructure. We recognize these concerns—lessees indeed must have reasonable expectations that they will have the right to continue to occupy spectrum. These concerns have been addressed in part by our actions to provide an expectation of renewal for licensees. Thus, while a licensee cannot grant a lease for longer than its license terms, it is able to negotiate conditional options for renewal. We intend to look for additional ways that we can enhance licensees' ability to negotiate with lessees to ensure continuity of service.

34. We also seek to minimize the transaction costs and time associated with completing agreements for transfer or lease of spectrum usage rights. Some of these costs may be associated with the lack of currently available information on available spectrum. The majority of these costs, however, stem

[44] *Id.* 700 MHz Proceeding, and *See* 4.9 GHz Band Transferred from Federal Government Use, *Second Notice of Proposed Rule Making*, in WT Docket No. 00-32; and Amendment of the Commission's Rules with Regard to the 3650-3700 MHz Government Transfer Band, *First Report and Order* in ET Docket No. 98-237, FCC 00-363 (rel. October 24, 2000).

from contract negotiation and regulatory review. For example, questions regarding regulatory rights and status, interference, technical parameters, indemnification, and contract terms may complicate a transaction. High transaction costs create disincentives for trading or leasing of spectrum usage rights by serving as a barrier to entry. To further help reduce transaction costs, we also plan to consider ways we could facilitate the establishment of brokerage agents and institutions such as spectrum exchanges and standardized contracts between licensees and transferees/lessees.

35. In addition, we plan to augment our existing enforcement infrastructure to support the growth of secondary spectrum markets. Having a mechanism in place to effectively deal with accidental or intentional interference with the ability of users to effectively utilize the spectrum is an important function. We plan to enhance the technical capabilities and resources of our enforcement staff so it can deal with accidental or deliberate interference in a timely and effective way.

2) Promote the availability of frequency and technically agile equipment

36. One of the most difficult problems that users face in providing services in new spectrum is the availability of equipment that will provide the desired service on the specified frequency with an appropriate transmission technology. Different frequencies and services have unique propagation and operating characteristics that require specific equipment performance attributes. Radio equipment is generally not frequency and technically agile, *i.e.*, it is generally designed to operate on a specific band or bands, use a specific modulation method and perform a specific function, and cannot be readily adjusted or modified to work differently. For example, an AM broadcast receiver operates differently and performs different functions than a cellular telephone. Even where devices perform similar functions, current technology does not make it feasible for devices to operate on a frequency band different than those for which they were designed. For example, a VHF maritime radio that uses frequencies in the 150-160 MHz region cannot be readily modified to operate with PCS service at 2 GHz. These limitations on equipment flexibility are generally based on considerations of cost, performance, power and size. With traditional technology, it makes little economic sense to build expensive capabilities into a device that likely will never be used or that will increase its size and weight.

37. However, advanced integrated circuitry, digital designs and processors, and stored program capabilities are increasingly making it more economically feasible to incorporate additional technical flexibility into radio equipment. New equipment concepts known as "software defined" radios are now being developed that will incorporate these new technologies to make radio receivers, transmitters, and transceivers more fungible across different applications and services. We believe these new equipment concepts offer significant potential for providing equipment solutions that would allow a service provider to rapidly begin operations in a newly acquired band of frequencies or to operate economically on a term basis on leased spectrum. We intend to facilitate the deployment of more flexible technologies for equipment, such as software-defined radios and multi-band transmitters and receivers wherever possible.[45]

3) Promote more effective functioning of market processes

38. In order for any market-based system to function there must be a means for bringing buyers and sellers together, presenting products for trade, establishing a mutually acceptable price, and completing their transaction. In the simple example of a traditional bricks and mortar retail store, buyers

[45] We have already initiated a proceeding to consider authorization of software defined radios. *See Notice of Inquiry* in ET Docket No. 00-47, 15 FCC Rcd 5930 (2000).

and sellers come together at the seller's place of business, merchandise is presented on shelves or floor displays, price is established by marking goods or through negotiation, and transactions are completed by exchanging payment for the goods. The opportunity to shop at other stores provides for competition. This market approach is simple, timely and relatively inexpensive. Other types of standard market organizations, such as the brokerage trading approach used in commodity markets, also provide effective, efficient means of exchange. There is, however, no such standard market model for sale or lease of spectrum usage rights. Buyers and sellers must search each other out through brokers, advertising, private contacts or other *ad hoc* means. Negotiations for bandwidth and service area can be limited by the Commission's technical and service rules. Also, completing the transaction requires approval by the Commission that can, to varying degrees, involve complex submissions and be time consuming and expensive.

39. We seek to encourage improvements in the functioning of the market processes for exchange of spectrum usage rights. Basic to this process is the means for bringing buyers and sellers together. Several of the panelists at our public forum noted the need for a mechanism to identify available spectrum.[46] A relatively simple, cost-effective means for identifying licensees who desire to trade in spectrum usage rights or might have unused spectrum rights available that could be sold or leased to potential buyers could greatly facilitate the development of secondary markets. This function could be provided through several different types of information sources or services that would vary in the extent to which they would address a potential buyer's specific needs. In general, we believe that if our rules permit the operation of robust spectrum market, sufficient economic incentives will exist for mechanisms to develop in those markets to gather and disseminate the relevant information. To help further these developments, we intend to pursue options that look to:

- Maintain an on-line listing of licenses by service, frequencies, and service area. This is the simplest means for identifying spectrum usage rights to potential buyers/lessees. This would not, however, identify specific spectrum the rights to which licensees might be willing to sell or lease.[47]

- Support development of services that list spectrum resources that licensees are actively offering for sale or lease. This is a more useful approach than a simple comprehensive listing of licenses by service.

- Support the establishment of private spectrum exchanges and brokers who would match parties interested in acquiring spectrum usage rights with suitable resources held by existing licensees. Spectrum brokers could bring specific expertise and knowledge of the unique properties of different spectrum bands to assist prospective buyers in identifying the best spectrum for their needs.

[46] *See* testimony of Carrie Bennet, Counsel for the Rural Telecommunications Group; Robert Shiver, Chairman and Chief Executive Officer, Securicor Communications and Tom Hazlett, Resident Scholar, American Enterprise Institute at the Public Forum.

[47] The Commission makes wireless licensing data available on-line, including maps showing licensing areas and service providers as part of its Universal Licensing System. *See generally* WT Docket Nos. 98-20 and 96-188. In addition, listings of available spectrum are already provided to some extent by the private sector for some specific services. For example, Comsearch has developed a commercial spectrum database identifying services and principle users by frequency band. *See* http://www.comsearch.com.

V. CONCLUSION

40. The goals set forth in this Policy Statement are intended to establish a framework for the Commission's efforts to facilitate the development of active secondary markets in spectrum usage rights. This endeavor is part of our ongoing efforts to evolve our spectrum management and licensing activities to respond to the changing communications environment. Given the dynamic nature of the market for telecommunications services and the importance of communications to our economic growth, we cannot let spectrum scarcity limit the development of new services. Consistent with our statutory obligations, we are optimistic that an improved system of secondary markets in spectrum usage rights will further the efficient and intensive use of the electromagnetic spectrum and the development and rapid deployment of new technologies, products, and services for the benefit of the public.

FEDERAL COMMUNICATIONS COMMISSION

Magalie Roman Salas
Secretary

SEPARATE STATEMENT OF COMMISSIONER SUSAN NESS

RE: PRINCIPLES FOR ENCOURAGING THE DEVELOPMENT OF SECONDARY MARKETS FOR SPECTRUM

The United States has long been the vanguard for developing new approaches to spectrum policy and management. Today, we launch another vehicle to increase the efficiency with which spectrum – a scarce national resource – is deployed in this country. Previously, we have led the way globally to encourage the adoption of flexible wireless allocations and competitive bidding for license assignment. We have promoted the development of new technologies, such as software defined radio, that will facilitate more efficient, less costly, and less regulated access to spectrum. I am pleased that we are initiating a policy to foster secondary markets for spectrum – another effort to increase the opportunity for the public to have access to new services made possible by more efficient use of the spectrum.

The viability of a secondary market for spectrum will depend upon three crucial elements: (1) whether the Commission in future proceedings can establish the appropriate legal framework; (2) whether industry can produce equipment that takes advantage of this flexibility without causing undue interference; and (3) whether the market can develop a mechanism for identifying and distributing available spectrum.

I look forward to working with all parties to accomplish these goals.

SEPARATE STATEMENT OF COMMISSIONER HAROLD W. FURCHTGOTT-ROTH

Re: Principles for Encouraging the Development of Secondary Markets for Spectrum, Policy Statement; Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets.

Markets and government regulation are not complete strangers. Mutual contempt has bred an all too asymmetric familiarity. Regulations change, and markets, by necessity, adapt instantaneously. The converse, however, is not true.

It is difficult to find a market in which all applicable regulations have not been reflected; their effects on the market—for good or ill— are implicitly counted. By contrast, it is rare to find a regulation that directly and reasonably accounts for its effects in one market, much less all markets. Thus, even a casual observer should pause when a government agency writes a regulation with the word "market" in its title. What is at work here? A regulation based on familiarity with markets, or—all too familiarly—a regulation based on contempt for markets?

I am happy to report that the items today reflect more the former than the latter, and for this, the Office of Engineering Technology and Dale Hatfield along with Tom Sugrue and his Wireless Telecommunications Bureau deserve enormous credit. Indeed, these items are conceived from the all too obvious—and all too often ignored—observation that markets for spectrum rights are not working well. Buyers complain. Sellers complain. And the common refrain is that FCC rules are costly, cumbersome, and do more harm than good for spectrum markets. Even with the progress made by these items, much more needs to be done. These are but the first infant steps when giant steps are ultimately needed, particularly to remove the shadow of regulatory uncertainty from spectrum markets.

Clarifying lease arrangements

The items today do much to clarify Commission rules and policy regarding leasing arrangements for spectrum rights, and this newfound clarity and certainty will reduce one significant area of regulatory uncertainty. There remain some issues surrounding rental or leasing arrangements that are unresolved by today's items, but surely the additional clarity in Commission policy is a positive step.

Some may observe that secondary markets for spectrum are alive and thriving. Indeed, every year the FCC processes thousands of license transfers, the consummation of secondary markets for spectrum rights. In many if not most instances, these licenses are transferred from one party to another in exchange for some form of consideration as a result of a contract. Yet, the mere existence of a secondary market for spectrum rights does not imply that the market functions particularly well. Complaints about the license transfer process at the FCC are legion. As I have often noted, the license transfer process at the FCC is seriously flawed with delays, discriminatory treatment of applicants, unwritten rules, and other problems.[48] The unpredictable, dysfunctional, and possibly unlawful license transfer process at the FCC burdens secondary markets for spectrum rights. The process discourages some potential market participants, and leaves many participants disenchanted.

Even if the FCC were to move to timely, nondiscriminatory, transparent, carefully crafted, fully lawful rules for

[48] *See, e.g.*, Statement of Commissioner Furchtgott-Roth, Concurring in Part & Dissenting in Part, *Applications of Ameritech Corp., Transferor, and SBC Communications, Inc., Transferee, For Consent to Transfer Control of Corporations Holding Commission Licenses and Lines Pursuant to Sections 214 and 310(d) of the Communications Act and Parts 5, 22, 24, 25, 63, 90, 95, and 101 of the Commission's Rules*, CC Docket 98-141 (rel. Oct. 6, 1999).

license transfers, secondary markets for spectrum rights would still not be as vibrant as they could be. This is because Commission policies in many areas militate against transactions for spectrum.

Despite all of the good that comes from today's items, they do not, in my view, go nearly far enough. Markets for spectrum rights labor under a multitude of regulations, only a few of which are meaningfully reviewed or addressed, in these items. In the remainder of this statement, I describe broad areas where markets for spectrum rights are hampered.

What makes a market

Markets are simply means by which buyers and sellers exchange for mutual benefit goods, services, or bundles of rights. Markets facilitate exchanges in all societies, both primitive and modern. In primitive societies, many transactions may be based on barter exchange at one point in time. In modern times, transactions can be quite subtle and complex involving complicated contractual arrangements that occur over long periods of time. All market transactions, both simple and complex, have many rules—either explicit or implicit, and these can be summarized in three broad categories:

1. *Property or exclusivity rights*. The parties to a transaction should agree on what is being exchanged. In a simple transaction involving simple property, this might mean a good or service without much description or qualification of the rights associated with the good or service. But for many goods and services, the precision with which associated rights are defined determines the value of the good or service. One example of the importance of associated rights is spectrum. The extent to which excludability or property rights are defined and associated with a spectrum license determines the value of the license.

Much like land or many other forms of property, the right to exclude others from the use of spectrum is important to the value of spectrum. The use of spectrum with most current technologies is congestible. Different, uncoordinated uses of spectrum in the same band and location are likely to conflict and interfere with one another. The value of access to spectrum is directly related to the exclusivity rights of that spectrum, both for current and future use. On the other hand, limitations on the uses to which property may be used diminish the value of the property, including spectrum. Under FCC rules, there are limitations on the uses of practically all spectrum licenses.

2. *Contract or transaction rights*. When a good or service is bought or sold, the rights of the buyer to transfer the good or service to a third party may be restricted. To the extent there are restrictions, however, those are usually agreed upon at the time of the transaction. For FCC licensees, except for those limited leasing arrangements described in today's items, these transactions must be approved by the Commission.

3. *Enforcement and liability rules*. In most sophisticated contracts, the means to enforce the contract and the liability rules for failure to perform under the contract are explicitly stated. For FCC license transfers, enforcement and liability rules between private parties are difficult to write and to implement because the FCC is an intermediary in all transactions.

Uncertainty and markets

Demand and supply conditions in a market determine prices, and perturbations in demand and supply conditions lead to corresponding changes in prices. Even market participants with complete information on their current and future excludability rights, contract rights, enforcement rights, liability rules, and the other bundles of rights associated with goods or services in a market understand that prices are not constant forever. Buyers and sellers make transactions with expectations that prices will change, although perhaps not with shared expectations of price movements. At least in competitive markets, neither buyers nor sellers believe that any market participant has the power

individually to influence market conditions. Future market volatility as the result of changing demand and supply conditions is assumed to be an unpredictable exogenous event. This volatility in a competitive market where buyers and sellers have complete information on their current and future bundle of rights reflects the common usage of "market uncertainty."

For this common usage of "market uncertainty," firms will be more or less inclined to participate in a market depending on the firm's degree of risk aversion specifically to market uncertainty. Some firms like more risk; others like less. Some firms can insure against risks in one market with offsetting risks in another market while others cannot. Market uncertainty affects transactions and the distribution of assets in a market, but those outcomes are rationally assumed to be competitively neutral, not favoring one class of firms over another, except perhaps those that can—or those that believe they can—better insure against market risks than others. In any event, government agencies can do nothing to remove this form of market uncertainty.

There is a different form of uncertainty in markets that is independent of the market uncertainty of changing demand and supply conditions. This uncertainty is regulatory uncertainty, or incomplete information about future regulatory outcomes. There are many possible categories of regulatory uncertainty, but the three categories for transactional rules – property, contract, and liability – are convenient. Where market participants are unsure about current and future property rules, contract rules, and liability rules, not only will asset values fall but participants will be discouraged from transactions.

If the future outcomes of property rules, contract rules, and liability rules are believed to be random events, uninfluenced by any market participants, it is conceivable that regulatory uncertainty can be consistent with a competitive market. In practice, however, regulatory rules are the product of regulators who participate in spectrum markets often as sellers of spectrum, and always as intermediaries for all license transfers. Where sellers and intermediaries have the power to change regulatory rules, the competitive paradigm for regulatory uncertainty vanishes. Moreover, many other market participants actively lobby regulators, obviously in the belief that regulators can be persuaded one way or another. Again, where regulatory rules are influenced by market participants, regulatory uncertainty is inconsistent with the competitive paradigm.

As with market uncertainty, regulatory uncertainty affects the distribution of assets in a market. Many firms may simply avoid markets with substantial regulatory uncertainty. Unlike market uncertainty, it is difficult to insure against regulatory risk in one market with offsetting risk in another market. While some firms may believe they have the power to influence regulators, and therefore they may broaden their portfolio of assets subject to regulatory risks, other firms may view a portfolio of such assets as non-diversifiable risk.

FCC actions increase regulatory risk

The FCC has taken many actions that increase regulatory risk particularly by changing the property, contract, and liability rules that apply to licensees. These include consideration of and adoption of rules that limit the rights of licensees to exclude others from using or interfering with licensed spectrum. Examples include consideration of sharing of spectrum for DBS licensees, changing interference protection for FM radio broadcasters, absence of protection for WCS licensees, and forced relocation for certain licensees.

Although there are perhaps more examples of the FCC relaxing use restrictions, there are some examples where the Commission has considered and adopted more restrictive limitations on spectrum use. Examples include new public interest requirements on broadcasters.

Commission practice regarding license transfer transactions are also ever changing. (Formal rules rarely change because there are few formal written rules on license transfers.) Outside parties simply do not know how license

transfers, whether simple or complex, will be treated at the agency.

Finally, liability rules for interference change. Most licensees are assigned a license that is defined by geographic location, a spectral band, power limits, and other restrictions. While licenses sometimes delineate explicit protection from a small number of identifiable sources of interference, the FCC rarely makes explicit the interference protections to be afforded licensees from all other potential sources of interference. When legal but creeping interference increases in a band, liability rules implicitly are relaxed. When interference standards for broadcasters change or underlying noise levels for ultrawideband technology are modified, so too do associated liability rules and their enforcement.

Erosion of these property, contract, and liability rules ultimately increase regulatory risk, diminish the value of spectrum licenses, and discourage participation in spectrum markets. These adverse regulatory effects develop independent of the steps we take today to provide greater clarity for leasing of spectrum rights by licensees.

Frustration of parties with the FCC

Every business day, the FCC hears entreaties from many private parties concerning spectrum. Some want to acquire bundles of rights to spectrum. Some want to sell various rights associated with spectrum. Others want to facilitate (or to interfere with) the transfer of a spectrum license from one party to another. In the ordinary course of business for other commodities, buyers and sellers meet in markets, markets that may develop anywhere in America. For spectrum, all markets pass through the FCC in Washington.

Market transactions typically occur when all parties to the transaction are at least as well off as a result of the transaction. Buyers and sellers come to the FCC not because we make transactions less complex or more certain; they come here because, by law, they must. Buyers and sellers have some divergent interests, but, after their experiences at the FCC, all parties repeat common themes: (1) impatience with our process in which delays are the norm; (2) puzzlement at our complex rules and the unknown range of possible outcomes; (3) fear of the unknown likelihood of each unknown result; and (4) frustration at the absence of effective remedies for outcomes they perceive as unfavorable.

While the Commission today calls for a more active secondary spectrum market, it largely misses an opportunity to define the property, contract, and liability rights associated with a spectrum license. Absent a clear definition of the rights of its licensees, secondary markets cannot reach their full potential. Regulatory uncertainty is rampant at the FCC as evident by the types of questions regulated entities pose: What are the range of possible rights associated with a spectrum license? What is the likelihood associated with each outcome? Will the Commission change those rights unilaterally? What protections do licensees have from interference? What certainty do licensees have that the Commission will not seek to relocate them or ask them to share with other potentially interfering users? What remedies do licensees have for bad outcomes? How long will FCC proceedings last? The answer to each question seems to vary by proceeding.

Even more troubling is the Commission's reluctance to answer these questions at all. For example, there is reluctance to explain why we contemplate sharing arrangements in some bands of spectrum and not in others. Similarly, we refrain from defining interference protections because we want the "discretion" to alter those rules later on. Yet to the extent the Commission wants to continue to change, eliminate, or overrule its decisions about the scope of licensees' rights, the Commission must accept as a consequence of increased regulatory uncertainty that secondary markets will not flourish. Few want to buy something that cannot be defined. Licensees can only sell what they have – yet the FCC is reluctant to define exactly what

"spectrum usage rights" these licensees have.

A Pig in a PokePig in a Poke

Much wisdom rests in an old country saying: "Don't buy a pig in a poke." Narrowly, the expression admonishes a potential buyer to have responsibility for diligence before purchasing a good or service. More broadly, the expression means that a person should not blindly enter into situations without having some knowledge of the possible outcomes, the likelihood of those outcomes, and any remedies that might be available for bad outcomes. Where the range of possible outcomes is unknown, the likelihood associated with any outcome is unknowable, and remedies for bad outcomes are unavailable, individuals should be wary.

One can look around America, in urban canyons and in country fairs, and still not find a market for a "pig in a poke." It is not for the difficulty of supply; while difficult, putting a pig in a bag is not impossible. There is no market because no one wants to buy one, and it is consumer demand—not the ease of supply—that creates a market.

Few markets have products where the range of possible outcomes is unknown, the likelihood associated with any outcome is unknowable, and remedies for bad outcomes are unavailable. If there is such a pig-in-the-poke market, it is generally the market—and more particularly the secondary market--for spectrum rights and all of the regulatory
uncertainty associated with it.

The Commission's consensus goal of a vigorous secondary spectrum market will only be achieved if we are prepared to answer the difficult questions associated with clearly defining exactly what rights a spectrum license creates. The process will be difficult, but the resulting benefits make it our necessary course. Ultimately only through free market evolution will spectrum-based services ever keep pace with consumer demand and technological change. Thus defining spectrum usage rights is a challenge that we have no choice but to accept.

STATEMENT OF COMMISSIONER GLORIA TRISTANI
DISSENTING IN PART

Re: Principles for Promoting the Efficient Use of Spectrum by Encouraging the Development of Secondary Markets; Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets (adopted November 9, 2000)

I support our action here to examine whether we can facilitate more efficient use of commercial and private wireless licensed spectrum by encouraging a secondary market in spectrum usage. I write separately, however, to dissent on the scope of our discussion in the *Policy Statement* and to highlight my keen interest in encouraging comments on certain issues raised in the Notice of Proposed Rulemaking (NPRM).

As an initial matter, the *Policy Statement* alludes to future consideration of secondary markets in spectrum dedicated to broadcast licenses, and I believe the item should have focused exclusively on spectrum used for commercial and private wireless services. Our action here stems in large part from last May's *Secondary Markets Public Forum*, which did not include any panelists from the broadcast industry or the public interest community and focused on commercial and private wireless spectrum. Any discussion of spectrum licensed for broadcast use must include the principles of localism and diversity. While the *Policy Statement* acknowledges public interest "considerations" in the broadcast context, the values of localism and diversity are at the core of broadcasters' public interest obligations and should not be subordinate to spectrum efficiency. These issues were not raised at the *Public Forum*, and the *Policy Statement* merely asserts that the Commission will accord such values "adequate weight in pursuing a secondary markets policy." I believe that we must engage with the broadcast industry and the public interest community before we hint at embarking on a secondary market campaign in the broadcast arena, and we must reflect on the importance of these values in any debate. I cannot support such discussion when we have not.

Nonetheless, I support the essence of these items as they explore how this agency can take steps to foster increased use of spectrum licensed for commercial and private wireless services, consistent with the Communications Act and sound public policy. It goes without saying that spectrum is an increasingly valuable public resource, and that spectrum management is a core function of this agency. In exercising this responsibility, exploring ways to encourage more intense use of this limited public resource serves the public interest. Secondary market transactions may be one opportunity to do just that.

A vision of secondary market transactions, however, raises several legal and policy issues. With regard to the NPRM, I intend to look closely at the comments regarding our obligation to review radio spectrum license transfers under section 310(d) of the Act. We are aware that some leasing arrangements are scuttled by regulatory uncertainty and others by the transactions cost of license transfer proceedings. Leasing arrangements without Commission approval, we are told, would tap the secondary market. To that end, what is the nature of our statutory obligation to review radio license transfers of control? How should we define control under section 310(d) for purposes of commercial and private wireless licenses? Are there considerations beyond ultimate responsibility for compliance with our rules that we must consider in the context of spectrum use and control of a license? I encourage interested parties to examine these issues thoroughly. We cannot ignore the obligations of the Act in the name of secondary markets.

The NPRM also seeks comment on the extent to which existing service rules applicable to licensees should extend to spectrum lessees. I believe the wisest course in this uncharted territory is to move deliberately,

lest we find ourselves advancing secondary markets at the expense of the underlying purposes of our rules. More to the point, I am concerned that relaxation of our service rules, under the guise of furthering secondary markets, could invite opportunities to circumvent enforcement of our licensing responsibilities and public interest requirements. I am inclined to support a starting point where the lessee "stands in the shoes" of the licensee, agreeing to all interference and service rules that attach to the licensee. Certainly, there are circumstances that warrant relief from the service rules, and I encourage commenters to explore where we should grant such relief.

Ultimately, my goal is to find a balance that will foster secondary markets without undermining our obligations under the Communications Act or our policies to promote the public interest. I hope that this *Policy Statement* and the NPRM offer tangible steps, and I look forward to reviewing the record.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matters of	)	
	)	
Appropriate Framework for Broadband Access to the Internet over Wireline Facilities	)	CC Docket No. 02-33
	)	
Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services	)	CC Docket No. 01-337
	)	
Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services; 1998 Biennial Regulatory Review – Review of Computer III and ONA Safeguards and Requirements	)	CC Docket Nos. 95-20, 98-10
	)	
Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities	)	GN Docket No. 00-185
	)	
Internet Over Cable Declaratory Ruling	)	
	)	
Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities	)	CS Docket No. 02-52

POLICY STATEMENT

Adopted: August 5, 2005 **Released: September 23, 2005**

By the Commission:

I. INTRODUCTION

1. The availability of the Internet has had a profound impact on American life. This network of networks has fundamentally changed the way we communicate.[1] It has increased the speed of

[1] The Internet is "the international computer network of both Federal and non-Federal interoperable packet switched data networks." 47 U.S.C. § 230(f)(1). The Internet is also described as "the combination of computer facilities and electromagnetic transmission media, and related equipment and software, comprising the interconnected worldwide network of computer networks that employ the Transmission Control Protocol/Internet Protocol or any successor protocol to transmit information." 47 U.S.C. § 231(e)(3). The Supreme Court has described the Internet as a "network of interconnected computers." *National Cable & Telecommunications Ass'n v. Brand X Internet Services*, 125 S. Ct. 2688, slip op. at 2 (2005) (*NCTA v. Brand X*); *see also Reno v. ACLU*, 521 U.S. 844, 849-50 (1997). No single entity controls the Internet; rather it is a "worldwide mesh or matrix of hundreds of thousands of networks, (continued . . .)

communication, the range of communicating devices and the variety of platforms over which we can send and receive information.[2] As Congress has noted, "[t]he rapidly developing array of Internet . . . services available to individual Americans represent an extraordinary advance in the availability of educational and informational resources to our citizens."[3] The Internet also represents "a forum for a true diversity of political discourse, unique opportunities for cultural development, and myriad avenues for intellectual activity."[4] In addition, the Internet plays an important role in the economy, as an engine for productivity growth and cost savings.[5]

2. In section 230(b) of the Communications Act of 1934, as amended (Communications Act or Act), Congress describes its national Internet policy. Specifically, Congress states that it is the policy of the United States "to preserve the vibrant and competitive free market that presently exists for the Internet"[6] and "to promote the continued development of the Internet."[7] In section 706(a) of the Act, Congress charges the Commission with "encourag[ing] the deployment on a reasonable and timely basis of advanced telecommunications capability" – broadband – "to all Americans."[8]

3. In this Policy Statement, the Commission offers guidance and insight into its approach to the Internet and broadband that is consistent with these Congressional directives.

II. DISCUSSION

4. The Communications Act charges the Commission with "regulating interstate and foreign commerce in communication by wire and radio."[9] The Communications Act regulates telecommunications carriers, as common carriers, under Title II.[10] Information service providers, "by contrast, are not subject to mandatory common-carrier regulation under Title II."[11] The Commission, however, "has jurisdiction to impose additional regulatory obligations under its Title I ancillary

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owned and operated by hundreds of thousands of people." John S. Quarterman & Peter H. Salus, *How the Internet Works*, http://www.mids.org/works.html (visited Dec. 17, 2003) (quoted at *IP-Enabled Services*, WC Docket No. 04-36, Notice of Proposed Rulemaking, 19 FCC Rcd 4863, 4869 n.23 (2004) (*IP-Enabled Services NPRM*)).

[2] *IP-Enabled Services NPRM*, 19 FCC Rcd at 4869-70, para. 8.

[3] 47 U.S.C. § 230(a)(1).

[4] 47 U.S.C. § 230(a)(3).

[5] *See, e.g.*, Hal Varian *et al.*, *The Net Impact Study: The Projected Economic Benefits of the Internet in the United States, United Kingdom and Germany*, available at: http://www.netimpactstudy.com/NetImpact_Study_Report.pdf (January 2002) (visited July 31, 2005).

[6] 47 U.S.C. § 230(b)(2).

[7] 47 U.S.C. § 230(b)(1).

[8] 47 U.S.C. § 157 nt. (incorporating section 706 of the Telecommunications Act of 1996, Pub. Law No. 104-104, 110 Stat. 56 (1996)).

[9] 47 U.S.C. § 151.

[10] *See NCTA v. Brand X*, slip op. at 1.

[11] *Id.* at 3.

jurisdiction to regulate interstate and foreign communications."[12] As a result, the Commission has jurisdiction necessary to ensure that providers of telecommunications for Internet access or Internet Protocol-enabled (IP-enabled) services are operated in a neutral manner. Moreover, to ensure that broadband networks are widely deployed, open, affordable, and accessible to all consumers, the Commission adopts the following principles:

- *To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet*, consumers are entitled to access the lawful Internet content of their choice.
- *To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet*, consumers are entitled to run applications and use services of their choice, subject to the needs of law enforcement.
- *To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet,* consumers are entitled to connect their choice of legal devices that do not harm the network.[13]
- *To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet*, consumers are entitled to competition among network providers, application and service providers, and content providers.[14]

III. CONCLUSION

5. The Commission has a duty to preserve and promote the vibrant and open character of the Internet as the telecommunications marketplace enters the broadband age. To foster creation, adoption and use of Internet broadband content, applications, services and attachments, and to ensure consumers benefit from the innovation that comes from competition, the Commission will incorporate the above principles into its ongoing policymaking activities.[15]

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

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[12] *Id.* at 3-4. We also note that the Enforcement Bureau recently entered into a consent decree to resolve an investigation with respect to the blocking of ports used for voice over Internet Protocol (VoIP). *See Madison River LLC and Affiliated Companies*, File No. EB-05-IH-0110, Order, 20 FCC Rcd 4295 (Enf. Bur. 2005).

[13] *See Hush-A-Phone Corp. v. United States,* 238 F.2d 266, 269 (D.C. Cir. 1956); *Use of the Carterfone Device in Message Toll Telephone Service*, 13 FCC 2d 420 (1968).

[14] *See* Preamble, Telecommunications Act of 1996, P.L. 104-104, 100 Stat. 56 (1996) (enacting 1996 Act "to promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies").

[15] Accordingly, we are not adopting rules in this policy statement. The principles we adopt are subject to reasonable network management.

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

PETITION OF NEWTON MINOW AND HENRY GELLER FOR EXPEDITED RULEMAKING TO REQUIRE PUBLIC SERVICE TIME FOR POLITICAL BROADCASTS OF SIGNIFICANT LOCAL CANDIDATES OTHERWISE NOT COVERED

Respectfully submitted,

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1. Introduction and Summary. This petition is filed by Newton Minow, former FCC Chairman, and Henry Geller, former FCC General Counsel and NTIA head. It requests that the Commission commence an expedited rulemaking proceeding to adopt a policy requiring broadcast licensees, during a short specified period (30 days) before a general election, to devote a reasonable amount of public service time (20 minutes) during the broadcast day to appearances of candidates in significant local races which otherwise would not receive coverage informing the electorate. The allocation scheme for broadcasting strongly militates for such a requirement, especially in view of recent research showing failed broadcast efforts to inform the public on such local campaign issues. The details of the proposal, the grounds therefor, and its validity, are discussed below.

2. The broadcast licensee, as a public trustee, has a special obligation to present political broadcasts, including serving as an effective local outlet in this respect. Broadcasters are public trustees, "... given the privilege of using scarce radio frequencies as proxies for the entire community..." (Red Lion Broadcasting Co. v. FCC, 395 U.S. 367 (1969).[1] Two laws, the 1992 Cable Act[2] and the 1990 Children's Television Act,[3] establish Congress' continuing recognition and stress of this concept: "...America's system of broadcasting... is a unique system that emphasizes responsiveness to the local community and places the broadcaster in the role of public trustee for the frequencies it is permitted to use."[4] It is thus a system of local outlets, with a very large allocation of spectrum space to broadcasting so as to facilitate this

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[1] See also Turner Broadcasting Sys., Inc. v. FCC, 114 S.Ct. 2445, 2456-57 (1994); CBS, Inc. v. FCC, 453 U.S. 367, 395. Red Lion established the constitutionality of the fairness doctrine and that the FCC does not exceed its authority "in interesting itself in ... the kinds of programs broadcast by licensees (id. at 395).

[2] 1992 Cable Television Consumer Protection and Competition Act, Pub. L. 102-385. 106 Stat. 1460.

[3] Children's Television Act of 1990, Pub. L. 101-437, 101st Cong., lst Sess., 47 US.C. Secs. 303a-b

[4] S. Rep. No. 92, 102d Cong., 1st Sess. 42 (1991).

localism quality. The broadcasters themselves have vigorously opposed spectrum usage fees specifically on the ground that they have a public service obligation and therefore cannot act like the usual business simply to maximize profits.[5]

The licensee necessarily has great discretion in fulfilling that public trustee role. But the Act makes clear that there are two public service areas upon which the broadcaster must focus: educational and informational programs for children (see n.3) and political broadcasts. As the Supreme Court stated in Farmers Educational and Cooperative Union v. WDAY, 360 U.S. 525, 534-5 (1959), that is the essential message of Section 315 of the Act:

> ...the thrust of section 315 is to facilitate political debate over radio and television. Recognizing this, the Communications Commission considers the carrying of political broadcasts a public service criterion to be considered ... in license renewal proceedings...[6]

The legislative history of Section 312(a)(7) affirms this licensee duty to present political broadcasts. In 1971, in connection with campaign reform legislation, Congress added the "lowest unit rate" requirement of Section 315(b), and, fearful that broadcasts would then avoid political broadcasts, especially campaign commercials, it also inserted the requirement of Section 312(a)(7) that broadcasters afford reasonable access for candidates for

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[5] See, e.g., Broadcasting & Cable Magazine, June 13, 1994, 42-43; April 19, 1993, 64.

[6] The Commission and its predecessor agency, the Federal Radio Commission (FRC), from the earliest days, have taken into account whether a licensee has met its responsibilities in the field of political broadcasts. See Memorandum of the FCC Concerning Interpretation of Second Sentence of Section 315(a), FCC 63-412, at 10. Thus, in the 1919 Great Lakes case, the FRC stated: "In a sense, a broadcasting station may be regarded as a sort of mouthpiece on the air for the community over which ...its political campaigns ... may be broadcast" (FRC 3rd Annual Report, at 32-36). See also Report and Statement of Policy Re: Commision En Banc Programming Inquiry, 20 P & F., R.R. 180 (1960).

Federal office. The Senate Report (No. 92-96, 92d Cong., 1st Sess., 28 (1971) states:

> The presentation of legally qualified candidates for public office is an essential part of any broadcast licensee's obligation to serve the public interest, and the FCC should continue to consider the extent to which each licensee has satisfied his obligation in this regard in connection with the renewal of his broadcast license. Certainly no diminution in the extent of such programming should result from enactment of this legislation. (Emphasis added).[7]

There is a further background point before turning to the thrust of our petition. While the term "political broadcasts" largely connotes presentation by the candidate (most often in short commercials), there is another important facet -- the licensee's coverage of a campaign as part of broadcast journalism. Congress has soundly sought to promote this important contribution to an informed electorate by exempting such journalistic efforts as bona fide newscasts, news interview programs, documentaries, and on the spot coverage of news events, from the equal time requirement of Section 315(a). See 47 U.S.C. 315(a)(1)-(4).

As shown above, broadcasters cannot restrict their efforts to inform the electorate to their own journalistic activities. There must also be the uncensored use of the station's facilities by the candidates themselves -- in

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[7] See also the Senate Report, supra, at 34: "The duty of broadcast licensees generally to permit the use of their facilities by legally qualified candidates for these public offices is inherent in the requirement that licensees serve the needs and interest of the community of licensees." As a "conforming amendment" needed in light of the new Section 312(a)(7), the legislation added the underlined phrase to the second sentence of Section 315(a): "No obligation is imposed under this subsection upon any licensee to allow the use of its station by any such candidate." See S. Conf. Rep. No. 92-580, 92d Cong., 1st Sess. 22. The purpose of this sentence is to make clear the broadcaster is not a common carrier (see Section 3(h)) and that it can exercise discretion in selecting the races to be covered (but now with provision specified in 312(a)(7) for Federal candidates). As shown in the discussion within, we agree with this point concerning the broadcaster's wide discretion.

their own language or presentations rather than through the editorial filter or selectivity of the broadcast journalist. In short, there must be, to some reasonable extent, the candidate's use of broadcasting as an electronic speaking platform or soapbox.

3. Broadcasters should devote a reasonable amount of public service programming time for candidates to use in local races warranting but not receiving such coverage. Of crucial importance to this petition, the broadcaster must act as a reasonably effective outlet for informing the electorate in local races that are important to the community or communities in their main coverage area but otherwise would not receive any reasonable coverage. Broadcasting has been given so much spectrum precisely to contribute to an informed local electorate. If the objective were to inform the electorate only on national or state-wide races, an entirely different allocation plan would suffice -- fewer but more powerful stations covering the state. Under the plan adopted, the broadcaster is a local public trustee to render public service to its community or communities.

This means that the broadcaster cannot sit back and simply rake in the millions upon millions spent by the major party presidential, senatorial or gubernatorial candidates for commercials. This huge and growing expenditure does inform the public about candidates in which they have a great interest, but it is not the public service for which the free use of so much spectrum is based. Some broadcasters do render public service in their journalistic efforts as to these national or state-wide races, a matter

discussed at length within. The races that uniquely and strong compel a special public service effort are those that are of obvious importance to the community (in the judgment of the broadcaster) but have no expenditure for commercials and little if any journalistic coverage. They can be for the House in many cases, city or county council or commissioner, mayor, school board, or many other local offices that can be of great significance to the community in the circumstances. In exchange for free use of the valuable and generously allocated spectrum, a public trustee, putting profits second and public service first, can and should be required to make a reasonable contribution to an informed local electorate in this important respect.

However, broadcasters are not making that contribution, and as a result, many important local races receive no broadcast coverage. This is shown by the research efforts of the Lear Center Local News Archive, conducted by USC Annenberg School and the University of Wisconsin NewsLab. The research analyzed the highest-rated half-hour news programs aired in early and late evening every night of the week in the period September 18 through November 4, 2002 on 122 randomly selected local television stations in the top 50 media markets. The release issued on the report[8] (herein called the Lear report) contained the following findings:

Majority of local news contained no election coverage

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[8] A full copy of the report is at www.localnewsarchive.org/pdf/LocalTV2002.pdf.

> Over the seven-week period analyzed, 56 percent of the top-rated half-hour news broadcast did not contain a single campaign story. In the 44 percent that did, the average election story was 89 seconds long. When campaign stories aired, only 28 percent contained candidates saying anything at all. In those stories showing candidate speaking, the average sound bite was 12 seconds long...
>
> **Few stories focus on campaign issues or local races**
>
> Overall, 48 percent of the stories in the sample were about either campaign strategy or the campaign horserace...Only 27 percent of the stories that aired focused on campaign issues or analyzed political advertising.
>
> Nationwide, 38 percent of all campaign stories focused on a gubernatorial race. In contrast, 20 percent of the stories focused on U.S. Senate races, and only seven percent centered on the U.S. House.
>
> Races for the state legislature only accounted for three percent of the stories, and potentially high-profile statewide races, such as secretary of state or attorney general, were the focus of just two percent of the stories. Four percent of all the stories focused on regional, county or city offices, and six percent were stories about ballot initiatives or referenda. The remaining stories focused on voting issues (11 percent), multiple races (six percent), the courts (one percent), and other aspects of the election process (one percent).
>
> Even when counting stories about U.S. House races as a type of local election, only 14 percent of all stories in the same focused on local races...

These figures clearly indicate that broadcast journalism is not contributing adequately to informing the public on local races. In the case of Presidential, Senatorial and gubernatorial, campaign ads can and do make such a contribution. But in all other cases of local races (e.g., House, state legislature, state offices, county or city offices, etc.), as the Commission well

knows, candidates generally do not have the financial base to buy time for ads.[9] The bottom line is that there can be and almost always are important local races that are not covered by broadcasters, either through journalism or campaign ads. Broadcasters, public trustees under an obligation to serve their local communities, are marked failures in this vital aspect.

4. The proposal to remedy the above public service deficiency is reasonable, affords great discretion to the licensee, and is not burdensome or disruptive. The most effective way to remedy the above deficiency is through affording public service time to the local candidates to present their views in the local races chosen by the broadcaster because of their importance to the community. To seek a remedy through affecting broadcast journalistic efforts would interfere with the licensee's judgment of who and what should be presented in newscasts, news interviews, or news documentaries, and in any event would not be as effective as the public service programming time. We urge that as in the case of the other core responsibility, children's educational programming, there should be quantitative guidelines -- a "safe harbor" -- as to the amount of public service programming time for the candidates involved and the general times for broadcast. The Commission clearly has authority to so proceed. See McConnell v. Federal Election Commission, 124 S.Ct. 619, 714-716 ("...the FCC's regulatory authority is broad. Red Lion, supra, at 380 ("broad" mandate to assure broadcasters

[9] See Kenneth Goldstein and Joel Rivlin, Political Advertising in the 2002 Election, Chapter two, available online http://www.polisci.wisc.edu/tvadvertising/Political%20Advising%20om %29th&202002%Elections.htm, showing the great amounts spent for gubernatorial and senatorial races and substantial but smaller amounts for

operate in the public interest) ..."); FCC must determine "... whether a broadcasting station is fulfilling its licensing obligation to broadcast material important to the community and the public"; FCC must determine "...whether broadcasters are too heavily favoring entertainment and discriminating against broadcasts devoted to public affairs...").[10]

We urge this approach of a guideline or "safe harbor" for two reasons. First, as shown by past experience (e.g., the initial implementation of the Children's Television Act), without such quantitative guidelines, the policy is simply too "mushy" and runs the clear danger of being ineffective. Second, in this sensitive First Amendment area, we urge that it is wrong not to let the licensee and the public know what the ground rules are. The renewal applicant is going to assessed on this score; to hold that its renewal must be denied or truncated because of inadequate performance in this respect, without any prior proper guidance, undermines the First Amendment.[11]

The approach should be one that constitutes a significant contribution -- yet does not unfairly burden the broadcaster, is not unduly disruptive of its schedule, and leaves the licensee with the greatest possible discretion as to the

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the House seats (the 40 or so hotly contested House races). Cf. James T. Hamilton, All the News That is Fit to Sell, Princeton U. Press 2004, Chap. 5.

[10] See Sections 303(b), 303(r), 4(i), 307, 309. 315(a) and 312(a)(7) (the latter section is discussed within). If, as Red Lion holds (395 U.S. at 393), the Commission can properly require licensees "to give adequate and fair attention to public issues...", it follows, under U.S. v. Storer Bctg. Co., 351 U.S. 192 (1956) and FCC v. ABC, 347 U.S. 284, 289 n.7 (1954), that the Commission can prescribe by rule or policy what constitutes "adequate" attention to this category of public issues (free programming presentations by candidates in local races deemed important to the community but about which the public would otherwise not be informed by broadcast efforts). While the Commission would proceed by the guideline or "safe harbor", the licensee could always make a showing why it is operating in accord with the public interest in the particular circumstances.

[11] See Greater Boston Television Corp. v. FCC. 444 F.2d 841, 654 (D.C. Cir. 1970). cert. denied, 403 U.S.923 (1971) ("...a question would arise whether administrative discretion to deny renewal expectancies, which must arise under any standard, must be reasonably confined by ground rules and standards...").

actual programming decision, as is required by the statutory scheme in the broadcast field. See CBS v. DNC, 412 U.S. 94 (1973).

Accordingly, we advance the following proposal: that the period in which these broadcasts must be made available be confined to 30 days before the general election; that for television, the amount of time to be devoted be 20 minutes each day, 6 am to midnight, at least five minutes of which must be in prime time (with the other three five minute segments occurring in other day parts); and that in radio with its generally very short talk formats, the figure would be six minutes, in at least one minute segments, including one in "drive time."

We urge that the daily amount is not burdensome, is confined to a narrow window during the year, and can be accommodated without disrupting the program schedule. In television, for example, the five minute segments could be inserted at the end of some half-hour program, with no undue disruption of the schedule. A number of programs were produced in past elections tailored to such insertion, and could be again so designed, if this approach were adopted.

While we propose this approach in order not to be burdensome or disruptive, we point out that it does accomplish a great deal: As public service, it would be free and thus would be available to candidates in important races who are financially unable to purchase time; it would afford an opportunity for the candidates to present a much more in-depth discussion of the important issues than is possible in the short spot announcement; it could become a focal point

in the campaign -- a mini-debate between the candidates, sharpening their differences and informing and interesting the public; and finally, it is much more likely to be used, in contrast to the experience of offering programming time or debates to candidates who purchase campaign ads and wish to rely upon such ads, rather than accept an offer of time for a programming appearance or debate.[12]

We also point out that the proposal is simply a "safe harbor" floor - not a ceiling. Licensees would be free to adopt political programming plans that differ by going beyond this "floor." The variations are numerous and would of course be a matter left to the licensee's discretion.

The licensee would also have very great discretion as to the races to be afforded such time. The broadcaster would be required to focus on races that are significant and important to their communities -- yet have not been covered extensively or significantly in campaign ads or other political programming. It follows that under the statutory scheme, the licensee must have great discretion, very largely unreviewable by the Commission, as to the races to be selected for this public service allotment of programming time. Further, while we would hope that the licensees in any given area would consult with one another, so that important or significant races are not omitted because of duplicative efforts, this again is a matter solely for the licensees' judgment.

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[12] Thus, experience shows that offers like that of Belo Corp. (Request of Belo Corp., Staff Ruling, DA 96-1653, Oct. 1, 1996) were very often not taken up by candidates committed to campaign ads.

There remains the question of the equal opportunities requirement of Section 315. Where there are no fringe party candidates (e.g., Socialist Labor; Vegetarian; Libertarian; etc.), this poses no problem. The licensee could present the major party candidates (and any serious third party candidate) in rotating order in these 5 minute segments (with each getting an opportunity in prime time). Where there are fringe party candidates as in the Pesidential race,[13] the licensee could make use of the King ruling, exempting under 315(a)(4) back-to-back presentations from the equal opportunities requirement. In television, it could present, say, the two major party candidates back-to-back in 2 and 1/2 minute segments[14] or in segments on alternating days.[15]

This proposal would, we urge, markedly promote the "the larger and more effective use" of broadcasting in the public interest (Section 303(g)). It could be accomplished, after expedited rule making proceedings, either through adoption of a rule or a policy, embodying the above described processing guidelines.[16]

The proposal would be applicable to the present broadcasting operation. We recognize that broadcasting is in transition to its digital future, but the exact nature of that future remains uncertain and will depend on the decisions made

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[13] See King Broadcasting Co. v. FCC, 860 F.2d 465, 467 (D.C. Cir. 1988).

[14] This would have the advantage of being even more of a confrontation on the issues, with the same audience hearing both sides; the disadvantage would be the reduced time for each of the candidates to explain their positions. Again, use of this arrangement, either to create more interest or because of the present of fringe party candidates, would be matter for the licensee's judgment.

[15] See Request of Fox Broadcasting Co., et al., Declaratory Ruling, FCC 96-155, Aug. 19, 1996.

[16] For legal reasons, we do not suggest that the proposal include cable television. See Section 624(f)(1), proscribing any new Federal or State agency content regulation not in existence at the time of the 1984 Cable Act. Compare Sec. 315(a)-(c) with Sec. 312(a)(7).

by broadcasters as to the use of their 19.4 Mbs, and regulatory determinations, such as to the pending multicasting"must carry" controversy. New public interest obligations may well be in order in that digital milieu and will thus be threshed out in a different proceeding.[17] At this time, the most salient fact is that the general election of 2004 is approaching, and that the public interest in an informed electorate calls for speedy promulgation of the proposal here advanced. It is that factor which also rules out relegating this proposal to the Localism in Broadcasting Initiative (FCC Release , Aug. 20, 2003) and compels the requested expedited treatment.

5. No Congressional enactment precludes adoption of this policy.

Finally, we deal here with the argument that this is an area which has been totally occupied by a comprehensive Congressional scheme, leaving no room for agency action along the above lines. This, we submit, is not the case. The starting point for analysis of this is "the language employed by Congress" (CBS, Inc. v. FCC, supra, 453 U.S. at 377). There is no statutory language precluding the proposed FCC action as to public service programming time for candidates in important local races, about which the public would otherwise be left uninformed by broadcasters. As shown by Section 624(f)((1) (see n.16), Congress knows how to make clear its intention to confine the agency role when it wants to do so.

Here on the contrary, Congress has stressed in the statute and legislative history its full agreement that affording time for political broadcasts is a

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[17] See, e.g., In the Matter of Public Interest Obligations of TV Broadcast Licensees, MM Docket No. 99-360 (1999).

indeed, if promulgated, would not in any way obviate the need for such reform in the view of its proponents.

Finally, there is the argument based on the language of 312(a)(7), that revocation is limited to "willful or repeated failure to allow reasonable access to or purchase of reasonable amounts of time ... by a candidate for Federal elective office ..."; state or local candidates thus have no specific right to access to broadcast facilities; and therefore, it is asserted, broadcasters have no public interest obligation to inform their communities about non-federal local candidacies.

But this last statement is a blatant misreading of the Congressional statute and purpose. Congress had adopted "lowest unit rate" for all election appearances by candidates, and was concerned that broadcasters would then avoid selling time for the Presidency or Congressional races (Senate and House) -- hence 312(a)(7). It did not extend that right of access to all candidacies, because that would make the broadcaster a common carrier as to political broadcast appearances, and would thus contradict the contrary provision in 315(a) (see n.7). The Federal races are all of great importance. In addition to the House races,[18] non-Federal local races can certainly also be of considerable importance to the community (e.g., mayor; governor; county commissioner), but there are thousands of such races and many could be of little or no interest. This explains and justifies the different treatment of Federal and other local races.

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[18] The great majority of House races would fall within this proposal, because candidates for House usually do not buy the expensive time for TV campaign ads. See n.9.

However, Congress clearly was not saying that broadcasters could ignore their public interest obligations as to all local non-Federal elections. Indeed, the legislative history is crystal clear that Congress wanted full compliance with the existing public interest obligation, and "certainly, no diminution in the extent of such programming should result from enactment of this obligation" (emphasis added; see p.4).

Just suppose that a broadcaster announced a policy that it would not afford any time for access or ads by any local candidate -- that it would afford access only to Federal candidacies. Such a policy would be arbitrary and in clear conflict with the public interest obligation to inform the electorate in its community. Unlike in the Federal area, the broadcaster has great discretion as to local races and need not accede to any individual request from a non-Federal candidate.[19] But a broadcaster cannot assert that whatever the importance to the community, it will never contribute to informing the public in any local non-Federal race.[20] As stated, there is no indication in the legislative history that Congress sought such an arbitrary and ludicrous policy, considering the importance of many state and local races to democratic governance, and every indication to the contrary. See 3-4. Indeed, such a policy would violate due process and equal protection, and would be unconstitutional.

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[19] See Codification of the Commission's Political Programming Policies, FCC 91-403, pars.11-12 ("As the Court explained in CBS, Inc. v. FCC, [453 U.S. 367, 378-79, n.6 (1981)], under the 'public interest' standard, 'an individual [non-federal] can claim no right of personal access.' "

[20] Of course, the broadcaster could inform the public through its journalistic efforts, but as shown by the Lear study, that is not the case, and the remedy is not for the FCC to try to tinker with these journalistic efforts, especially the newscast. See pp.6-8. The broadcaster could also claim that in its judgment this year, there is no

The 1991 FCC decision (n.19) focussed on a specific right of individual access, and soundly found it confined to Federal candidates, but did not consider the general or overall public interest facet here discussed. We therefore strongly urge the Commission to take this opportunity to clarify that the pattern of operation shown by the Lear study is not consistent with the public interest obligation of a broadcasting system established and allocated so much spectrum specifically to serve as local outlets for their communities.

CONCLUSION

For the above reasons, we urge the Commission promptly to issue a Notice of Proposed Rulemaking, so that a proposal along the foregoing lines can be the subject of expedited comment and definitive action before the upcoming general election period.

Respectfully submitted,

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important or significant local race about which the public would be left uninformed; that would be an extraordinary claim, but the broadcaster is entitled to make such a claim and showing.

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Article

*341 PUBLIC INTEREST REGULATION IN THE DIGITAL TV ERA

Henry Geller [FNa1]

Television, including terrestrial and direct broadcast satellite ("DBS"), cable television, multichannel multipoint distribution systems ("MMDS"), and local multipoint distribution systems ("LMDS"), is moving into the digital era. Federal Communication Commission("FCC")Chairman Reed Hundt has called for clearly defined and heightened responsibilities for commercial television; [FN1] he has also indicated the desirability of symmetrical regulation of the principal electronic media subject to the FCC's jurisdiction. The White House, led by Vice President Gore, has established an advisory group, to study and make recommendations regarding the nature of the public interest obligations of digital broadcasters. [FN2] The major focus of this article is on that issue.

I. Trends and Guiding Principles

It is not my purpose here to trace the trends of television in detail. For the purposes of this article, it suffices to say that we are heading for an era of digital television, many delivery systems, continuing fractionalization of the audience, and greater competition for that audience, the advertising dollar, and popular programming. [FN3] Cable television is certainly a great success story. It serves 63% of the nation's households, [FN4] with hundreds of channels of programming. DBS has made a strong entry with its 150 or more channels of digital television. Commercial television is flourishing because it continues to be the local outlet for television advertising. On a national level, it is the only way to garner the large audience *342 sought by many advertisers. [FN5] There is no way to predict with any certainty the impact of future video delivery systems such as LMDS, the local telephone companies ("telcos"), and most importantly, the Internet, through high speed data (including video) directed to either digital TV receivers or personal computers ("PCS"). [FN6]

Against this background, the following principles should guide policy in this area:

(i) Continue and expand the policy of open entry. Such entry contributes to the diversity of programming and of sources, thereby markedly servicing the public interest and the First Amendment. [FN7]

(ii) Promote open, nondiscriminatory access for information providers and the public. This principle is closely related to the open entry policy, and indeed, with a plethora of effective distribution channels, no government intervention, such as requiring general (telco) or partial (cable) common carriage, may be needed.

(iii) Maintain and promote vigorous competition. [FN8] This principle may require a balance of conflicting considerations, namely, a need to consider economies of scale against the desirability of diversification and competition, especially at the local level. [FN9]

(iv) While the market should be given the fullest possible play, there is the need to insure against deficiencies, and thus to promote high quality public service programming that contributes to an educated and informed citizenry in a manner that (a) is effective; (b) reaches all Americans and deals with the have/have not problem; (c) is consistent with the First Amendment; and (d) reduces First Amendment strains by developing structural approaches *343 that truly facilitate the achievement of goals without behavioral regulation. Television is becoming increasingly important to the nation. It is a child's window on the world, and most people now obtain their news and information from television. Therefore, television should also provide educational, cultural, and in-depth informational programming. The government's role here, as in the case of schools and libraries, is of great importance.
(v) Avoid unnecessary regulation and to the extent possible, adopt like regulation for like services so as not to tilt the playing field.

II. The Current Regulatory Schemes

Before turning to the issue of reform for digital TV, it is appropriate to briefly describe the current regulatory policies, especially for broadcasting.

A. Broadcasting: Public Trustee Regulation

Because the number of people who want to use the spectrum exceeds the number of available frequencies or channels, the Communications Act of 1934 establishes a system of short-term broadcast licenses to be awarded to private parties who volunteer to serve the public interest--to be a fiduciary or trustee for all those who were kept off the air by the government. [FN10] The Act imposes several public service requirements: (1) that the broadcaster serve local needs and interests, with what is called "community issue-oriented programming" today; [FN11] (2) that the broadcaster contribute to an informed electorate through informational and political broadcasts; [FN12] and (3) that because children are so important to the nation and watch so much television, television broadcasters are required to serve the educational and informational needs of this audience with programming specifically designed for that purpose. [FN13]
Requirements such as the above clearly involve content regulation, and thus, their constitutionality would normally be judged under the strict scrutiny standard of First Amendment jurisprudence. That standard places on the government the heavy burden of showing that the requirements are narrowly tailored (i.e., the *344 least restrictive means) to serve a compelling interest. [FN14] However, the Supreme Court has consistently held that because of the above allocational scarcity, such governmentally imposed broadcasting requirements do not come under traditional heightened First Amendment jurisprudence, but rather the more liberal standard set out in the Red Lion and NBC cases [FN15]--if the regulation is reasonably related to the public interest, it is permissible under the First Amendment.
Finally, there is the matter of the efficacy of the public trustee scheme. It is a failure. The FCC has effectively deregulated broadcasting. [FN16] Indeed, with one exception, the Children's Television Act of 1990 ("CTA"), the FCC receives no programming information from which it might assess the public service efforts of its licensees, nor does it monitor the industry generally or through specific random inspections that evaluate public service efforts. Although the FCC requires broadcasters to maintain files indicating significant treatment of community issues, along with illustrative programs, broadcasters do not have to submit this material to the FCC. Instead, they send the FCC postcards stating that the relevant material may be found in a public file located at the station. As a result, the FCC must rely solely upon the public to bring to its attention stations that are not fulfilling their public service obligations.

This reliance is wholly misplaced, as the seventeen year experience with postcard renewal shows. Even though people may send letters complaining about the disappearance of a favorite program or some content feature, they can hardly be expected to go to a station, examine its files, analyze the data, and then file a petition to deny. Postcard renewal simply permits the FCC to avoid consideration of public service issues. That is why it is aptly termed Deregulation of Radio (or Television). [FN17]

In 1976, Commissioner Glen Robinson, echoing Nobel Prize economist Ronald Coase, described FCC regulation of broadcasting as a charade--a wrestling match full of fake grunts and groans but signifying nothing. [FN18] Today, with postcard renewal, the charade continues, but is more starkly apparent. This is not to say commercial broadcasters render no public service, but with the one exception of the CTA, such service has nothing to do with regulation. *345 The point is that the FCC public trustee regime is, and has long been, a failure. [FN19]

B. Cable Television

Cable comes under a different regulatory and constitutional regime than broadcasting. Because it has a capacity for many channels of programming, it has never been regulated as a public trustee required to provide public service content in categories like children's television or informational programming. Indeed, the Act specifically bars such content regulation. [FN20] Instead, the policy is geared toward providing access for so-called public, educational, or governmental ("PEG") channels on a non-commercial basis or for commercial leased channels. [FN21] These access channels are designed to promote the Associated Press principle, [FN22] by freeing a significant amount of cable capacity from the control of the cable operator in order to diversify the sources of information coming to the cable subscriber.

In Turner, the Court unanimously rejected the government's argument for application of the Red Lion standard to cable television. It held that Red Lion is based on the unique and distinguishing characteristic that broadcast frequencies are a scarce resource that must be allocated among many more applicants than there are available frequencies, and that cable does not have such inherent limitations. Rather, the Court found that in light of technological developments, there is no practical limitation on the number of speakers, nor is there any danger of interference between two cable speakers. [FN23]

It follows that regulation of cable speech comes under traditional First Amendment jurisprudence--if content based, the standard is strict scrutiny; [FN24] if content neutral, the standard is the *346 intermediate standard of United States v. O'Brien. [FN25] It seems clear, therefore, that extending Red Lion requirements such as the provision for educational or informational programs, would not pass constitutional muster. There is simply no "compelling interest" or "extremely important" or "extraordinary" problem. Indeed, in light of cable's many channels of programming (e.g., The Learning Channel; Discovery Channel; Nickelodeon; Arts & Entertainment Channel; CNN and the new news channels; C-SPAN; the PEG channels), there is no problem at all, and no policy reason for government intrusion. [FN26]

There is a question as to the efficacy of the access provisions. While they constitute a sound approach in my view, their implementation at both the national and local levels has been flawed. A large number of franchising authorities do not require PEG channels, or if they do, fail to assure adequate financial support. [FN27] As to commercial leased channel operation, Congress recognized in the 1992 Cable Act that this requirement of the 1984 Cable law has been a failure. It therefore added a provision requiring the FCC to determine the operator's maximum rates for commercial leased channel use, and to establish reasonable terms and conditions. [FN28] The

Commission has acted, with several parties appealing its order as inadequate to remedy the situation. [FN29] On this score also, the matter is unsettled both as to legality and efficacy.

C. DBS

The 1992 Act contains two public interest provisions concerning DBS. [FN30] Section 335(a) directs the FCC to initiate a proceeding to impose public interest requirements on DBS providers of video *347 service (at a minimum, the access provisions of section 312(a)(7) and the use provisions of section 315). Section 335(b) requires the provider to reserve 4% to 7% of capacity for noncommercial programming of an educational or informational nature, with prices not to exceed 50% of the total direct costs of making such a channel available, and with the DBS provider having no editorial control over any video material offered under the section. The FCC has not imposed any public interest requirements beyond those specified in the Act under section 335(a) and has a proceeding under way to determine how both sections 335(a) and (b) should be implemented. [FN31]

Because DBS uses a scarce spectrum, a circuit court held that Red Lion is applicable and on that basis, sustained the constitutionality of section 335. [FN32] The case points to the unique nature of the Supreme Court's broadcast jurisprudence. The provision requiring 4% to 7% for noncommercial, educational, or informational purposes is reasonably related to a public interest purpose, and thus can be said to come under Red Lion. But if the provision was tested under traditional First Amendment jurisprudence, it would raise substantial constitutional issues.

First, there is the question whether the regulation is content neutral. In the case of cable, the access provisions do appear to be content neutral (commercial leased access, and noncommercial access in the form of public and governmental (a local C-SPAN--the educational channel is more problematic but might be swept along with the others)). In the case of DBS, the emphasis is on the educational and informational, similar to the CTA (and further, DBS is not a bottleneck multichannel provider like cable). If the DBS provision is not content neutral and comes under strict scrutiny, the question arises whether a compelling or extraordinary problem is being considered. DBS, like cable, carries a plethora of educational and informational programming (albeit most with commercials), and is eager to carry noncommercial PBS programming (and does carry into areas not served by local PBS stations).

If there is a problem in this area, it is really with the financing of such noncommercial channels of programming--a matter left in limbo by the statute. Significantly, MMDS, which is now commencing *348 digital operation, and LMDS, which is about to be authorized, do not come under statutory (or administrative) requirements such as section 335. [FN33] This is sound, as both services need to establish themselves. While DBS is more advanced, it seems that a service reaching less than 10% of the U.S. households and still in an emerging state, section 335 should be implemented with the lightest regulatory hand at this time (i.e., only the statutorily imposed 4% to 7% requirement). If DBS does become a strong, profitable video provider, there is time enough to consider what public interest requirements should apply.

III. Sound Regulatory Policies for Digital Broadcast Television

A. The Need for Clearly Defined Guidelines

The 1996 Telecom Act specifically provides that the public interest standard is applicable to television broadcasting in the advanced (digital) era. [FN34] Chairman Hundt has called for "clearly defined guidelines for all uses of the airwaves [that come under the] public interest [standard]," [FN35] and has applauded the Executive Branch Commission to study broadcasters'

public interest obligations in a digital age. [FN36]
First, so long as the Act requires the application of the public interest standard, the Chairman's position calling for clearly defined guidelines is sound. Public service, without further definition, is a vague concept. Commercial broadcasting is a business of fierce and ever-increasing competition. [FN37] In these circumstances, it is understandable that the commercial broadcaster largely focuses on the bottom line--maximizing profits.
The situation is similar to the issue of pollution: some businesses will be good citizens and not pollute the water, land, or air, but many others, driven by strong competition, will take the profit-maximizing route and do great damage to the environment. To prevent a Gresham's Law pattern from taking over the whole situation, the government adopts specific regulations applicable to an *349 entire industry. It does not say to the industry: "Do right and avoid undue pollution."
But with the exception of its recent action in the area of children's television (discussed below), the FCC has never adopted effective, objective guidelines for local or informational programming--that is, quantitative guidelines for these categories during prescribed times (e.g., 6 a.m. to midnight and during prime time). [FN38] Because the FCC was proceeding under vague, "marshmallow" standards, [FN39] there was no effective enforcement of the public interest requirement. In 1973, FCC Chairman Dean Burch told a broadcast industry group: "If I were to pose the question, what are the FCC renewal policies, and what are the controlling guidelines, everyone in the room would be on equal footing. You couldn't tell me, I couldn't tell you--and no one else at the Commission could do any better. . . ." [FN40]
With such "mushy" standards, it is most difficult for the agency to single out some station for denial of renewal; after all, the station is in the dock because it was given no guidelines by the FCC as to what was expected in order to gain renewal. This failure to act on an ad hoc basis compounded the problem. An action taken against one station, however unfair and perhaps subject to challenge on that score, [FN41] would nevertheless serve as an example to the entire industry, with an effect comparable to that of a general regulation. The FCC, however, shirked this responsibility, even when confronted with the most serious violations. [FN42]
As noted, the FCC effectively deregulated broadcasting in the 1980s by adopting postcard renewal. Instead of moving in the direction of making the public interest requirement effective, it boldly undermined the whole concept, as a practical matter. Most significantly, Congress never even held a hearing on this action, much less moved to set it aside.
*350 Congress revised one facet with its passage of the 1990 Children's Television Act, requiring broadcasters to serve the educational and informational needs of children, with specific programming designed to serve such needs. Congress stated that a showing at renewal must be made as to this obligation and that the postcard would not suffice in this respect. The history of the implementation of this Act demonstrates the need for clearly defined guidelines.
The Act became effective in October, 1991. In March 1993, the FCC issued a Notice of Inquiry, because after examining renewal applications then on file, it found the following:
* No increase in the number of hours of educational and informational programming. The number of standard-length programs was at times very limited, with many licensees relying substantially on Public Service Announcements ("PSAs") and vignettes to meet the CTA obligation.
* No real change in the time slots devoted to children's programming, with CTA proponents claiming that broadcasters slotted educational programs before 7 a.m., when the child audience is minimal.
* Some licensees are proffering such animated programs as "The Flintstones" and "GI Joe" as

educational, asserting that such programs include a variety of generalized pro-social themes. [FN43]

Another way to illustrate the need for quantitative guidelines is to examine the performance of Los Angeles VHF station, KCAL-TV, operated by the premier family and children's entertainment company, Disney. For over one year after the effective date of the CTA, KCAL-TV presented only one core educational program (i.e., program specifically designed to educate or inform children), a half-hour show at 5:30 a.m., subsequently augmented by another half-hour show at 6 a.m. After the FCC issued its Notice and moved forward to implement a three-hour quantitative guideline for such core programming, KCAL-TV rapidly increased its effort to meet that guideline. [FN44]

The National Association of Broadcasters ("NAB") argues that the approach of clearly defined guidelines for public service violates the First Amendment-- that the Amendment bars governmental *351 action "requiring broadcasters to air particular types of programs." [FN45] The Act itself, however, requires broadcasters to air particular types of programs, to serve as a local outlet (with indeed the entire allocations scheme based on this obligation) and to present informational programming, including political broadcasts and children's educational programs. [FN46] The NAB is really arguing that the public trustee scheme of the Act is unconstitutional. If it believes that, why does it not challenge the constitutionality of the Act, and specifically the CTA? [FN47]

The answer is that the NAB welcomes being called a public trustee, so long as the obligation is left vague and therefore unenforceable. If the NAB were to lose its public trustee status, it might well be subject to spectrum auctions (as to the new channels for advanced TV Broadcasting) and spectrum usage fees. For example, in the 103rd Congress, the Administration, seeking to raise needed revenues, proposed a $5 billion spectrum usage fee on broadcasters (beginning at 1% and rising to 5%). The NAB successfully opposed this effort, and used the argument that the fee scheme would "change the landscape of communications policy" by eliminating broadcasters' commitment to serve the public interest in exchange for free use of the spectrum. "Broadcasters have always supported that compact, [NAB President] Fritts says. This proposal, however, puts it at risk, he says." [FN48]

The NAB's position is truly astounding--that it accepts the public service obligation, but any attempt to implement it by adopting quantitative guidelines as to some prescribed category such as the CTA, is unconstitutional. The guideline is just that--a reasonable guideline or "safe harbor" assuring renewal by the staff, with the renewal applicant having the right under the CTA and the FCC's rules to make further showings as to why renewal is in order. [FN49] If, to take an egregious case, an applicant sought renewal with only a half-hour or one hour of programming at a very early *352 morning hour, the FCC could constitutionally deny renewal on an ad hoc basis. So the issue is why does it not serve the public interest and the First Amendment to give applicants some reasonable notice of what is required for renewal? As the court stated in the Greater Boston case, administrative discretion to deny renewal must be "reasonably confined by ground rules and standards." [FN50]

This is not to say that there are no First Amendment difficulties in the implementation of the public trustee scheme. There clearly are. Thus, the Supreme Court, while affirming the constitutionality of the scheme, has acknowledged that the scheme necessarily entails First Amendment strains--that the role of the government as "guardian of the public interest" and the role of the licensee as a "journalistic 'free agent' call for a delicate balancing of competing interests. . . . The maintenance of this balance for more than 40 years has called on both the

regulators and the licensees to walk a 'tightrope' to preserve the First Amendment values written into the . . . Communications Act." [FN51]

Whatever public service program categories are used, for example, local, informational, nonentertainment, community issue-oriented, or "specifically designed to [educate or inform children]," definitional problems arise, particularly at the margins. [FN52] Take the latter category, called core educational programming. [FN53] Educational or informational programming for children contains a strong entertainment component, and trying to separate the two components is neither possible nor appropriate. Further, it can have a social purpose instead of being cognitively directed. [FN54] This can result in the claim that "The Little Mermaid" meets the definition of core educational programming because it shows little girls how to be leaders or how to be assertive. Controversy can and has arisen over programs like NBC's "NBA Inside Stuff," with the network disputing the criticism that this was not core educational fare by citing the support of two educational psychologists who had assisted in its preparation. [FN55] This means that the Act must be implemented *353 reasonably, and specifically by affording broad programming discretion to the licensee. [FN56] But as shown, it does not mean that there should not be clearly defined, reasonable guidelines as to the public service categories.

B. The Appropriate Guidelines for the Digital TV Broadcast Operation

1. Introduction: Guidelines for the Present Analog Operation

Since the 1996 Act explicitly makes the public interest standard applicable to the digital era, [FN57] it is sound policy to consider what clearly defined, reasonable guidelines are appropriate for that era. But before doing so, it makes sense to ask what sound guidelines are to be adopted today for the present analog operation. This is so for two reasons: (1) that operation will continue to dominate broadcasting for at least another decade and perhaps longer (the FCC's target date for full industry transition to digital operation is 2006); and (2) as discussed within, there is a substantial possibility that the digital operation may very largely resemble the analog one so far as guidelines are concerned.

As noted, the FCC has adopted quantitative guidelines only in the area of children's television programming. The broadcast licensee remains under a general public interest obligation to serve its area through community issue-oriented programming, but there are no guidelines and indeed, the renewal applicant sends only a postcard to the FCC. If the FCC were really serious about obtaining a reasonable amount of public service, it would specify some quantitative guideline in this respect. For example, the guideline assuring renewal in television might be 15% of the broadcast day (6 a.m. to midnight) devoted to local programming (including 15% in prime time), and 18% devoted to informational (nonentertainment) programming (including 18% in prime time and the three-hour core programming guideline in children's educational/informational programming). [FN58] In radio, the guideline *354 might be 8% of the time (6 a.m. to midnight) to be devoted to non-entertainment programming (community issue-oriented, by another name) but with an exception for specialized stations like those presenting mostly classical music--perhaps there a requirement of only 2%. [FN59]

This approach would be directed at the three main content thrusts of the Communications Act--local, informational, and children's educational programming. [FN60] It is not a new approach. Rather, it resembles past failed efforts along the same line. [FN61] Further, there could be new refinements to this general approach. Thus, another facet of the informational requirement stressed in the Act is the provision of time for political broadcasts. [FN62] It has been suggested that there should be a guideline of twenty minutes (in four five-minute segments, one in prime

time, all on a sustaining (free) basis) to be devoted to appearances of candidates during the thirty days prior to the general election (or fifteen days in off-year elections)--that this would promote a core value of the public interest. [FN63]

The above proposal is directed to that value and has nothing to do with campaign reform, and indeed would not alleviate the need for such reform in any way. [FN64] Chairman Hundt has put forward a proposal for very substantial amounts of free time during the Presidential general election, specifically to effect needed campaign reform. [FN65] Such proposals would be similar to the British system, whereby the parties receive free broadcast time (with the candidate appearing) and cannot purchase any additional time. (In the United States, this bar would be the condition for accepting the free time, in order to meet the constitutional requirements of Buckley v. Valeo. [FN66]) While the proposal is most worthy and certainly of the greatest pertinence to the issue of public trustee *355 obligation, it is beyond the scope of this article because it is integrally involved with campaign reform rather than simply the broadcast reform issue. Stated differently, such reform is clearly for the Congress, not the FCC [FN67] to consider (which is a pity, since Congress, despite the recent scandalous conduct of both election campaigns, so far seems most loath to act).

Finally, there are undoubtedly other public interest avenues that could be explored. I do not develop this area further, because while it is certainly germane and important in light of the continued applicability of the public interest standard, I strongly favor a different course.

2. Guidelines for the Digital (Advanced) Operation

I turn now to the issue of guidelines for broadcast operation during the digital era. Each existing television broadcaster has been assigned a 6 MHz digital television ("DTV") channel in addition to its current analog channel. The Commission has not specified that the broadcaster must use the channel for high definition television ("HDTV"). Rather, the DTV rules provide that so long as the broadcaster provides at least one free, over-the-air service throughout the broadcast day, it can decide upon the package of digital services that it wishes to provide. The 6 MHz channel really should be thought of as 19.3 Mbs; 19.3 Mbs would be very largely consumed for HDTV, which does require an enormous stream of data; or, because of the availability of digital compression techniques, the broadcaster can now offer four to six telecasts (sacrificing some amount of definition as the number goes up); or, it can use some of the capacity for digital ancillary services such as paging. [FN68] The decision is for the broadcaster to make based on the broadcaster's own judgment.

How that decision turns out can dramatically affect the formulation of public interest guidelines for DTV. Thus, if the emerging *356 pattern is very largely HDTV operation (with only 1 or 2 MHz for ancillary endeavors), the DTV situation does not differ from the present analog one. However, if a multichannel operation results, there is an opportunity for greatly changed guidelines. For example, a guideline might then call for the devotion of 3 or 4 Mbs for public service operation. The nature of such a guideline is discussed below, but what needs to be emphasized is that it is premature at this time to make any judgment as to which way the business decision will go. No one can now say whether the operation will be very largely HDTV or multichannel.

It might be that the broadcaster will surely opt for extensive multichannel operation in order to meet the challenge of multichannel competitors like cable or DBS. But that might be a bad strategy in the so-called 500 channel universe. Robert Wright, the President of NBC, has stated his belief that the broadcast networks (and their affiliates) will continue to flourish so long as they each command a share around the twelve mark. [FN69] This view certainly seems to be

borne out by present prices for television advertisements. [FN70] For this reason, it may not be a wise strategy for broadcasters (network or local) to send out multiple programs and thus end with a share like the cable channels. [FN71] Further, CBS Chairman Michael Jordan and Fox Chairman Rupert Murdoch have expressed great doubt that there is advertising support for such multichannel operation. [FN72] This is not to say with any certainty that broadcast DTV will be largely HDTV. Trade and newspaper reports indicate that there is great confusion among the broadcasters as to how to proceed. [FN73] The point is that it is premature to now formulate public interest guidelines for future DTV operation when the nature of that operation is so much in doubt.

That could be the conclusion of this essay--wait and hope. However the decision comes out, largely HDTV or multichannel, *357 there is no real hope for a good solution to the public interest question. Therefore, a wholly different route should be taken. [FN74] This can be shown by analyzing an optimum multichannel DTV public interest approach and showing that it is still inadequate.

Suppose that in a 19.3 Mbs multichannel operation, 3 or 4 Mbs were required to be used for a public service channel. Such public service might be left to the discretion of the licensee and could include public affairs, news documentaries, political broadcasts, educational/information programming for children (in addition to any three hour guideline), and so on. Further, to ensure that the broadcaster's incentive is only public service and not profit maximizing, the channel would be entirely sustaining--that is, without any commercials. [FN75]

Such an arrangement would reflect the original Channel 3-Channel 4 pattern in the United Kingdom, where Channel 4 was supported by a portion of the advertising revenues garnered by Channel 3. Here, the public service channel would be supported by the commercial operation of the remaining 15-16 Mbs--probably four channels of commercial broadcasting.

Finally, if the broadcaster did not want to devote the 3-4 Mbs to this public service channel, it could retain the 3-4 Mbs for commercial operation but would then be required to pay a significant sum to a public television trust fund. [FN76] This "play or pay" option would reflect the thrust of section 303b (b)(2) of the CTA, which was initially promoted by the FCC but ultimately discarded. This option is not employed today to any significant extent.

This would be a very ambitious and optimum public service approach--difficult to achieve both practically and politically. But it is set forth here because an analysis of it demonstrates the need for a wholly different scheme. First, if the broadcaster decided to "play" in order to avoid a significant payment, the result would very likely be adjudged a dismal failure. For, with no revenue coming in, why would the broadcaster expend the considerable sums needed to produce high quality programming? Again, if we use children's programming as a focal point because of its central importance to the public interest, the commercial broadcaster would be most unlikely to devote the substantial sums needed to present *358 quality children's programming. The tendency would be to "slough." The broadcaster would regard any diversion of its audience to the "public service channel" as a loss of viewers for its advertiser-based channels. Once again, regulation is trying to force a business--one under fierce competitive pressure--to act against its driving interest to maximize profit. [FN77]

If the broadcaster should "pay" instead of "play," this could contribute significantly to the production and distribution of high quality programming by the public television community. Indeed, it is the approach that I advocate. [FN78] However, this leads to an obvious conclusion: since sound policy is served only by the "pay" rather than "play" option, policy should be aimed solely at obtaining that payment.

If the operation were largely HDTV, this would, in effect, mean that the past inadequate scheme of public interest regulation would be applicable. Even if that scheme were improved along the lines suggested in Part B.1. above, so that there were quantitative requirements for public service, such as 15% local and 18% informational (including the three hour guideline for core children's educational programming), there would still be strong arguments militating for a new approach.

First, in the real world, public service programming is not a numbers game. The aim should be to deliver a reasonable amount of high quality programs that educate, inform, present the classic and new drama, advance culture, and serve minority interests. In the U.S. regulatory world, any content behavioral approach must be limited to quantitative guidelines and must eschew all qualitative focus. Whether some program is of high quality is a subjective judgment that the government could address only by violating the First Amendment. [FN79]

In its deregulation decisions in the 1980s, the FCC stated that it intended to emphasize "the quality of a broadcaster's efforts, not the quantity of its non-entertainment programming." [FN80] Thus, in its Radio and Television Deregulation Reports, the Commission stated:

*359 A station with good programs addressing public issues and aired during high listenership times but amounting to only 3 percent of its weekly programming may be doing a superior job to a station airing 6 percent on entertainment little of which deals in a meaningful fashion with public issues. The focus of our inquiry in the petition to deny context can be expected to be whether the challenged licensee acted reasonably in choosing the issues it addressed in its programming. Assessing the reasonableness a licensee's decision will necessitate an ad hoc review to examine the circumstances in which the programming decision was made. [FN81]

Nothing is more chilling or inappropriate than the FCC casting itself as the national nanny for broadcasters' decisions on issues, or examining program quality to determine whether a given program is good or bad because it fails to address issues in a meaningful way. Such a regime would flagrantly violate the First Amendment and the Act, and the FCC has, of course, never implemented such a bizarre scenario. The whole deregulation action, including postcard renewal, amounts to little more than a smoke screen for inaction.

There may be a great difference in quality between a "Sesame Street" and a commercial children's program that is geared largely to entertainment centered on a toy and has a claimed social purpose--between PBS "News Hour" or "Frontline" and the commercial newscasts or documentaries with "tabloid" emphasis. [FN82] The government is wholly and soundly precluded from considering such differences through content regulation. Since the provision of high quality programming in the public service areas is of great importance, the government should adopt a scheme that promotes such a provision rather than one where it correctly has no say on quality and the presentation of such programming may be against the driving business interest of the commercial broadcaster.

That scheme is the one detailed in Part B.3., below--and emphatically not the quantitative prescription of public service for HDTV. Significantly, in commenting on the Annenberg Report, [FN83] Chairman Hundt observed: "[the] studies show that virtually all the programs aired for children on PBS were judged to be of high quality and educational; only a third of those aired on the 'Big *360 Three' networks fell into the same category. This statistic about PBS is not surprising." [FN84] It is not surprising because PBS has no commercial motivation and wants solely to deliver high quality educational programs.

Second, there are First Amendment strains in the latter approach because there will always be difficult questions at the margins, whatever the definition of public service may be. As noted,

this again is best illustrated in the children's area, with its definition of core educational programming: [FN85] To attract the young child, the programming must have a strong entertainment quotient and the FCC has wisely determined that there is no way to draw a line as to the amount of such entertainment fare (e.g., that the program must be "primarily" educational rather than entertaining). When this consideration is combined with a program that purportedly seeks to teach children a lesson as to some social goal, [FN86] the FCC can end up reviewing content in a most sensitive area. [FN87] This is the "tightrope" or "delicate balance" referred to in the Supreme Court decisions. [FN88] And while it is constitutional under Red Lion, it is also good policy to avoid or reduce such First Amendment strain, if it is possible to do so and still obtain the public service sought. It is therefore a decided plus for the approach urged below, [FN89] which indeed does provide high quality *361 public service programming even more effectively, that it eliminates these significant First Amendment strains.

Third, it is also good policy to avoid, as much as possible, asymmetric regulation of the various means of distributing television programming. Because the media are so different in nature, that is not always feasible or desirable. For example, the main regulatory problem in cable is dealing with its bottleneck monopoly, [FN90] and in light of its great and growing channel capacity as it moves into digital delivery, access provisions like commercial leased channel and PEG are sound policy; yet such access provisions are not feasible for broadcast HDTV, with its single channel of operation. [FN91]

But, it is possible to treat over-the-air broadcasting and cable, its main and growing competitor, similarly as to content regulation. Cable does not face content regulation as does broadcasting. [FN92] Because of cable's use of the public streets, the franchising authority can require a franchise fee of up to 5%, and thus financing for cable's public service (the PEG channels) is available. [FN93] With the approach recommended in Part B.3., over-the-air broadcasting would be treated much like cable--no content requirements like the provision of community issue-oriented programming (including the CTA requirements). Because broadcasting uses the public spectrum, there would be a modest spectrum usage fee to support the provision of high quality public service through its contribution to a trust fund for public telecommunications.

Fourth, even if the quantitative guidelines suggested in Part B.1. were adopted, experience points to the impermanence of any behavioral scheme. As noted, prior to the FCC's deregulatory actions in the 1980s, there were a number of public interest rules and policies including the quantitative renewal guidelines and the fairness doctrine. All of these rules and policies were sloughed aside because of the policy bent of the then Chairman of the FCC and his associates; indeed, Chairman Fowler referred to television as a "toaster with pictures" and asserted that at renewal, the broadcaster had no obligation to children for which the FCC would hold it *362 responsible. [FN94] An approach such as that advanced below is much more likely not only to be effective but to persist.

3. The Sound Approach: In Lieu of the Public Interest Obligation, Substitute a Spectrum Usage Fee that is Used to Directly Achieve Public Service Goals

The sound alternative approach has been foreshadowed in the above discussion. Improving the public trustee regulatory regime, while clearly needed if that regime is retained, is not the best way to proceed. The public trustee regime will always remain a behavioral content scheme that seeks, with First Amendment strains, to make the broadcaster act against its business interests by providing much less remunerative public service. It cannot deal with the need and desirability of promoting high quality public service programming.

The new approach would substitute a modest spectrum usage fee for the public fiduciary

obligation. Congress could reasonably establish such a fee based on a percentage of gross advertising revenues, (e.g., 1% for radio and 3% for television). This fee might then be set in a long term contract, for example, fifteen years, between the FCC and the broadcaster, so that it would be exempt from the effects of government policy changes toward the media. [FN95] The sums so garnered would go into a trust fund for public telecommunications. For the first time, we would have a policy working for the achievement of public service goals.

The focus so far has been on television, but the far-reaching benefits of the alternative approach are pointed out by considering its application to broadcast radio. There are over 11,500 broadcast radio stations. All commercial radio stations are considered public trustees. But as far as the regulatory scheme is concerned, this is the charade which has been previously noted. The FCC has no knowledge as to their public service efforts (community issue-oriented programming). It receives only a postcard at renewal. It has never monitored the performance of these stations through community, regional, or individual spot-checks. As a practical matter, this is truly deregulation.

*363 There are market deficiencies in radio. Commercial radio does not now supply in-depth informational programs, dramatic fare, or programming for the blind. Noncommercial radio does, but it is inadequately funded. With a 1% spectrum fee, $130 million would be available, [FN96] with roughly $80 million for public radio and the remainder going to fund political broadcasts over radio, if a free time trust fund were established as part of campaign reform.

If this new approach were adopted, the policy structure would actively promote public service goals for the first time. The commercial radio system would continue to do what it already does--deliver a variety of entertainment formats, often interspersed with brief messages--and the noncommercial system would have sufficient funds to accomplish its goals.

Significantly, this approach is much sounder than any effort to provide clearly defined guidelines for public service in radio. It gives the most promise of securing high quality public service programming and avoids all First Amendment strains. Indeed, as shown by FCC experience under the processing guidelines in the 1970s, there can be adverse consequences in radio from the quantitative guideline approach. Because radio stations can choose a specialized format like classical music, they can have difficulty meeting even the generous guideline of 8% nonentertainment, and in the circumstances of major market operation, should not have to. [FN97]

Furthermore, the use of public interest criteria to choose among competing applicants in comparative hearings has been thoroughly discredited, and the whole process has long been at a standstill because of court action. [FN98] With the new approach, all new frequencies would be auctioned, and the sums obtained (probably not too great in view of the dearth of available frequencies in larger markets) would be contributed to the same trust fund for public telecommunications.

*364 This same approach should be applied to broadcast television. It would markedly help facilitate the production and presentation of high quality programming, such as educational programming for children, in-depth informational programming such as the "News Hour" or "Frontline," and cultural fare. It would contribute most substantially to solving the perennial funding problems of public telecommunications, which are extensively documented in Quality Time?, a recent report of the Twentieth Century Fund Task Force on Public Television. The most arresting statistics in the report show the amounts spent per capita by various nations for public broadcasting: In 1992, the United States spent only about $1.06; Japan spent $17.71; Canada spent $32.15; and the U.K. spend $38.56. [FN99]

To continue the example of funding children's educational programming because of its importance, if 1% of the spectrum usage fee were dedicated to this purpose (about $300 million), the Corporation for Public Broadcasting [FN100] could then fund production of such programming by a PBS station or an independent producer like Children's Television Workshop or the Ready to Learn Channel. [FN101] The funds might also be directed to local noncommercial stations working with community groups to activate the educational channel on the local cable system, with some of the programs so produced then broadcast or shared with the local library system to become an electronic educational clearinghouse. [FN102]

It has been argued that there is no need for the public service contribution of public television in light of cable's multichannel development. The above report establishes the continuing need for the public service contribution of public broadcasting, especially in the area of education. That discussion, while relied upon here, will not be repeated. To give one example, there is a clear need not just for the excellent pre-school fare on public television, but also for the strong development of programming aimed at the school age child, five to eleven years old. There is no basis for the assumption that cable will fill this need. Furthermore, cable is a *365 pay service and is not received in roughly one-third of all television households. [FN103]

This then is the concept for the new approach. There are of course many details to be resolved in its implementation. [FN104] There are several ways that the funds could be transferred--for example, they can accumulate in the trust fund until $4 billion is reached, at which point Federal support would cease. Or, the funds could be divided between the trust fund for public telecommunications and another fund for free political time. [FN105] Again, such considerations, while of great importance, must await progress or agreement on the main concept--to move forward to replace the public trustee scheme.

Aside from the merits, there are also large obstacles. The commercial broadcasters will strongly oppose the reform, because they would much rather "play" than pay 1% to 3% of gross revenues. As has been noted by congressional leaders, [FN106] the commercial broadcasters are a most powerful lobbying force. But just as campaign reform is difficult to achieve but nevertheless most worthy of being fought for this year and every year, the same is true of reform of the public trustee scheme. It took many years of effort to reform transportation or the common carrier scheme in the 1934 *366 Act, but those efforts eventually paid off. The same effort should be made here.

Another obstacle is the need for revenues to achieve a balanced budget. This has resulted in the billions obtained through the spectrum auction process all going to deficit reduction, [FN107] and indeed skewing the auction process. [FN108] So, here again, Congress could decide on a spectrum usage fee but use the revenues for its own deficit purposes--and thus not provide high quality public service over an adequately funded public telecommunications system. But the monies here are being uniquely generated--replacing the public trustee obligation precisely to obtain funds to more effectively provide the needed public service. If the concept is adopted on this ground, the funds should and would go to public telecommunications.

IV. Policies for the Other Main Electronic Media

There is no need for extended discussion on this point. The new electronic delivery systems such as telco, LMDS, digital MMDS, and Internet video streaming (or other computer delivery systems) all should not come under Red Lion content regulation as a matter of policy (wholly aside from serious constitutional issues). These nascent video delivery systems should be allowed to develop with no intrusive content regulation.

Cable is well established, is a most powerful force in video, and will become even stronger as it

enters the digital era. As noted, Red Lion cannot constitutionally be applied to cable, which comes under the traditional First Amendment jurisprudence. Congress has soundly eschewed Red Lion content regulation, and that policy should continue.

There is a problem as to the PEG channels in light of inadequate support at the local level in many instances. In those circumstances, including the political or practical considerations, it would appear that this problem will have to be solved over time at the local level. Stated differently, if, for example, some communities develop strong and effective local C-SPANs, this may well put pressure *367 on other communities to assure that there are resources available to duplicate that kind of strong service in their own localities. As noted, efforts to strengthen the local public television station may also be helpful in promoting a stronger PEG effort. [FN109]

As for the problem with commercial leased access, the move to digital should mean that there is a significant amount of new leased channel capacity available, since the 15% requirement would be applicable to the new digital channels. It is to be hoped that the FCC's recent revision as to reasonable pricing for leased channels will be effective. It would be better policy simply to require the cable operator to engage in last-offer arbitration if no agreement on terms is reached after a stated brief period. [FN110] Under this scenario, the programmer would obtain immediate access during the arbitration period after posting a bond to ensure financial performance. This would track the market better than authorizing the government to set prices and terms, and it would have offered a practical prerequisite to success for any programmer--prompt access to distribution--instead of a government proceeding.

The other substantial video distributer is DBS, with 4% penetration of U.S. television households, and the prospect of about 10% by the year 2000. As stated, there should be no action to implement section 25(a) (other than equal time rules). As for the 4% to 7% set aside for noncommercial educational and informational access, the real problem here is the lack of financial support for the production of programming. In that respect, the above spectrum usage approach should be most helpful, since the funds thus made available are for public telecommunications and thus would foster distribution over DBS for noncommercial educational/informational material produced with the markedly enhanced financial support.

V. Conclusion

The main focus here has been on appropriate governmental policy for DTV because there is now such great focus on that issue at the White House, the Congress, and the FCC. What is remarkable is that with the one exception noted below, the focus is confined to the way the public interest standard should apply in the *368 digital era. Thus, the approaches of the Executive Branch and the FCC appear to give no consideration at all as to whether that standard should continue to apply, or whether it should be replaced by an approach such as that advocated here.

In the 1996 Telecommunications Act, Congress considered the common carrier approach that had been used for decades (from 1910 on), and drastically reformed the regulatory scheme. But as noted, the same Act continues the basic broadcast regulatory scheme that has been applied since 1927. The House Telecommunications Subcommittee, under Chairman Billy Tauzin, is raising the issue of its continuance. His proposal would substitute a spectrum usage fee for the public interest obligation of the commercial broadcaster, with the sums so obtained going to a trust fund for public broadcasting. It is hoped that this is the beginning of a long overdue debate on what is the sound governmental policy for broadcasting as the nation moves into the next century.

FN[FNa1]. Communications Fellow, The Markle Foundation.

FN[FN1]. See FCC Chairman Reed Hundt, Speech before the CTIA Convention (Mar. 4, 1997); see e.g. Reed Hundt, First Things First, Broadcasting & Cable, Mar. 3, 1997, at 32-33. (Hundt has left the FCC, but his successor appears to be following the same policies in this field).

FN[FN2]. See Vice President Al Gore, Speech on Public Interest Obligations in a Digital Age (Feb. 5, 1997); Advisory Committee on Public Interest Obligations of Digital Television Broadcasters, 62 Fed. Reg. 12,065 (1997) (establishing the Advisory Committee on Public Interest Obligations of Digital Television Broadcasters).

FN[FN3]. See Robert Pepper, Broadcasting Policies in a Multichannel Marketplace, in Television for the 21st Century: The Next Wave 120 (The Aspen Institute Communications and Society Program 1993); See also Henry Geller, 1995-2005: Regulatory Reform for the Principal Electronic Media, The Annenberg Wash. Program Nw. Univ. 7-8 (1994).

FN[FN4]. Not Much Improvement in Basic Subs for Cable Top 50, Television Digest, May 12, 1997, at 2.

FN[FN5]. See Sally Goll Beatty, Network TV Sales Head Skyward as Audience Size Remains a Lure, Wall St. J., June 5, 1997, at B12; Kyle Pope, Why TV Ad Prices are Rising Even as Viewship is Falling, Wall St. J., May 12, 1997, at B1.

FN[FN6]. The telcos do not appear to be a substantial factor in the near term, but must eventually turn to broadband transmission (and indeed, several are proceeding with expansive fiber programs). The Internet, while it faces considerable obstacles today for video distribution, may well be a most important future factor. See, e.g., Steve Lohr, The Next Act for Microsoft, N.Y. Times, June 10, 1997, at D1; Don West, Convergence the Hard Way, Broadcasting & Cable, Apr. 9, 1997, at 6.

FN[FN7]. See Metro Broad., Inc. v. FCC, 497 U.S. 547, 566-67 (1990)(quoting Associated Press v. United States, 326 U.S. 1, 20 ("[W]idest possible dissemination of information from diverse and antagonistic sources is essential to the welfare of the public.")).

FN[FN8]. Id.

FN[FN9]. Thus the proposal to allow newspapers to own television stations in the same area, see Chris McConnell, Publishers Challenge Common Ownership Bars, Broadcasting & Cable, June 9, 1997, at 20, or to permit duopoly ownership of local television stations goes markedly against

the diversification principle. People rely on television stations and the newspaper for information on local issues, and therefore these powerful media should be in separately owned hands. While DBS, cable television, and other media may contribute to informing about national issues, they are not relevant to local issues. This area, while of the greatest importance, is not treated further in this article.

FN[FN10]. Red Lion Broad. Co. v. FCC, 395 U.S. 367 (1969).

FN[FN11]. See Communication Act of 1934, 47 U.S.C. §307(b); Deregulation of Radio, 84 F.C.C.2d 968-69, 978, 982 (1981), aff'd, United Church of Christ v. FCC, 797 F.2d 1413 (D.C. Cir. 1983); Commercial TV Stations, 98 F.C.C.2d 1075 (1984).

FN[FN12]. See Id. §§ 315(a), 312(a)(7)(1934).

FN[FN13]. See Children's Television Act of 1990, 47 U.S.C. § 303b(a)(2)(1994) ("CTA").

FN[FN14]. Turner Broad. Sys., Inc. v. FCC, 512 U.S. 622 (1994).

FN[FN15]. Red Lion Broad. Co. v. FCC, 395 U.S. 367 (1969); NBC v. United States, 319 U.S. 190, 226-27 (1943).

FN[FN16]. See supra note 11.

FN[FN17]. Id.

FN[FN18]. Cowles Fla. Broad., Inc., 60 F.C.C.2d 371, 439 (1976).

FN[FN19]. For a fuller discussion of this long pattern of failure, see Geller, supra note 3, at 12-17.

FN[FN20]. See Children's Television Act of 1990 § 624(f)(1), 47 U.S.C. § 544(f)(1). Cable Television Consumer Protection and Competition Act of 1992, Pub. L. No. 102-385 106 Stat 1501.

FN[FN21]. Id. §§ 611, 612 (1990).

FN[FN22]. See supra note 7.

FN[FN23]. Turner Broad. Sys., Inc. v. FCC, 512 U.S. 622 (1994). The Court, while agreeing that the cable market reflects dysfunction, also rejected the extension of Red Lion on that basis, holding that the physical, rather than economic characteristics of the broadcast market underlie the Court's broadcast jurisprudence, and that the claim of market dysfunction "is not sufficient to shield a speech regulation from the First Amendment standards applicable to nonbroadcast media." Id. at 640.

FN[FN24]. In Denver Area Telecomm. Consortium v. FCC, 116 S. Ct. 2374 (1996), a case involving the constitutionality of provisions dealing with indecent programming over PEG and commercial leased channels, a plurality led by Justice Breyer used a new standard instead of strict scrutiny, called "close judicial scrutiny." Id. at 2385-86. Under that test, the plurality substitutes "extremely important" problems (or "extraordinary problems") for "compelling interest" and "sufficiently tailored" or "appropriately tailored" for "least restrictive means." Id. at 2385. The five other members adhered to Turner and employed strict scrutiny.

FN[FN25]. 391 U.S. 367, 377 (1968). Under this standard, a content-neutral regulation is valid if it "furthers an important or substantial governmental interest; if the governmental interest is unrelated to the suppression of free expression; and if the incidental restriction on alleged First Amendment freedoms is no greater than is essential to the furtherance of that interest." Id.

FN[FN26]. The constitutionality of the PEG and commercial leased channel provisions was sustained under an intermediate (O'Brien) analysis in Time Warner Entertainment Co. v. FCC, 93 F.3d 957, 967-973 (D.C. Cir. 1996).

FN[FN27]. For a full discussion of this and the leased channel problems, see Geller, supra note 3, at 28-31.

FN[FN28]. See Cable Act of 1992 §9, 47 U.S.C. §532 (1994).

FN[FN29]. Cable Television Leased Commercial Access, 62 Fed. Reg. 11364 (1997)(to be codified at 47 C.F.R. pt. 76)(proposed Mar. 12, 1997); see Value Vision Int'l, Inc. v. FCC, No. 97-1138 (D.C. Cir. filed Mar. 17, 1997).

FN[FN30]. See Cable Television Consumer Protection and Competition Act of 1992, Pub. L. No. 102-385, § 25, 106 Stat. 1501.

FN[FN31]. Implementation of Section 25 of the Cable Television Consumer and Competitive Act of 1992, FCC MM Docket No. 93-25.

FN[FN32]. Time Warner Entertainment Co. v. FCC, 93 F.3d 957, 973-77 (D.C. Cir. 1996), reh'g denied, 105 F.3d 723 (D.C. Cir. 1997) (five judges voting for rehearing and stating their belief that the DBS provision is unconstitutional, three voting against rehearing, and two recusing themselves).

FN[FN33]. See supra note 29.

FN[FN34]. See Telecommunications Act of 1996, 47 U.S.C. § 336(d)(1994).

FN[FN35]. See supra note 1; the Chairman also stated that the Commission "will issue an inquiry this summer to 'afford all Americans an opportunity to advise us' ... on specific public interest obligations for broadcasters." Hundt on his Favorite Topics, TV Digest, June 9, 1997, at 8.

FN[FN36]. As stated by Chairman Hundt on February 5, 1997.

FN[FN37]. See, e.g., Bill Carter, Losing Viewers to Cable, Again, N.Y. Times, May 22, 1997, at C20.

FN[FN38]. See National Black Media Coalition v. FCC, 589 F.2d 578 (D.C. Cir. 1978). From 1973 to the early 1980s, the FCC had processing guidelines governing nonentertainment programming and local programming for its renewal staff, so that the staff could grant renewal under delegated authority. See United Church of Christ v. FCC, 707 F.2d 1413, 1420-21 (D.C. Cir. 1985).

FN[FN39]. Broadcast Renewal License: Hearings Before the House Subcomm. on Comms., 93d Cong., 1st Sess., ser. 93-36, pt.2, at 1120 (testimony of Chairman Dean Burch); En Banc Programming Inquiry, 44 F.C.C.2d 230 (1960); Ascertainment of Community Problems by Broadcast Applicants, 57 F.C.C.2d 418 (1976); Revision of FCC Form 303, 52 F.C.C.2d 184 (1975); Ascertainment of Community Problems by Broadcast Applicants, 54 F.C.C.2d 418 (1976).

FN[FN40]. Dean Burch, Address to the International Radio and Television Society (Sept. 14, 1973).

FN[FN41]. See infra note 50.

FN[FN42]. See, Lamar Life Broad. Co., 38 F.C.C. 1143 (1965), rev'd sub nom., United Church of Christ v. FCC, 359 F.2d 994 (D.C. Cir. 1965); Kord, Inc., 31 F.C.C. 85 (1961); Moline Television Corp., 31 F.C.C.2d 263 (1971); Herman Hall, 11 F.C.C.2d 344 (1968).

FN[FN43]. See Policies and Rules Concerning Children's Television Programming Revision, 8 F.C.C.R. 1841, 1842 (1993).

FN[FN44]. See Petition of CME, to Deny Applications for Consent to Transfer of Control of Broadcast Licenses Held by Capital Cities/ABC to the Walt Disney Company, Nos. BTC, BTCH, of BTCCT-950823KA-950823LI, at 29-30. For a definition of core educational programming, see infra note 85.

FN[FN45]. Edward Fritts, Response to FCC Chairman Reed Hundt, Broadcasting & Cable, Apr. 7, 1997, at 36.

FN[FN46]. See supra Part II.

FN[FN47]. The allocational scarcity on which the public trustee scheme rests persists today, with no channels or frequencies available in most markets and
with stations being sold at very high prices because of the scarcity. See Geller, supra note 3, at 11.

FN[FN48]. Kim McAvoy, Broadcast, Cable Unite Behind Senate Bill, Broadcasting & Cable, June 13, 1994, at 42-43 ("Dingell may be set to derail onerous spectrum fee."); Scott Greenberger, Fritts Insists Highway will Include Broadcasters, Multichannel News, May 23, 1994, at 130 (where an industry spokesman warned that if the fee were implemented, the public service obligation would have to be removed).

FN[FN49]. See Children's Television Act, § 303b(a)(2)(1990); FCC Report on Children's Television Act, FCC 96-335, at para. 135 (1996).

FN[FN50]. Greater Boston Television Corp. v. FCC, 444 F.2d 841, 854 (D.C. Cir. 1970).

FN[FN51]. CBS v. Democratic Nat'l Comm., 412 U.S. 94, 117-18 (1973)("A licensee must balance what it might prefer to do as a private entrepreneur with what it is required to do as a

'public trustee.' To perform its statutory duties, the Commission must oversee without censoring....").

FN[FN52]. For a full discussion of this proposition, see Henry Geller, Broadcasting, in New Directions in Telecommunications Policy 125-54 (P. Newberg ed., Duke Univ. Press 1989).

FN[FN53]. See infra note 85.

FN[FN54]. See id.

FN[FN55]. Thus, in the 1997 State of Children's Television Report: Programming for Children Over Broadcast and Cable Television (The Annenberg Public Policy Center of the Univ. of Pa. 1997) [hereinafter Annenberg Report], there is the finding that "one quarter of the commercial broadcasters' educational/informational programs could not be considered educational by any reasonable bench mark." Id. at 4. This finding included network shows like "NBA Inside Stuff," ABC's "New Adventures of Winnie the Pooh", and CBS' "Secrets of the Crypt-keeper's Haunted House." Elizabeth A. Rathbun, Anneberg Grades Children's Television, Broadcasting & Cable, June 16, 1997, at 21.

FN[FN56]. See CBS, 412 U.S. at 110("Congress intended to permit private broadcasting to develop with the widest journalistic freedom consistent with its public obligations.").

FN[FN57]. See supra note 34.

FN[FN58]. The two figures would overlap since, for example, local news would of course also count towards the informational guideline. Chairman Hundt's proposal of a "modest 5% of programming time on digital TV" for public service is too modest, in my opinion. See Speech to the International Radio & Television Society (Oct. 18, 1996).

FN[FN59]. See infra notes 96-98 and accompanying text.

FN[FN60]. See infra Part II.A.

FN[FN61]. For a detailed discussion of such efforts, see Bill F. Chamberlin, Lessons in Regulating Information Flow: The FCC's Weak Track Record in Interpreting the Public Interest Standard, 60 N.C. L. Rev. 1057, 1083-86, 1093-94 (1982).

FN[FN62]. See 47 U.S.C. §§ 312(a)(7), 315 (1994); S. Rep. No. 92- 96, 92d Cong., lst Sess., at 28 (1971).

FN[FN63]. For a full discussion of this concept, see Petition of Common Cause, et al., for Inquiry or Rulemaking to Require Free Time for Political Broadcasts, filed October 21, 1993. It should be acknowledged that the author is one of two attorneys on the petition. No action has ever been taken on the petition.

FN[FN64]. See id. at 6 n.7 & 18.

FN[FN65]. See, e.g. Paul Taylor, Superhighway Robbery, The New Republic, May 5, 1997, at 22.

FN[FN66]. 424 U.S. 1 (1976). See the recent speech of former Chairman Newton Minow to the Economic Club of Chicago, April 16, 1997 for a fuller exposition of the approach. 143 Cong. Rec. E774-03 (daily ed. Apr. 29, 1997) (statement of Newton Minow). It is necessary to impose the above condition because otherwise, the candidates would accept the free time, and still engage in expensive purchases of additional time, so that the need to raise huge sums of money would not be tempered at all.

FN[FN67]. See Heather Fleming & Don West, Tough's the Word for John McCain, Broadcasting & Cable, Mar. 3, 1997, at 20 (interview with Senator John McCain)
I don't believe that anything is going to happen which gives free television time to candidates unless it's part of an overall campaign reform package, which will have to be legislation passed by Congress.... Congress would naturally rebel if Mr. Hundt said, 'Well, OK, we're going to give this time to candidates without the rest of a reform package being passed.' It would be a total non-starter.... Because unless you had some restraint on campaign spending, that would just be another freebie for candidates.

Id.

FN[FN68]. See Telecommunications Act of 1996, 47 U.S.C. § 336(a)(1), (b)(1),(e).

FN[FN69]. Bob Wright and the NBC Nobody Knows, Broadcasting & Cable, Mar. 6, 1995, at 46.

FN[FN70]. See Kyle Pope, Why TV Ad Prices are Rising Even as Viewership Is Falling, Wall ST. J., May 12, 1997, at B1 ("As TV watchers spread their viewing over several, if not dozens, of the nation's 200-plus cablechannels ... advertisers have found it nearly impossible to reach the

sort of mass audiences they crave. Broadcasters say it is this fracturing of the market that has made broadcast television so valuable.").

FN[FN71]. Thus, Michael Jordan, CBS Chairman, has stated that the television audience already is saturated with program choices from multichannel providers, so "real competitive advantage for broadcasters will be HDTV rather than multichannel standard definition." Jordan Sees HDTV as Advantage, TV Dig., June 16, 1997, at 8.

FN[FN72]. Id. Paul Farhi, TV's Wave of the Future Takes on a Digital Look; Broadcast, PC Industries Clash Over Format, The Washington Post, Apr. 28, 1997, at A01. See also Heather Fleming, Clinton Calls for Free Airtime, Broadcasting & Cable, Mar. 17, 1997, at 18.

FN[FN73]. See Padden Targets DTV Opportunities, Comm. Daily, May 29, 1997, at 2 (stating that while ABC has questions about DTV, it does not yet have any answers).

FN[FN74]. See infra Part B.3.

FN[FN75]. As to children's programming, no toy could be spun off for commercial sale until the passage of some substantial period--say, 18 months to two years.

FN[FN76]. I use the term "public television," but the operation would more aptly be described as "public telecommunications," using all methods of video distribution (e.g., over-the-air terrestrial, DBS, cable, MMDS, LMDS, cassettes).

FN[FN77]. It could be argued that all this stems from the ban on advertising on the public service channel. But if that ban is lifted, we face the same problems already described--the drive to gain advertising support by emphasizing the entertainment/social purpose aspect of children's programming, and the resulting First Amendment problems.

FN[FN78]. See infra Part B.3.

FN[FN79]. See 47 U.S.C. § 326 (1994)(the "No Censorship" Clause).

FN[FN80]. Office of Communication of the United Church of Christ v. FCC, 779 F.2d 702, 710 (D.C. Cir. 1985).

FN[FN81]. Deregulation of Radio, 84 F.C.C.2d 968, 991 (1981); Commercial TV Stations, 98 F.C.C.2d 1075, 1095 (1984).

FN[FN82]. See Steven Stark, Local News: The Biggest Scandal on TV, Wash. Monthly, June 1997, at 38.

FN[FN83]. See supra note 55.

FN[FN84]. Reject Commercials on PBS--Hundt, TV Dig., June 16, 1997, at 7. The Annenberg Report necessarily involved both "objective and subjective measures" and therefore cannot be looked to for precise statistics. Annenberg Report, supra note 55, at 11. The figures are properly relied upon as rough indications made by an independent and responsible academic organization. Thus, in the example in the text, even if the figures are not precisely accurate, the great disparity between PBS and the three networks is being soundly portrayed.

FN[FN85]. Core educational programs are defined in the CTA Report as those that (i) are specifically designed for children ages 16 or under; (ii) have serving the educational and information needs of children as a significant purpose; (iii) are regularly scheduled, weekly programs of at least 30 minutes; and (iv) are presented between the hours of 7 a.m. and 10 p.m. On the crucial element, (ii), the FCC looks to "content that would further the development of the child in any respect, including the child's cognitive/intellectual or emotional/social needs." See Id. at 11, 15.

FN[FN86]. The Annenberg Report notes that the "most common 'primary lesson' in the broadcasters' educational programs was one that emphasized social/emotional skills (42.7%)," and that "nearly all of the network-provided programs had prosocial messages as their primary educational goal," because such programs garner higher ratings than those with a primary cognitive/intellectual message. Id. at 20-21.

FN[FN87]. Thus, it might have to review the one-quarter of educational/intellectual programs as to which the Annenberg Report concluded "could not be considered educational by any reasonable benchmark." Id. at 4. In this context, Chairman Hundt acknowledged that "this definitional issue is... the crux of our rules and by far the most difficult." Reject Commercials on PBS--Hundt, supra note 84, at 8. One industry spokesman complained that the process "comes very close to putting someone [from government] in my program department." Id.

FN[FN88]. See supra note 51.

FN[FN89]. See supra Part B.3.

FN[FN90]. See Turner Broad. Sys., Inc. v. FCC, 512 U.S. 622, 661 (1994).

FN[FN91]. If broadcasting in the digital era did operate in a multichannel mode, it might be possible to impose some reasonable access requirement on the public service channel (3 to 4 Mbs) as discussed before.

FN[FN92]. See supra note 20 and accompanying text.

FN[FN93]. Before the 1984 Cable Act, the franchise fee had to be used for cable-related purposes, such as support of the PEG channels. This was changed in the 1984 Act. See Geller, supra note 3, at 28-29, for a discussion of this change and its result. It is now a matter of discretion with the franchising authority whether adequate support is given to the PEG channels.

FN[FN94]. See Henry Geller, Comment, The FCC Under Mark Fowler: A Mixed Bag, 10 Hastings Comm. & Ent. L.J. 521, 530-31 (1988).

FN[FN95]. Administrations have become hostile to the broadcast media because of what they regarded as too critical a press attitude. See Henry Geller,
The Comparative Renewal Process in Television: Problems and Suggested Solutions, 61 Va. L. Rev. 471, 498 (1975); F. Friendly, Politicizing TV, Colum. Journalism Rev., Mar.-Apr. 1975, at 9 (threatening actions of the Nixon Administration).

FN[FN96]. See Lisa Brownlee, Radio's Revenue is Getting a Lift from Consolidation, Wall St. J., June 20, 1997, at B7.

FN[FN97]. To give one example, KIBE-AM, a San Francisco classical music station, bowing to the FCC dictates, substituted a 6:00 a.m. talk show for a baroque music program, in order to gain renewal without going through an expensive hearing which it could ill afford. See Letter from Edward Davis, Station Manager KIBE-AM, to Henry Geller (Apr. 6, 1976) (on file with author). In this way, it did the least damage to its schedule. But the audience, which could turn to several other stations if it wanted "talk," lost a program which it enjoyed. The regulatory pattern, when so applied, does not serve the public interest.

FN[FN98]. See Bechtel v. FCC, 10 F.3d 875 (D.C. Cir. 1993); Mixed Signals, Wall St. J., June 18, 1997, at A1 (quoting Chairman Hundt as saying, "We're in gridlock" and describing the comparative hearing as "cumbersome,"
one "of subjective judgment [which is] a recipe for lawyering deals").

FN[FN99]. Quality Time?, The Report of the Twentieth Century Fund Task Force on Public Television 152 (Twentieth Century Fund Press, 1993) [hereinafter Task Force]. As a member of the Task Force, the author fully agreed with the report and its recommendations.

FN[FN100]. The Report noted above recommended several important changes in the governance of the public broadcasting system. Id. at 35-39.

FN[FN101]. Fortunately, Congress created the Ready to Learn Channel to which parents could reliably turn for children's programming; unfortunately, it has never adequately funded this undertaking.

FN[FN102]. Task Force, supra note 99, at 20-21.

FN[FN103]. Chairman Hundt opposes the above approach because he believes that "educational programming needs to be on the most popular channels, where viewers will see the show;" he "likened the placing of such shows on a separate channel to creating 'an educational ghetto'." Rathbun, supra note 55, at 20. But as noted, the PBS educational programs are consistently of high quality,
are not so heavily weighted toward social goals, and are viewed by a substantial child audience (and with increased funds for marketing to parents, would be able to increase such viewing). Further, the governmental goal must be to assure the availability of the high quality programming to all age groups; it is a plus--not a disadvantage--that the parent can turn to noncommercial channels and direct the child's viewing to such channels. If the parent abdicates and does not supervise the child's viewing, the child will turn to the "most popular channels," and will find "low quality" programs "full of violence and devoid of any educational value." Annenberg Report, supra note 55, at 29.

FN[FN104]. Broadcasting would be subject to government regulation of obscene material and would continue to face the problem of indecent broadcasts, because this regulation is not based on the public trustee concept. See FCC v. Pacifica Co., 438 U.S. 726 (1978). But enforcement would no longer involve denial or revocation of license but only forfeiture. Further, broadcasters would still have to follow sponsorship identification provisions, multiple ownership rules, rigged quiz or payola restrictions; all of which would be enforced by cease and desist and/or forfeiture rulings. The equal opportunities provisions (including no censorship) would continue, although equal opportunities should apply only to paid time. These points are not
discussed further because however difficult or important a particular aspect may be, the primary focus must be on the need to replace the public trustee scheme. The devil may be in the details, but without agreement on the central issue, we shall never arrive at the details.

FN[FN105]. See the proposal of Paul Taylor, Creating a TV Time Bank, The New Democrat, May-June 1997, at 15.

FN[FN106]. Thus, Senator McCain stated that broadcasters were the most powerful lobby that he had encountered in Washington. Paul Farhi, Their Reception's Great: When the National Association of Broadcasters goes to Capitol Hill, Congress is on the Same Wavelength, The Wash. Post, Feb. 16, 1997, at H5.

FN[FN107]. Chairman Hundt has recognized public broadcasting's need for "significant, long-term, reliable funding," Reject Commercials on PBS--Hundt, supra note 84, but believes that such funding should come from spectrum auctions rather than the spectrum usage fee approach urged here. See Rathbun, supra note 55, at 21. That solution has been proposed for years and is simply not going to happen because of Congress' drive for deficit reduction, with all the auction funds committed for many years to that purpose. To advance it yet again in 1997 is a "cop-out." Id.

FN[FN108]. See Peter Passell, Big Brother Wants to Manage the Broadcast Spectrum Again, N.Y. Times, Feb. 6, 1997, at D2.

FN[FN109]. See Brownlee, supra note 96, at 724.

FN[FN110]. In last-offer arbitration, the arbitrator chooses between the final offers of the two parties, forcing them to be realistic and thus closely emulating the market bargaining process.

END OF DOCUMENT

D.

Innovative Approaches to Public Interest Responsibilities: A Comparative Analysis

Innovative Approaches to Public Interest Responsibilities: A Comparative Analysis

The purpose of this appendix is to offer some discussion of various possible innovative approaches to public interest obligations, and to compare them to more conventional approaches.* Our shared ground is that broadcasters should attempt to contribute to the educational, civic, and democratic goals of a well-functioning democracy. The question is what methods are best suited to achieving those goals and whether it is possible to think of more creative means for doing so. Thus we discuss a wide range of proposals, from deregulation to spectrum auctions to a system of "digital drop-ins," by which government would support a substantial amount of public interest programming.

Some of the most interesting proposals below attempt to promote public interest goals by allowing considerable flexibility for broadcasters, as, for example, by allowing them to provide public interest broadcasting or instead to pay for someone else to do it, or by paying a spectrum fee (from an auction or from a set price) that might be used to support public interest broadcasting.

We have been greatly assisted by a number of presentations and documents, including those by the Media Institute, a working group of the Aspen Institute, and Hugh Carter Donahue. The public through electronic mail submissions, faxes, and attendance at meetings has also made substantial contributions to the Committee. We are very grateful for the creative thinking and assistance provided by these organizations and individuals. These ideas were vigorously debated within the Committee. Given the innovative and new approach taken by many of these proposals, the Committee chose not to reach any final judgment and conclusions or make any specific recommendations.

I. Traditional Regulation: The Public Trustee Model

The traditional approach to regulation of broadcasting has treated broadcasters as public trustees, obligated to meet a large set of public service responsibilities. Because broadcasters get exclusive use of a scarce public resource—the airwaves, it has been deemed appropriate to subject them to national commands designed to ensure promotion of the public interest. Perhaps the public trustee model should be "carried over" to the digital era, though there are complexities in deciding exactly how the model applies in a new setting. There are serious questions about the extent to which federal commands should be specific (so as to ensure compliance) or vague and general (so as to allow room for private adaptation).

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* The Advisory Committee thanks Angela Campbell and the Aspen Institute's Communications and Society Program directed by Charles M. Firestone and Amy Korzick Garmer for the submission, *Toward a New Approach to Public Interest Regulation of Digital Broadcasting: A Preliminary Report of the Aspen Institute Working Group on Digital Broadcasting and the Public Interest,* on which this Appendix is based.

Advantages: It is reasonable to think that direct mandates are the simplest way to ensure compliance with public interest responsibilities. If, for example, broadcasters are told to provide three hours of educational programming per week, or five hours of free air time for candidates per year, the public interest may be well-served simply by virtue of the mandate. Other approaches might be easier to evade and less effective.

Disadvantages: In general, this approach may be anachronistic in light of the new communications market, with so many more options. As historically understood, the public trustee model also has a degree of rigidity—a kind of "one size fits all" notion that is ill-suited to varying needs on the part of stations and viewers alike. Command-and-control approaches can also be counterproductive and have unintended bad side-effects.

II. Economic Incentives: Pay or Play, Spectrum Checkoff

In the environmental area, there have been many innovations designed to create efficient, or low-cost, ways of promoting regulatory goals. A creative illustration consists of "emissions trading," by which polluters are given a right to pollute a set amount, and permitted to trade that right with others.[1] The basic idea is that pollution is a public bad, and therefore people should be able to save money from doing less of it (and in that way lose money from doing more of it). If the right to pollute can be traded, there will be strong incentives to come up with low-cost ways of reducing pollution, and the result should be a system in which we obtain pollution reductions most cheaply. Existing experience with emissions trading approaches have shown many advantages.[2]

This basic approach—using economic incentives—might be adapted to the area of public interest programming. Indeed, the Children's Television Act now authorizes licensees to meet part of their obligation to children by demonstrating "special efforts . . . to produce or support [children's educational] programming broadcast by another station in the licensee's marketplace."[3] The idea might be generalized. Suppose, for example, that public interest programming is considered to be a "public good," in the sense that the public is better off with more of it. Suppose too that some broadcasters are good at providing such programming, and can do so in a cost-effective manner, whereas others are not so good at it, and can do so only at great expense. Adapting the environmental law model, it might be provided that broadcasters should have a choice: provide public interest programming of a certain defined level; or pay a certain amount to someone else who will do so.

A mild variation on this approach would involve what has been called the "spectrum check-off" model. On this model, broadcasters are given a choice: adhere to public interest responsibilities as nationally determined; or pay a fee for the use of the spectrum. The payment would be used for public broadcasting of one kind or other. This approach is somewhat less fine-tuned, and somewhat simpler, than the "pay or play" model. Under "spectrum check-off," there is only one "deal," whereas under "pay or play," there could be a number of trades every year.

Advantages: This approach might ensure a high level of public interest broadcasting, and do so in a way that ensures that such broadcasting will be provided by those most willing and able to do it. Thus the "pay or play" approach might combine the virtues of the public trustee model with the virtues of deregulation. Under this approach, people who do not want to provide public interest programming, or who can do so only at great expense, can make mutually beneficial deals with others who are willing to do so. This could serve both broadcasters and the public.

Disadvantages: In the environmental area, emissions trading does not work where it creates "hot spots," that is, areas that are highly polluted. A problem with "pay or play" is that it may result in the failure, on the part of some or many broadcasters, to do anything but "pay," with the consequence that many viewers do not see such programming—and with the further consequences that broadcasters who provide such programming may be hurt in the marketplace. In addition, there are symbolic and expressive values to uniform public interest obligations. Some people think that these obligations should apply to everyone and that no broadcaster should be allowed to buy its way out.

III. Pay Plus Access

Under this approach, broadcasters would pay a fee for a right to use the spectrum; the fee might be determined via auction or might be determined by government. At the same time, public interest obligations would be removed. In addition, broadcasters would be asked to allow a specified amount of programming in the public interest—in other words, to set aside an identified amount of time for political candidates, educational programming, or diverse viewpoints. It would be possible to imagine various combinations of the three ingredients of this approach: payment, relief from general public service obligations, and access.

Advantages: As compared with economic incentives, this approach would tend to ensure that some public interest programming was on every station. Many people think that this is important—that certain programming, for example candidate speech, should not be relegated to certain channels that are rarely watched. Thus this approach might do better in serving democratic goals. As compared with the public trustee model, this approach would better ensure that people will provide public interest programming who have the incentive to do so well.

Disadvantages: For those skeptical of "pay or play," this approach might create similar problems. It also would involve a degree of administrative complexity. It is possible that people would simply change the channel when the "access" material was on the station.

IV. Disclosure of Public Interest and Public Service Activities

We have emphasized the importance of disclosure of public interest and public service activities. It would be possible to think that disclosure should be the exclusive governmental mandate, and that the market should be used for all specific decisions. Perhaps, then, government should restrict itself to a disclosure requirement.

Advantages: Disclosure might well trigger public-interested reactions on the part of broadcasters and diverse segments of the public. In the environmental context, disclosure has by itself done enormous good in terms of achieving low-cost pollution reductions.[4] The same may well be true here. If broadcasters are required to disclose their public interest activities, there may well be a kind of competition to have more such activities, and to create a kind of "race" to do better. Moreover, disclosure is a minimal mandate, not by itself requiring anything. Perhaps what emerges from the market, influenced as it is by the pressures that come from disclosure, is best for society, especially in light of the increasing range of programming options.

Disadvantages: In advance, it is impossible to know how much good would be done by disclosure on its own. Perhaps the good results in the environmental area will not be replicated here. If disclosure by itself has few effects, there is insufficient reason to think that whatever results is necessarily "best." Disclosure may, in short, be too close to deregulation.

V. Spectrum Auction Without Public Interest Obligations

The FCC has experimented with an auction approach to allocating scarce communications resources. It would be possible to suggest that instead of being required to pay a "fee" for spectrum, to be set by government, broadcasters should receive licenses via any auction, where the market would set the relevant prices. The proceeds from the auction could be used however the taxpayers see fit.

Advantages: It is usually better to have the market, rather than government, set the fees for goods and services. And if deregulation is an appropriate solution, a spectrum auction might well be part of a complete deregulatory package, in which broadcasters purchase "space" (at market prices) and then supply the relevant goods (also at market prices).

Disadvantages: Operation of so general an auction could be somewhat complicated. Some people believe that there would be serious questions of equity if digital "space" were put up for sale anew, especially in light of various investments that have already been made. Most important, this approach is unacceptable if the case for deregulation has not been made out. If, for example, there are various forms of market failure, it is reasonable to think that broadcasters should provide more public interest programming that the market guarantees (see below).

VI. Complete or Near-Complete Deregulation

One possible approach, explicit in some of the suggestions that we have received, is to eliminate any public interest obligations. It might be thought, for example, that the market for communications is providing sufficient services for everyone, and that serious constitutional questions are raised by any governmental control of programming content. Even if the constitutional questions are not so serious, perhaps this form of government intrusion into the editorial discretion of broadcasting stations is no longer acceptable.

Advantages: Perhaps deregulation could do as well as any other approach at ensuring that viewers see what they want to see. It would certainly save money and reduce administrative burdens for broadcasters, a fact of general importance for the industry and of particular importance for many small and local stations. In light of the broad availability of options—including cable—it might be thought that there is no longer any reason for government control of content. On this view, any public interest programming should be funded by taxpayers, to the extent that they are willing to do so; broadcasters should not be required to pay for that programming on their own.

Disadvantages: There is good reason to believe that the communications market will not meet all social needs. Many people do not have cable television at all, and they rely instead on broadcasting. The market for broadcasting may well underproduce educational programming for children, and also programming relating to elections and other democratic concerns. There are large "external" benefits from such programming, and individual viewers may not adequately take account of those benefits in individual choices.[5] The fact that advertisers are involved in determining program content suggests that the communications market is not an ordinary one; since broadcasters deliver viewers to advertisers—since viewers are in this sense commodities rather than consumers—it is not at all clear that the communications market will simply provide viewers what they "want."[6] In any case people are citizens as well as consumers, and they may well, in their capacity as citizens, want broadcasters to produce more public interest programming than the market produces on its own. And if broadcasters are receiving licenses for free, it makes sense to say that they should be required to provide something in return.

VII. Degreulation with Licensing Fee, with Proceeds Devoted to Public Interest Broadcasting

Some people have suggested that government should deregulate the market, and allow broadcasters to show whatever they wish, but that it would be appropriate to impose a licensing fee, the proceeds to go to public interest broadcasting. Of course the licensing fee might be established via auction.

Advantages: Like the deregulation option, this one would eliminate any government control of the content of broadcasting. But it would impose a quid pro quo: broadcasters would have to pay a certain amount as a licensing fee, with the proceeds to go to public interest broadcasting on, for example, PBS.

Disadvantages: Like the deregulation option, this approach may well produce too little educational viewing for children and too little attention to democratic and civic affairs. It is risky to leave all public interest obligations with PBS; our tradition has sought to impose minimal duties on all stations who receive broadcasting licenses.

VIII. Digital Drop-Ins in the Public Interest and the Question of "Reserving" Public Interest "Space"

It has been suggested that when the 1600 channel analog television system becomes obsolete, some part of the spectrum should be specifically reserved, by government, for civic discourse or local and public affairs programming. The networks that produce such programming might be funded by money received from auctioning off a portion of the analog stations. The basic idea would be to ensure "space" for public broadcast stations that would serve civic aspirations. These stations could in turn develop relevant expertise and obtain niche markets, as for example, C-Span has done.

Advantages: This approach would involve little control of commercial broadcasters. At the same time, it would ensure a large level of civic and democratic programming. The goal would be to use new technologies to expand on the PBS model, creating a number of "little," and private, public stations.

Disadvantages: If it is desirable to ensure a certain level of public interest programming on all stations, this approach will be inadequate. There are also questions about the extent to which it is appropriate for government to reserve "space" for programming of a specific content, and about how strong a role government might have in overseeing those stations.

Endnotes

[1] *See* Ackerman and Stewart, *Reforming Environmental Law*, 37 Stan. L. Rev. 1333 (1985).

[2] *See id.*; Robert Stavins, *What Can We Learn From the Grand Policy Experiment? Lessons from SO2 Allowance Trading*, 12 J. Econ. Persp. 69 (1998).

[3] 47 USC 303b(b)(2).

[4] *See* James Hamilton, Channeling Violence (1998).

[5] *See* C. Edwin Baker, *Giving the Audience What It Wants*, 58 Ohio State L.J. 311, 352-83 (1997); *see also* James Hamilton, *supra.*

[6] *See* C. Edwin Baker, Advertising and a Democratic Press (1994).

The Davis Amendment and The Federal Radio Act of 1927: ē valuating ē xternal Pressures in Policymaking

In March 1927, the Federal Radio Commission (FRC) undertook the task of sorting out the interference problems and setting a regulatory agenda which would shape the nascent broadcasting business in the United States, a business that was less than seven years old. Conceived by Congress as a hurried solution to the interference problems of 1926, the Federal Radio Commission undertook the unenviable task of creating a new agency without any resources allocated to it. Additionally, the full membership of the Commission was not ratified by the Senate and it lost two of its members within the first year. It is not surprising to discover, therefore, that the work of the Commission met with dissatisfaction among members of Congress, distrust by the public, and attempts to rifle specific agendas through by large broadcasting and radio manufacturing interests.

The original legislation creating the Federal Radio Commission called for a one-year tenure for the agency, subject to reauthorization by Congress. During the reauthorization hearings, Representative Ewin Davis (R) of Tennessee charged the FRC was doing the bidding of the large broadcast interests and that the agency had failed to meet its mandate to create service for all Americans.

Davis introduced an amendment to the reauthorization bill that declared all Americans were entitled to equality of radio broadcasting service, both of transmission and reception. The amendment called for equitable allocation of licenses, wavelengths, time, and station power to each of the states according to population within each zone. The purpose of the amendment was to make the intentions of Congress clear to the members of the Federal Radio Commission.

Before and after amendment's adoption, public relations campaigns both for and against the implementation of the amendment's provisions heightened public awareness of both the Federal Radio Commission and the problems that it faced. Posturing about the difficulty involved in trying to implement the equality of service provisions led the Federal Radio Commission to become reactive to the influence of various members of Congress, to the pressures of the electronics industry, and to the needs of smaller regional broadcasters. The reactive stance helped set the mode of operation and the public posture for the Commission for the first years of its existence. The outcome of the Commission's work between the years 1927 and 1933 resulted in the creation of a local/ regional broadcasting service that relied heavily on a system of large and small broadcast stations that carried network provided, commercially oriented radio programs designed primarily for commercial entertainment.

A reading of the trials and tribulations of an upstart federal bureaucracy might make for an interesting, even nostalgic look at the birth of radio regulation, but one could question the importance of studying the adoption and

implementation of the Davis Amendment now. Broadcasting historian Susan Douglas reminds us that we can look at "old articles about radio fever as fanciful and misguided stories of little consequence, or we can take them seriously, and analyze the connections they reveal between technology and ideology."[1] As the Federal Radio Commission was being created there were powerful institutional forces seeking to influence the decisionmaking process. Their roots were political, economic, technological, and social, and the interaction between those influences produced a situation calling out for regulatory control. Congress responded with compromise legislation, written broadly, allowing independent commissioners the freedom to develop a new systematic paradigm for regulating broadcasting in the United States. However, In the *End of Liberalism*, Theodore Lowi writes that compromise legislation which marked the beginnings of many regulatory agencies often called for unclear, contradictory goals. Lowi found many regulatory statutes were void of meaningful guidelines beyond the abstract requirements to serve the 'public interest'.[2] Did the vague, compromised language that created the Federal Radio Commission make it impossible for a new structure of broadcasting to develop? Would the FRC Commissioners have the ability to separate their regulatory responsibilities from their political responsibilities? Were the technical limitations of the medium destined to define the solutions possible to the equalization clause?

Through an examination of the issues and problems that compelled the Federal Radio Commission to adopt certain policy decisions that met the legislative requirements of the Davis Amendment, I hope to illuminate some of the unintended consequences of deliberate legislative acts. The FRC began the regulation of wireless communication, and today's industry is still bound in some ways to the regulatory stances carved out during these early days. For example, the Federal Communications Commission is still bound by the regulatory procedures started by the FRC. Could a study of the initial controversies illuminate our knowledge about the commission's expectations for structuring the industry, along with the resultant outcomes for reducing interference? As a corollary, can we discover any insights regarding the industry's expectations from the commission?

Karl Popper suggests that the study of linkages between intentions and outcomes can produce insights into why the actions of historical actors who set out to accomplish one set of goals might produce unanticipated or contrary results.[3] Popper's suggestion holds promise for the study of broadcast regulation. For example, did the Commission's desire to create a quick solution to meet the rigid requirements of the Davis Amendment contribute to the notable reduction of nonprofit broadcast stations?[4] Was there a concern by the FRC or consulting engineers that the new technical plan described in General Order 40 could only be met by commercial stations able to buy expensive new equipment to meet a set of more stringent technical regulations? Such a proposition, though not definitively accepted in the current literature, is not without possibility.[5] Still, such a proposition opens a speculative, but viable set of explanations as to why commercial broadcasting emerged during the earliest days of radio and why a more public service orientation in radio did not surface until the creation of the FM band

Surprisingly, while some scholars have focused on either the history or the workings of the Federal Radio Commission, few have focused on the significance of the external pressures on the Commission that may have prevented it from resolving the interference and technical problems in its own way and within its own time frame.[6] If we examine the interests, motivations, and behaviors in the institutional setting of the Federal Radio Commission against the interdependent interests and motivations of Congress, the large broadcast trust, and the National Association of Broadcasters, we may gain insights into the decisions and the decisionmaking process?

This paper will briefly outline the events that occurred before, during, and after the passage of the Davis amendment look at the interaction among the various players, and identify the interests they sought to further. Finally, I will examine the decisionmaking process of the Commission in deciding how to implement the equality of service requirements of the Davis Amendment

I. The Federal Radio Commission. The First Year

According to the first *Annual Report of the Federal Radio Commission*, "a wholly new Federal body was called into being to deal with a condition which had become almost hopelessly involved during the months following July 3, 1926."[7] Congress had failed to create proper legislative oversight earlier in 1912 when it gave supervisory responsibility to the Secretary of Commerce and Labor. This failure to provide proper regulatory oversight came back to haunt Congress a decade later when Secretary Hoover found he lacked the authority to revoke station licenses, assign power levels or times of operation.[8] Radio's growth was explosive

Congress needed to do something fast, the question was 'what to do?' Lowi reminds us that regulation is only one of several ways governments seek to control society and individual conduct. And since there are some specific purposes that are best pursued through regulatory techniques, we should be able to observe a distinct set of political-process consequences associated with this kind of government commitment.[9] Scholars disagree as to why legislators wanted an independent commission. There may have been some reluctance to trust the Secretary of Commerce and Labor since Hoover was seen as closely aligned with large broadcast interests.[10] After consideration, perhaps Congress decided that an independent regulatory commission could best deal with the seemingly intractable interference problems that had developed as a result of the breakdown of the Radio Act of 1912.[11] Or, perhaps Congress was reluctant to adopt any of the earlier bills retaining the supervision of the Secretary of Commerce since they failed to gain partisan support in Congress. However, when Attorney General Donovan declared the existing regulation unconstitutional, the mounting interference crisis made radio reception almost impossible in many parts of the country. Amid mounting complaints from the rapidly growing broadcasting industry and local constituents who were eager to listen, legislators moved to create emergency legislation.[12]

Representative Wallace H. White (R- Maine) sponsored a bill in the sixty-ninth Congress giving authority to the Secretary of Commerce to grant licenses, assign wave lengths, and allot time to broadcasters while Clearance C Dill (D-Washington) sponsored a bill in the Senate that created an independent five member commission to have almost total control over broadcasting. Though both bills passed in their respective houses, the conference committee was unable to reconcile the difference before adjournment of the first legislative session.[13]

Continuing public outcry about the deteriorating listening situation around the country forced legislators into action. A compromise was reached early in the new year; the Radio Act of 1927 passed and was signed into law by the President on February 23, 1927. The Act incorporated parts of both house and senate bills by creating a the five-member commission on a temporary one-year basis to assign broadcast license and bring order to the chaos of the airwaves. After the initial one-year period, licensing authority would revert back to the Secretary of Commerce, while the FRC would act as a sort of Court of Appeals for broadcasters. According to the Act, certain non-policy functions were to remain with the Commerce Department.[14]

The Radio Act of 1927 gave the Commission authority to grant or deny licenses as would best serve the public interest, assign frequencies, times of operation, and power output. Section 9 of the Act instructed the Commission to remove inequalities in geographic distribution of broadcast facilities that had developed prior to the Act. Congress succeeded in appointing three of the five commissioners, and *The Outlook*, a news magazine of the period, claims that politics played a part in preventing several of the commissioners from gaining confirmation. At the end of the legislative session the Federal Radio Commission was only partly filled and had no appropriations budget. Other government agencies assisted with personnel and space as the Commission struggled to begin the task of creating a new federal agency without resources.[15]

Documents of the early days of the Federal Radio Commission show that one of the first issues discussed was a plan for frequency allocation and a timetable for implementation. This was necessary because section one of the act automatically terminated all existing licenses.[16] Following a precedent set by Secretary of Commerce Hoover, the FRC held hearings in late March to solicit opinions from broadcasters. The focus of these discussions centered on the issues of allocation and the engineering concerns surrounding the interference problem. McChessney notes that these sessions were dominated by testimony of corporate-affiliated radio engineers.[17]

The outcomes of these discussions are reflected in the actions of the Commission and a plan they begin to implement. For example, General Order 11(amended by General Order 13) issued on May 21, 1927 terminated all licenses, required all stations to file applications concerning their current status, and made radio stations subject to the provisions of the Radio Act of 1927. Included in the minutes for the meeting of May 21 is a statement that recognizes that "no scheme of reallocation which does not at the very outset eliminate at least four hundred broadcast stations can possibly put an end to interference."[18] This early declaration by the Commission suggests

that the FRC recognized the need to clear broadcasting interference through attrition of stations, reallocation of assignments, and reauthorization of power outputs. However, the actions of the FRC during this first year illustrate a much more conservative body.[19] It may be that given the tenuous nature of the commissioners' appointments and the lack of funding, the newly formed agency did not want to rock the boat. It may be that coercive actions from Congress or industry made the Commission tread lightly, but during the first year few station licenses were revoked.

Throughout much of 1927, the FRC acted less like a regulatory body and more like a technical agency. Documents indicate the FRC moved congested stations to less congested spots (frequency assignments) on the radio dial rather than reducing the number of licenses. A series of channel assignment changes made during this period helped some; however, the overall problem of overcrowding and interference was not eliminated.[20] These early orders moved various stations from one allocation to another to alleviate interference problems among 'local listeners.' However, as the winter approached, rural areas still suffered from significant interference. General Order 19 provided for the large scale transfer of station assignments to clear all frequencies between 600 KHZ and 1000 KHZ from 'heterodynes' (sic) and other interference.[21] However, the intention of the Commission was to hold the industry in status quo while the agency sought recognition and money from Congress to execute its charge. Testifying to an oversight committee of the House, Commissioner Skyes stated,

> (W)e concluded it was our responsibility under the law to first give a fair trial and see if it were possible to let all of these stations live....(I)f we had denied 150 or 200 station licenses at that time, in my judgment and in the judgment of the commission, we would have had so many law suits and possibly temporary injunctions granted against us that practically the whole of the broadcast band would have been tied up....[22]

Analysis of FRC General Orders and Minutes during its first year indicates that the Commission attempted to resolve the various interference problems on an ad hoc basis.[23] These attempts produced mixed results in the various regions of the country. FRC rulings seemed to ignore their responsibilities under Section 9 of the Act and instead ensconced commercial broadcast interests, particularly the large chain broadcasting stations and affiliates.[24] Members of Congress charged the Commission with favoring large broadcasters from the East while discriminating against the listeners in the South and West.[25] Commissioners vigorously denied the charges but when the new Congress convened, oversight hearings and newspaper accounts of public reaction to the Federal Radio Commission indicate that it had not succeeded in fulfilling its goals.[26] A House report reflected the displeasure of its members:

> The set-up in the broadcasting field which it was believed at the time the radio act was passed could be worked out in a year's time had not been effected. We are confronted with the dilemma of continuing the commission in authority for another year during which it is hoped the situation may be improved.[27]

In hindsight, it appears that the Federal Radio Commission did not see that political problems would develop as a result of its policy of maintaining the status quo in broadcasting while trying to resolve most interference questions on a case-by-case basis. One could argue that without the legislative mandate of proper funding and a fully confirmed commission, the FRC lacked the political clout to resolve the technical problems it was created to fix; thus the commission argued that it tried to avoid legal challenges which might further prevent implementation of the Act.[28] Congress, on the other hand, recognized the dissatisfaction among its constituents very clearly and sought to rectify the situation during the Commission's reauthorization process. Led by members from the south and the west, Congress amended the FRC's reauthorization bill to correct broadcasting's geographical imbalance.

II. The Fight ō ver the Davis Amendment

The Seventieth Congress took no pity on its stepchild. Rosen says the two members most responsible for the creation of the FRC fiercely attacked its lack of accomplishments. Clarence Dill chided the 'cowards and dullards' for their inability to develop a plan to reduce broadcast stations while allowing themselves to succumb to the influence of the radio trust. Representative White complained that the FRC policies had complicated the situation. Both White and Dill echoed their colleagues by insisting that the only solution to the interference problem was the elimination of some broadcast stations. Led by Representative Davis, Congressmen from under-represented regions of the country protested that the FRC had failed to distribute facilities equally among the states.[29]

During an oversight hearing, Representative Davis served notice to Commissioner Sykes that he intended to change language in the Act to remove any vagueness about the Commission's responsibility.

> *Mr. Kading*: ....do you not think it would be very important to act upon the suggestion of the chairman of preparing an amendment to be introduced in Congress clarifying the matter (interpreting equally of service)?
> *Commissioner Sykes*: Personally, I would be glad, of course, if Congress would clarify it. I would not like to have to undertake to draw the amendment, though; I would have to leave that to you gentlemen.
> *Mr. Davis*: In other words, your opinion is, naturally, even from the point of view of the commission itself, it is highly important for whatever statutory provisions are enacted for your guidance to be unambiguous and about which there can be no controversy or conflict of opinion.
> *Commissioner Sykes*: I would be delighted, Judge, to see it at my rest.
> *Mr. Davis*: I want to state I am in thorough accord with that and, so far as I am concerned, will undertake to effect that result.[30]

With the introduction of the Davis Amendment to section 9 of the Act's reauthorization bill, a political debate ensued over the precise meaning of the 'equality of service clause' and whether passage of the reauthorization with its

inclusion would create a better radio service or hamstring the Commission in its work. Depending on what interests one held, the amendment was designed to either destroy broadcasting or save it. There seemed to be little middle ground. For example, Senator Dill said the language of the new bill made it unworkable and impracticable and blamed the FRC for disregarding the equitable service provisions of the 1927 law.[31]

Industry leaders lobbied heavily against the amendment provisions. David Sarnoff, Vice-President of Radio Corporation of America, stated, "(I)t is my hope that Congress will not pass a bill, the technical provisions of which, to my mind cannot be of help either to the listening public or to broadcasting stations."[32] Even members of the Federal Radio Commission got into the fray. Commissioner Caldwell stated that the "rider would wreck our present wonderful radio broadcasting structure" and claimed the amendment" is not practical and must be discarded in the search for a way to reduce the number of stations " Meanwhile the *New York Times* speculated, "(W)ill the Ides of March in 1928 go down in history as a turning point in 'radio'?"[33]

The heated debate crossed party lines making it difficult to assess relative support for the bill. Support for the bill appeared to be tied to supporting regional constituent desires for either more radio service or for maintaining the status quo. For example, Representative White, a powerful Republican from Maine aligned himself with Representative Davis, a Democrat from Tennessee. House Democrat McKeon from Oklahoma stated that if the "house failed to adopt the 'equitable distribution' provision he would offer a resolution call for an investigation of the (radio) 'trust'."[34] All of these congressmen had constituents who desired better local service. But, House Democrat Emanuel Cellar from New York said, "the amendment which the committee made to the Senate bill, to my mind, will put radio art into a straitjacket."[35] During February the FRC undertook several measures to appease southern supporters of the Davis Amendment.[36]

Outside organizations with an interest in radio also lobbied Congress against adoption of the Amendment. The *New York Times* covered the reauthorization bill extensively. At one point it described the political maneuvering in Congress as if it were describing a battle scene:

> Honors are even in the radio war being waged in Congress. Commissioner Caldwell opened the hostilities with an attack on the Watson bill. A few days later Senator Dill raided the Commissioner's position. Reinforcements in the form of Representative Davis, Tennessee, came to the Senator's aid. Just when it seemed the Commissioner might be forced to beat a strategic retreat, the National Association of Broadcasters, Inc. hurled its shock troops in the breach caused by Davis' flank attack on the Commissioner's left while Senator Dill was hammering his front. It appears radio is in politics![37]

Despite the best efforts of the NAB, the radio 'trust' and members who opposed it, the reauthorization which included the Davis Amendment's 'equitable distribution' requirements passed by a large margin on March 28, 1928.[38] The clause amended Section 2 of the Radio Act to read:

> ....that the people of all zones.... are entitled to equality of radio broadcasting service, both of transmission and of reception, and in order to provide said equality the licensing authority shall as nearly as possible make and maintain an equal allocation of broadcasting licenses, of bands of frequency or wave lengths, of periods of time for operation, and of station power, to each of said zones when and in so far as there are applications therefor: and shall make a fair and equitable allocation of licenses, wave lengths, time for operation, and station power to each of the States, The District of Columbia, the Territories and possessions of the United States within each zone, according to population.[39]

The FRC was directed to carry out the equality of service requirement "by granting or refusing licenses or renewals of licenses." As if to make it clear that the Commission should do its bidding, Congress set all the Commissioners' terms for expiration on February 23, 1929. The message from Congress seemed to be 'get it done in a year or we'll get new commissioners.'

With all of the apparent opposition to the Davis Amendment why did this version of the reauthorization bill emerge from committee and pass? Rosen suggests that it passed to appease Southerners who threatened to delay a vote on the reauthorization legislation. It may be that some members worried that a defunct FRC would mean that the United States would plunge into further broadcasting chaos without a regulatory body. Legislators did not want to face that eventuality and since the Commission's authority had already expired, this appeasement may have been the expedient political accommodation necessary to reinstate the FRC. Other members of Congress were concerned that without passage of the reauthorization, administration of radio would revert back into the hands of the Department of Commerce.[40]

III. The Davis Amendment and the Allocation Plan

With the passage of the amendment, the Commission members now faced the problem of implementing a plan they had publicly criticized. However, faced with the reality of the situation, the Commission had to formulate a plan to meet the specific requirements of the amendment. Louis Caldwell, Chief Counsel of the Federal Radio Commission, wrote, "(I)t would be hard to conceive of a more baffling problem than the one which Congress imposed upon the Federal Radio Commission by the so-called Davis Amendment."[41] Caldwell complained that before the amendment the Act allowed the Commission a certain latitude in making its license distribution among the different states; the flexibility was now gone because of the rigid requirements set forth by the new language.

Nevertheless, faced with the specific requirements of the Davis Amendment, the FRC undertook steps to devise an allocation policy that would bring station assignments into compliance with the newly amended Radio Act There was disagreement among the Commissioners as to the precise meaning of the amendment. The majority of the commission construed it as requiring immediate reallocation of the broadcast band while Commissioner Robinson claimed the amendment required the Commission to adopt a policy to be followed in the future where equalization would be attained where ever possible The commission also grappled with the question of whether the amendment required an equality of the number of licensed stations without regard to division of time or whether two or more stations dividing time could be balanced against one full time station in another zone.[42] Each interpretation created a problem for the FRC since each interpretation called for a different engineering calculus.

1928

At the end of March a working group from the Institute of Radio Engineers (IRE) submitted a memorandum to the Commission describing a plan for classifying the 90 broadcast channels into three groups of licenses The plan called for the creation of national, regional and local broadcasting services. Under this scheme licensees would be apportioned equally to all five zones [43] The study was reported out on April 6, 1928, when the Commission asked radio engineers, under the supervision of Dr. J. H Dellinger of the U. S Bureau of Standards for their recommendations to implement the allocation plan.[44]

Also during this time the Federal Radio Commission began to solicit the expert opinion from members of the Institute of Radio Engineers such as L E Whittemore, in addition to using experts at the U S Bureau of Standards, Captain Guy Hill from the Army Signal Corps and the other engineers from consultative or technical groups [45] The obvious complications of the equalization clause required the Commission to attempt to become more sophisticated in its approach to solving the radio interference problem But, now the Commission found itself facing increasing pressure from Congress [46]

By April 1928, the initial plan proposed by the Institute of Radio Engineers was fleshed out Briefly, the plan created a zone-based allotment scheme for the 90 channels available in the standard broadcast band It called for the creation of 50 high powered stations that would operate on 'cleared channels' Ten stations were to be assigned to each zone of the country. Because these stations were assigned the sole use of the channel (clear channel) during the nighttime, no heterodyne interference would occur and reception of these high powered stations would reach into the furthest sections of rural America The remaining 36 channels would be divided between stations that served the regional and local needs of the various zones Each zone would receive 10 of these secondary channels Because these secondary stations were lower in power, engineers believed it would be possible to assign more than one station to each region of the country. [47]

The Institute of Radio Engineer's plan did not meet with widespread approval from either Congress or the broadcasting industry There were two major problems with the plan. First, it called for a maximum of 340

stations, a reduction of nearly 350 stations from the current allocation Secondly, new higher powered clear channel stations did not fit into the scheme envisioned by members of Congress seeking to appease their constituents Ewin Davis, author of the equalization amendment, lamented "the tentative plan is overloaded with so-called national stations...." Later that April the National Association of Broadcasters, the Federal Radio Trades Association and the Radio Manufacturers' Association proposed a wholly different interpretation of the Davis Amendment The NAB, fearing a reduction in the number of licenses, offered a plan that attempted to maintain the status quo of assignments as much as possible The National Electric Manufacturers' Association and other broadcasting station groups also submitted various allocation plans to the Commission.[48] No one plan seemed to meet the specific requirements of the equal allocation clause. While the IRE's plan seemed to have the inside track because it had the support of J. H Dellinger, the *New York Times* reported members of the National Association of Broadcasters were disenchanted with the proposal, calling it too theoretical. The NAB and NEMA also called for an investigation of the agreements made by members of the radio trust.[49]

Why was a logically designed plan, incorporating some of the best engineering theory of the day, unacceptable to those with political or industry influence? There were major obstacles to implementing the engineers' proposed solution First, equalization would require the Commission either to target zones with more stations and reduce the number of licenses in those zones, or increase the number of licenses in the zones that were under served thereby increasing the number of stations and the interference level overall The former plan would rile Congress by eliminating many constituent radio stations And, while the latter plan might be a political expedient, it would not eliminate the interference problems that the FRC was created to resolve In either case, there was also some concern that whatever plan was adopted, the plan would permanently freeze the number of broadcasting stations

Similarly, the equalization clause required making the number of licenses allotted to the various zones proportional to the populations of the states within each zone Thus it was possible that even though a zone may have the correct number of licenses, once the FRC decided whether to increase or decrease the number of licenses, the zones would have to redistribute those licenses among the states if their number did not reflect the correct population ratios Further, while the engineer group's scheme began to address one of the equalization requirements of the Davis Amendment, the division of power allocations among the zones, their plan also needed to address station power and time division within the zone and among the states based on population [50]

The FRC felt obligated to start the process of reducing the number of licenses in order to implement the new allotment scheme [51] General Order No. 32, issued on May 25, 1928 asked for 164 broadcasting stations to show cause why they should continue to be licensed Most of these stations were located in highly populated states in the East and Mid-West No stations from the South were included in the Order. Over the summer a number of licenses were disposed and other stations included in this group had their hours of operation or power sharply curtailed [52] While the engineering staff under J H Dellinger grappled with the difficult problems posed by the

equalization clause, the Commission provided an outwardly visible demonstration that it was dealing with the questions of allocation and division of service by eliminating small and marginal broadcasters.[53] Ready to avoid controversy for its actions, the FRC issued two lengthy documents on August 23 and September 1, 1928 describing the Commission's application of a vague public interest standard in reviewing the stations examined in General Order 32.[54]

Hugh Slotten contends that the engineers' view became dominant because key members of the commission believed that rancorous political debate would be avoided if the solution was based primarily on the use of technical reason. Engineers interpreted the "public interest" standard as one that provided the best possible service based on engineering standards and technical efficiency.[55] Since Congress failed to define the meaning of public interest, the technical definition could be construed as easily as any other definition. Supporting this thesis is the fact that some Commission members argued that equalization and reallocation were fundamentally technical problems demanding technological solutions.[56]

Slotten's thesis is enticing but not wholly supported by the engineering facts reported out in the Federal Radio Commission's Annual Reports for 1928 through 1931. For example, the broadcast section of the FRC's annual reports of 1930 and 1931 under C. B. Joilleff and V. Ford Greaves detail a much more complex matrix of engineering data than previously included under J. H. Dellinger in General Order 40. Also, the Commission abandoned the quota system that it applied in 1928. Starting with General Order No. 92 issued June 17, 1930, a 'unit system' of evaluation to determine equalization compliance was adopted that included information about type of channel, power, hours of operation, and other considerations. The unit system provided a richer data set for analysis, but it also provided some indication that true equalization would never be achieved.[57]

IV. General Order 40 - Making Lemonade out of a Lemon

On August 30, 1928 the Federal Radio Commission issued General Order 40, a plan outlining a quota system for the reallocation of broadcasting stations. Immediately the Commission began a public relations offensive to convince politicians, broadcasters, and the public alike that the scheme was the best possible solution to meet the equalization requirements specified in the Amendment.[58] On September 4, 1928, Chief Engineer J. H. Dellinger submitted a memorandum to engineers detailing the principles of the allocation plan. Three days later Dellinger issued a second engineering analysis of the plan. The second analysis, made by John V. L. Hogan a well known radio consulting engineer, supported Dellinger's engineering assertions. Hogan states, "I feel you and your Commissioners are to be congratulated upon having withstood criticism until this time when you are prepared to rearrange the broadcasters with the least possible disturbance of established services and the greatest improvement of the status of listeners, consistent with the law."[59]

Dellinger's memoranda and the supporting engineering opinions are significant for several reasons. First, they were meant to reassure those broadcasters who survived the earlier round of cuts that the status quo would be maintained as much as possible by providing a permanent, definite basis of station assignments for each zone and locality. Thus, any station that survived the license hearings of the past summer would find an allocation on the allotment table under General Order 40.[60] Secondly, Dellinger outlined a strategy for implementing 40 high powered stations on clear channels, a plan meant to bring greater listening choice to rural America while further entrenching the interests of the radio trust. Third, the plan placed several blocks of regional and local services on different parts of the dial to minimize inter-channel interference. This reallocation allowed larger metropolitan areas to have more station assignments. Finally by using the 'borrowing' clause of the Davis Amendment, some Commissioners hoped to keep licenses for stations in zones that were currently over quota by borrowing those frequencies from other states in the same zone that were under quota. This maneuver was meant to placate broadcasters and audiences in metropolitan areas who were used to having a diverse number of stations to choose from.[61]

While the plan implemented guidelines specified in the report of the Institute of Radio Engineers generally, General Order 40 specifically acknowledged the importance of meeting its political obligations as well adhering to the Commission's earlier decision that no existing stations would be abolished as a result of the new allocation. To reinforce the notion it was meeting its responsibilities as a regulatory arm of Congress, the FRC in its Second Annual Report specifically outlined the outcome of license reductions as part of its attempt to meet the requirements of the Davis Amendment. Documents of the Commission show that this strategy was developed in August before the actual announcement of General Order 40.[62]

In implementing the equalization plan, the FRC needed to meet specific regulatory requirements in the Act allowing stations an opportunity to appeal the frequency assignment change if they were displeased by their new frequency. Such a move would reduce litigation and possible court challenges to the allocation scheme. The Commission stated it would give stations an opportunity to examine the new assignments and challenge the potential changes, thus all station licenses were extended until November 11, 1928. The details of the plan were sent to broadcast licensees on September 11th. In that memorandum, Acting Chairman Sykes tried to assure broadcasters that the Order was a starting point, not a final solution. "(I)t is the desire of the Commission that any broadcasting station which is dissatisfied with its assignment under the reallocation should have an opportunity to be heard and to demonstrate that public interest, convenience or necessity would be served by a better assignment," he notes.[63] In addition to proffering good will for the new plan and hoping to head off a court challenge, the Commission wanted to examine the effects of the reallocation which up to this point were only theorized on paper. A second temporary licensing period was established to allow the engineering staff time to fix unforeseen problems after the stations moved to their new frequency assignment.[64]

The Commission used several strategies to disseminate positive information about the equalization plan to the general public. For example, the October issue of *Congressional Digest* was given over entirely to a discussion of the problems of radio reallocation. On the day of the reallocation, Commissioner Orestes Caldwell issued a lengthy statement to the public stressing several previously mentioned points that. 1) engineering experts created the plan, 2) small town and remote listeners would benefit greatly, 3) dissatisfied broadcasters could challenge the assignment, and 4) some time would be required to evaluate the effects of the change.[65] At the same time, Dellinger issued a press release attempting to explain the benefits of the plan to both general and technically sophisticated readers. In the New York *Herald Tribune*, Dellinger suggested that listeners would find it helpful to make lists of the old and new dial assignments side-by-side for easy comparison while in the *Journal of the Institute for Radio Engineers* he analyzed the allocation scheme for the technically minded.[66]

Outwardly the Commission appeared pleased with the response to reallocation although almost immediately following the announcement of General Order 40, numerous complaints were filed with the Commission. Boasting about the benefits of the new allocation scheme under General Order 40, Commissioner O. H. Caldwell stated "Congress handed us a lemon and we have proceeded to make lemonade out of it."[67] Immediately following the issuance of the Commission's reallocation scheme, broadcasting stations began to protest the plan. Many complained that the plan did not constitute an equalization as required by the Davis Amendment. The Commission had to set several hundred cases for hearing. Meanwhile political pressure mounted in Congress at the same time as various interest groups expressed displeasure with General Order 40. On November 22, 1928, a resolution passed requiring the FRC to report back to the Senate on or before December 15, 1929 detailing the number of licenses, power allocations, number of frequencies, and periods of time for operation among all five zones.[68]

V. After ē qualization: Analysis of the Commission's Choices

Analysis of the implementation of General Order 40 poses several problems for broadcast historians, and legal, science or political policy analysts. Mark Gilderhaus reminds us that the historian displays a bias through the mere choice of subject matter and Carl Becker observes that since the actual past is gone, the world of historical analysis is an intangible world.[69] What the historian chooses reflects what she/he thinks is important. Yet, public interest theory, the basis upon which we provide assessment of regulatory success or failure, is predicated precisely on those fault lines, e.g. on interpretive views of the events, legislative histories, the people circumscribing the agencies, and the specific laws analyzed during specific time periods. Robert Brett Horwitz notes that within this perspective, the public interest is assessed as either a theoretical standard or as a historical fact of the regulatory agency's birth.[70]

The Federal Radio Commission's birth was a difficult one. It was the result of rancorous debate, inadequate funding, and political manipulation. The Commission was created to deal with immediate and long-term structural

problems. Thus, given the circumstances of the Commission's birth, the amazing growth of radio as a means of communication and as a social institution, and the powerful lobbying interests of the radio trust and the NAB, the implementation of the Davis Amendment provides significant material to analyze. Several different theoretical frameworks provide potential for conceptualizing the importance of the events, for analyzing their long-term significance, and for explaining the behavior of the regulating agency.[71] Public interest theory provides us with the opportunity to view the events surrounding the implementation of the Davis Amendment as one of the resolution between the conflict of the needs of private corporations and the needs of the general public. We could deduce this based on the above stated history surrounding the passage of the Davis Amendment.

While applying public interest theory would allow the reader a historical understanding of those events, the application of such an analysis fails to provide a richness of detail in defining the various influences played upon the commission. For example, the growth of the radio industry during this period seems to fail to conform to the mold of the small, individual producer as embodied in the Jeffersonian idealism of public interest theory. During this time, radio was largely controlled by large industrialized companies such as RCA, Westinghouse, AT&T and General Electric.

The application of the 'progressive' phase of public interest theory reflects the altered economic conditions created by large corporations, situations not unlike the growth of radio during the period leading up to the formation of the FRC, but the technical interference problems and the 'equalization' requirements of the Davis Amendment effectively remove this means of analysis as a viable explanation for the promulgation of regulatory policy as embodied in General Order 40. On the face of it, the specific actions of the FRC generally seem to support the large radio interests as opposed to reflecting the work of an interventionist-type commission designed to protect powerless consumers.[72] Thus, the FRC does not seem to act like the Federal Trade Commission or other similar regulatory agencies.

In "Four Systems of Policy, Politics and Choice," Theodore J. Lowi defines a model of capture theory that details likely policy outcomes based on the influences and types of coercion applied in given circumstances. This kind of analysis is useful because it allows one to look at the behavior of the actors and apply a schema to explain the events or outcomes as a result of the application of coercion, policy directives and/ or politics upon the regulating body. Figure 1.0 describes the four potential policies (and their political effects) that could be adopted by an independent commission such as the Federal Radio Commission as a result of the various potential influences. Under such a schema, if you looked at the policy it would be possible to guage the immediate influences upon that policy or upon trying to change that policy. For instance distributive policy would be likely to influence individual conduct as opposed the the environment of conduct throughout a whole segment of an industry or industrial sector.

TYPES OF COERCION, TYPES OF POLICY, AND TYPES OF POLITICS

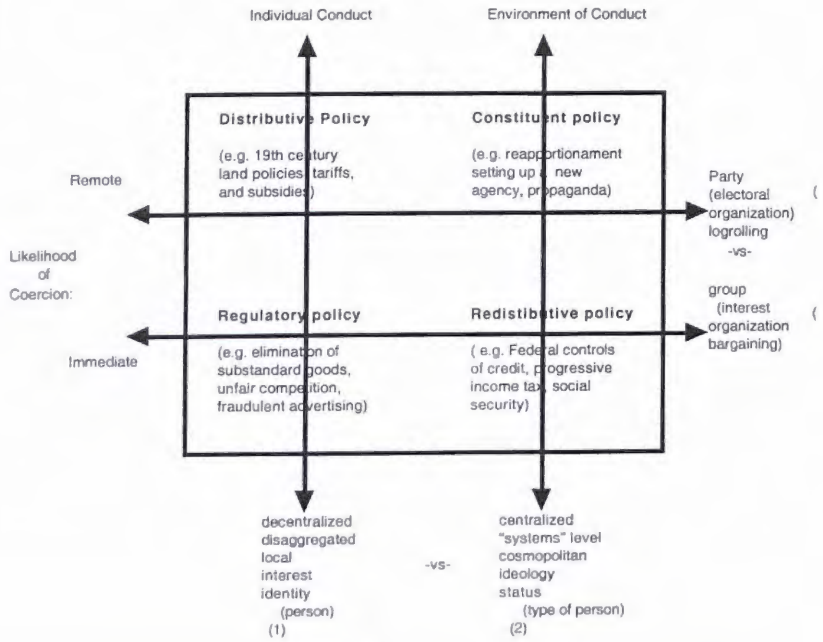

fig. 1.0[73]

To apply this schema to the Federal Radio Commission, one could analyze the nature of radio licensing and assess its potential benefit to the licensee. After doing so, it is possible to deduce the type of policies being applied to the broadcasting industry. For example, one could analyze the effects of the application of federal policy with the onset of radio licensing starting about 1912. The Wireless Act of 1912 provided for little regulatory oversight. Licensing was primarily a record keeping function assigned to the Commerce Department. As can be seen in figure 1.0, early licensing would be considered 'Distributive' In this case government is giving away (or licensing) a property right. The determinations made for a distributive policy type generally depends on individual conduct (e.g. is the applicant a suitable license holder?). One would conclude that the likelihood of coercion upon the policymaker, the giver of the license, is as remote as the likelihood of coercion by the government upon the licensee. Since the Secretary of Commerce essentially granted radio licenses when the individual or party applied for one, we can see

that in real life little coercion would have been applied. Why? Because no test was required for licensing and the license was not a limited resource in 1912, little coercion would occur.

Using this schema to look at changes in the types of policy illustrates that the Federal Radio Commission actions do not fall into the regulatory policy arena as easily as do other governmental agencies policies such as the Federal Trade Commission or the Interstate Commerce Commission. Both the FTC and ICC were created to use 'regulatory policy' to eliminate unfair practices or reduce the problematic of poorly made or unsafe goods. Clearly the FTC could apply coercion to firms through the use of 'cease and desist orders' and 'consent degrees'. Similarly, the trust-busting ability of the FTC could move to decentralize and disaggregate large trusts.[74] Applying Lowi's schema illustrates the fact that there is a great likelihood of pressure or coercion applied to the regulatory agency when large trusts attempt to maintain the status quo.

The plight of the Radio Commission appears somewhat different from traditional regulatory agencies, though, when we attempt to plot the influences on it within this schema. The 1927 Federal Radio Commission found itself in a different situation than the Secretary of Commerce did in 1912. For example, if the FRC attempted to use 'Regulatory' policy to break up the increasingly powerful radio trust, it was likely to face the threat of immediate coercion from considerable lobby efforts of the powerful corporations involved in the radio trust. Worse yet, because the FRC was not a permanently established independent regulatory commission, it found itself heavily influenced by various 'Constituent' policy initiatives of Congress because it faced a yearly renewal. Many in Congress were looking for the FRC to reapportion frequencies favorable to them; a bit of redistributive policy with a constituent interest bent. Conversely other members of Congress from the East and Midwest looked to maintaining the status quo. Still others looked for the agency to develop policies that would permit local stations to transmit without the interference problems that plagued radio after 1926. There appeared to be no clear cut constituent decision that would please the majority of Congress possible for the Commission to adopt. And, educational leaders were interested in having the FRC develop redistributive policies that would create the necessary conditions for the long-term growth of radio for educational and informational purposes. Other special interest groups wanted to affect policy, too. Commercial interests wanted to maintain the current system of broadcasting ensuring the growth of powerful radio networks.

The divergent set of interests provided too many countervailing pressures on the infant, unstable Federal Radio Commission. As noted earlier, it was necessary for the Commission to respond to party pressures and interest group pressures of various Congressional constituents, mindful that Congress had (1) failed to confirm several commissioners who were friendly to Hoover, (2) failed to provide funds for the agency's operation, and (3) anticipated that the commission would expire at the end of its term of appointment. A look at figure 1.1 illustrates some potential policy outcomes that might occur as a result of choosing specific goals or favoring the influences of certain politics.

TYPES OF COERCION, TYPES OF POLICY, AND TYPES OF POLITICS

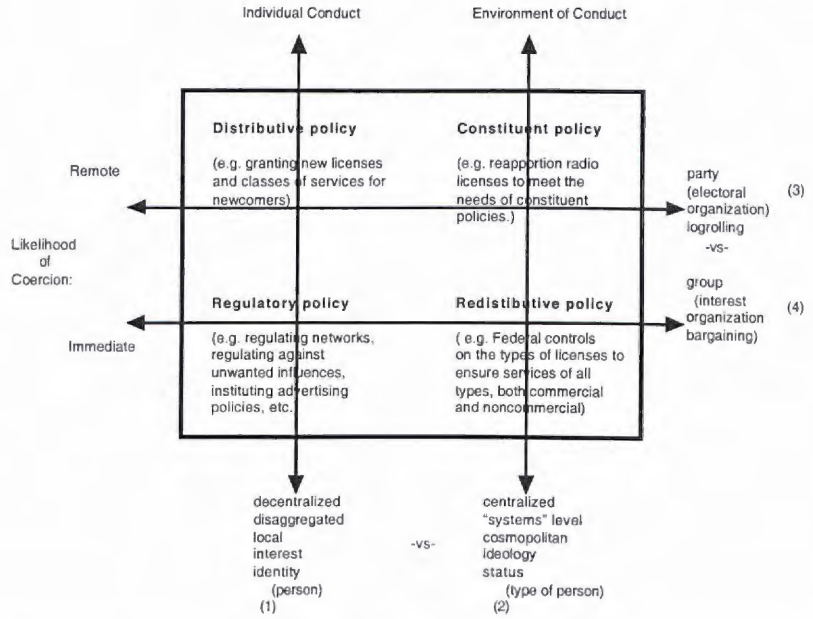

fig. 1.1

Within the framework of this redrawn policy schema one can conclude that the Federal Radio Commission of 1927 is caught between several different factions. The traditional congressional needs versus special interests needs are obvious. On one hand some congressional members, such as Ewin Davis from the South, are applying constituent coercion on the commissioners and would like to see the Commission equalize the number of radio licenses between the northern U. S. cities and southern cities. The pressures put on the Commission by the congressional membership follows traditional logrolling behavior. Adoption of the Davis Amendment's equalization language requires the FRC to act to meet the regional needs of the South and the West. Other congressmen, such as Congressman Dill, wanted the Commission to redistribute the radio spectrum for special interests such as alternative and educational users. One can see that different interests groups apply various forms of lobbying pressure would try to force the Commission to move in a specific direction on this chart. In choosing a political

solution, the Federal Radio Commission would be forced to favor one interest group at the expense of another regardless of the decision it chooses.

The FRC was faced with potential influences outside of Congress as well. The radio trust and some members of the NAB were at odds over potential regulatory policies for radio broadcasting. RCA, for example, was anxious to contain the application of FRC policy that could hamper the sales of radio receivers since it held the patents on the devices or circuits needed to build radios. Licensing fees as a means of paying for programs, such as those imposed by Great Britain, were seen as a deterrent to the sale of radio receivers. And by 1927, the members of the radio trust held the most powerful radio stations, developed chain broadcasting, and had the engineering expertise to improve these stations quickly and dramatically.[75] RCA opposed policies which disfavored large stations and its radio network. Obversely smaller broadcasters were afraid the of the potential and power of the RCA trust. These smaller National Association of Broadcasters members needed substantial revenues from advertising sales to build and expand their program offerings and broadcast facilities. These different factions attempted to coerce the FRC into adopting favorable policies to local or affiliated stations. While RCA would have favored a regulatory commission to ensure high engineering standards and the elimination of smaller nuisance stations, smaller NAB members would have favored a redistributive policy which required the delivery of programming at the local level.

The FRC tried to avoid upsetting the large station interests of the broadcasters and also tried to please the party or regional constituents' interests of Congress at the same time.[76] This strategy can be seen in the allocation scheme devised for General Order 40. The best channels favored large broadcast interests through the creation of 'clear channel' station allotments while the less powerful regional and local channel allotments could mollify many listeners concerned about their favorite local affiliated stations.[77] Given those countervailing forces, the strategy for implementing General Order 32 can be seen clearly. General Order 32 essentially reduced or eliminated marginal stations, including educational and special interest or 'propaganda' stations as the FRC referred to them. As a result of the FRC's general policies and the implementation of General Order 32, these stations found their power levels slashed and their hours of operation sharply curtailed. Clearly the actions of the commission are traced along the regulatory and redistributive trajectory; by reducing the influences of special interest groups such as educators and religious groups, the commission eliminated some of the complexity and pressure of resolving the equalization problem that faced them.

Lowi's taxonomy provides a useful way for using the historical record to assess the normative and empirical implications of radio regulation. This analysis contradicts the notion that implementation of the Davis Amendment would be best served using the very best engineering principles available. Looking at the outcomes, the implementation of the equalization principles becomes an amalgamation of both constituent and redistributive policies. For example, the intention to provide equalization of services to all regions of the country cuts across constituent boundaries, as previously noted in section 3 of this paper. However, Davis' criticism of the radio

commission for failing to reallocate power and frequency assignments of the large radio monopolies suggests the FRC should respond to Congress' desire to apply constituent policies while Dill's criticism that the FRC had not acted boldly enough suggests redistributive policies. Similarly Congress' refusal to confirm Commissioners Caldwell and Bellows suggests that members of Congress were uneasy with the close relationship between those two nominees and the powerful radio industry that was closely aligned with Herbert Hoover. These policy assumptions indicate normative policy goals Congress would have considered in voting the legislation for equalization up or down. However, along with normative assumptions were there Congressional concerns about formative outcomes, too? Did members of Congress assume that the likelihood of coercion on these Commissioners would be so great that they would do the bidding of the radio trust? Such a fear demonstrates one of the classic problems associated with the public interest capture theory.

In capture theory any institution with sufficient political influence will attempt to manipulate the policies of the agency. This may be too simplistic an explanation to understand the decisionmaking processes of the FRC. Any specific policy the FRC developed to help only one segment of the industry, say the large radio trusts, would meet the disapproval of those Congressmen who supported a different constituency, such as small, local stations. Again, Lowi's model provides illustrations of how external influences can be drawn along policy lines. The Federal Radio Commission was being pulled along *several* paths simultaneously. At the end of the first year, the influences upon the commission did not diminish. With the addition of specific equalization requirements in the Davis Amendment, the task that lay before the Commission was more complex politically and technically than ever. The Federal Radio Commission needed to develop an initiative that would free it from the constraints of developing a strategy for meeting the needs of just one of the four traditional sets of influences that are illustrated in figure 1.1. Instead, the Commission decided to focus on a technological solution to the administrative dilemma of having too many political interests clamoring for different policy solutions

VI. General ō rder 40: Mixing Technology With Politics

Capture theory can be applied to scientific assessments as well as political influence peddling. Sheila Jasanoff states that bias in scientific assessment is commonly the result of conscious deception by 'experts' or of uncritical acceptance of the industry's viewpoint by agency officials.[75] Whatever regulations the Federal Radio Commission decided to effect regarding the interference problem, it was faced with the reality that broadcasting had established an important place in the social consciousness of America. McMahon notes that by the time Congress established the Commission in 1927, advertising had become the dominant mode of financing despite listener preferences for alternative ways to support radio programming.[79] Clearly the broadcasting networks had programming that the public wanted to listen to, and two members of the Commission had industry ties. But, it is the recommendations of the Institute of Radio Engineers that essentially assured the continuance of the large broadcasters by setting up the allocation scheme of several large, powerful clear channel stations in each zone of the country. In many cases

these large stations were already owned or affiliated with the broadcasting networks, either NBC or the newly formed Columbia Broadcasting System.

The decisionmaking process, at first blush, was seemingly based on engineering principles, but it appears to be influenced by political and economic decisions, as well as engineering requirements. For example, during the first years of the FRC, Alfred Goldsmith was both president of the Institute of Radio Engineers and the chief broadcast engineer of RCA. Thus, the recommendations of the radio engineers presented to the Commission must have reflected, at least to some degree, the beliefs of how to best deal with the interference problem from the perspective of the special committee and RCA's chief engineer.[80] Other members of the IRE committee set up to study the implementation of the Davis Amendment included C. W. Horn of Westinghouse Electric, R. H. Marriot of International News Corp., and L. E. Whittemore of the Bureau of Standards.

Several members of the Commission spoke against the acceptance of the recommendations of the engineers. On August 17, 1928, Louis Caldwell, General Counsel, notes in a memorandum to the Commissioners,[81]

> 3 a. The small stations are not being treated well under the proposed reallocation: it is foolish to think that they will be fooled into believing the contrary....
>
> 5. One manifest injustice in the proposed reallocation is the fact that on the whole all the so-called trust stations receive the very best treatment (in some cases the same corporation preserves two or three full-time assignments on the best channels) while the big independent stations in the Middle West are forced to divide time.
>
> 7. As a matter of fact, even the proposed reallocation does not come anywhere near complying with the Davis Amendment, under the heading of equality in number of stations.

Also taking issue with the engineers' report, Commissioner Sam Pickard, of Zone 4, wrote, "I feel it is unfortunate that my views on that subject (using the borrowing clause under equalization) are not shared by a majority of the Commission.... My apprehension is that the present effort to approach the ideal.... abruptly limits the facilities of this zone to a margin where stations, previously recognized as rendering worth while service by this Commission, cannot exist."[82]

Representative Ewin Davis, author of the amendment, also took exception to the engineers' allocation scheme writing, "...even from the standpoint of getting the National Broadcasting Company chain programs to the various sections of the country, there is no occasion for granting to such stations a monopoly of power or desirable and cleared channels, not to speak of the fact that such an allocation would deprive stations broadcasting independent programs of the share to which they are entitled..."[83]

Even after adoption of the allocation scheme various influential people spoke out about the adoption of a commercially based systems as mapped out by the IRE and adopted by the Commission. Speaking to the American Academy of Air Law in April, 1931, Bethuel Webster, Jr. former General Counsel to the ~~Federal~~ Radio Commission stated[84]:

> One may praise many of the performances of the National Broadcasting, the Columbia Broadcasting System, and originated by some of the chain and a few of the unaffiliated stations, and at the same time deprecate legislative policy and administrative weakness that permit the use of the ether under federal franchise for self-advertising stunts, for the sale of quack medicine, and the exposition of religious or social creeds in which the public generally has no interest.

Whether or not the recommendations of the Institute of Radio Engineers represented the very best solution to the equalization clause conundrum embodied in the Davis Amendment is open to interpretation. Many debated the implementation and the outcomes until the Commission finally abandoned enforcement of the Amendment in 1932. The final outcome, an allotment scheme that provided radio stations of varying powers to serve the United States worked substantially well until after the heyday of AM radio. What is at issue is whether the Federal Radio Commission exercised due diligence in accepting the policy recommendations of a body that was biased in favor of the industry that created it. One could argue that the FRC did not have the ability to proceed in such a technical task since it did not establish its own engineering department until after the recommendations of the Institute of Radio Engineers on August 17, 1928.[85] But that criticism would not reflect the reality that John Dellinger, who was chief engineer at the Bureau of Standards, oversaw the Commission's technical needs during the interim period and ultimately became the chief engineer for the Commission. While Dellinger's title changed, his work responsibilities did not.

Perhaps of greater importance are the questions that revolve around the way the Commission solicited and accepted scientific advice. Members of the scientific community use a variety of boundary-defining strategies to establish their authority and enhance their stature within scientific area and their professional circle. This behavior can be traced in the relatively new, rapidly expanding field of electrical engineering. Engineers of the Institute of Radio Engineers did this by building professional communities, defining and excluding nonmembers, competing for and asserting primacy of knowledge, and asserting their authority against those who held divergent opinions. For example, between 1915 and 1920 the Institute of Radio Engineers Board, under its secretary David Sarnoff, attempted to influence policymakers to keep radio in the hands of private capital. That effort continued as RCA's chief engineer Alfred Goldsmith succeeded Sarnoff as secretary and then as president of the IRE. McMahon states that IRE's pronouncements confidently stated that "government interference always impedes technological creativity. The Board's assertions left no room for exceptions."[86] Thus the IRE's policy pronouncements from 1915 through 1930 seemed to reinforce the agenda for corporate entities that ultimately became part of the RCA 'radio trust.'

During the 1930's historian Charles Beard notes[87]:

> Few indeed are the duties of government in this age which can be discharged with the mere equipment of historic morals and commonsense. Whenever, with respect to any significant matter, Congress legislates, the Court interprets, and the President executes, they must have something more than good intentions; they must command technical competence.

In this case, the building of a national broadcasting system really required significant regulation before the technical knowledge existed on how to best build it and how best to regulate it. Perhaps McMahon provides the best overview of the significance of the Institute of Radio Engineers' role in the technical decisionmaking process when he concludes that in addition to participating in the invention and development of radio, engineers made it feasible for corporate leaders to achieve vast organizational and physical systems. They shaped both the bureaucratic context in which they worked and, in part, the social uses of the technology they helped create.[88]

Does the analysis of the political and technological implications of the Davis Amendment hold significance and meaning for regulators and policymakers of today, particularly in areas where technology is rapidly changing the environment to be regulated? In *The Fifth Branch*, Jasanoff says the notion that the scientific component of decisionmaking can be separated from the political and entrusted to independent experts has been discredited. To prove useful, those making regulatory decisions need to be informed by an accurate knowledge of the internal dynamics of both science and regulation. She cautions that however rhetorically appealing it may be, no simple formula exists to allow for injecting expert opinion into public policy debate.[89] This caution should be inscribed for future communication policymakers to remember. Today, the pace of innovation of technology again calls to question the ability of regulators to make adequate decisions about which technologies hold promise for consumers and at what cost, what effects the implementation of new technology might be, and what impact these choices will have on current broadcast and telecommunications institutions.

Regulation restricts users' choice of activities and outcomes through the institutional consolidation of legislative, executive and judicial power in the single apparatus of independent commission. The mode of action can be informal through the companion use of consultative bodies, the adjudication is flexible on a case-by-case basis, and the rulemaking procedures can be formal defining the way participation in a proceeding will occur. Given the ability of the institution to set rules, the complex interaction of influences on the regulatory process and the flexible authority of the independent commission, scholars and consumers alike would be well advised to understand the contingent and socially constructed character of regulatory decisionmaking.

[1] Douglas, Susan J., Inventing American Broadcasting 1899-1922. Baltimore, MD: Johns Hopkins University Press. 1987. pp. xix.

[2] See Lowi, Theodore, *The End of Liberalism* (2nd. ed.). New York, NY: Norton. 1979. Also see Horwitz, Robert Britt, *The Irony of Regulatory Reform: The Deregulation of American Telecommunications*, New York, NY: Oxford University Press. 1989. pp. 31

[3] Popper, Karl, "Prediction and Prophecy in the Social Sciences" in Patrick Gardiner (ed.) *Theories of History* . New York: The Free Press, 1959. pp. 276-85.

[4] McChesney, Robert W., *Telecommunications, Mass Media and Democracy: The Battle for the Control of U. S. Broadcasting, 1928-1935*, Oxford: Oxford University Press, 1993. pp. 18-21.

[5] See Sterling, Christopher H. and John M. Kittross, *Stay Tuned: A Concise History of American Broadcasting*. Belmont, Ca: Wadsworth Publishing Co. 1990. pp. 111.

[6] For example, Rosen looks at the beginning of radio broadcasting and its relationship to government over an expansive time period, covering the Federal Radio Commission's implementation of the Davis Amendment as a small part of the total work. Rosen, Philip T., *The Modern Stentors: Radio Broadcasting and the Federal Government, 1920-1934*., Westport, Conn.: Greenwood Press, 1980. Louise Benjamin's wonderfully documented manuscript *Ariel's Covenant* (forthcoming) describes how the newly formed commission began and organized itself, and *Congressional Digest's* October 1928 edition takes on the Davis Amendment controversy by describing the problems involved in implementing the specific requirements of the amendment. *Congressional Digest*, Vol. 7. No. 10. October, 1928. pp. 255-286.

[7] Federal Radio Commission, *Annual Reports Number 1-7, 1927-1933*, Reprinted in *History of Broadcasting: Radio and Television*, Christopher Sterling, ed. Arno Press and the New York Times: New York, 1971. pp. 1

[8] See United States v. Zenith Radio Corporation, 12 Fed. (2nd series) 614.

[9] Lowi, Theodore J. "Four Systems of Policy, Politics, and Choice." *Public Administration Review*, Summer 1972. 299.

[10] Merrit, Dixon, "To Unscramble the Air." *The Outlook*, January 19, 1927. vol. 145. no. 3. pp. 75-76.

[11] It appears that Congress understood the problems involved in this area. See Committee on Interstate Commerce, Sixty-ninth Congress, Report 772, May 6, 1926. "If the channels of radio transmission were unlimited in number, the importance of the regulatory body would be greatly lessened, but these channels are limited and restricted in number and the decision as to who shall be permitted to use them and on what terms and for what periods of time.... "

[12] McChesney supra note 4, at 16., On December 7, 1926 President Coolidge said, " .... the whole service of this most important public function has drifted into such chaos as seems likely, if not remedied, to destroy its (radio's) great value. I urgently recommend that this legislation should be speedily enacted." *Congressional Digest*, supra note 6, at 257.

[13] Public Act No. 632, 69th Congress, 2d session. entitled "An act for the regulation of radio communications". Evidently both of the original bills appeared to be flawed in granting the regulatory party sufficient control or power over the licensee. The ABA noted that neither "... deals adequately with the difficult problem of reducing interference" and that both bills ought to be amended 'so as to provide for closing up superfluous stations and for paying just compensation to them'." Air Law Committee, "Interim Report on Radio Legislation," *American Bar Association Journal*, Vol. 12. No 12. December, 1926. pp. 848. Merritt, Dixon, supra note 10. pp. 75-76.

[14] Public Act No. 632, 69th Congress, 2d session. The law created a five member panel appointed to overlapping six years terms. Each commissioner was to be responsible for a geographical 'zone' encompassing a large section of the country. However, the original authorization bill expired one year after passage. The Congress needed to reauthorize the Commission in 1928. In 1929, Congress extended the Commission indefinitely. See *Congressional Digest*, supra note 6, at 265.

[15] The commissioners included Rear Admiral W. H. G. Bullard for the second zone, Judge Eugene O. Sykes for the third zone, and Orestes H. Caldwell for the first zone. Neither Henry A. Bellows of Minneapolis for the fourth zone nor John F. Dillion for the fifth zone was not confirmed by Congress. Though Caldwell actively sought appointment, he was not confirmed by the 69th Congress. (*The Outlook* says that the objection to both Caldwell and Bellows, according to Dill, was they were seen to be under the influence of Hoover. See *The Outlook*, March 23, 1927. vol. 145. no. 12. pp. 356.) According to Barnouw, Caldwell decided to start work under his interim appointment, without salary, hoping to be confirmed in the next session of Congress. Barnouw, Erik, *A Tower in Babel: A History of Broadcasting in the United States, Volume 1 to 1933*, New York: Oxford University Press, 1966. pp. 213. Several other governmental agencies lent support to the orphaned commission. Loaned from the Department of Agriculture, Sam Pickard became the Commission's secretary. The Navy loaned the commission the services of Captain Stanford Hooper while the Department of Commerce lend the services of John H. Dellinger, chief of the Commerce's Radio Division. Benjamin, supra note 6, at Ch. 6, pp. 2.

[16] Minutes of Discussion of the Federal Radio Commission, April 29,1927, NARG -173, Box 128, DOA - Executive Director, General Correspondence.

[17] McChessney, supra note 4, at 19.

[18] *General Order 11* issued at a meeting of the Federal Radio Commission, May 21, 1927, NARG-173, Box 128, DOA-Executive Director, General Correspondence. While it does not call for the elimination of any stations, the FRC clearly states that it believes that eliminate of interference can only be accomplished by reducing the number of broadcasting stations by 40%. The document also draws special attention to the fact that there are no unallocated frequencies from which to draw upon. Hence, the Commission indicates that it will be reassigning many stations to different frequencies.

[19] Schmeckebier, Laurence F., *The Federal Radio Commission: Its History, Activities and Organization*, Service Monographs of the United States Government No. 65, The Brookings Institution: Washington, 1932. pp. 23.

[20] Federal Radio Commission, supra note 7 at 9. See the *Annual Report of the Federal Radio Commission.*

[21] See Minutes of the meeting of the Federal Radio Commission, June 7, 1927, NARG-173, Box 128, DOA-Executive Director, General Correspondence. General Order 19 issued by the Federal Radio Commission, November 14, 1927, NARG-173, Box 128, DOA-Executive Director, General Correspondence. Special Order 211 issued by the Federal Radio Commission effected the reassignment of many stations to help with the interference problem in rural areas. See Federal Radio Commission, Special Order 211, November 16, 1927, NARG-173, Box 128, DOA-Executive Director, General Correspondence.

[22] United States Congress, House of Representatives, Committee on the Merchant Marine and Fisheries, *Hearings on the Federal Radio Commission* , 70th Congress 1st session. January 26, 1928. pp. 3.

[23] This statement is not meant to suggest that the FRC had no plan or organizational conception of what it wanted to accomplish. For example, one of its first actions was to place all stations on even ten kilocycle spacing. Similarly, during the summer of 1927 the FRC separated stations in the same locality by at least five channels. Both of these techniques required some overarching plan. However, most problems were examined on a case-by-case basis. See "How the Federal Radio Commission Brought Order Out of Chaos" by Caldwell, Orestes, *Congressional Digest* supra note 6, pp. 266.

[24] See General Orders 10,11,12; Special Orders 5,6,7,8,9, Special Order 211. Federal Radio Commission supra note 5, NARG-173, Box 128, DOA-Executive Director , General Correspondence. See also Herring, J. M. "Equalization of Broadcasting Facilities Within the United States," *Harvard Business Review*, Vol. 9. no. 4, 1930. pp., 417- 430.

[25] "Urges Fixing Power of the Radio Board," *New York Times*, January 31, 1928. pp. 18.

[26] Rosen, Philip T. supra note 4. pp. 129. See also Schmeckebier, Laurence F. supra note 19. pp. 25. *Time Magazine* wrote that the large broadcast interests would be displeased with the actions of Congress during the reauthorization of the FRC because "(T)he effect may be to cut the franchises of the rich, long-established stations in New and Chicago zones to benefit the Southern and lower-Midwestern stations." "Radio: Opportunity for Service," *Time Magazine*, Vol. XI. no. 15, April 9, 1928. pp. ??????

[27] United States Congress, House of Representatives, Committee on the Merchant Marine and Fisheries, *Report on the Federal Radio Commission to accompany S. 2317., Report No. 800,* 70th Congress 1st session. February 29, 1928. pp. 2.

[28] Barnouw, supra note 15. pp. 215.

[29] Rosen, Philip T. supra note 6. pp. 129.

[30] United States Congress supra note 22. pp. 31.

[31] "Senate Demands Radio Bill Parley," *New York Times*, March 14, 1928. pp. 6-7. (??)

[32] "Radio Men to Fight Bill In Washington," *New York Times*, March 7, 1928. pp. 30.

[33] "Radio War Rages Around "Equal Division' Amendment." *New York Times*, March 4, 1928. pp. 19.; "Ides of March Loom as Day Approaches" *New York Times*, March 11, 1928. pp. 15.

[34] "Battle in Congress Opens on Radio Bill" *New York Times*, March 2, 1928. pp. 22.

[35] "Will the Davis Amendment Bring Better Radio?" *Congressional Digest* supra note 6. pp. 268.

[36] Minutes of the meeting of the Federal Radio Commission, February 17, 1928, NARG-173, Box 128, DOA-Executive Director, General Correspondence. pp. 341, 343.

[37] *New York Times*, supra note 33. pp. 19. It should be noted that the *New York Times* was probably not an impartial observer. Since its main readership was New York City, the Times reflected the indignation that the city might lose some radio stations during a reallocation of the Davis Amendment. See "Radio Men Unmoved by Davis Measure," *New York Times*, March 3, 1928. pp. 10.

[38] After a prolonged debate the bill passed 235 to 135. The vote was split along geographical lines with the majority of the opposition from the heavily populated states of the East and Midwest. See Schmeckebier, Laurence F. supra note 19. pp. 28.

[39] 45 Stat. L., 373. section 9.
[40] Rosen, supra note 6. pp. 130.
[41] *Congressional Digest*, supra note 6. pp. 262.
[42] Federal Radio Commission, supra note 7. pp. 12.
[43] id
[44] "Report of Radio Engineers to the Federal Radio Commission," *Journal of the Institute of Electrical Engineers*, Vol. 17 ???? pp. 556. See also Press Release of the Federal Radio Commission (hereinafter Press Release), April 11, 1928, NARG-173, Box 128, DOA-Executive Director, General Correspondence. By contrast, when the FRC came into being in 1927, it used the same techniques that the Secretary of Commerce had used in the National Radio Conference of the 1920s. Then the Commission asks broadcasters for input to a possible solution to the interference problem. See Federal Radio Commission, supra note 7. at 3. Most of the input reflected commercial interests. See also McChesney, supra note 4. at 19.
[45] See Minutes of the meeting of the Federal Radio Commission, April 11, 1928, NARG-173, Box 128, DOA-Executive Director, General Correspondence.
[46] At one oversight hearing, Chairman Ira Robinson complained of 'political pressure constantly exercised...in all manner of cases' by members of Congress. See Schmeckebier, Laurence F. supra note 10 at 57. This pressure, coupled with Congress' passage of the one-year term clause in the 1928 reauthorization certainly illustrated the coercive potential of the legislature on the independent body. See Barnouw, Erik supra note 15 at pp. 217.
[47] Press Release, supra 41.
[48] Federal Radio Commission, supra note 7. Appendix 'E' pp. 142- 150. J. H. Dellinger attempted to discredit the plan submitted by the National Association of Broadcasters because it strayed too far from engineering considerations. In writing an analysis of the broadcasters' plan Dellinger wrote, "Several speakers at the hearing emphasized that engineering considerations are not the only ones involved, and that other matters, financial problems, local conditions, etc. make some of the engineering recommendations impracticable. While it is true that the problem of broadcast allocation is too complex to be solved by straight engineering calculation, nevertheless its solution can not be right if it disregards any valid engineering principle."
[49] *New York Times*, "Radio Allies Offer Allocation Plan," April 23, 1928. pp. 18.
[50] Federal Radio Commission supra note 7. Appendix "E", "Summary of the conference of engineers on April 6, 1928, by J. H. Dellinger" at 133. Dellinger states " (S)ince the law requires equality of the number of hours and licenses among the zones, and, according to population, among the States within each zone, if time is divided on a given channel among several stations in any one State, this division must be duplicated on some channel in every other zone and proportionally in every State."
[51] Increasing the number of stations as a political expedient would have required the FRC to rescinding General Orders 92 and 102 which set forth the method by which equalization would be brought about. General Order 102 prohibited the FRC from allocating more stations to zones that already used its pro-rated share of facilities.
[52] Federal Radio Commission supra note 7 at 150.
[53] While Commissioner La Fount moved for the adoption of the basic principles of the Engineer's Plan on July 24, this was really a formality since the Commission had been working on the basic plan since April. Lafount, Harold A., Memorandum, July 24, 1928" NARG-173, Box 128, DOA-Executive Director, General Correspondence.
[54] Federal Radio Commission supra note 7 at 163.
[55] Slotten, Hugh Richard, "Creating "Radio Paradise": Radio Engineers, the Federal Radio Commission, and Technological Systems"(Unpublished manuscript). p. 21-22.
[56] During this period and through the fall, Commission members sought public support for the engineers' report. For example, on a tour of Western states, Fifth Zone Commissioner Harold LaFount supported the clear channel concept by stating: "We hear a lot about freakish characteristics of radio, but we know enough about it to realize that one station on a channel produces the desired results." See "West unworried over new waves," *New York Times*, May 6, 1928. xx. pp. 21.
[57] Herring, J. M., "Equalization of Broadcasting Facilities Within the United States," *Harvard Business Review*, vol. 9, No. 4. 1930. 423.
[58] Four Commissions supported the plan. Ira Robinson, as noted earlier, voted against the Order believing that the Davis Amendment did not require immediate action.

[59] "Radio Engineer Analyzes New Broadcasting-Allocation Plan," NARG-173, Box 128, DOA-Executive Director, General Correspondence.
[60] Memorandum to Broadcasting Committee, NARG-173, Box 128, DOA-Executive Director, General Correspondence. General Order 40 issued August 30, 1928 by the Federal Radio Commission, August 30, 1928, NARG-173, Box 128, DOA-Executive Director, General Correspondence.
[61] Memorandum 180 "To All Persons Holding Licenses to Broadcast" Federal Radio Commission, September 11, 1928. NARG-173, Box 128, DOA-Executive Director, General Correspondence.
[62] Memorandum to Eugene O. Sykes from G. Franklin Wisner, NARG-173, Box 128, DOA-Executive Director, General Correspondence.
[63] Id.
[64] Caldwell, O. H. "How the Federal Radio Commission Brought Order Out of Chaos" from *Congressional Digest* supra note 6 at 266.
[65] Orestes H. Caldwell, "Why the broadcasting reallocation was made," NARG-173, Box 128, DOA-Executive Director, General Correspondence.
[66] Dellinger, J. H., "The New Dial Settings," NARG-173, Box 128, DOA-Executive Director, General Correspondence. Dellinger, J. H. "Analysis of Broadcasting Station Allocation," *Journal of the Institute of Radio Engineers*. Vol. 16. no. 11. Nov., 1928. pp. 1477-1485.
[67] Caldwell, Louis G. "The Standard of Public Interest, Convenience or necessity as used in the Radio Act of 1927," *Air Law Review*, Vol. 2, No. 3. July, 1930. pp. 326.
[68] Herring, J. M. supra note 22 at 422.
[69] Gilderhaus, Mark T. *History and Historians: A Historical Introduction, 2nd ed.*, Englewood Cliffs, N.J.. Prentice Hall, 1995. pp. 80
[70] Horwitz, Robert Brett, *The Irony of Regulatory Reform: The Deregulation of American Telecommunications*. New York, NY: Oxford University Press, 1989. pp. 27.
[71] Id. pp. 22. Horwitz provides an outstanding discussion of the different theories of regulation and their specific weaknesses and strengths.
[72] Id. pp. 121.
[73] See Lowi, Theodore J. supra note 9 for a complete discussion of this schema.
[74] Jome, Hiram L., *Economics of the Radio Industry*, Chicago: A. W. Shaw & Co., reprinted by the Arno Press, New York, 1971. pp. 53. The formation of the radio trust and the creation of RCA occurred largely because of government intervention so as to making the licensing of technology easier.
[75] McMahon, A. Michal, *The Making of a Profession: A Century of Electrical Engineering in America*, New York: Institute of Electrical and Electronics Engineers Press 1984. pp. 163. See also Jome, supra note 74. pp. 251.
[76] During the spring of 1928, the FRC quickly approved power increases and frequency changes for stations in the southern zone but withheld changes in allocation or allotment for stations in the East and Midwest. See NARG-173, Box 128, DOA-Executive Director, General Correspondence. FRC minutes April 11, 1928.
[77] See a "Memorandum to Mr. Caldwell" which states "(A)ll the present high-powered stations are backed by large electric or radio interests and were established early in 1921 or 1922. At that time these were practically the only organizations that saw the possibilities of high-powered broadcasting, had the engineering backing and financial ability to undertake such station construction " Butman, Carl, H., Secretary, Federal Radio Commission. NARG-167, Box 7, General Records of J. H. Dellinger. February 2, 1928.
[78] Jasanoff, Sheila, *The Fifth Branch: Science Advisers as Policymakers*, Cambridge: Harvard University Press. 1990. pp. 15.
[79] McMahon, A. Michal, Supra note 75. p. 163. Jome notes the probability that indirect advertising will support stations in 1926. Supra note 74. pp. 246
[80] McMahon notes that the FRC and the IRE were so close during these early years that two of the five commissioners served as IRE Board members, too. Supra note 75. p. 164.
[81] Caldwell, Louis G. NARG-167, Box 87, General Records of J. H. Dellinger. August 17, 1928.
[82] Pickard, Sam. NARG-167, Box 87, General Records of J. H. Dellinger. August 31, 1928.
[83] Davis, Ewin, letter to the Federal Radio Commission, Federal Radio Commission, *Annual Reports Number 1-7, 1927-1933*, Reprinted in *History of Broadcasting: Radio and Television*, Supra note 7 pp. 134.
[84] Webster, Jr. Bethuel M. "Our Stake In the Ether," address to The American Academy of Air Law and The School of Law, New York University. April 10, 1931. pp. 9.

[85] Dellinger, J. H. NARG-167, Box 87, General Records of J. H. Dellinger. August 17, 1928.
[86] McMahon, Michal A., Supra note 75 pp. 152.
[87] Beard, Charles A. *The American Leviathan: The Republic in the Machine Age*. New York: Oxford University Press, 1941 pp. 297.
[88] McMahon, Michal, A. Supra note 75 pp. 157.
[89] Jasanoff, Shiela Supra note 78 pp. 17.

UNITED STATES EARLY RADIO HISTORY

THOMAS H. WHITE

Broadcasting Becomes Widespread (1922-1923)

- *Next Section*: The Development of Radio Networks (1919-1926)
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Led by Westinghouse's 1920 and 1921 establishment of four well-financed stations -- located in or near Pittsburgh, Boston, Chicago and New York City -- there was a growing sense of excitement as broadcasting activities became more organized. In December, 1921, the Department of Commerce issued regulations formally establishing a broadcast service. Then, in early 1922, a "broadcasting boom" occurred, as a sometimes chaotic mix of stations, sponsored by a wide range of businesses, organizations and individuals, sprang up, numbering over 500 by the end of the year.

Eventually the scores of individual station efforts, from small town amateurs to major electrical firms, coalesced into a broadcasting boom, which swept across the United States in early 1922. In 1899, the London *Electrophone* had claimed Queen Victoria as a listener, and the rise of broadcasting introduced U.S. President Harding to radio, via a receiver installed by the Navy, according to President Enthusiastic Radio Fan "Listens-in" Almost Daily from the April 8, 1922 *Telephony*. Lists of the wide variety of stations making broadcasts to the general public began to appear, including What Anyone Can Hear, by Armstrong Perry, from the March, 1922 *Radio News*, First American Radio Charts from the March, 1922 *Popular Science Monthly*, Radiophone Broadcasting Stations of the United States, from the May, 1922 edition of *The Consolidated Radio Call Book* and Louis Jay Heath's The Romance of the Radiophone, from the 1923 annual supplement of *The Home* magazine. In fact, the Department of Commerce became worried that too many stations -- especially amateur and experimental -- were making broadcasts intended for the general public, and, effective December 1, 1921, adopted regulations which restricted public broadcasting to stations which met the standards of a newly created broadcast service classification. I've put together an overview of this tumultuous period, Building the Broadcast Band, which reviews some of the struggles that took place with the rise of widespread radio broadcasting in the U.S.

With enforcement of the new regulations, the number of private U.S. stations permitted to make broadcasts intended for the general public dropped to 67 as of the March 10, 1922 list of broadcast stations, which appeared in the March 1, 1922 issue of the Commerce Department's *Radio Service Bulletin*. However, even with the restrictions broadcasting continued to grow explosively, and at the end of the year there would be over 500 broadcast stations, located in every state, their growth chronicled by the monthly broadcast station reports appearing in *Radio News*. WHAS in Louisville went on the air in July, 1922 as the first broadcasting

station in Kentucky, 45th of the then-48 states to get a station. Credo Fitch Harris, a multi-talented journalist who incidentally knew virtually nothing about radio, was appointed station manager. In 1937, Harris recorded his experiences being assigned the job of starting up operations during "the horse and buggy days of radio" in the opening sections of Microphone Memoirs (operations extracts)--a task he poetically likened to being "led into the garden of Parizade and placed beneath her Singing Tree whose leaves dripped harmonies".

The tremendous growth of radio broadcasting saw the development of a wide variety of innovative program offerings. Starting in October, 1921, children listening to WJZ, Westinghouse's recently established station in Newark, New Jersey, were informed that "The radiophone, which is the wireless, has made it possible for the Man in the Moon to talk to you", as the station began evening readings, by Newark *Sunday Call* journalist Bill McNeery, of short stories written by Josephine Lawrence. In 1922, a collection of these "Man in the Moon Stories: Told Over the Radio-Phone" was published, beginning with Chapter I of The Adventures of the Gingerbread Man. Credo Fitch Harris, the station manager at WHAS in Louisville, Kentucky, reviewed in Microphone Memoirs (programming extracts) the kinds of programs produced by his station in 1922 and 1923, beginning with its inaugural broadcast on July 18, 1922, which overwhelmingly consisted of live -- and unpaid -- amateur talent. As radio's mysteries captured the public imagination, it was increasingly reflected in popular culture, including the publication in 1922 of the wistful song, I Wish There Was a Wireless to Heaven (The Radio Song), followed six years later by a somewhat happier tune, A Bungalow, a Radio and You.

Radio themes had occasionally appeared in juvenile books up through 1921, two early examples being The Motor Boat Club and the Wireless, written in 1909 by H. Irving Hancock, and the 1911 Tom Swift and the Wireless Message, written by Howard Garis under a syndicate pseudonym of Victor Appleton. However the 1922 broadcasting boom triggered a huge increase in radio related literature, including the introduction of at least three competing lines of Radio Boys books, in addition to a series about a group of Radio Girls. In most of these books radio activities served mainly as a prop or provided a loosely related background plot. A notable exception to this superficial coverage was the "Allen Chapman" Radio Boys books, written by John W. Duffield, with forewords by Jack Binns. The teenaged protagonists in this series do engage in the standard activities of besting bullies, while impressing the leading citizens -- and their daughters -- in the fictional town of Clintonia, located not too far from New York City. But extracts from the first five books in this series also provide an unusually detailed and technically accurate review of the excitement of the rapid spread of radio broadcasting in 1922. In the series' opening book, The Radio Boys' First Wireless, the boys build award winning crystal receivers, which use headphones. In The Radio Boys at Ocean Point, they improve their receiver design, by adding a vacuum-tube detector and loud-speaker, while experimenting with umbrella and loop antennas. The Radio Boys at the Sending Station includes a visit to WJZ, the Westinghouse broadcasting station in Newark, New Jersey, and they are also thrilled to pick up their first trans-Atlantic signals. In The Radio Boys at Mountain Pass our heros continue to spread word of the wonders of the new technology of radio through the community, witness the broadcast of a local church service, and speculate on the day when cars will be equipped with receivers. And in The Radio Boys Trailing a Voice they learn about radio communication applications in the forest fire service, while Dr. Dale predicts that: "Radio is yet in its infancy, but one thing is certain. In the lifetime of those who witnessed its birth it will become a giant--but a benevolent giant who,

instead of destroying will re-create our civilization."

As radio broadcasting began to establish itself as an ongoing public service, there were questions about the types of stations and kinds of programming they would offer. In Concerning "Canned Music Now Broadcast" from the September, 1922, *Radio Dealer*, George H. Fisher came to the defense of small stations like WHAW in Tampa, Florida, whose programming consisted almost entirely of phonograph records. Meanwhile, the possibility of radio stations becoming a major source for news was covered in the September, 1922 *Popular Radio* by Homer Croy, who noted in The Newspaper that Comes Through Your Walls that an audio news service, like that which had been available for over twenty-five years to subscribers to the Budapest *Telefon Hirmondó*, could now potentially be transmitted by radio broadcasting stations over much wider areas.

In 1922, the increasing interest in broadcasting led to the publication of numerous books and articles intended for the general public, to explain this exciting innovation. Rhey T. Snodgrass and Victor F. Camp, in *Radio Receiving for Beginners*, reported that "thousands of twelve year old boys, *and girls*" had already successfully set up radio receivers for "entertaining their families and friends", and that their introductory book would show others how to participate in the "magic" of the "radio wonderland". Basic information, plus explanations of technical terms like "static" and "interference", appear in the following selections from the book, beginning with How Can I Receive Radio? Another review, aimed at slightly older readers, talked of radio as "unlimited in its scope of subjects, just as it is virtually unlimited in the size of its audience", according to the Radio-Phone Broadcasting--What It Is and What It Means section from Austin C. Lescarboura's *Radio For Everybody*.

Radio's ability to conquer distance helped reduce the isolation of sparsely populated regions. In the March 17, 1922 issue of *Country Life*, Frank H. Mason in Britain reported in Wireless and the Country House how he had originally used a crystal receiver, which didn't require electricity to operate, to pick up time signals from the Eiffel Tower station in Paris, France. However, the introduction of broadcasting caused a dilemma, because reception of the weaker signals sent out by broadcast stations required more sensitive vacuum-tube -- or "valve" in British usage -- receivers, which were battery operated, and in the early 1920s most of the British countryside did not have electricity. So Mason built a small water wheel to power a generator, which recharged the set's batteries, and also operated a couple of lights in the outhouses. In the December 16, 1922 issue of *The Country Gentlemen*, John R. McMahon reviewed his adventures in setting up a radio receiver, and also answered the question of What Makes the Radio Laugh? -- "the cat's whisker tickled the galena and this made the radio laugh". After successfully installing a receiver, McMahon optimistically concluded that "The radiophone is a marvel. After the automobile, it is to become the foremost agency of civilization. Anybody who feels discouraged about things in general should clamp on a pair of ear phones and tune up." Somewhat less sanguine was Tom P. Morgan's article, A Wireless Warning from the April 22, 1922 *The Country Gentleman*, which reviewed, in a humorous way, potential downfalls. Morgan foresaw the introduction of pagers that would jab wearers in order to get their attention, to be followed by "a stern voice commanding him to get to work". Also, after a benign beginning where radio broadcasting would allow listeners in "the Red Front Grocery in Peeweecuddyhump" to hear Presidential addresses, the author feared that less benign impulses would soon be let loose, as broadcasting fell under the control of hectoring do-gooders, leading to a future where "the Hons. have torn loose and are

flapdoodling like mad". Radio as a Revolutionist from the March 29, 1922 *The Nation* also sounded a cautionary note, asking readers to "Think of the tragic fate of some future Thoreau who goes to his beloved woods in search of solitude only to find the night made suddenly hideous by the 'famous laughing saxophone' played at station XYZ and received and amplified by equipment in possession of the Boston Boy Scouts in camp not far away!" And in contrast to the speculation by many that radio would help bring world peace, this review closed noting that "if another war comes, which radio-telephony may make easier to bring about, radio control of the means of destruction will add immeasurably to its horrors" although possibly these were "the fears of a crotchety generation that is passing. Certainly they are not shared by the young men and women who make up our radio clubs. May they make better use of this new conquest over the powers of nature than we have done with some of ours."

The 1922 boom in radio broadcasting was also a boon for radio equipment sellers. *How to Retail Radio* informed merchants that radio was poised to take its place "in the stalls of business along with the camera, the victrola, the dictaphone, the typewriter, and all of the other merchandise that makes for the transference of sight or sound or thought between men". There was a caution, however, that the current sales boom would eventually level off, and "although radio is here to stay, not every radio dealer is here to stay". Ideas on how to avoid that unhappy fate were included in chapters such as What Kind of Radio Stock and How Much? by F. W. Christian, and Where to Look for Radio Customers by J. C. Milton. Meanwhile, the 1922 edition of O. A. Witte's *The Automobile Storage Battery*, noted that "It is in the sale of batteries for radio work and in the recharging of them that the battery man can 'cash-in' on the radio phone 'craze.' ", according to the Radio Batteries chapter of the book. And a 1922 pamphlet by Frederick Dietrich, *Beginner's Book of Radio*, stated that "the beginner is apt to make the mistake of purchasing a horn attachment for his receiver" in a doomed effort to use it as a radio loud-speaker, but warned "the results obtained with such an arrangement will be extremely disappointing" -- better to "buy several headphones and connect them in series" -- as explained in the Radio Telephone and Telegraph Receivers chapter. (The author, by the way, was president of C. Brandes, Inc., major manufacturers of headphones). Not everyone, however, went to the expense of buying headphones. An international problem developed, as unscupulous persons began snipping off the receivers from public telephones, as reported in Radio Craze Brings Raids On Telephones for Equipment from the June, 1922 *Telephone Engineer*, and French Pay Stations Robbed of Receivers for Radio Use, from the April 15, 1922 *Telephony*.

"A few days later, I remarked to a fellow reporter that I had spent several evenings listening to programs. 'Do you think radio is here to stay?' I quoted the popular gag of the day. 'God forbid!' he said. Apparently the young man who functioned as radio editor of the *News* shared his sentiments. Convinced that there was no future either in broadcasting or in writing about it, he resigned his job, and some time later I stood before the city editor again. 'Gross, you're it,' said the boss. 'I don't like radio,' I said. 'I want to be a drama critic.' 'You'll be a radio critic,' he insisted. 'But I'm not qualified,' I protested. 'I don't know a thing about radio.' 'Oh yes you do! From now on you're our expert--our great authority. And do you know why? Because you're the only guy around here who knows how to turn one of those damned things on!'"--Ben Gross, *I Looked and I Listened*, 1954.

UNITED STATES EARLY RADIO HISTORY

THOMAS H. WHITE

The Development of Radio Networks (1919-1926)

- *Next Section*: Financing Radio Broadcasting (1898-1927)
- *Previous Section*: Broadcasting Becomes Widespread (1922-1923)
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The introduction of vacuum-tube amplification for telephone lines allowed AT&T to experiment with sending speeches to distant audiences that listened over loudspeakers. The next step would be to use the lines to interconnect radio stations, and in December, 1921 a memo written by two AT&T engineers, J. F. Bratney and H. C. Lauderback, outlined the establishment of a national radio network, financially supported by advertising. General Electric, Westinghouse and RCA responded by forming their own radio network, however, unable to match AT&T's progress, in 1926 they bought out AT&T's network operations, which were reorganized to form the National Broadcasting Company.

Large companies are often slow to innovate. A notable exception occurred when the research and experimentation by the American Telephone & Telegraph Company -- the largest company in the world -- on interconnecting telephone lines, loud speakers, and radio transmitters led in late 1921 to a plan to create a national radio network, supported by advertising, at a time when most people had yet to even hear a radio broadcast. AT&T's intention to set up nationwide broadcasting was formally announced on February 11, 1922 and publicized in articles such as National Radio Broadcast By Bell System, which appeared in the April, 1922 issue of *Science & Invention*. Most of the network broadcasts originated from WEAF in New York City, thus the network was generally called the "WEAF Chain". However, company circuit charts marked the inter-city telephone links in red pencil, so the chain of stations was also known as "the red network". From 1922 until 1926 AT&T would be the most important company in the programming side of U.S. broadcasting. Its advertising-supported radio network, including flagship station WEAF, set the standard for the entire industry.

After AT&T began organizing the first U.S. radio network, the three companies that comprised the "radio group" -- General Electric, Westinghouse, and their jointly-owned subsidiary, the Radio Corporation of America -- responded by creating their own, smaller, radio network, centered on WJZ in New York City. But, blocked by AT&T from using telephone lines to connect their stations, this other network had to find some other way to link up stations. Initially leased telegraph wires were used. However, the telegraph companies hadn't been in the habit of employing acoustics experts or installing lines with more fidelity

than what was needed for basic telegraph service, so this often resulted in low fidelity broadcasts accompanied by loud hums. Also tried was connecting the stations using shortwave radio links, but this couldn't meet the reliability or sound quality requirements. Another idea that was investigated was increasing transmitter powers, to create a small number of "superpower" stations of upwards of 50,000 watts. This higher power might have helped some, but still didn't match the reliability and flexibility provided by local stations linked together by high-quality phone lines.

At this point, the radio group got a break. After four years of increasing success in the broadcasting arena, AT&T decided that it no longer wanted to run a radio network. In May, 1926, it transferred WEAF and the network operations into a wholly-owned subsidiary, the Broadcasting Company of America. Then came the bombshell announcement -- AT&T was selling WEAF and its network to the radio group companies for $1,000,000. (RCA's David Sarnoff was fond of saying "when life hands you a lemon, make lemonade". In this case, the strategy became "buy the other guy's lemonade stand".) At this point a new company was formed, the National Broadcasting Company, which took over the Broadcasting Company of America assets, and merged them with the radio group's fledgling network operations. AT&T's original WEAF Chain was renamed the NBC-Red network, with WEAF continuing as the flagship station, and the small network that the radio group had organized around WJZ became the NBC-Blue network. In September, 1926 NBC's formation was publicized in full-page ads that appeared in numerous publications: Announcing the National Broadcasting Company, Inc. The new network's debut broadcast followed on November 15, 1926. NBC's first president was Merlin H. Aylesworth, the energetic former director of the National Electric Light Association. Ben Gross, in his 1954 book *I Looked and I Listened*, included a biographical sketch of Aylesworth, noting that "If there is one man who may be said to have 'put over' broadcasting with both the public and the sponsors, it is this first president of NBC."

"By this time AT&T, RCA's former ally, had cut loose, and was operating a broadcast station of its own--WEAF. It was better on a technical end than we were. The late Raymond Guy sums it up in his reminiscences recorded many years later at Columbia University's Oral History Research Office: 'AT&T did things with a more thorough knowledge of what they were doing.... They just knew more about telephony than we did, as you might expect. They had the best telephone engineers in the world. The entire Bell Laboratories were at their disposal.' Aside from the normal pride which engineers take in their profession, this kept us on our toes; but the technical competition with the telephone company was an uphill fight, as Ray Guy implied, and I would be the last to deny. WEAF, cautiously at first, began to sell time and develop an income. When WJZ-WJY went on the air May 15, 1923, neither we nor WEAF were paying the artists. After a while, WEAF was in a position to do so, and we were not, until the National Broadcasting Company was organized and WJZ became the key station of the Blue Network, later taken over by the American Broadcasting Company".--Carl Dreher, *Sarnoff: An American Success*, 1977.

UNITED STATES EARLY RADIO HISTORY

THOMAS H. WHITE

Financing Radio Broadcasting (1898-1927)

- *Next Section*: Fakes, Frauds, and Cranks (1866-1922)
- *Previous Section*: The Development of Radio Networks (1919-1926)
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Soon after Marconi's groundbreaking demonstrations, there was speculation about using radio signals to transmit information to paying customers. However, there was no practical way to limit broadcasts to specific receivers, so for a couple decades broadcasting activities were largely limited to experiments plus a limited amount of public service transmissions by government stations. During the "broadcasting boom" of 1922, most programming was commercial-free, and entertainers, caught up in the excitement of this revolutionary new invention, performed for free. Meanwhile, a few people wondered how to pay for all this. In early 1922, AT&T began promoting the controversial idea of using advertising to finance programming. Initially AT&T claimed its patent rights gave it a monopoly over radio advertising, but in a 1923 industry settlement paved the way for other stations to begin to sell time. And eventually advertising-supported private stations became the standard for U.S. broadcasting stations.

Radio broadcasts -- simultaneous transmission to multiple locations -- are such an obvious development that it really doesn't make sense to try to identify any one person or station as the originator of the idea. Wire-based systems, including "tickers" for transmitting stock market reports, and telephone news and entertainment services, showed the possibilities for instantaneously distributing information and audio programming. The next question was whether the same sort of thing could be done on a wider scale without the connecting wires. The ticker and telephone systems were financed by subscriber fees, and the Budapest *Telefon Hirmondó*, which began operation in 1893, received money for reading short commercials, and also charged for such things as instruction books for its language lessons. However, these systems were expensive to build and operate, and had limited transmission ranges and relatively small service areas. Even the simpler tickers were only established in large cities, while the more elaborate telephone-based entertainment systems operated in an even smaller number of localities, mostly in Europe.

Some early demonstrations of short-range wireless-induction systems, which were developed prior to radio, included speculation about their use in some form of broadcasting, for example, a review of Nathan Stubblefield's induction system, Waldos Fawcett's Latest Advance in Wireless Telephony from the May 24, 1902 *Scientific American*, reported a test where

transmitted music was heard at three separate locations, and noted "the capability of this form of apparatus to send messages from a central distributing station over a very wide territory". However, induction transmissions never got much beyond the experimental stage.

The possibility of using radio signals for broadcasting was discussed soon after Marconi's successful tests, although there was a question whether it was financially practical. In the October 14, 1898 *The Electrician (London)*, an overview of Wireless Telegraphy noted that "there are rare cases where, as Dr. Lodge once expressed it, it might be advantageous to 'shout' the message, spreading it broadcast to receivers in all directions". But an earlier review of Oliver Lodge's presentation, Hertzian Telegraphy at the Physical Society, from the January 28, 1898 issue of the same weekly, had been dubious about the economics, stating "As to the practical applications, there were occasions when one wanted to 'shout to the world'--as in distributing political speeches to the Press--and for such a purpose the Hertz-wave and the coherer might be of service. But did not Prof. Lodge forget that no one wants to pay for shouting to the world on a system by which it would be impossible to prevent non-subscribers from benefitting gratuitously?" In an interview with Charles H. Garrett which appeared in the December 2, 1899 *Success* magazine, Marconi and Wireless, the inventor thought that restricting transmissions to a single frequency would hide broadcasts from persons who hadn't paid to receive them, so that "a news agency may flash news to its subscribers within one hundred miles in all directions, and none but its subscribers can receive it, because others are not tuned to that particular transmitter". However, this was not a practical idea, as Marconi had vastly underestimated how easy it was to intercept transmissions, no matter what frequency was used. One area where a form of subscription broadcasting did produce revenue, especially for the Marconi companies, was in overnight news transmissions sent out by powerful shore stations to trans-oceanic passenger ships -- subscribing ship lines were allowed to incorporate these Press reports in the onboard newspapers sold to passengers. Marconi introduced this service in 1904, and although there was no way to keep others, including onshore amateurs, from hearing these news summaries without paying, these non-subscribers were limited to technically skilled persons who were willing to stay up late and knew how to read Morse Code, so there was little loss of revenue. And some "gratuitous" broadcasting was in fact introduced by numerous governments beginning in the first decade of the 1900s, for distributing public service information, such as time signals, weather and market reports, and shipping warnings. H. E. Duncan, in an address to the Annual Convention of the Indiana Retail Jewelers' Association, reprinted in Wireless Time for Jewelers from the October, 1912 *Electrician and Mechanic*, noted that "we are on the eve of a new condition", where anyone could take advantage "of obtaining the 'ticks' of the Naval Observatory transmitting clock", and provided basic information on how to "grab the time signals as they go by as wireless waves" for free. Transmission of Time Signals/Weather Reports by Naval Radio Stations, from the July 1, 1915 edition of the Commerce Department's *Radio Stations of the United States*, reviewed daily transmissions by numerous U.S. Navy stations, while 250 Amateurs Take Reports in Iowa from the September, 1916 *The Electrical Experimenter* reported the daily weather and news reports broadcast by Iowa State College's station, 9YI. However, until the early 1920s almost all of these transmissions were in Morse code, which greatly limited the number of people who could make use of the services.

Although it was clear that full-audio transmissions had the potential to greatly expand radio

War One broadcasts featured phonograph records, and in many cases stations obtained records by bartering with a local record store, which provided the latest releases in return for promoting the store during the program. This practice was independently adopted by numerous stations, going back to at least 1912, when a weekly broadcast by "Doc" Charles Herrold's station in San Jose, California featured records provided by the Wiley B. Allen Company. One particularly ambitious example of this barter relationship was written up in Advertising by Radio, from the October, 1921 *Radio News*, as a Portland, Oregon station operated nightly by Charles L. Austin joined forces with the local Remick Song Shop. Another innovative application appeared in a December, 1921 *Radio News* report about a Canadian amateur selling radio equipment, who ran an advertisement in the September 20, 1921 *Toronto Globe* announcing that local amateurs could use their transmitters to Call "9BA" for Anything You Want for Your Wireless Apparatus. This same issue carried an article by Victor Rawlings, Radio in Department Stores which reviewed how the Hamburger's Department Store in Los Angeles, California was using its experimental station, 6XAK, to promote both the store and radio equipment sales.

In 1916, broadcasts by the DeForest Radio Telephone & Telegraph Company's "Highbridge Station", 2XG in New York City, featured records provided by the Columbia Phonograph Company. This station briefly became one of the first to also include advertising messages of a more general nature, when it added announcements about products sold by the station owner. But, as noted in his autobiography -- Father of Radio (2XG advertising extract) -- Lee DeForest abruptly ended the practice when he became embarrassed by critical comments made by Western Electric engineers. Ironically, five years later Western Electric's parent company, AT&T, would become the main proponent of advertising-supported broadcasting in the United States. But DeForest continued to vigorously rail against advertising for the rest of his life -- for example, the September, 1930 issue of *Radio News* included Dr. DeForest designs the ANTI-AD, written by the inventor, which described a remote-control device for silencing radio commercials. This ability to eliminate advertising was, according to DeForest, "a new joy not unlike one would experience in shooting a noisy tom-cat on top of a back fence on a moonlight night and thus terminating the awful caterwaul".

Most of the broadcasting stations that sprang up during the boom of 1922 did not sell airtime, and their financial support depended entirely on the generosity of their owners, who saw the stations mainly as promotional vehicles. But Austin C. Lescarboura warned in the With an Eye to the Future section of his book *Radio for Everybody* that, because of the costs involved, "this gratuitous service cannot continue indefinitely" and advertising was inevitable. In the debut appearance of his On the Crest of the Radio Wave column, in the June, 1922 *Popular Science Monthly*, Jack Binns also reviewed the looming economic problems, noting that the significant expense of running a radio station meant that "free broadcasting services obviously cannot go on forever". Binns' proposed solution was for stations to broadcast scrambled signals, which could only be unscrambled by special coin-operated receivers. Although this particular approach would not be tried for radio at this time, similar setups would eventually be adopted in later decades for such thing as Subscription TV, premium channels on cable TV, and satellite TV and radio. And in the December, 1922 *Popular Radio*, Waldemar Kaempffert declared that "broadcasting must be organized as a business", while reviewing some of the proposed financing ideas -- including a radio industry proposal for self-imposed contributions by manufacturers, AT&T's idea of selling airtime, and the possibility, in urban areas, of charging subscription fees for personal reception of "wired-wireless" signals -- in

audiences, it required a couple decades of development before reliable, cost-effective audio transmitters would be perfected. The first audio broadcast using radio signals is generally believed to be Reginald Fessenden's experimental transmission on the evening of December 24, 1906 (Christmas Eve), using his new alternator-transmitter located at Brant Rock, Massachusetts, as reported by Helen Fessenden in the first broadcast section of *Builder of Tomorrows*. There continued to be speculation that entertainment transmissions might be financed by somehow limiting their reception to paying subscribers. In the June, 1907 issue of *The American Monthly Review of Reviews*, Herbert T. Wade's Wireless Telephony by the De Forest System noted that "The great and universal appreciation of music reproduced by graphophone, telharmonium, or other device has suggested to Dr. De Forest that radio-telephony has also a field in the distribution of music from a central station, such as an opera house. By installing a wireless telephone transmission station on the roof, the music of singers and orchestra could be supplied to all subscribers who would have aerial wires on or near their homes. The transmission stations for such music would be tuned for an entirely different wave length from that used for any other form of wave telegraph or telephone transmission, and the inventor believes that by using four different forms of wave as many classes of music can be sent out as desired by the different subscribers." R. Burt's The Wireless Telephone from the November, 1908 issue of a United Wireless publication, *The Aerogram*, suggested that someday "The wireless message sent from one central station, in a special tone or to be more exact having a special electrical 'resistance,' may be received in every home, within the range of station, by every subscriber having a receiver corresponding to the electrical resistance of the sending station. By this means it will be possible to send news, stock quotations, lectures, monologues, music, merchants bargain announcements, etc., etc., broadcast for whomsoever may subscribe for that service." Over the next decade, numerous other experimenters would make test broadcasts, some on regular schedules. However, initially most employed alternator or, more commonly, arc-transmitters, which never quite achieved the practicality needed for setting up a regular service, and there continued to be no way to limit reception to paying customers. In was only in the mid-1910s that the engineering question of how to effectively transmit, and receive, full-audio radio signals would be answered the same way worldwide: vacuum-tube transmitters and receivers. But the second question -- how to finance radio broadcasting -- would have multiple answers, which varied greatly by country.

Assorted examples of radio being used to generate revenue date back to some of the earliest experiments. The January 28, 1905 issue of *Electrical Review* reported that "Two English inventors have made an adaption of wireless telegraphy for entertaining patrons. Music boxes placed in different parts of the room are caused to play on the placing of a coin in a receptacle at a common centre." With the development of audio transmissions, just the idea of hearing "voices sent through the air" was a novelty, and some enterprising individuals made money by offering people the chance to personally witness this scientific marvel. In the March, 1938 issue of *Radio-Craft*, William Dubilier's entry in Reminisciences of Old-Timers remembered a Seattle amusement park owner, who in 1909 charged persons 10 cents to listen to test transmissions from an experimental station operated by Dubilier. Eleven years later, on the Asbury Park, New Jersey boardwalk, Harold Warren modified a roller chair to add a radio receiver, so riders could listen to experimental transmissions, as reviewed in Wireless Music and News for the Roller Chair Passenger, from the August 7, 1920 *Scientific American*. When regularly scheduled audio transmissions started to be established, one obvious potential revenue source was the sale or barter of airtime for commercial messages. Most pre-World

Who Will Pay For Broadcasting?

In February, 1922, AT&T announced its plan to establish a national radio network and sell airtime -- which it called "toll broadcasting" -- for programs supported by advertising. At this time AT&T believed, based on patent rights it claimed under a series of cross-licencing agreements made with various companies including General Electric and Westinghouse, that it was the only company in the U.S. allowed to operate broadcasting stations, with the exception of a few permitted to other companies under the cross-licencing agreements, plus a small number of stations which had purchased Western Electric transmitters. The idea of radio stations broadcasting commercial messages was, however, very controversial. In the July, 1922 issue of *The Radio Dealer*, a letter from AT&T Publicity Department employee J. H. Ellsworth gave AT&T's side of the debate in Explains Broadcasting of Advertising Programming, stating that "the fear which is sometimes expressed that advertising will destroy broadcasting is seen to be without foundation". But another Publicity Department employee, Westinghouse's J. C. McQuiston, was more skeptical, and in his article appearing in the August, 1922 *Radio News*, Advertising by Radio. Can It and Should It Be Done?, a caption editorialized that "Advertising by radio cannot be done; it would ruin the radio business, for nobody would stand for it".

In March and April, 1922, Commerce Secretary Herbert Hoover sponsored a national Conference on Radio Telephony, which in part addressed the question of radio advertising. During the meeting Hoover warned that "It is inconceivable that we should allow so great a possibility for service to be drowned in advertising chatter", and the conference recommendations for advertising standards would have restricted it to near non-existence. The final report called for "toll broadcasting" to be the least important of four categories of stations, with limited transmitting ranges, and their development kept under "close observation". Moreover, commercial messages were to be "indirect" only, and "limited to a statement of the call letters of the station and of the name of the firm responsible for the matter broadcasted". The conference report, however, was never adopted as official policy, and a year later, the report of the second national conference did not include any restrictions -- or even references -- to toll broadcasting. However, the industry continued to cast a wary eye on developments, and at the third conference, in 1924, Hoover famously warned that "if the speech by the President is to be used as the meat in the sandwich of two patent medicine advertisements there will be no radio left". However, he added that "The listeners will decide in any event. Nor do I believe there is any practical method of payment from the listeners."

Meanwhile, in spite of initial optimism, AT&T found it very difficult at first to convince potential customers to purchase radio airtime. AT&T began its broadcasting operations in New York City, which was perhaps the most difficult place in the country to try to make sales, because there were plenty of competing stations which were more than willing to carry the same programs for free. AT&T began broadcasts from its new station, WBAY, on July 25, 1922, but because of technical problems, in mid-August the broadcasts were transferred to WEAF, a station operated by AT&T's Western Electric subsidiary. Up to this point they hadn't sold any airtime; AT&T's first sponsored program over WEAF -- 15 minutes for a talk promoting a Queensboro Corporation apartment complex -- finally aired August 28, 1922. The text of this debut offering, Hawthorne Court Advertisement, comes from Gleason Archer's *History of Radio to 1926*.

Although the Hawthorne Court talk has often been called "the first-ever radio commercial", there actually is evidence that other stations had previously sold airtime to commercial buyers. In Jersey City, New Jersey, Frank V. Bremer reportedly leased his amateur station, 2IA, to the *Jersey Review* in May, 1920, charging $35 for twice-a-week broadcasts. This station was also reportedly rented out, for $50, to a second newspaper, the *Jersey Journal*, for a one-hour New Year's broadcast on January 1, 1922. Also, in late 1921 the American Radio & Research Corp.'s (AMRAD) experimental station, 1XE in Medford Hillside, Massachusetts, reportedly received money for reading stories from the Little Folk's Magazine and Youth's Companion. On February 7, 1922, following the recently adopted regulation that broadcasting stations had to have Limited Commercial licences, AMRAD received a new licence with the callsign WGI. A short time later, AMRAD president Harold J. Power decided to expand into commercial programming, hiring a salesman to sell 30 hours of programming a week at the rate of $1 per minute. On April 4, 1922, nearly five months before WEAF's Hawthorne ad, WGI inaugurated its commercial operations with a program sponsored by the Packard Motor Company of Boston. However, WGI's commercial programs were almost immediately suspended, with the explanation varying whether it was due to the intervention by the local District Radio Inspector, or AT&T enforcing what it felt was an infringement of its patent rights.

With an almost pathological fear of ever offending anyone, AT&T initially set very high standards for the sponsored programs it would accept for WEAF, which meant it sometimes refused to sell airtime to prospective advertisers. This provided an opportunity for competing stations whose standards weren't quite so high. In I looked and I Listened (WAAM extract), Ben Gross recalled a Newark, New Jersey, station, WAAM, which quietly sold airtime -- cash only please -- to advertisers which WEAF didn't want, at the same time worrying that federal regulators might take offense and shut the station down.

By the end of 1922, there were over 500 broadcasting stations in the United States, and AT&T, which originally thought its patent rights would give it a near-monopoly of U.S. broadcasting, claimed that all except 41 of these were infringing on its rights. At this point the phone company accepted the inevitable, and in early 1923 announced that it would, for the proper fee, licence its broadcasting-related patents to the infringing stations. However, in the words of Erik Barnouw, "The hundreds of stations did not rush to comply." Finally, in early 1924 AT&T filed a patent-infringement lawsuit against WHN in New York City, which was eventually settled out of court. At the time of this settlement, WHN management loudly complained that the licence agreement prohibited them from carrying advertising. This quickly brought an outcry against AT&T's supposed plan to "monopolize" radio, although *Radio Broadcast* opined that if any company were to monopolize the radio industry, perhaps AT&T wasn't a bad choice. However, the WHN charges were false -- there were no restrictions on commercial broadcasts in the agreement, and in fact all stations settling with AT&T were permitted to sell advertising, and also gained access to telephone company lines for remote broadcasts. *Radio Broadcast*'s corrected report on the controversy, Licencing Broadcasting Stations, appeared in its August, 1924 issue. At this point, the rest of the broadcasting stations followed WHN's lead, and those that wanted to remain on the air paid for AT&T patent licences.

By the mid-1920s, many broadcasting stations found themselves facing increasing financial pressure. In addition to the AT&T patent licence fees, entertainers started to demand payment

for their performances in something more tangible than publicity, tighter government engineering standards required better -- and more expensive -- station equipment, and music publishers successfully argued that they were due royalty payments for all copyrighted music that was aired, even if the stations weren't collecting any revenues. This led to more and more stations selling airtime. But radio advertising continued to be controversial. In its May, 1924 issue *Radio Broadcast* magazine announced a $500 contest soliciting the best essay on the topic of Who Is to Pay for Broadcasting--and How? -- the fact that the magazine ran this contest suggested it didn't believe on-air advertising was a suitable solution. However, with only a few exceptions, at this time no other financing ideas proved practical for United States stations. WHAS in Louisville, Kentucky, after operating its first three years without commercials, began carrying advertising in late 1925, which prompted one irate listener to write "If it's the last act of my life, I'm going to invent something to turn my radio off during those advertising talks, and turn it on again when the music starts!", according to Credo Fitch Harris' 1937 Microphone Memoirs (advertising extract). But there was no turning back, and even *Radio Broadcast* magazine eventually endorsed advertiser sponsored broadcasting in general, and AT&T's network in particular, in articles like Austin C. Lescarboura's How Much It Costs to Broadcast, which ran in its September, 1926 issue. And what became known as the "American Plan" for financing broadcasting -- private stations supported by on-air advertising -- remains the most common method used in the United States to this day.

After a couple of years of shaky finances, AT&T's "toll broadcasting" experiment eventually began to generate significant revenues, especially once its network operations started up. In particular, weekly network programs, beginning with "The Eveready Hour" on October 6, 1924, greatly expanded advertiser interest and network billing. Meanwhile, AT&T had used its interpretation of the cross-licencing agreements it had with the "radio group" (General Electric, Westinghouse, and the Radio Corporation of America) to prohibit them from selling airtime, so as these companies' program offerings got more ambitious, they also began to lose increasingly large sums of money. By mid-1925 there was starting to be a financial crisis for the radio group due to the increasing expenses of their broadcasting stations, and a committee was formed to study whether they could continue to support broadcasting operations without selling advertising. The committee's conclusion was "there is no way". Around this time, the cross-licencing agreements between AT&T and the radio group unraveled, freeing the latter to make commercial broadcasts, at the same time that AT&T was deciding to exit the programming side of radio. According to Gleason Archer's *Big Business and Radio*, in late 1925, as the radio group was still contemplating their purchase of WEAF's radio network, General Electric and Westinghouse employees reviewing the proposal specified that the reorganized network should "have the exclusive right to broadcast for revenue so far as that right can be given it". However, due to AT&T's earlier settlement with the broadcasting industry, the radio group would not be able to monopolize commercial broadcasting.

When stations began selling airtime, advertiser influence naturally increased. Around late 1928, NBC President "Deac" Aylesworth received a somewhat surreal demonstration of the saying "He who pays the piper calls the tune" when his top advertiser, George Washington Hill of the American Tobacco Company, decided on a unique "test" of the dance music sponsored by his firm. As recounted in Ben Gross' book *I Looked and I Listened* (George Washington Hill extract), in order to "evaluate" the programs, Hill commandeered the NBC Board of Director's room for weekly dancing with a company model, moreover, he insisted that Aylesworth join the two, compelling the NBC president to dance with another NBC

executive, Program Manager Bertha Brainard. (Another odd incident Gross related in his book was "a mysterious bearded old man who bought a minute of time daily over WLTH of Brooklyn to say, 'I love you!... I love you!... I love you!' Whom, what or why he loved, he would not explain and the station did not care.")

In late 1921, Postmaster General Hays sent Robert B. Howell to Europe to review radio developments in the Old World -- Howell's report was included in the Radio in European Countries chapter of Charles William Taussig's *The Book of Radio*. Most European countries would ultimately decide to set up broadcasting as a government monopoly, in many cases charging their citizens fees for listening licences. (A few countries also briefly experimented with radio receivers that were constructed so they only picked up specific paid-for stations, however this proved difficult to implement and too easy to circumvent.) In the United States, most early radio broadcasting was done by private stations, although not everyone was happy with their program offerings. In the October, 1922 *Popular Science Monthly*, Charles E. Duffie, in Why I Believe in Government Radio, complained about "the indiscriminate competitive jumble of phonograph music, uninteresting lectures, and disguised advertising talks, which have, in part, made up many programs". Duffie looked toward the federal government to provide a better selection of programming, an idea shared by Robert B. Howell, now the Republican candidate for U.S. senator from Nebraska, who, following his tour of Europe, felt that "in the practical application of the radiotelephone -- especially for broadcasting news over wide areas -- Europe has been in advance of the United States". (Interestingly, the European program service which most influenced Howell wasn't a radio station, but instead was the Budapest *Telefon Hirmondó*, now 27 years old, which used telephone-line distribution. However, Howell noted that "All that has been done of this character with the wire telephone can be done with the wireless telephone.") Howell in particular thought that, in contrast to the "amusing vaudeville" offered by private stations, the government should set up its own high-powered stations, providing "in addition to news bulletins, market and weather reports, other features, such as short stories, discussion of popular current topics, and music and entertainment of the highest type". At the time this article appeared, there was already a limited amount of broadcasting by government-owned facilities -- one early example of a state-owned station was WOS, which operated from Missouri's capitol building in Jefferson City, and was set up primarily to serve rural listeners, as reviewed in A. B. Macdonald's Missouri Goes in for Wireless from the May 22, 1922 *The Country Gentleman*. Unlike the multitude of privately owned stations which sprang up during the broadcasting boom of 1922, WOS was supported by public funds, which meant state officials had to justify its existance along the lines of "What practical good is this sending of wireless messages? We know it's good from an entertainment standpoint, but if we take money that the farmer pays in taxes and spend it this way, we must know that he is getting his money's worth out of it." However, in the United States broadcasting by government stations would actually decline after this point, and would generally be restricted to a small number of stations operated by local governments and colleges, plus basic public service efforts, such as time signals and weather reports.

After broadcasting became popular, a common observation was that one of radio's perceived flaws -- the lack of privacy, since anyone who wanted to could listen to a signal -- had actually turned out to be its greatest strength. But even after the rise of radio broadcasting, a few experimenters continued to try to develop a way to set up multi-program audio services that were limited to paying subscribers. One alternative to over-the-air broadcasting dated

back to work begun in 1910 by General George Owen Squier of the U.S. Army Signal Corps. General Squier noted that because metallic wires act as wave-guides for radio signals, multiple low-power transmissions could be carried along telegraph, telephone or electrical wires to distant points, and received only by persons located along the line. Squier became an evangelist for what he called "wired wireless" -- later known as "carrier current" transmissions -- and over succeeding decades the basic idea has been developed into a wide variety of innovations, from the Muzak audio service to Cable TV. An early adaptation was by electrical companies, for private long-distance telephone service along their power lines, with a successful test reported in Power Company Experimenting with "Wired Wireless", from the September 11, 1920 *Telephony*. In the August, 1922 *Popular Science Monthly*, Jack Binns' "On the Crest of the Radio Wave!" column reviewed General Squier's ideas in Can Wired Wireless Change Radio Broadcasting?. However, Binns was skeptical about this innovation's potential, and noted the limitations compared to radio, in both the number of programs offered, and the difficulty in covering rural areas, especially in the many regions which didn't have electricity at this time. Giving the Public a Light-Socket Broadcasting Service, by William Harris, from the October, 1923 *Radio Broadcast* magazine, reviewed an early (and ultimately unsuccessful) attempt to set up a subscription-based "wired radio" programming service in Staten Island, New York City.

"In seeking the good will and support of the public, big business has attempted to propagate a convenient but misleading idea. Its public-relations experts have sought to persuade us that it is to big business, in terms of its annual investment of millions of dollars in radio, that we owe the fine program services we get. Accompanying this questionable claim there is often the suggestion that we, the public, are therefore somehow beholden to the advertiser and to the networks and stations, as though a benefit had been conferred for which we should be grateful. There is no doubt that many innocent listeners genuinely feel beholden in this way and regard themselves as fortunate beneficiaries of a generous patron. This is a dangerously sentimental state of mind, implying a subservience on the part of the public which is neither justified nor healthy. Business is not philanthropy. It is a system of exchange. The businessman provides us with the goods and we provide him with his profits. We can cry quits on the deal. We should never feel subservient or anything but incidentally grateful."--Charles A. Siepmann, *Radio's Second Chance*, 1946.

5

The Threshold of the Information Age

Radio, Television, and Motion Pictures Mobilize the Nation

Margaret Graham

In previous chapters we have seen how the rise of large bureaucratic structures in the early decades of the twentieth century, enabled by a national communications infrastructure and driven by the needs of systematizers, created a voracious appetite for information and information processing technologies. At roughly the same time, in what we will term the Vacuum Tube Era, communications technologies in the United States came to be adapted to broader social purposes, on a national scale. These changes, driven in the first instance by the imperatives of national defense, involved creating a new communications infrastructure based on incorporating vacuum tubes into preexisting technologies. The result of this new combination was not only an enhanced communications infrastructure, but one that was concentrated under the control of a few large enterprises, loosely but effectively aligned with the federal government.

From the 1930s through the 1960s, vacuum-tube–based communications in their various forms made the United States into an increasingly mobilized society, that is, a society that could be motivated to achieve broad national purposes. Chief among these purposes were the search for national economic recovery through consumption; a culture unified, or at least socially homogenized, through mass entertainment; and broad public support for war aims. Some semblance of this "national unity culture" endured through World War II and the Korean War, continuing well into the 1960s when both the concentrated control of the infrastructure and the broad cultural consensus disintegrated.

The mobilized society began its slow erosion in the late 1950s, becoming simultaneously media-rich and self-conscious. Government policy toward technological changes introduced greater competition

among different forms of mass media, supporting competing alternatives to a national cultural consensus. Radio, television, and movies all still had national "reach" and some had even attained international reach, but for the audience the experience had changed. With the advent of the transistor it was possible to foresee the arrival of truly individualized (or at least customized) information, and with that a resulting fragmentation of the collective experience.

The Vacuum Tube Era (1907–1967)

If we think of the Information Age, beginning with the spread of automated information processing in the late 1950s, as the time when social and economic activities began to be organized according to the logic of information flow rather than materials flow, then vacuum-tube–based technologies defined the threshold of that age. The Vacuum Tube Era began with twin related inventions—the Fleming valve, or diode vacuum tube (1904) and the de Forest triode or audion (1906). It ended with the triumph of the transistor, which was introduced in the 1950s for defense and commercial technologies but did not replace vacuum tubes in consumer electronics until the 1960s. (Indeed, it has yet to replace cathode ray tubes for most types of television displays even today, although portable computer displays are already mainly solid state.) As the ultimate "radio-related" technological devices, vacuum tubes both enabled and manifested a new scientific understanding of electrons as particles, and of "electronics" as an emerging practical branch of applied physics.[1] Even as the British physicists at the Cavendish Laboratory were uttering their famous toast: "To the Electron, may it never be of any use to anybody," early cathode ray tubes were serving as tiny laboratories in which the behavior of electrons could be observed, as well as used, to good effect.[2]

As we have seen in earlier chapters, the newspaper was the earliest form of mass communications that could be said to have reached a national audience long before the turn of the nineteenth century. By the time vacuum tubes were invented, the Hearst papers reached audiences in cities across the United States and had already been blamed for whipping up public support for the Spanish-American War in an orgy of sensationalism and misinformation. Point-to-point electrical communication already existed in the form of the telegraph and the telephone, and some people even envisioned the telephone as the basis of a mass entertainment system.[3] But the telegraph required expert operation by operators who were skilled at Morse code; the telephone was still a local matter, and expensive.

Many of the communications technologies that eventually used vacuum tubes predated the invention of the vacuum tube by decades. Crystal sets, the precursors to vacuum-tube–based radios, were in widespread use by amateurs before World War I, but it was by no means evident at that time that radio had the potential to challenge newspapers. Mass entertainment in the form of silent films was also already in existence, but because the industry was dominated by cheap, bawdy entertainment for working-class audiences that could not afford vaudeville, film could hardly be viewed as a potential instrument for effecting social revolution. Vacuum tubes not only dramatically changed the direction of these information technologies, they also shaped their subsequent development and their collective interaction as components of a national communications infrastructure able to mobilize a national audience for various collective ends.

Some scholars have seen the Vacuum Tube Era as the "the control revolution," that is, the last episode in the Industrial Revolution. Here, while the chief basis of the economy was still material, electronic communications media enabled the regaining of market "control" at a national level after early phases of the industrial revolution had undermined market control at a local or regional level.[4] Greater purposes than control of commercial markets were engaged in the Vacuum Tube Era, however. Information conveyed by means of electronic media came to pervade every aspect of U.S. national culture. Vacuum-tube–based technologies were rightly credited with defending, perhaps even preserving, American freedoms; at the same time they also helped to curtail a few freedoms. They were also responsible for a mass national culture characterized by electronic sound and image, and a mass consumer society homogenized by the 1950s to the point that its members came to do their laundry, eat, dress, and amuse themselves in similar ways all over the country. By the 1960s, so pervasive was this development and so media-rich the society that Marshall McLuhan could point to the medium itself as "the message."[5]

Vacuum-tube–based communications technology well illustrated a familiar reciprocal principle evident in the evolution of most infrastructural technologies: while technology in its material form was shaping social phenomena, the material form itself was being shaped by social forces.[6] There were many mediators of this reciprocal relationship—some individual, many more institutional. They included not only the inventors and producers of the electronic hardware systems

and their programming or content producers, but also their early users, their competitors, and their opponents. All these parties participated in laying the foundations for the Information Age that was to accompany transistor-based information processing in the 1960s and 1970s with sight and sound communication first created by the vacuum tube.

The Tube as Enabler and Controller

The American Lee de Forest's invention of the audion, the ancestor of all later vacuum-tube devices, has been called "one of the 'great divides' in the history of radio technology," and we might add, of all radio-related technologies as well.[7] The tube, or "valve" as it was known in England, revolutionized both the transmission of radio signals and the ability to detect or receive them. It increased the capacity of signal systems to handle far more information, greater "bandwidth," and thus to accommodate sound and images as well as simple blips. It also made it possible to repeat and refresh a signal traveling over wire or cable, enabling wired transmission over long distances and ultimately making it possible to hook up national networks. As we shall see later, it was the U.S. defense establishment that early recognized radio and related technologies as the most powerful munitions and that provided the impetus for pushing their performance capabilities.[8]

Had it not been for a prior connection between the English inventor Ambrose Fleming and the English company Marconi, de Forest's invention of the triode would have given the U.S. communications giant American Telephone and Telegraph (AT&T) undisputed postwar control of radio, and perhaps of subsequent radio-related technologies as well. Lee deForest had come up with his device by modifying the Fleming diode. The decisive advantage of the triode was in its grid structure, which de Forest could not have created without Fleming's prior discovery.[9] AT&T purchased de Forest's rights to his invention in 1912. The telephone company made the triode purchase initially for use as a telephone signal repeater, but it quickly also recognized its broader applicability for general wireless communications, and with that the potential threat to its own wired system.[10] American Marconi's control of the Fleming technology, however, gave it the ability to block AT&T's use of de Forest's device for most purposes, and with that the potential to challenge AT&T's U.S. communications monopoly.

To keep the battle between various radio-related patents from blocking the development of wireless as a strategic defense technology during World War I, the U.S. government effectively took control of strategic patents during the war and mandated cooperation among those who owned them, promising to indemnify them afterwards for any infringement.[11] After the war, the problem of sorting out competing patent positions threatened to plague all forms of electronic communication in the United States and was to involve several major disputes between the government and various industry patent combinations in motion picture sound, radio, and television before the communications infrastructure based on vacuum tubes achieved maturity. To keep patent conflicts to a minimum, the government collaborated with the General Electric Company (GE) to set up the Radio Corporation of America (RCA), effectively using a commercial enterprise to coordinate the evolution of radio-related technology on the government's behalf.[12]

As we have seen, with the exception of radar, most of the communications technologies that used vacuum tubes were already in existence in more primitive forms, but incorporation of the first electronics gave them the much greater power and performance they needed to be agents of mobilization. Movies acquired sound, radio receivers could be precision tuned and amplified, radio networks could use telephone lines to reach nationwide audiences, and local radio stations could transmit live radio programs originating from outside their studios; when these developments occurred, it was possible to reach a mass, national, networked audience—to inform, to persuade, to entertain, to reassure, and to sell. In the era of the Red Scare, after World War I, and the rise of totalitarian regimes abroad, with social unrest and militant labor unions at home, the potential for nationwide communications to fall into the wrong hands was recognized as a serious threat to U.S. national security. One way of dealing with the threat was to concentrate this potential under the technological control of a handful of companies allied or at least aligned with the U.S. government. This, then, was one reason that the Federal Communications Commission (FCC) could lean toward interpreting its legitimate regulatory role as ensuring corporate stability against upstart new technologies. Corporate stability in a time of general instability was one public interest it was defending. Moreover, by enabling corporate concentration in the media it could indirectly control a force that it could not afford to control openly.[13]

However potent the radio art might be, it was limited by its material form. One producer of glass envelopes for vacuum tubes referred to the cathode ray tube (CRT) as the "glass heart" of any radar system.[14] In fact, with the coming of vacuum-tube technology all radio-related devices had numerous vital organs made of evacuated glass bulbs. These typically contained large amounts of lead oxide, which was a heavy, expensive, and scarce ingredient. By the 1930s they could also be made of ceramic material combined with metal, or of metal alone. The glass enclosures, which were at first simply physical clones of lightbulb enclosures[15], were fragile, expensive, tough to make, and difficult to transport. When assembled into tubes they were by far the most expensive of the components that made up all electrical and electronic communications devices. Though smaller, weaker sets might get by with one tube, even early high-performance sets in kit form required four or five tubes of different sizes. Sold separately, each tube retailed for about $5.[16]

Glass bulbs enhanced electronic devices, for glass had beneficial electrical properties in its own right.[17] At the same time glass also imposed powerful physical constraints on the usability of all vacuum-tube devices. Any "set" using vacuum tubes, whether radio, radar, or (later) television was heavy, bulky, prone to interference and sudden failure, and voracious in its use of power. Indeed, early radio sets had high-drain filaments and required rechargeable storage batteries, like today's car batteries, which ran from $15 to $30. So-called "farm radios" and military portables were designed to run solely from dry cells, while standard radios were eventually adapted for household current.[18] These physical characteristics placed constraints on the social uses radios could serve. Vacuum-tube radios required expert maintenance and service to test and replace failing components. Their prodigious consumption of electricity made battery power a limiting proposition for a long time.

In 1922 when all components had to be assembled by the buyer and tubes came separately, radio set prices ranged from $18 to $350. By 1927 all radio components (including power supply and speakers) were sold in one box, and even then the buyer had to string an outdoor antenna when installing the radio. Tubes were still unreliable and prone to failure. It was quite possible for the novice installer to make a mistake in hooking up a radio that would knock out a whole set of tubes. A power surge, common to early power systems, could knock out the radios of a whole neighborhood. In 1927 radios began to look less like physics experiments and more like attractive pieces of furniture, with prices ranging from $82.75 to a luxurious $2,000 (at a time when Fords and Chevrolets sold for as little as $600).

At such prices there was unlikely to be more than one set to a household in all but the most affluent households. Radios were hard to hear at first, owing to the twin problems of static and "birdies" (the shrill whistles emitted when neighboring sets interfered with each other). These characteristics accounted for the way radios were used at first. As depicted in advertisements from the 1920s, an entire family would cluster around the radio, which would be located in the living room or kitchen, all generations listening intently to the same program.

Although tubes never overcame many of their main physical defects completely, they did improve dramatically as to performance and operating expense. Owing to their dual use character (i.e., parallel military and commercial uses), military requirements, especially for missile systems, pushed tube design improvements toward higher performance, while commercial requirements for low cost, ease of use, and improved sound drove other aspects of tube development. A cumulation of small interrelated innovations by the bulb makers, the device makers, and the set makers would gradually produce significant changes in radio design and operation.

Improvements in the ability to mass produce receiving tubes reduced prices for tubes and components (speakers, power supplies etc.) in the 1930s. Tube makers included not only the members of the so-called Radio Trust—General Electric and Westinghouse—but also AT&T, Hygrade (later Sylvania), Dumont, and many smaller enterprises. The capital-intensive part of tube making was glass bulb manufacture. Automatic bulb-making equipment capable of producing millions of bulbs a year from one machine first came into production in 1926. By the 1930s most smaller vacuum tubes were produced by a few very large automated machines owned by General Electric, Corning Glass Works, and Libbey Glass. The resulting improvements in manufacturing productivity reduced radio costs dramatically. The bulb producer, Corning Glass Works, jumped from a theoretical capacity of 40,000 hand-made bulbs per man-year in 1910, to 640,000 per man-year in 1912 (on semiautomated equipment) to more than 300 million receiving bulbs per man-year in 1932.[19] As a result of all the changes by tube and bulb makers, radio set prices went from an average of $133 in 1929 to $87 in 1930, $35 in 1933, and as little as $10 (for the "peewee" model) in the middle of the Depression.[20] Tubes that were optimized for increased signal output and reduced power-consumption also gave off less heat, thus allowing table top models to be made of lower-

quality, lighter-weight materials such as pressed metal and moldable plastics.[21]

Similar physical considerations affected sound in movies where vacuum tubes were also key to improving performance. Movies equipped with sound were only possible when sound could be amplified to fill a large space, and when microphones and recording devices could produce soundtracks on film. The vacuum tube was essential to making these developments possible. The incorporation of sound into movies was technically feasible years before it was tried. But movie studios incurred huge capital expenses both for their studio production equipment and for modernizing the theater chains that they owned.

Radar sets also had tube-based physical limitations when they first came into use during World War II. Cathode ray tubes could not be mass produced in the same manner as other less complicated receiving bulbs. Display units used in wartime radar sets—3 in., 7 in., and 9 in. round screens made of heavy leaded glasses—had to be made by hand for most of the war. Their invention and introduction had been so sudden that there had been no time to find either new glass compositions to make them lighter or tooling modifications to make them easier to produce. For many wartime radar applications, portability was a desirable attribute, but it was hard to achieve. It was a sign of just how valuable the devices were to the war effort that despite their weight and bulk they not only found a home on shipboard in World War II, but were jammed into airplane cockpits.[22] The attempts to master radar's physical limitations came too late for wartime service, but they were in time to benefit television mass-production after the war.

Key innovations by component suppliers also helped enable the introduction of black-and-white television after World War II at a price low enough ($375) for rapid market penetration (90 percent in ten years). Tube makers like RCA, Westinghouse, Dumont, and Hygrade/Sylvania worked with glassmakers Corning Glass Works and the Owens-Illinois Kimble Division to develop new lead-free glasses as well as finding new ways to mass produce CRT bulbs. In contrast, the innovation that produced color television ten years later was a much more radical jump from black-and-white to color than black-and-white had been from radar. It involved inventing, designing, and (hardest of all) finding ways to produce an all-electronic color picture tube (the shadow mask) that was very large and that required precise machining and alignment; in addition, the picture tube emitted radiation and therefore required lead to be reintroduced into the glass as protection.[23]

Television stations and consumers were slow to adopt the new technology. Color television was introduced in 1954, but it was ten years before color achieved the market penetration that either radio or black-and-white had achieved in half that time. Early color televisions sold at much higher introductory prices ($695 to $1,100, plus a mandatory service contract of more than $100) than black-and-white televisions. They were as hard to adjust and keep in adjustment as early radios had been. Sales were also limited by the problem that there was relatively little color programming. Not only the networks but also the local stations had to be able to originate color programming, and this involved a major investment in new production equipment. Sales were so poor (only 50,000 for all manufacturers in the first year), that GE, CBS, and Zenith withdrew from the market and essentially boycotted color, leaving RCA, RCA's licensees, and RCA's NBC network to keep the business going on its own. The rest of the industry charged that RCA's timing was dictated mainly by its need to renew its licensing income, for a large number of radio-purpose patents, including many having to do with black-and-white television, expired in 1954. This situation continued for seven years, until in 1961 Zenith finally broke the color boycott as black-and-white sales fell off.[24]

In the 1950s and 1960s developmental work on microwave electronics and other powerful electronics used for weapons and aircraft stimulated economic growth in several high-technology areas of the country. In New York City and California both the electronics and the entertainment industries were engines of the economy, whereas the leading-edge weapons work went on around the campuses of MIT, Stanford University, and Princeton University. Companies like Varian, located on the fringes of the Stanford campus, grew rapidly because of their contributions to radical increases in the performance of specialized vacuum tubes. Ironically, although silicon gave the place its nickname, it was glass and metal that gave Silicon Valley its original shape and character.[25]

Radio: The Unforeseen Dual Use Technology

Even though wireless was at a primitive stage when World War I began, it was vital to U.S. interests both before and during U.S. entry into the war. Great Britain, an ally but also a commercial competitor, controlled the other major international form of communications—the international telegraph cables. Britain defended its interests by cutting

the cables between the United States and Germany when the war started. This action caused an international incident, for the United States, as yet not a belligerent, had its commercial dealings with Germany substantially disrupted. It was clear that to have a commercial policy independent of the British even after the war, the United States needed its own capability in ship-to-shore wireless technology. Nor was the Navy the only branch of the service interested in radio. As early as the late 1910s the Army Signal Corps developed a portable radios that could be carried on a donkey or in a cart.[26]

In addition to buying hundreds of thousands of tubes, and thousands of radio sets for ship-to-shore and battlefield use during World War I—and thus stimulating new radio tube production methods—the U.S. government intervened in the development of radio-related communications by helping to sort out the intellectual property maelstrom just described. After the war, the U.S. government's concern was to keep the British from obtaining vital radio technology via British Marconi's subsidiary, American Marconi—and also as we have seen, to sort out the radio patent situation. These concerns led the Navy to sponsor, with Owen D. Young (president of General Electric), the formation of RCA. The company was set up as a joint holding company to hold and administer all "radio-related" patents on behalf of its corporate owners, which originally included General Electric, Westinghouse, United Fruit, and AT&T but gradually narrowed down to GE and Westinghouse, known as the Radio Trust. By sanctioning what amounted to a patent monopoly in radio-related patents, the government kept destructive competition from slowing down the postwar development of wireless technology as a vital part of the military arsenal.[27]

Commercial broadcasting was a largely unanticipated consequence of these arrangements. Neither the government nor RCA's corporate owners had anticipated the popularity of commercial radio, or that RCA would also become the sales and marketing arm for large quantities of commercial radio equipment made by GE and Westinghouse. Focused on other mostly industrial markets, GE and Westinghouse could not initially see how to make money out of a broadcasting service though they could anticipate the returns from selling apparatus. Left to their own devices they would almost certainly not have mass-marketed radios at the relatively low prices needed to achieve rapid mass penetration of households. But latent demand was already there, and the government had unwittingly cleared the last obstacle keeping commercial radio broadcasting from leaping forward.[28]

Amateurs at work before World War I had been using crystal sets to send and receive radio signals. Their numbers had multiplied into the thousands, with 13,000 radio licenses issued in 1917 alone. By establishing a climate of experimentation conducive to invention and by attracting entrepreneurially oriented immigrants to the field of communications, these enthusiasts had laid the groundwork for regular radio broadcasting.[29] Budding young self-taught engineers, eager to build the best apparatus, shared tips and accomplishments in popular radio magazines. Some were known as the "distance fiends," competing to see who could detect signals from furthest away. But crystal sets were limited by the ability of the operator to assemble the device in the first place, the ability to master Morse code to broadcast and receive comprehensible signals, and skill at tuning in a signal that continually appeared and disappeared.[30]

Commercial radio broadcasting, which began in 1920 (soon after the end of a three-year wartime hiatus in amateur listening), had fewer limitations and appealed to a much different type of audience. It broadcast real voice and sound in the form of analogue signals. Rank novices could tune in and hear comprehensible, if not high-fidelity, programming—music and talk—without special training, though they still had to fiddle frequently with their dials.

David Sarnoff, RCA's general manager and formerly of American Marconi, was an immigrant entrepreneur, more akin to the young proto-engineers among the radio amateurs than he was to his superiors at GE. He flung RCA at the opportunity of radio broadcasting, and the new start-up soon found itself at the core of an exploding commercial radio business and the founder of one of several rapidly expanding broadcasting networks. Westinghouse's pioneering station KDKA (established in 1920) was soon joined by RCA's WJZ and AT&T's WEAF (the most overtly commercial of all three), each offering regularly scheduled broadcasts of live talent to urban audiences.[31]

A struggle ensued between the amateurs who preferred the old kind of point-to-point wireless with little more than occasional programs and regularly announced call letters to be heard, and the powerful commercial interests backed by the large equipment makers who recognized greater potential in a passive audience that wanted to be entertained and amused by regularly scheduled programming. In 1924 the latter party prevailed, pushing the "distance fiends" off the air and marginalizing other small opponents and competitors, such as stations run by small local feedstores or variety stores, but also educational radio stations run by schools and universities.[32]

The Radio Act of 1924, unlike earlier acts which dealt with military uses of radio, was the first to regulate commercial broadcasting by giving the U.S. secretary of commerce the power to issue radio licenses. This was resisted by many and taken to court by Zenith, allowing the problem of wave jumpers and pirates to worsen until 1927, when Congress created the Federal Radio Commission (FRC; later the FCC). Among other provisions the FRC was empowered to assign radio frequencies by type of station. "B" class stations, which received the larger, more select area of the spectrum, were those that had abundant resources and commercial interests related to the advance of commercial radio broadcasting. They included not only the radio apparatus manufacturers GE, Westinghouse, and RCA, who needed steady programming to keep up their sales, but also many stations owned by newspapers and department stores. By 1923 these included both of the Detroit dailies, the Kansas City *Star*, both Rochester papers, the Atlanta *Journal*, the St. Louis *Post Dispatch*, the Chicago *Daily News*, and the Los Angeles *Times Mirror*, as well as Wanamakers in Philadelphia, Gimbels in Pittsburgh, and Bambergers in New York.[33]

B class stations had to meet certain highbrow programming conditions in order to receive their choice spectrum space. One condition was live entertainment, not just the broadcasting of phonograph records. This prohibition on recorded music was observed more in the breach than the observance by the most powerful stations, and was later dropped altogether; it served, however, as an effective means of stabilizing broadcasting under the control of the larger stations and the networks they were creating.[34]

In the 1920s both RCA and AT&T had started and acquired multiple powerful radio stations, linking them together in what were to emerge as the first broadcasting networks. As early as 1921, stations were linked over telephone lines for single event, but permanent networks with centrally scheduled programming offered for some part of each day awaited an agreement between AT&T and RCA, which came in 1926. AT&T kept for itself the transmission system, and with it the revenues generated by providing telephone line transmission for the nationwide linkage. It left the broadcasting business to RCA and its National Broadcasting Company (NBC) "red" and "blue" networks. Another network, the Columbia Broadcasting System (CBS), emerged in 1927, to be taken over and built to prominence by tobacco magnate William S. Paley; Dumont had a third network that floundered badly and disappeared before World War II.[35]

This move to consolidate radio broadcasting was portrayed as a triumph for the forces of order, a chance to make use of the airwaves

for cultural and educational purposes, and to quell some of the more unruly aspects of amateur transmissions. There is little doubt, however, that the chief impetus for networks was the need to spread the high cost of programming, while what kept the networks in place was the substantial revenues that accrued when network advertising was introduced in the late 1920s.[36] There was considerable rural and regional opposition to the centralizing moves and as we shall see, some elitist opposition to the intrusion of advertising into the home. Without the role of gradually evolving regulatory agencies, especially the FCC, siding with network promoters, more democratic, entrepreneurial, diverse models might have prevailed. But a centralized or at least concentrated communications system was essential to defense purposes, increasingly desirable for political and economic purposes, and certainly in the public interest to sort out the chaotic state of the airwaves on some organized basis.

Despite the initial predominance of urban audiences drawn to the broadcasting of their local entertainments and consumer interests in such commercial centers as New York, Pittsburgh, and Chicago, the other force that made radio's development so rapid was the unforeseen demand for information and entertainment among segments of the new audience outside urban areas. Farmers, thinly spread across the U.S. frontier and isolated by distance and weather, were able to get vital weather news and agricultural information. This service was begun by amateurs who relayed their information in encoded form to other amateurs in outlying localities who would translate it and spread the news.[37] Residents of outlying areas who were neglected as uneconomic customers by the telephone companies—and in some regions by the electric power companies as well—were able to feel part of a larger community. Sports fans were able to follow their teams on radio even when the fans lived nowhere near the ballparks, while people for whom even a quarter was too much to pay for a movie embraced radio's free entertainment.

Newspapers, more than 2,200 of them read by 20 million readers in 1910, had fed this need for information, entertainment, and connectedness before[38], but they had required a literate readership and they suffered from the limitations of text. Now radio offered the far more accessible modes of speech and music. So important did radio sets become to the U.S. population that they could be found in 14 million households by 1930, a rate of household penetration far in excess of that achieved by either household electricity or the telephone.[39] The nearly universal use of radios during the Depression, at a time when disposable household income was drastically diminished—when even

attendance at motion pictures was off by a third—showed how important radio had become to a large and growing audience.

Sound in Motion Pictures

The addition of sound to films was a technological revolution that was even more devastating to existing interests than the revolution in wireless, because there was already a well-established film industry in place before World War I, albeit not one that received much respect from the social establishment. Having originated with peep shows and arcade amusements, silent films had developed into something of an antiestablishment force before World War I. Early film was a low-cost medium abounding in small studios and independent producers, with flexible distribution. It was possible under such conditions for films to be made about all kinds of social problems.[40]

After World War I the climate changed. The rise of Hollywood and the studio system combined with conservative reaction to the Red Scare and heightened postwar antiunion sentiment to virtually eliminate radical filmmaking. In the early 1920s film graduated from being a pillar of working-class entertainment to serving a larger and more socially varied audience. Studios thrived from their investments in picture palaces, and from promoting the colorful lives of flamboyant Hollywood stars like Douglas Fairbanks, Mary Pickford, and Mae West. As films became more expensive, risky productions were harder to make. With the emergence of downtown movie palaces came "cross-class" films that stressed harmony among the classes. The picture palaces and the pictures they showed promoted "conservative visions of consumption and class interaction," including films that depicted love between men and women of different classes, replacing themes of social problems with those related to social mobility.[41]

In the late 1920s, however, partly in response to the emergent Russian film industry that threatened to undermine the American studios' dominance of programming worldwide (and spreading socialist revolutionary fervor), the industry made a sudden jump to "talkies." Two relatively unknown U.S. studios, Fox and Warner Brothers, took the pioneering step of adding sound to motion pictures, thus gaining a lead on the rest of the industry. In the space of a year Warner Brothers came out of nowhere to gain control of more than 700 theaters.[42]

Talkies, what one motion picture historian has called the "technological counterrevolution of sound technology" put the familiar mode of capitalist commercial cinema firmly back on center stage. The American sound monopolies, RCA's Radio Keith Orpheum and the competing Westrex system from AT&T's Western Electric (marketed by AT&T's ERPE), could shut out the Soviets by controlling all the relevant technology.[43] For a time it appeared that a struggle over sound patents might block a speedy transformation until AT&T stepped in and forced an agreement.[44]

However controversial they might have been in establishment terms, silent films had developed a formula that made vast sums of money for U.S. capitalist enterprises at home and abroad. The changeover to sound was costly, involving new moviemaking facilities in acoustically protected studios, different actors and actresses, different methods of production, and new theaters with elaborate sound systems.[45] Ultimately, the shift was effective in keeping American enterprises at the forefront of filmmaking internationally, but the timing caused serious short-term upheavals in the film industry.

Silent film producers had adopted a regime of moderate moral self-censorship in the mid-1920s, but the risqué and the bawdy reasserted themselves when sound pictures came in, because studios needed to attract large audiences to their new theaters. Success seemed assured at first, but with the onset of the Depression audiences diminished. The large sums of capital the studios owed put even such giant studio empires as Paramount Pictures into bankruptcy court when revenues dropped in the early 1930s. For a while financial control of the industry devolved on a few key Wall Street enterprises controlled chiefly by the Morgans and the Rockefellers. However, artistic control soon returned to the people who had started the earlier studios and who knew the business. Eventually many of the outsiders who had begun their careers in the era of silent film returned to head the large studios, some of them well into the 1960s.

Although movie revenues achieved some fabulous peaks among their valleys, the movie story was never as rosy as popular mythology would have suggested. Movie-going never equaled the popularity of radio once radio became well established. In surveys cinema ranked well behind both newspapers and radio as a form of wartime information, even though, as discussed later, the movie industry received special dispensations for war work. Attendance and revenues peaked for the last time in 1946 when market research appeared to show that movies had finally achieved the audience of their dreams. This impression soon turned out to be illusory. In the late 1940s movie attendance fell off for several reasons: locations of theaters in declining urban areas, postwar changes in lifestyle, and, by 1950, an audience preference for television. Eventually television would give all other media a run for

their money, though at first it seemed to be a victim of a serious "chicken and egg problem"—equipment sales depending on programming availability and programming availability depending on equipment sales. Owing to the necessary "lock and key" nature of its transmission and reception, far more constraining than radio, television could not benefit from thousands of amateurs putting out their own pictures over the airwaves in the way distance fiends had prepared the way for radio.[46]

The Transition to a Mobilized Society

The transition to a newly mobilized society, characterized by at least a superficial cultural unity, occurred from the 1920s to the 1940s. The transition occurred in several arenas simultaneously—the shaping of public opinion for political purposes, the expansion and manipulation of a mass market through electronic media advertising, and the transformation of a civilian society into a society permanently mobilized for war. To a great extent these arenas were interdependent.

A Culture of National Unity

Radio broadcasting's potential to reach a large mass of newly connected people was quickly apparent. Wireless in the hands of amateurs had already revealed a latent and growing need for a way to communicate over distance and to form bonds among people with similar enthusiasms.[47] The rapid creation of nationwide leagues of amateurs in 1914 and 1915 manifested this impulse, though amateurs were sometimes viewed with the same ambivalence as computer hackers today, as a potentially rebellious and incendiary force.[48] The problem radio broadcasting seemed to address even more effectively than wireless was an immigrant and mobile culture gripped by feelings of anomie and isolation. The United States had become a population of newcomers, whether to the country itself or just to a new part of the country, radio could hasten their cultural adjustment by keeping them in touch.

To those who sponsored it at the start, radio seemed to be a vehicle for a new national unity of a superior kind, consciously purveying programming of a much more upscale variety than older forms of entertainment like vaudeville and silent film. In radio's formative period the goals of cultural unity and homogeneity were held up repeatedly as matters of the highest importance.[49] NBC's stated mission explicitly committed the organization to provide the "best programming," or again, to provide machinery to insure the national distribution of national programs, "of the highest quality."[50] Consistent with a general attitude of paternalism among big business leaders, an ad from the National Carbon Company proclaimed, "The air is your theater, your college, your newspaper, your library." Underneath it all, though not as explicitly stated, there was a perceived need to reach people who might not be able to read, and a desire to combat the "transgressive forces" that seemed to be showing up in the aftermath of World War I—including the disruptive forces associated with large groups of blacks migrating north and women asserting themselves to claim voting rights.[51]

Leaders of large companies like GE and Ford were adopting the role of corporate statesmen in the 1920s. To paraphrase Keynesian biographer Robert Skidelsky, on both sides of the Atlantic leaders had shown what could be done in mobilizing their countries' resources for war, and they wanted to believe it was possible to mobilize for constructive peacetime purposes as well.[52] A particular emphasis was on acculturating immigrants. To this end large companies adopted progressive benefits, and they viewed radio as yet another means to accomplish some of the same ends.[53] As one scholar has observed, listeners tuning in by the tens of thousands to one specific program airing at a specific time created an even more intense version of the imagined community, with its "shared simultaneity of experience," than has been claimed for the daily newspaper. Indeed, chain newspapers were actually far more local in their impact than network radios.[54] Radio promoters were confident that they knew what cultural standards ought to be, but the culture of the Eastern elites turned out not to be a realistic set of norms for their purposes. New types of entertainment were needed that would appeal to a broad range of people, transcending social class and pocketbook, and helping to build through shared experience a culture of national unity that created common ground among people of widely differing ethnic backgrounds.

Inside the home, radio offered another kind of shared experience. Indeed, as mentioned earlier, it entered the private domain of the family in a way that was potentially more intrusive than any previous medium. Playing in the bosom of the family it reached everyone within earshot, young and old alike; unlike print media, it could be heard and understood by young and old alike. This intimate aspect of radio broadcasting was not lost on its promoters; it was one of the reasons that there was at first so much reluctance to use radio for advertising. Although it was undeniably possible for the listener to switch off or tune out a program if it took an offensive turn, it certainly was more

risky to broadcast programming that might give offense than it was to print it.[55]

It soon became apparent that programming that appealed to Eastern elites was not the programming the general public wanted to hear. Promoters like Lee de Forest and David Sarnoff envisioned programming around patriotic themes and highbrow cultural entertainment such as operas and recitals. deForest emphasized bringing opera to the airwaves, though he also spoke of a broad mix of news and comedy; Sarnoff originally spoke of a public service kind of broadcasting that would be supported by philanthropists. As discussed later, these promoters initially shunned advertising, but it was advertising that would help to sort out mismatches between the goals of program selectors and those of their audience. For the first several decades of radio the white middle-class family image of radio prevailed. As radio stations proliferated, this image was diluted. After television replaced radio as the dominant networked medium, other social groups would also find in radio a way to get their voices heard in the larger community.

By far the most popular program in the early years of broadcasting was *Amos 'n' Andy*, which began in Chicago in 1926 as *Sam 'n' Henry* and later switched to NBC, which nationally broadcast the program. The program was indicative of many of the concerns that were shared by the broader populace, though it portrayed them through the adventures of two Southern black men who had moved to Chicago to seek their fortunes. By 1931–1932 *Amos 'n' Andy* was estimated to be reaching an audience of 40 million Americans. At a time when minstrel shows were still the stock-in-trade of most local live entertainments, this program could hardly be construed as the voice of a genuine black culture. Its writers and actors were two white male actors, Freeman Gosden and Charles Correll, and their dialogue as well as their plotlines undoubtedly reinforced racial stereotypes. Nevertheless, immigrants of many stripes identified with the hilarious experiences of two newcomers having to cope with a complex and unfamiliar urban setting beyond their control.[56]

Critics soon rose to denounce radio on cultural grounds. They complained that the networks, bolstered by government regulation and by strong local affiliates, were refusing to represent a broad spectrum of cultural interests. To radio's claim that requests for educational programming were slighted because advertisers would not pay for it, they replied that radio had aligned itself with government regulators to repress social dissent. College stations were in fact being squeezed by the FRC into poor and noisy channels; their spectrum assignments seemed to get worse each time the radio spectrum was reallocated.

Allocation of the radio spectrum remained an area of tremendous controversy, intensifying when in the late 1930s frequency modulation (FM) band radio and National Television Standards Committee television began to contend for the same area of the radio spectrum. Of course most critics had their own axes to grind. Their complaints about the debasing of public taste arose out of their fears that radio posed a destructive form of competition for other better cultural institutions. Nevertheless they could point to the government radio systems of Great Britain and Canada with their explicit educational aims as superior alternative models.[57]

Movies offered another approach to solving the problems of social isolation and loss of community. Films were less ephemeral than radio broadcasts; viewed repeatedly, they could reinforce taste and standards, and embed certain material ideals in the collective psyche. Since their storytelling depended as much on image as on sound, they also provided a chance for immigrant groups to learn the language. Unlike radio, which began as highbrow and therefore exercised fairly strong self-censorship from its start, movies grew out of a silent film culture that had had more than a few run-ins with the arbiters of taste and decency. In the mid-1920s the movie studios adopted their own half-hearted self-censorship to head off a Roman Catholic church push for government censorship. After a rash of gangster movies and other celebrations of offbeat heroism in the 1920s, Hollywood took a much more aggressive and deliberate stance toward influencing the national culture as young movie producers and directors assumed a new mantle of respectability. Three men in particular, David Selznick, Irving Thalberg, and Darryl Zanuck, transformed the very nature of Hollywood's pictures by making numerous dignified, elevated, and respectable (and often very expensive), movies set in the past, many based on literary classics—films of *Hamlet, Romeo and Juliet, Anna Karenina, David Copperfield, Les Miserables,* and *A Tale of Two Cities*. Later the trend moved to making films of the best contemporary works like *Gone with the Wind* and *Rebecca*.[58]

F. Scott Fitzgerald and other writers, who were cultural heros in the 1920s, sensed more of a threat than an opportunity in these Hollywood developments. They saw serious movies as a more critical challenge to the literary life of the nation than the silent films had ever been, because they portended a narrowing of the cultural life. The economics of movie production and distribution, and for that matter of all vacuum-tube–based communications technologies, were such that there came to be less and less room for opposing views, or alternative visions of what life in America was like. In what one movie historian has called

"the first fully conscious era of cultural mythmaking," the middle-class culture of those who attended movies, and who could first afford radio and television, became identified in the 1930s both domestically and internationally as the U.S. national culture.[59]

Mobilizing Public Opinion Electronic media were hardly the first mass media to be used by politicians and other national figures to mobilize public opinion. Newspapers, aided by the telegraph, had already proven effective in stirring up their mass audience. President Woodrow Wilson had acknowledged the effectiveness of mass print advertising campaigns when he appointed the Curlee Commission to help raise volunteers for World War I. The commission had mounted an effective national advertising campaign to persuade the U.S. populace of the rightness of U.S. entry into the war.

Nevertheless, radio clearly improved the prospects for engaging the U.S. populace more immediately in the political process. The very first radio broadcast on KDKA in Pittsburgh aired the Harding–Cox election returns on November 2, 1920, heard by at most a few thousand people. In 1923, Calvin Coolidge became the first president to use networked radio broadcasting. President Herbert Hoover used it to mark national milestone events such as the fiftieth anniversary (in 1929) of the invention of Edison's lightbulb. But Franklin D. Roosevelt perfected the use of radio for political purposes with his "fireside chats," which bypassed commentators and journalists to go directly to the people.[60] In the depths of the Depression these intimate addresses broadcast to citizens—whom he addressed as "my friends"—reached roughly 16 million households, nearly half of all Americans.[61] They were credited with raising morale and stabilizing a potentially explosive social situation, where millions were unemployed and desperate. The Roosevelt administration also borrowed an idea from the British government by employing filmmakers to educate the people about the government's goals. Pare Lorentz organized government film units to produce such notable documentaries as *The Plough that Broke the Plain* (1936), *The River* (1937), and *Power and the Land* (1938). These films used powerful sound tracks and lyrical images to convey their messages about the need for agricultural electrification or the manmade causes of what were previously thought to be simply natural disasters.[62]

The public purposes to which radio was put in its first three decades were generally of this unifying and stabilizing sort, partly because it was the sitting politicians who had access to the media. The potentially dangerous power of radio to influence the public was not lost on radio's critics, however. James Rorty, a prominent spokesmen for opponents

of radio, warned in the early 1930s that "the control of radio means increasingly the control of public opinion."[63]

Newspapers, whose opposition to radio was obviously motivated by fear of competition, tried to keep radio from broadcasting news in the mid-1930s by refusing to allow the news they gathered to be broadcast. The networks retaliated by founding their own news bureaus, which caused advertisers to worry that the still stronger newspapers would shut them out. An agreement signed in late 1933 ended the dispute by limiting the time slots in which the radio networks could broadcast the news and getting the networks to do news on an unsponsored basis. Radio also agreed to limit their news to analysis or commentary, rather than reporting. As discussed later, the distinction between analysis and reporting helped to prepare the public for the special requirements of wartime news broadcasting.

After World War II, electronic media would come to be used in a more divisive and partisan way. In 1946, young John F. Kennedy of Massachusetts was one of the first aspiring politicians to buy radio time for his personal radio ads. Kennedy built up a broadcasting persona that would serve him well when he became one of the first two presidential candidates to conduct televised debates, in the 1960 election. The networks began routinely to broadcast party conventions and election nights as a public service, and they also broadcast the political show trials of the House Unamerican Activities Committee under Senator Joseph McCarthy.

Mobilizing the Mass Market Though the advertising profession was well established when radio broadcasting began, early radio promoters, with the exception of AT&T, were mostly averse to advertising on radio. One scholar attributes this to the perception of radio as a high-brow medium, starting as it did with affluent buyers and gradually spreading to the less well off.[64] No less a personage than Secretary of Commerce Herbert Hoover commented that it would be "inconceivable that we should allow so great a possibility for service to be drowned in advertising chatter."[65] Even leading members of the advertising profession fulminated against allowing commercialism to intrude on the "sanctity of the home." There was the fear in the advertising community that if advertising were allowed to invade this new medium there might be a consumer backlash against all advertising.

But radio posed significant challenges to advertisers, as well as to the advertising agencies that served them.[66] The practice of advertising in print media was well understood, and it was relatively easy to calculate how many people a particular ad might reach and what kind of people

they were. In this sense early radio was a big unknown,[67] and preparing copy to be heard in the privacy of the home was perceived to be a delicate matter. Radio advertising went through several quick stages in the 1920s. First came "sponsorship only," simply identifying the name of a sponsor with a program, allowing the audience to infer that the National Carbon Company must be sponsoring the *Eveready Hour* because radios were such large users of batteries. Next, the advertising came to be blended with the program content in a fairly subtle way. A character in a situation drama or a comedy might refer to the brand of tea he was drinking, for instance. Later on, programming and advertising were interwoven, as advertising agencies began influencing content. Even styles of performance, such as the crooning of Bing Crosby and Rudy Vallee, were favored because crooning was the style of music deemed most likely to prepare the listener to be receptive to a commercial message.

Gradually advertisers deduced from favorable, though not necessarily representative, correspondence that the audience did not object to advertising of an even more overt sort despite being in the privacy of the home. Especially in the daytime hours when women tended to be at home working, listeners seemed to welcome a helpful, often educational "message from our sponsors."[68] Ironically, opera of a kind also came to form the basis of daytime programming in 1933 when the large packaged goods companies became some of the earliest enterprises to discover the advantages of getting their message to masses of women. The vehicle for this was the "soap opera," so-called because it was invariably sponsored by detergent manufacturers, who knew that their target consumer was the housewife. More than 70 percent of women could be relied upon to be at home in the afternoon hours; they bought the products without consultation and were known to be loyal to brands.[69]

By 1930 advertising on radio was reaching $60 million annually, and by 1940 it had jumped to $600 million. By 1935 some 12.5 percent of the whole advertising market had moved from newspapers and magazines to radio. It was evident that in spite of hard times generally, the networks were doing very well. *Fortune* magazine, part of the print media that was struggling to stay afloat, noted with envy that in the year 1930–1931 NBC's profits increased from $20 million, to nearly $26 million, while the smaller CBS increased from $8.5 million to $11.6 million.

Small wonder that newspapers felt the need to acquire radio stations.[70] Some newspapers bought stations as a defensive move, while others saw them as additional sources of advertising revenue. In some

cases they fought back in other ways, refusing to carry radio schedules and giving bad reviews to programs that were commercially sponsored. At first they saw these moves as countering the very real threat to their revenue base, but after a while they realized that publishing radio schedules was more likely to sell papers than not and capitulated into peaceful coexistence.

In the 1920s, even before the economy had fallen into depression, some corporations had begun to think of themselves as conducting business as a public service. Prominent among these companies were GE and AT&T, both major players in the radio industry. Then the economy went into depression, and Roosevelt's New Deal came in with a philosophy quite different from the probusiness philosophy of the Republican administrations of the 1920s. At that point, many corporations faced the shocking prospect of a growing public hostility. To counter some of the bad press, companies sponsored radio programming intended to show their public-spiritedness—special concerts, dramatic shows, and so on. At this period advertising agencies began producing their own shows, a practice that would continue for a time with television.

Movies, which were held in about the same low regard by the advertising community as were the tabloids, had played a relatively small role in advertising in the era of silent films. Even this small exposure—a few spots before a film began—was lost with talking pictures. Movies were likely to portray a world of conspicuous consumption and to stimulate interest in it, but they were not likely to become a direct advertising medium. Consumption, decreased though it was in the 1930s, was nevertheless a form of recreation. And in the 1930s consumption was also public-spirited. The New Deal government, believing that consumption was imperative to get the national economy moving again, was disinclined to oppose any efforts the advertising community might make to stimulate it. The old dichotomy was gone. Increasingly the population was drawn together as a culture more by what has been called a "democracy of goods" than they were by a democracy of ideas.[71]

Mobilizing a Civilian Society for War. "Radio is the one channel of publicity which has not previously been available in a great international crisis. It lends itself with singular effectiveness to the creation of morale on a national scale," claimed the Treasury Department in one of its 1941 bulletins. Treasury was early among U.S. agencies to try to mobilize public opinion with its Defense Savings Bond program. But outside the government other organizations had already been using

radio's considerable powers of influence to raise consciousness about Nazi atrocities and to fight anti-Semitic activities in the United States. The Council for Democracy, formed in 1940 to fight all forms of prejudice in "our national consciousness" whether it was directed at minority groups or the foreign-born, relied heavily on the mass media, especially radio. It also worked with government agencies including the Justice Department, and later with the House Unamerican Activities Committee reporting on the activities of subversives who were sympathetic to the Nazi regime. Such groups were ready to give assistance, and even lend their personnel, when the government moved to mobilize public opinion in favor of the war in 1941.[72]

Before the United States entered World War II, the country was divided in its sympathies toward the belligerents and also toward the idea of U.S. involvement. As it had during the depths of the Depression, the Roosevelt administration once again turned to radio to move public opinion to support its program, this time on behalf of the Allies. Radio broadcasts and newsreels of the Battle of Britain helped contribute to the sense of urgency and national purpose as well as to the need to make funds available for war materiel under the Lend-Lease Program. Roosevelt's use of the radio to persuade the populace of the necessity of his course of action allowed him, in the face of considerable congressional opposition, to violate the spirit, if not the letter, of the Neutrality Acts by diverting war materiel to Great Britain. Soon radio was asked to help in recruiting men and women for military service, and women for war work at home.

Radio was no longer restricted from broadcasting news, immediacy being viewed as an advantage to keep the populace informed. Indeed, the familiar voices of such radio personalities as Lowell Thomas and Edward R. Murrow did much to bring home the reality of the devastation overseas and the need for the United States to intervene. More than a dozen manufacturers had begun turning out portable radios from late 1938, when Sylvania's introduction of new battery tubes—tubes that made smaller, less expensive radios possible—coincided with increased tensions in Europe. Demand for them was created almost entirely by listeners eager to hear war reporting.

War coverage moved into high gear as soon as Germany invaded Poland in 1939. *Newsweek* reported that broadcasting studios adopted twenty-four-hour emergency schedules, and "armies of correspondents and commentators were mobilized" creating such a "stream of war-and-peace confusion . . . that Americans were left almost as tense and groggy" as those who were actually experiencing air raids. So excessive was some early war coverage that the three networks (the three included

the American Broadcasting Company "red network," which RCA had been forced to divest in 1942) worked with the FCC to draw up a code governing wartime news dispatches. It held that every effort consistent with the news itself should be made "to avoid horror, suspense and undue excitement."[73] One important matter was to distinguish clearly between fact and fiction when broadcasting news. Radio had made such a practice of embedding its messages in story and skit form that it was necessary to make a very clear distinction for news formats.

After the United States entered the war, President Roosevelt commissioned the Bureau of the Budget under Milton Eisenhower to propose a better approach to coordinating the government's information functions, which often seemed to be working at cross purposes. The new Office of War Information, headed by Elmer Davis, a well-known journalist and radio commentator, was directed to facilitate the development of an informed and intelligent understanding of the government's wartime activities at home and abroad, and to coordinate and review all federally sponsored programming intended for radio broadcast or motion picture.[74] The advertising agencies offered their services through an effort that circulated an average of three messages a week involving timely themes to be incorporated into programs at the discretion of producers. Unlike the massive orchestrated efforts of the German propaganda machine, all such activities on the part of the U.S. broadcasting, motion picture, and advertising industries were strictly voluntary, and the government's role remained officially one of coordinator rather than originator of the information. These efforts were often chaotic at first, and the bureaucratic apparatus involved (though reorganized from time to time) never achieved the effect of a well-oiled machine.

Nevertheless, mass media were employed at all levels for training, civil defense, and information dissemination purposes.[75] The Motion Picture Committee Cooperating for the National Defense, which officially came into being on December 12, 1941, comprised six divisions; some parts such as the Hollywood Division, employed tens of thousands of workers throughout the war. The Distributors Division managed more than 300 film exchanges in thirty-one cities to handle releases of approved films at no expense to the government. The Newsreel Division, which consisted of five major newsreel companies and the March of Time, took responsibility for filming the war in all of its theaters, at home and abroad. Between 1942 and 1945, one of Hollywood's most distinguished directors, Frank Capra, produced the important twelve-part military-training film series "Why We Fight." Combining "stock footage, newsreels, and specially produced film."

This series attempted to explain to U.S. servicemen and women why the United States was at war. Meanwhile John Ford, William Wyler, and others produced films for the different armed services that aimed to inspire patriotism and resolve in the population at large; they created such moving war stories as *Memphis Bell* for the Air Corps, *The Battle of San Pietro* for the Army, and the *Battle of Midway* for the Navy.[76]

The Office of War Information, formed in 1942, took as its mandate the need to broadcast information from the various agencies concerned with defense mobilization about the state of business–government cooperation. The office was ineffective because there were no clear guidelines as to whether its primary mission was to build morale and create unity, or conversely to shine light on the problems arising in the arena of government–business cooperation. More effective was a branch of the Office of Civil Defense, called the Office of Facts and Figures (organized under the leadership of then Librarian of Congress Archibald MacLeish), to provide public opinion samplings and to give Americans an accurate and coherent account of government policy while striving to avoid the appearance of propaganda. This office had a radio division, headed by former CBS programming vice president William Lewis, "to give guidance to government departments and agencies and to the radio industry as a whole" and "to handle certain government programs on the networks within the U.S."[77]

Media executives like David Sarnoff of RCA, William Paley of CBS, and James Galvin of Motorola received wartime commissions commensurate with their peacetime status and were enlisted in the cause of adapting broadcasting and communications activities of all kinds to wartime missions. Rapid advances in emergent electronic communications technology were considered so important for military purposes that the government funded civilian communications and electronics research via the Office of Scientific Research and Development and kept it free of military control even as the war was progressing. This extreme deviation from previous practice put millions of dollars into research at a long list of radio and electronics firms and also supported mammoth university–industry–government cooperative efforts such as the Radiation Laboratory at MIT.[78] One key wartime development was the image orthicon, a significant improvement by RCA of its old orthicon tube, and one that had important implications for guided missiles and reconnaissance.[79] In addition to performing large amounts of high-priority research, the large integrated companies, such as GE, Westinghouse, and RCA, were converted to manufacturing military communications equipment and electronic weapons. Among the technologies that emerged during this very fertile period, though it drew

on work already under way in the 1930s, was solid state electronics, which involved electrons flowing through solids rather than through gas or vacuum or conductive metals. When it became apparent that it would not be possible for the country to return to the peacetime status quo after the war, the military–industrial complex that formed at this time would continue even stronger in the postwar period. Pillars of this complex were the integrated electronics and communications companies, now joined by many other companies who could rely on continued postwar government funding and who would rise to challenge, ultimately successfully, the way the largest companies had previously been allowed to dominate broadcasting and communications.[80]

Television and Radar: The Planned Dual Use Technology

Although television as an invention was as old as radio, it was World War II that prepared the way for it to become a thriving commercial medium in its own right. Television had been under development before World War II in several companies—of which RCA, CBS, and Dumont (an entrepreneurial firm cross-licensed to RCA from 1938) were the most significant. Vladimir Zworykin, a Russian immigrant, had invented the iconoscope camera tube in 1923 while working at Westinghouse before its radio-related research transferred to RCA, and then later with funding from fellow Russian immigrant, David Sarnoff at RCA. Zworykin was a student of another Russian inventor, Boris Rozing, who in 1907 had already patented a cathode ray tube (CRT) television receiver.[81] The ingenious but unlucky Philo Farnsworth was the first to demonstrate a complete prototype television system, in the late 1920s. In the late 1930s Corning Glass Works supplied enough experimental CRTs for RCA to run several major pilot tests of television in New York City. In 1937 the Radio Manufacturers' Association (RMA)—generally regarded as a "tool" of the RCA because the corporation dominated the tube market and still controlled radio technology through its licensing arrangements—made recommendations to the FCC for a workable all-electronic television standard. The rest of the radio industry feared another RCA monopoly over television. Led by CBS, which was promoting its own partly electronic television system, RCA's industry opponents appealed to the FCC, and a National Television Standards Committee (NTSC) was formed in 1940 to produce one set of universal standards agreeable to the entire industry. A year later the FCC agreed to a set of NTSC

standards calling for 525 lines and the use of FM for the audio portions of the broadcast. RCA began broadcasting on this standard in July 1941, only to have it come to a halt five months later with the Japanese attack on Pearl Harbor.[82]

Because of its lock on critical materials and devices, the war diverted the nation's capacities for the duration. This hiatus in television broadcasting turned out to be of incalculable value to television manufacturers and broadcasters, because World War II prepared the way for television in innumerable ways. It provided the means and the focus for significant improvement in key electronic devices like the image orthicon; it made inexpensive radar plants available for television tube manufacturing; it trained servicemen in electronics; and it created a pent-up demand for consumer goods. Radio had enjoyed this type of advantage to some extent in World War I, as wireless operators came back having benefited from training and field operations, but World War II made much greater use of electronic equipment in numerous forms. Radar, the top-secret weapon, gave the Allies the incalculable advantage of superior information about enemy whereabouts, guarded U.S. airfields, sailed aboard U.S. naval vessels, gave eyes to U.S. submarines, and even flew on U.S. bombing runs.[83] Once again, as with radio, the bulb makers were the high-volume producers with many more tube companies manually assembling the finished tubes. Television receivers, using the same small round CRTs, were also used in primitive form in wartime, though the military form was still rudimentary enough to have limited application, mostly for training.[84]

When World War II was over it was in almost everyone's interest to see that television came into being as a regular broadcasting service as quickly as possible. The war had pulled the country out of the Depression, but it was generally recognized that it would be necessary to reprime the pump of national consumption if prosperity were to continue. After two decades of austerity, postwar Americans looked forward to a future of new homes, new cars, and countless conveniences. The consumer electronics industry employed tens of thousands of people, and pent-up demand could move many radios and televisions. Nevertheless, the industry was sharply divided in the postwar period as to whether it should be improved radio transmission and better radio receivers, or the new (but less well-developed) medium television, that should be allowed to benefit most from postwar demand. Here RCA prevailed, though only by overcoming stiff opposition from competitors led by CBS.[85]

The industry battle over television standards, now for both black-and-white and color, resumed on two fronts: in the FCC, which had

a larger role in television standard-setting than it had in radio, and in the marketplace, where RCA began selling black-and-white television receivers before the standards questions were settled. In the spring of 1947, CBS was pursuing a petition with the FCC for a revised color television system broadcast in the ultra high frequency (UHF) part of the spectrum, thereby creating uncertainty as to whether television would be a "go" or not. Under pressure from RCA, which warned that the stagnation of television would be ruinous to a potentially shaky economy, the FCC gave provisional approval to RCA's prewar NTSC standard for black-and-white and deferred judgment on the color standard. It had been James Fly, chairman of the FCC, after all, who had written, "I think it quite likely that during the post-war period television will be one of the first industries arising to serve as a cushion against unemployment and depression."[86]

CBS continued to direct its efforts toward convincing the FCC to adopt its constantly improving "field-sequential" color television standard, which employed spinning color wheels in both camera and receiver. The advantage of CBS's system was that it would free the very high frequency (VHF) part of the spectrum for FM radio. This would appease those radio manufacturers that had already been producing high-fidelity FM radio, which had been successfully introduced by Edwin Armstrong in 1939. The disadvantage would be that it would render obsolete all existing black-and-white television sets.

However provisional it was intended to be, FCC's decision in 1947 was the encouragement black-and-white television sales needed to explode. *Nations's Business* noted in the summer of 1947 that television was "something the average American family has just about decided it cannot do without."[87] RCA and more than 100 smaller existing and new entrepreneurial television receiver makers were selling enough black-and-white television sets on RCA licenses—table models, consoles, television-phonograph combinations—to impose a de facto standard on the marketplace.[88] RCA's combined revenues soared from licensing, tubes, receiving sets, professional broadcasting equipment, and the sale of other components, providing support for the development of television programming and the next advances in color television technology.

RCA's television system occupied the VHF channels, preempting the original FM radio band, and limiting severely the number of television stations that could operate in any given metropolitan area, making television broadcasting more concentrated—and television stations even more valuable than radio stations. The FCC's decision necessarily affected FM as well. It reallocated FM radio to a new part

of the spectrum, and cut back FM's power, rendering obsolete half a million receivers and forty prewar FM stations. This action raised a storm of controversy that would make it unthinkable to do such a thing again.

By 1950 television had already entered ten million households—at an average price of well over $200. The Korean War intervened to stop all production of television receivers, as users of scarce materials that were needed for weapons. When the Korean action was over, the FCC and the industry were forced grudgingly to accept RCA's NTSC standard not only for black-and-white television, but also as a starting point for the color television standard which now had to be compatible. FM survived as a system, used for the sound in television, but RCA and its many licensees flatly refused to pay Armstrong, FM's creator, the licensing fees he should have received for its use. Worn out by court battles, even though they were ultimately decided in his favor, Armstrong committed suicide in 1954. His FM radio system straggled along, only picking up adherents in the 1960s when classical radio stations, benefiting from static-free sound, became one of many multiplying radio formats.

Unlike radio, which had had to start largely from scratch as a broadcasting medium, television had the good fortune to follow radio, which it was able to mimic and to steal from in many different ways. Studios were adapted as well as assembly plants. Performers and writers moved from radio to television. Often shows appeared on prime time television that had developed their audience on radio. And many formats that had been developed for radio were adapted for television. Even the extremely popular morning programs that eventually anchored all three television networks were actually imitations of Mary Margaret McBride's very successful women's program on radio, which after a run of twenty years was reaching eight million listeners per day by 1954. Though hailed at the time as original breakthroughs in programming, with a magazine format largely directed toward men, they were actually derived from McBride's magazine format for women. Many radio soap operas, and situation comedies, made a similar rapid transition.[89]

What television could not adapt directly from radio, however, was the ability to hook up long-distance network broadcasting over the telephone lines. Multiple stations could see the same programming over stations all owned by the same company in Philadelphia and New York, but otherwise shared programming had to be transferred on film, an expensive and inferior procedure. Because of the greater bandwidth required, television networking had to await the construction of a

nationwide coaxial cable transmission system chat was not in place until 1951. It was only a short time after the coast-to-coast hook-up occurred, marked by Edward R. Murrow standing on the Golden Gate Bridge, that both prime-time radio programming and large-scale radio advertisers moved en masse to television.[90]

Media Coexistence

Judged solely in commercial terms (i.e., dollars expended on advertising), one generation of vacuum-tube–based technology rapidly displaced another. Radio, having stolen revenues from newspapers at such impressive rates, was in turn displaced by television as a bigger revenue generator from advertising. Nevertheless, despite predictions to the contrary, all of the vacuum-tube–based forms of communications technology continued to coexist, and gradually became complementary to each other. Radio, having created the major national audience, retrenched and decentralized to become a more local medium serving niche markets. Although low yield at first, these franchises became more and more profitable as radio discovered a new programming format that aimed different kinds of specialized music at different audiences—developing whole new genres of music or news or talk shows in the process.

Movie studios meanwhile made up for the loss of their primary audience by renting their film libraries to television, and later to cable television. Beginning with Howard Hughes's sale of the RKO film library in 1955, pre-1948 Hollywood productions flooded into television network libraries in the late 1950s. Certain studios, like Columbia Pictures' Screen Gems (starting in 1952), developed long-range relationships with the networks to make "telefilms," that is, made-for-television movies, in a format that would become extremely profitable for all parties involved. The studio would make a thirty-nine episode prime-time series that could be shown twice for the initial licensing fee, after which it would go into syndication both domestically and internationally. Ironically, even as television was arguing publicly that the ability to show live drama and current events was an important justification for having centralized networks, it was in the process of shifting almost entirely to film-based programming to maximize revenues from seasonal reruns. By 1957 live drama on television was coming to be a thing of the past.[91]

The coexistence of all the electronic media with print gave rise to cultural self-consciousness about the effects of different media on their

audiences and on the culture at large. Previous commentators, especially educators, had certainly questioned the legitimacy of broadcasting content and the effect of commercialism on the culture, but one question had yet to be considered. Were there unique effects from the media themselves, irrespective of content? Canadian professor Marshall McLuhan was one of the first public figures to raise this question.

In a keynote speech to the annual convention of the National Association of Educational Broadcaster (NAEB) in Omaha, Nebraska, in 1958, McLuhan used a phrase that was to generate public discussion throughout the 1960s: "The medium is the message." McLuhan told the NAEB and anyone else who would listen—including countless gatherings of communications industry executives from companies like GE and IBM—that his concern was the "mutational powers," the "various and often contradictory qualities and effects" of media.[92] For the remainder of his career McLuhan developed his theories about the human "sensorium" and the ways different media extended the human senses causing the other senses to interact with each other in ways unique to each medium.[93] In his book *Understanding Media,* McLuhan got to the implications of his theories. The media, he said, were capable of "imposing their own assumptions" on the people who used them, or indeed creating their own world. Unless people were aware of this and understood the nature of electronic media in particular, McLuhan warned, they were in danger of losing all the traditional values of literacy and Western civilization.

In 1960 when a number of U.S. events became media events—the U2 spy plane capture and the Kennedy–Nixon debates—McLuhan asserted with justification that the media had transformed North American current events and politics into a branch of the entertainment industry. Of the Kennedy administration he commented that a four-year stint in the White House was "no longer easily distinguishable from something arranged by a booking agency." And when Kennedy's assassination in 1963 was seen over international television, closely followed by his murderer's murder seen live, McLuhan entitled his comments "Murder by Television."[94]

McLuhan's theories led naturally to serious attempts to assess which medium was most effective for which kinds of advertising. Time Life employed McLuhan to offer his insights into the matter, and then used the skills of a young psychologist, Daniel Yankolovich, to test them. Yankolovich found that television advertisements were more effective at exciting emotional responses, whereas print was more effective at conveying information. The conclusion was that products that needed their buyers to have more information were better sold through print

media, whereas products that depended on visceral appeal were more appropriately advertised over television. By 1964, when his *Understanding Media: The Extensions of Man* was published, McLuhan could irritate a whole seminar of assembled publishers by predicting the imminent obsolescence of the hardcover book.[95]

Looking at the interaction of the different media, McLuhan saw each new medium as more than a cultural add-on. Instead it transformed the use of all previous media, "creating its own environment which acted on human sensibilities in a 'total and ruthless' fashion." To McLuhan a medium was not just the thing itself, but all the habits that collected around it, as well as the energy it created. The new environment created by a new medium rendered the old media and their environments newly visible, just as *The Late Show* made old movies into a self-conscious art form. McLuhan predicted that because television appealed to the innate American visual sense it would be all-engulfing, eventually turning print objects into little more than museum artifacts.[96]

Major human dislocations had indeed attended each generational change in technology and more were to follow. Many skills from the pre-electronic forms did not transfer, nor did the skills needed for one necessarily transfer to the other. The technical skills needed to show silent motion pictures, for example, had not transferred to "talkies" and 10,000 technicians from the silent era were thrown out of work, not to mention the musicians and the live acts that accompanied silent films. Moreover, the economic consequences of each shift in media generations were great. The manufacture of each generation of receiving sets tended to follow a dramatic life cycle—from introduction to saturation followed by layoffs of factory workers—until the next generation of set came along. The consumer electronics business employed tens of thousands of people in manufacturing, and was famous all during the 1950s and 1960s for laying them off in vast numbers a week or so before Christmas. The advantage of the large integrated communications concerns was that their control of networks' steady earnings countered the cyclicality of the business on the manufacturing side. All this would change when U.S. companies lost the consumer electronics business to off-shore, primarily East Asian, manufacturers. The layoffs that occurred then, in the consumer electronics recession of 1970, differed in one important respect: they turned out to be permanent.

The Cultural Extremes of Mobilization

The 1950s version of popular culture was outwardly as homogeneous in the broader society as the gray flannel suit was in business. Partly a consequence of the other developments in communications that originated well before World War II, partly a consequence of shared wartime experience, the society leaned toward a stripped-down "high-tech" material order made of modern technology-based materials—aluminum siding, glass blocks, glass ceramic oven ware, and, above all, plastics, promoted in the media as wartime spin-offs. In style and spirit these products were designed and promoted to match the ultra-plain architecture and furnishings of the modernist era.

In other eras this degree of social conformity—typified by loyalty oaths, pledges of allegiance, and security clearances, and in more sinister ways by the televised activities of the House Unamerican Activities Committee—would have been taken as the surrender of freedoms that it certainly was. In the face of the Soviet threat, however, many considered it to be a necessary cultural defense to narrow the bounds of social tolerance. Few in either Hollywood or the broadcasting studios of New York rose to oppose Joseph McCarthy or even objected to the blacklisting of hundreds of prominent members of the entertainment industry on both coasts. On the other hand, the vast media-based credibility of communications giant Edward R. Murrow, built up during his many wartime broadcasts, was one of the few forces powerful enough to break the spell of McCarthyite demagogery.[97] Murrow's interview of McCarthy on *See It Now* did much to discredit the self-appointed inquisitor in the eyes of the public. By the late 1950s, however, commercial pressures did what political pressures could not do. Even Murrow's brand of televised dissent became intolerable to the advertisers and they used their considerable clout to push his *See it Now* program off the air.[98]

The Costs of "Free" Media

The rhetoric of the mobilized society had barely begun to slacken after World War II, when renewed international tensions brought it once again to the fore. Starting with the Russian atomic tests of 1948 and continuing through the Korean action into the Cold War, the networks seized on the need for continued vigilance as a rationale for perpetuating the concentration of broadcasting power. No longer was it simply open warfare that justified living in a state of constant alert; now it was a matter of civil defense in peacetime. In 1956 CBS's Frank Stanton told a group that the threat of intercontinental nuclear missiles demanded an instantaneous civilian mobilization which could only be assured by means of network television. "It seems to be providential," he said, "that we are thus able—at this pivotal point in world history—to reach into nearly every home in America simultaneously and at a moment's notice."[99] Providential or not, there was of course a tremendous irony here, for although CBS and others argued that their "free"—in the political and legal sense—commercial system of broadcasting was obviously preferable to government control, it was a governmental agency, the FCC, that effectively perpetuated the concentration of broadcasting control in the hands of a very few powerful, and highly profitable, broadcasting networks. Regular local stations were highly resentful of the networks' privileged positions, as were the aforementioned independents such as local educational stations. Even as they were touting the value of free networks, the networks were overstepping their bounds commercially.

In the 1960s the networks' control of programming and advertising revenues made them so profitable and so powerful that they behaved arbitrarily toward even the largest local affiliates. Knowing that loss of network affiliation could halve a local station's revenues overnight, the networks exercised almost total control. Their behavior set in motion a rebellion on the part of local stations that would ultimately result in regulatory action to reduce their programming role. Meanwhile alternative forms of transmission (such as cable), and alternative entertainment formats (such as pay-TV) slowly moved into position to challenge the networks' hegemony, though they would take two decades to make a serious dent in network profitability. The agitation that began against the networks' dominance of programming would ultimately lead in the 1970s to Nixon administration antitrust rulings that would deprive the networks of their programming rights.[100]

The Loss of Alignment between Government and Industry

Paradoxically, though the full effects would not be felt for almost a decade afterward, it was in the late 1950s that the informal but potent alignment between the U.S. government and the large companies that controlled the national networks was beginning to unravel. Not the result of deliberate government policy toward communications as such, it came about because government antitrust policy undercut the prag-

matic policy that had for so long justified RCA's quasi-sanctioned monopoly of radio-related technology.

RCA had felt the first effects of governmental antitrust action directed against it in 1940, when it had been forced to divest one of its two broadcasting networks and turn its smaller B network into the independent, and at first very shaky, American Broadcasting Company (ABC).[101] Then throughout the 1950s, responding to complaints by the broader industry about high-handed tactics on the part of RCA/NBC, the government launched an antitrust case against RCA. Although for years it had sanctioned RCA's control of radio-related technology for its own national defense reasons, the government charged that RCA's practice of package licensing its consumer electronics technologies was a predatory practice leading to unfair monopoly of the technology. The rest of the consumer electronics industry had long bitterly resented RCA's dominance of its technology even as it benefited from the standards it helped to set, and even though RCA was losing large sums of money keeping color broadcasting alive alone until the other producers broke the industry boycott on color in the early 1960s.[102] It had not escaped the industry's attention that RCA had hired a former head of the FCC as an NBC executive when his term of public service had come to an end—presumably as a reward for help in once again giving RCA the edge, this time in the standards battle for color television.[103]

In 1954 RCA had managed to renew its licensing position when its radio-related patents ran out by persuading a large number of domestic licensees to give its color system a try. It had spent well over $100 million developing television, especially color, and it looked on licensing as one reliable way to recover its investment. But the renewal was to be short-lived. In 1957 RCA signed a government consent decree, thereby agreeing to license the technologies it controlled, individually and at minimal cost, to all its domestic competitors.[104]

This marked the beginning of the end of the U.S. consumer electronics industry. In 1958, to maintain the substantial stream of licensing revenues that it had come to rely on (and would surely lose under the new arrangement), RCA began the practice of package licensing its proprietary consumer electronics technologies overseas, especially in Germany and Japan. Europe had other contenders, such as Philips, offering licenses, but in Japan RCA's technology packages were eagerly purchased by a number of licensees. In a few years David Sarnoff received the highest award ever given to a foreign businessman, the "Order of the Rising Sun, 3rd class," for his substantial contributions to fostering the Japanese consumer electronics industry. Japanese

pocket radios using primitive transistors had been coming into the United States since 1954, because Japanese producers had been able to license transistor technology from Bell Labs after AT&T had signed a similar consent decree earlier in the decade. But RCA's licensing involved much more complete and advanced technology packages, embracing the entire field of consumer electronics. Advanced television technologies, advanced display technologies, and advanced recording and pickup devices would all be included in the packages offered each succeeding three years to international licensees throughout the 1960s and 1970s. By the late 1960s, RCA had begun to abdicate its own leadership in technology to the Asian competitors it had helped to create. Distracted by financial pressures and diversification strategies, and plagued by declining manufacturing capabilities in what it regarded as "mature" technologies, RCA would delay introduction of new consumer electronics products that its dealers and its industry followers needed to keep their business on track. Meanwhile the offspring of RCA's (and Philips's) internationally licensed technologies would flood back into the United States spelling the beginning of the end for the U.S. industry. Japanese companies Matsushita, Sony, Sanyo, and the like, became powerful enough to make short work of most U.S. firms in a very few years.

RCA, with its NBC network, had been hated and feared by many in the consumer electronics and related industries. But although there were many opponents, a pattern had developed when RCA controlled the radio purpose patents that served as an effective pathway to innovation. RCA was a fully integrated company that controlled all parts of the entertainment system, from consumer and professional equipment manufacturing, a dedicated dealer network, and research and development, to entertainment producing and broadcasting. With the sometimes reluctant concurrence of the government RCA had been able to carry through a complete innovation cycle from beginning to end. No other U.S. Company was in a position to do this single-handedly. When RCA faltered, therefore, in the 1960s, no other company was in a position to step into its shoes.[105] Almost unnoticed, "control" of the communications infrastructure—and in particular of the pace and direction of innovation—slipped out of the grasp of institutions closely aligned with the U.S. government in a breakdown of control not unlike the one that occurred in the middle of the Industrial Revolution.

Conclusion

There exist many historical studies of mass communications technologies, but few have treated these technologies in concert, as we have portrayed them here—the communications infrastructure of a society that by the second half of the twentieth century had become media-rich and media-dominated partly through alignment with multiple government priorities (though not, as in other parts of the world, direct government control). If, as, U.S. broadcasting moguls like William Paley were fond of pointing out, these media, especially the broadcasting media, were indeed "free" of government control in a way that such media were not in other countries, they were still willing servants of government interests. Government aligned and government assisted through regulatory channels, and shaped in other ways by repeated antitrust actions when they failed to conform, the media behaved as important instruments of national purpose both culturally and economically. Partly because of the tremendous capital cost of setting up vacuum-tube–based systems that were integrated enough to innovate and reach a national audience, these media were also highly concentrated.

A consequence of the peculiar brand of freedom the media enjoyed in the United States was the bias toward information in the form of entertainment. Entertainment was of course a powerful conveyor of information—cultural and political—and because of the ubiquity of advertising as the prime source of funding (movies being the exception here), U.S. media purveyed their information in the form that the largest, or the most affluent, segments of its audience found most entertaining. This was, of course, not new with the electronic media; it merely continued a long-established connection between newspaper sales and sensational reporting. But it ought to remind today's reader that the postwar professionalism of journalism is more of an historical aberration in the United States than a norm from which current standards can be said to have departed.

There are interesting parallels between the Vacuum Tube Era and the current era, when once again several powerful emerging information technologies are threatening the established media and vying for public acceptance. As we shall learn in the following chapters, in the Internet we once again have the rise of a socially and culturally integrating technology that has the power to mobilize those who are connected by it in all the ways that occurred in the early twentieth century, though this time the scope appears to be global. Once again it has not been the large companies who have invested so much to develop and

merge computer and telecommunications technologies, but the amateurs, now known as hackers, who have quite suddenly transformed the technology from a defense-related form of communication (the ARPANET of the 1970s and 1980s) to an infrastructure that other interests can recognize as being rich with commercial potential.

It remains to be seen what role the U.S. government, necessarily both interested and involved in this tool for mobilization purposes, will take. Few could argue that the public interest does not need defending in some way as these new communications technologies combining computers and telecommunications evolve. But once again the definition of public interest remains a matter of much controversy, although little direct public debate. Issues have already arisen around the allocation of the broadcast spectrum and its use by high definition television, and here the government's chosen role is clear. Once again, existing broadcasting interests are being aided in their modernization, based on an economic rationale. As with FM radio, if present plans continue, we can expect to see television receivers in vast numbers of consumer households rendered obsolete by the new technologies. In both cases only one lesson of history can be relied upon to come true: It is safe to predict that the old media, as distinct from old technology, will not be replaced, but will transform themselves in new forms of complementarity. It remains to be seen how different elements of society will then work to adapt and reconfigure these technologies to their own unforeseeable patterns and uses, but we can be sure that they will.

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*1 THE TELECOMMUNICATIONS ACT OF 1996 [FNd]

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*2 Introduction

President Clinton signed the Telecommunications Act of 1996 [FN1] (1996 Act or new Act) on February 8, 1996. [FN2] By that time, the spin masters were already in high gear, heaping superlatives on the bill. Clinton said the new Act was "truly revolutionary legislation that will bring the future to our *3 doorstep." [FN3] I hope here to provide a somewhat more sober assessment of the

bill. After all, a statute that defines "telecommunications" in a manner such that it includes the act of mailing a letter or throwing a newspaper on the lawn cannot be all that special. [FN4]

Two features of this article should be noted at the outset because they somewhat limit its scope. First, every sentence in the remainder of this article is (at least a bit of) an overgeneralization. This is a warning, not a boast. The 1996 Act is a very lengthy and very detailed bill. Formally written as a series of amendments and additions to the Federal Communications Commission's (FCC or the Commission) basic charter, the Communications Act of 1934 (1934 Act), [FN5] the committee print of the law is 111 pages long. Major changes are made in the law affecting regulation of broadcasting, both radio and television, as well as cable and telephony. Less extensive alterations occur in satellite and spectrum regulation and in the FCC's own processes.

Given the new Act's breadth and depth, no article about it can be simultaneously and consistently readable, fully comprehensive, and utterly complete. If one is to say helpful or sensible things about the 1996 Act, one must to some extent speak broadly. Nevertheless, I remain quite sensitive to the charge that this article may appear to contain more pontificating than analysis; I hope that citations to underlying research, much of which I conducted myself, will further help to convince the reader that I have thought about these issues seriously. [FN6]

Second, for the most part, what the article says takes for granted the utility of a federal communications commission. This is not an idle point. The 1996 Act does no more than did the 1934 Act (or its predecessor, the ***4** Radio Act of 1927 [FN7]) to explain a fundamental, but very contestable, policy choice that underlies U.S. regulation of telecommunications markets: Congress decided, in 1927 [FN8] and again in 1934, [FN9] to regulate these markets through an industry-specific federal commission. No other medium of communication in this country is regulated in this fashion; we have no Federal Computer Commission or Federal Newspaper Commission, no Federal Internet Agency or National Institute of Theatrical Productions. There may, indeed, be good reasons why Congress created the FCC rather than simply subjecting owners of broadcast stations, cable systems, and telephone wires and switches to laws of general applicability, such as antitrust, labor, and securities laws. But we do not know what these reasons are; we do know they are not self-evident.

One has to choose, then, between criticizing U.S. telecommunications law from within or without. Criticism from within would ask whether the 1996 Act is a good thing, given the presence and purposes of the FCC. Analysis from without would question whether the 1996 Act cogently identifies and then remedies defects in pre-existing, industry-neutral law as it would apply to telecommunications firms or markets. In this Article, I choose largely to criticize from within the existing paradigm, although I drop this constraint in the conclusion. To take a concrete example, when Congress writes antimonopoly provisions for certain telecommunications markets only and entrusts enforcement of them to the FCC, I do not ask in this article why the matter was not left to other federal agencies enforcing general antitrust principles. Rather, I ask only whether Congress seems to have devised wise rules, as they apply to the markets at issue.

I. Status Quo Ante

What was the problem? Why did Congress think a major overhaul of much of the Communications Act of 1934 was in order? What is the context within which we should read the 1996 Act? The answer, in two phrases, is "technological convergence" and "legal balkanization."

A. Technological Convergence

"Telecommunications" is, quite simply, the electronic transmission of information (in audio, video, or simple data form). [FN10] The electronic data ***5** transmission is encoded at the sending end so that it may flow through the ether (the electromagnetic spectrum) at the speed of light or through wires (copper, coaxial cable, fiber optic, etc.) at very rapid speeds. [FN11] At the receiving end, the encoded information is decoded. [FN12]

As this simple description shows, telecommunications has value to people because it can transmit information very quickly and over long distances. [FN13] In this regard, telecommunications is, except for its electronic features, like smoke signals. [FN14] These, too, are data transmission systems that carry information, encoded on one end and decoded at the other, at the speed of light. Telecommunications technology is largely regarded as an advancement over smoke signal technology because it can carry more information per second, carry it a greater distance, and provide more security against surreptitious monitoring. [FN15]

Thus, when Morse, Bell, and Marconi invented the telegraph, telephone, and wireless transmitter, respectively, each pushed us further along a path already trod. What they added to the process of information transfer was the use of electrical energy to drive the system.

All this was comparatively new when Congress wrote the Communications Act of 1934. Everything

seemed much simpler then. Electronic communications moved through either the air or wires. [FN16] The market for communications through wires was a natural monopoly--who ever heard of two communications wires going into the same house?--and so the telephone and telegraph (after which the monopolist AT&T was named) were to be regulated as common carriers. Accordingly, those who wrote Title II of the 1934 Act essentially copied from the Interstate Commerce Act the then-standard features of public utility regulation and subjected telegraphy and telephony (that is, AT&T) to such oversight. [FN17]

Conversely, electronic communication through the spectrum was broadcasting. This market was dominated by three radio networks (owned by two firms, CBS and NBC) [FN18] and so the task of regulation was to ***6** choose "the worthiest" applicants for stations and then to let them compete for listeners' attention. [FN19] This competition would be kept within the bounds of good taste by the Commission's oversight of programming practices. [FN20]

In 1934, then, telecommunications were characterized by technological balkanization. Telecommunication by wire was a natural monopoly, subject to common carrier regulation, characterized by speaker and listener privacy and virtually devoid of censorship. Telecommunication through the air was broadcasting, a conversation open to everyone, that was conducted through workably competitive markets, while censored by the FCC.

That was then. What is now? The perception of technological balkanization has yielded to the reality of technological convergence. Since the 1934 Act, we have witnessed satellites, microwave, television, computers (with their transistors and microprocessors), fiber optics, and the World Wide Web. These have shattered our previous illusions of tightly compartmentalized technologies.

Today, most Americans receive their television programming over a wire, the medium we call "cable television." [FN21] Millions of telephone calls every day in the United States are broadcast from cellular (mobile) telephones. [FN22] It would probably be impossible, and certainly difficult, to define today the difference between a telephone and a computer. Tomorrow, it will be equally challenging to distinguish a television set with a VCR and a cable connection from a computer with a monitor, CD-ROM, and a good modem.

In short, telecommunications technology is converging. More precisely, as illustrated by the preceding examples, we are witnessing a convergence of devices accompanied by a plethora of transmission paths. The telecommunications receiver is a radio, computer, television, telephone, VCR, and fax machine all rolled into one. We can get information to such devices by broadcast, microwave, satellite, tape or disk, copper wire, or optic fiber. [FN23]

B. Legal Balkanization

Confronting, and obstructing, these technological developments were (and, to some extent, still are) a series of governmentally imposed entry barriers that sought to force the new and the old technologies into a ***7** Procrustean bed. These barriers attempted both to confine certain devices to certain limited uses and to limit the transmission paths telecommunications providers might employ. For example, all of these assertions were true at the end of 1995 (and some still are): Television stations cannot operate local cable systems; [FN24] but cable systems must carry television stations. [FN25] On the other hand, firms sending multiple television signals to the home via satellite are effectively prevented from carrying network television stations. [FN26] Telephone companies cannot offer cable television [FN27] and cable television companies cannot offer telephony [FN28] although both run wires for electronic communications into the same houses. In several states, almost everyone except the incumbent phone company is barred from offering telephone service to residential subscribers. [FN29] Here's one Rube Goldberg might have admired: Most local telephone companies cannot offer long-distance service, [FN30] nor can they manufacture telecommunications equipment [FN31] (although they can sell it), but they can sell real estate, [FN32] although they may not offer cable television programming, unless they neither select nor own the programs. [FN33] Broadcast stations may also use their frequencies to transmit some information to private, paying subscribers but only types of information authorized by the FCC. [FN34]

Why did we encounter all these entry barriers? Usually these rules were explained by one of two reasons. The first, and most frequent explanation, is that we (claim to) fear predation. The issue of telephone entry into cable illustrates the two kinds of predation feared: discriminatory interconnection and predatory cross-subsidization. If telephone companies are allowed to offer cable television, it is said, they will be in a uniquely advantageous position to prey against their cable rivals. First, telephone companies could raise their cable rivals' costs by denying cable equal ***8** access to necessary facilities, such as pole attachments. [FN35] I refer to this tactic generically as discriminatory interconnection. Second, while raising their cable rivals' costs, the telephone companies (telcos) could simultaneously artificially underprice their cable rivals by hiding costs of telcos' cable services in the costs of providing telephone dial tones. I call this tactic predatory cross-subsidization. [FN36]

A second, less frequently voiced, justification for legal balkanization of telecommunications is that we (claim to) fear disruption of a system of pro-social internal cross-subsidies. Local, residential phone subscription rates are as low as they are not because costs are that low but because we force the phone companies to jack up business rates in order to depress residential rates. [FN37] Taking money from businesses and giving it to consumers is said to be pro-social, regardless of the relative costs of the services involved. If we permit cable systems to offer phone service, they will just target the business users. This "cream skimming" will deny phone companies the wherewithal to subsidize residents' rates, which will therefore increase. Taking money from consumers and giving it to businesses is said to be antisocial, regardless of the relative costs of the services involved.

II. Motives for the 1996 Act

From the vantage point just sketched out, we can discern the key reasons for the 1996 Act. I believe Congress and other opinion leaders reached three overriding conclusions about telecommunications law and policy that underlie the core of the new Act.

First, a consensus formed that issues of technological convergence should be answered more commonly by marketplace forces, and less frequently by regulatory fiat. Policy makers believe (or profess to believe) that if telephony, radio, and television are to merge--or not to merge--that result should be driven by consumers making choices in open markets that express their preferences. Regulation is at most a second-best method for deciding who will offer what telecommunications services to whom.

As noted, however, unleashing market forces might also just lead to monopolistic predation rather than open bazaars in which many firms ***9** flourish. Accompanying the conclusion that we should subject convergence issues to the marketplace, then, was the conclusion that predation could (perhaps must) be avoided by appropriate regulatory oversight. The FCC's job description needed to be rewritten. The agency should not decide who could enter what markets, but rather should monitor the conditions under which such entry took place and the responses to such entry by those already there-- "entrenched interests," if you prefer. [FN38] Tear down entry barriers, but replace them with specific regulatory instruments to hunt down predators.

Were this the entire story, it would be comparatively simple to retell. Indeed, we might then note that the 1996 Act was, at bottom, just an extension of the philosophy underlying the 1983 antitrust consent decree pursuant to which AT&T was broken into several parts. But a third policy conclusion, beyond the preference for competition among technologies monitored by predator hunters, also deeply affects the new Act.

That conclusion is the continuing conviction that markets for telecommunications services ought to be governmentally managed so that they provide--and to some extent conceal--pro-social cross-subsidies. Baldly stated, nonpredatory competition is not good if it leads to higher residential subscription rates for basic telephone services. Competition among broadcasters should not be permitted to generate a television system that does not provide closed-captioning, without charge, to everyone, or that provides too much violence or talk about sex.

Think then, of the Telecommunications Act of 1996, as an effort to hit a legislative trifecta: [FN39] (1) entry barriers will be torn down so that legal balkanization no longer stands in the path of technological convergence; (2) as crosscutting entry subsequently takes place all over the telecommunications field, the FCC will be charged with ferreting out predators and given special regulatory tools for this task; and (3) lest the new competition harm the most vulnerable, pro-social [FN40] cross-subsidies will be maintained and even added to the value produced by telecommunications firms and markets. [FN41]

*10 III. Controls over Industry Structure and Commercial Practices

The FCC has regulated telecommunications markets through controls imposed on industry structure or commercial practices (process regulations) much more frequently than it has imposed content (or outcome) regulations. Many headlines about the Act emphasized its censorship features, discussed below, but most of its provisions affect industry structure and commercial activity.

A. Radio

The 1996 Act drops all limits on the number of AM and FM radio station licenses that any owner may control nationwide. [FN42] It also substantially raises the number of stations that may be commonly owned in any one market, varying the multiple ownership limit with the size of the market. [FN43] Of course, antitrust law continues to supply an upper limit on station consolidation.

B. Television

. The next big development in television is expected to be the arrival of high definition television (HDTV). [FN44] This new method of propagating television signals produces a much clearer, richer, more textured picture--akin to what one sees watching a 35mm film in a movie theater.
HDTV signals, however, are incompatible with conventional television signals and so must be transmitted on a different frequency and cannot be decoded by conventional TV sets. This creates a real transition problem: how does one offer HDTV without forcing all viewers to buy new sets right away? [FN45]
***11** Several years ago, the FCC decided that it should manage the process of transition from conventional to HDTV technology and that conventional television broadcasters should take the lead in implementing HDTV. Conventional U.S. television stations broadcast in either the VHF (very high frequency) spectrum, in which we locate channels 2-13, or the UHF (ultra high frequency) spectrum, in which we locate channels 20-70. The agency determined that it could scrounge up enough UHF spectrum to give almost every existing full-strength television VHF or UHF broadcaster another 6 mHz, the bandwidth presently assigned for each television station. The Commission's initial plan was that each broadcaster would be offered an additional channel, on which it could broadcast HDTV and that at some future time--presumably after most U.S. households had acquired HDTV sets--broadcasters would then be required to surrender one of their channels.
Two things happened shortly after that initial plan was announced. First, the Commission started auctioning off spectrum that was being newly devoted to new common carrier technologies and the bidding went through the roof. [FN46] Politicians became enamored of the idea that spectrum auctions might materially reduce the national debt. [FN47] Second, digital technology overtook analog technology and it is now agreed that any HDTV transmissions will be digital. [FN48] The 6 mHz channels will therefore be quite ample to broadcast four or five conventional signals [FN49] at once, or HDTV plus some other types of information, or two HDTV signals. [FN50] The combination of these occurrences made some people realize the enormity of the give-away the FCC had proposed.
***12** The 1996 Act essentially protects the deal the broadcasters first wrung out of the Commission. Congress instructs the FCC that if the agency decides "to issue additional licenses for advanced television services," [FN51] it "should limit the initial eligibility for such licenses" [FN52] to existing television broadcasters. Since one cannot conduct an auction with only one bidder, this ends the auction idea. [FN53]

C. Broadcasting
Two features of the new Act combine to grant virtually perpetual licenses to all radio and television stations. The basic term for all broadcasting licenses is extended to eight years. [FN54] Additionally, at renewal time, the Commission must grant the application of the incumbent broadcaster if the agency finds that the licensee "served the public interest," [FN55] committed "no serious violations" [FN56] of the Communications Act or of the FCC's rules, and has not committed any other violations "which, taken together, would constitute a pattern of abuse." [FN57] Only if the incumbent-applicant flunks one of these tests [FN58] and only if the Commission then determines that a sanction short of nonrenewal is not appropriate may the Commission consider an outsider's application. [FN59] Comparative hearings in which an incumbent is ***13** an applicant have produced volumes of legal wrangling, but almost no license denials. [FN60] Now such hearings are a thing of the past.

D. Cable
The new Act makes two major changes in cable regulation. One reduces entry barriers. The other sunsets some rate regulation.

1. Reduced Entry Barriers

In 1984, Congress passed a statute prohibiting telephone companies (telcos) from offering cable television service directly to subscribers in their service areas. [FN61] Subsequent FCC interpretations of this law, embedded in the agency's so-called "video dial tone" rules had substantially narrowed the force of the cable/telco ban. [FN62] The rules permitted phone companies to offer distinct cable television services to their customers if the companies operated on a common carrier basis, not selecting the programming they transmitted. The video dial tone rules, however, prohibited phone companies from offering cable services in their service area if the telco played a major role in choosing the programming on its system. [FN63]
The 1996 Act repeals both the telco ban [FN64] and the FCC's video dial tone rules, [FN65] replacing the old scheme with one that allows telephone companies (or anyone else) to offer cable television while these new entrants also choose from a menu of regulatory options as to how they will be regulated. [FN66] New cable companies (or "multi-video program distributors" as the FCC likes to call them) may operate like, and be regulated as, broadcasters [FN67] or common carriers [FN68] or

cable companies [FN69] or something ***14** new: open video systems [FN70] (which bear a striking resemblance to video dial tone systems). [FN71]

2. Sunsetting (Some) Rate Regulation

Perhaps in part because Congress had kept telephone companies from offering competition to cable systems, Congress found in 1992 that cable systems enjoyed monopoly power. So, Congress heaped on more regulation; in this case, price regulation of cable services. [FN72] The 1992 Cable Act required every cable system that was not subject to effective competition [FN73] to divide its services into a basic tier, a cable programming tier, and other services such as pay-per-view or pay-per-channel.

The latter, such as HBO or Showtime, receive no rate regulation under the 1992 Act. [FN74] Rates for the basic tier, essentially retransmitted local stations plus public access channels and imported superstations (for example, WTBS and WGN), are regulated by states or localities following rules set down by the FCC. [FN75] Rules for an intermediate tier, what I call the cable programming tier, which contains the cable networks for which viewers are not charged separately [FN76] (such as TNT, MTV, ESPN, and BET), are regulated by the FCC. [FN77]

The 1996 Act, as it unleashes telephone companies into the cable market, also unshackles existing cable systems from rate regulation of their cable programming tiers as of 1999. [FN78] If all goes as Congress plans (or hopes), moreover, even more rate deregulation will occur. Cable rate regulation of any sort is authorized only when the cable system is not ***15** subject to "effective competition." [FN79] The Act treats as subject to "effective competition" any cable system that confronts a real rival in its market. [FN80] If telephone companies (or other utilities that also run lines into our homes, such as electric, water, or gas) successfully initiate cable services, then both the incumbent companies and the newcomers will be subject to "effective competition" and therefore freed of rate regulation. [FN81]

E. Telephones

As just mentioned, the 1996 Act frees telcos to enter cable television markets in any (nonpredatory) manner they see fit. The new Act makes three other major changes in the regulation of telephone services. To understand the first two, one must first know the basics of the 1983 consent decree that divested AT&T of its local operating companies.

The consent decree (or Modified Final Judgment or MFJ) [FN82] rested on the premise that the Bell System had used the power of its monopoly local exchange carriers (LECs) to gain power in markets that could have been competitive, such as providing long-distance services or manufacturing phones, switches, and wires. [FN83] Accordingly, the MFJ (1) took its LECs away from AT&T, and (2) set AT&T largely free from regulation to compete in long-distance and equipment markets, [FN84] while (3) preventing these newly divorced Bell Operating Companies (BOCs, a subspecies of LECs--since some local phone companies were never formerly owned by AT&T) from getting into such markets as long-distance and manufacturing. [FN85] These latter restrictions, just like the liberation of AT&T, followed from the underlying logic of the consent decree: [FN86] AT&T's power came from the LECs/BOCs; now that the BOCs were divorced from AT&T, AT&T could not find its old predatory tactics profitable, but the BOCs might adopt those tactics for the same reasons (and with the same successes) as had AT&T. [FN87]

***16** The 1996 Act essentially reflects two important new policy conclusions about the 1983 consent decree. First, some important provisions of the new Act rest on the conclusion that we may be able to cut the Gordian knot, to avoid choosing between complete exclusion of the former BOCs from competitive markets or permitting entry only under heavy regulatory constraints. We clearly would be able to avoid this choice were there competition in the local loop. Perhaps if local exchange carriers were forced to make their switches and wires available to anyone who wished to offer telephone services through the LECs' facilities, competitive markets in the provision of telephone exchange services might emerge. So certain sections of the new Act promise an "everyone into LECs" regime, under which any firm can acquire access to LEC facilities to offer competitive services. (As explained below, these provisions apply to all local exchange carriers, not only to those that formerly were Bell companies.)

Second, other important portions of the new Act rest on the conclusion that, at least until competition in the local loop becomes a reality, the best way to protect competitive markets--such as long-distance or equipment manufacturing-- that former Bell Operating Companies might wish to enter is not to ban BOCs' entrance into those markets, but to permit entry subject to regulatory constraints. Accordingly, the "BOCs into everything" provisions of the bill abolish all remaining line of business restrictions imposed by the consent decree. A panoply of regulatory constraints are imposed on BOCs who enter these newly opened markets.

Finally, the Act also codifies for the first time the regulatory goal of "universal service." I discuss that section after reviewing the provisions growing out of the aftermath of the consent decree.

1. Everyone into LECs

Many provisions of the Act are important to this point, but the key is new section 251, added to Title II. Entitled "Interconnection," this provision imposes general duties of access and nondiscrimination on every "telecommunications carrier" [FN88] and each "local exchange carrier." [FN89] More substantial obligations are imposed on "incumbent local exchange carriers," [FN90] that is, the local exchange carriers in existence when the act was passed. (More ***17** simply, your present local telephone company.)

These incumbent LECs are required to provide, at just and reasonable rates, interconnection with their networks for the transmission and routing of telephone exchange service and exchange access at any feasible point within the LECs' networks. [FN91] They must provide nondiscriminatory access at reasonable cost to network elements on an unbundled basis at any technically feasible point and in a manner that allows the requesting party to combine the network elements to provide a telecommunications service. [FN92] The incumbent LECs must permit each of their services to be resold and must offer for sale at wholesale rates any services they offer at retail to customer-subscribers. [FN93] They must provide reasonable public notice of new information necessary to transmit and route services over their facilities and networks. They must permit firms seeking interconnection to locate their equipment on the incumbent LECs' premises (known as "collocation" to the industry). [FN94]

In addition to these special obligations imposed on incumbent LECs, they are also required, along with all subsequent LECs, to provide number portability (move from one phone company to another, but keep your phone number). [FN95] All LECs must also provide dialing parity (same system of dialing for, say, directory assistance or long-distance access, whether using entrenched firm A or newcomer B). [FN96] And all local phone companies must provide access to their poles, ducts, conduits, and rights of way to competing providers of telecommunications services. [FN97]

What does this all mean? Simply put, every entrenched local exchange carrier must open its facilities up to new rivals who may employ those facilities, acquired at reasonable rates and on nondiscriminatory terms, to offer competing services. If a firm wants to offer "call waiting" services to Bell Atlantic's residential subscribers, it may "interconnect to" any relevant part of Bell Atlantic's system to create a call waiting service. The same holds for a firm that may wish to offer message routing services to brokerage houses or to provide teleconferencing services within a particular city. The firm need not build that which the incumbent LEC has already built; the entrant may just plug into it, at prices deemed fair by the FCC.

***18** Competition in long-distance telephone markets developed by an arguably analogous process. [FN98] Outfits like MCI and (the forerunners of) Sprint built rather small operations that interconnected only two or three cities. They were then permitted, however, to interconnect their system to AT&T's (over AT&T's objection). In this manner, MCI's St. Louis to Chicago line could become a St. Louis to Chicago to the entire world line. From such bases, these new entrants acquired the customer base from which to build their own complete networks.

Conceivably (hopefully, if you voted for the 1996 Act), local telephony markets may prove accessible to just such incremental competitive growth. Perhaps new carriers will build better networks inside the existing local loops or will disaggregate the existing structures and sell their components at lower prices.

2. BOCs into Everything

The 1996 Act adds to Title II of the 1934 Act a new Part III, called "Special Provisions Concerning Bell Operating Companies." [FN99] New section 271 permits the BOCs to offer long-distance telephone service. Section 273 allows the BOCs to manufacture telecommunications equipment (that is, the wires and switches, and associated software, that make up the local loop) and customer premises equipment (the handsets and switchboards that connect individuals and offices to the local loop). All of these activities were forbidden by the MFJ. [FN100]

The consent decree also kept the BOCs out of "information ser-vices," [FN101] a vague term that essentially embraced providing data that the phone company had assembled or acted upon. [FN102] That restriction was removed in subsequent court proceedings, [FN103] but a new section 274 now governs "electronic publishing" by the BOCs. The Act contains a laundry list definition of electronic publishing, describing several types of data that are included in the term and others that are not. [FN104] Essentially, "electronic ***19** publishing" is the transmission by a phone company of information that the company has generated or altered. The definition is, in other words, very close to

that employed in the consent decree. [FN105]

As noted, the purpose of these provisions is to remove the absolute entry barriers that the MFJ's line-of-business restrictions imposed on the BOCs and to substitute a system of regulated entry to guard against potential predation or discrimination by the BOCs against their rivals who do not control local exchange facilities. What types of regulations are substituted? You name any and you'll find it here. Various provisions dealing with various practices impose various regulations. For example, new section 275 erects an absolute entry barrier; neither BOCs nor their affiliates may offer alarm monitoring services for the next five years. [FN106] The same section also imposes a flat ban on granting rival alarm services inferior interconnection [FN107] and on cross-subsidizing BOC alarm services from telephone exchange operations. [FN108]

New section 274 forbids BOCs to offer electronic publishing except through a separate affiliated entity or a joint venture, [FN109] but this separate-subsidiary requirement sunsets after four years. [FN110] New section 272 also imposes a separate affiliate requirement on BOC manufacturing of equipment or provision of long-distance services, [FN111] but imposes a different sunset rule. [FN112] (Previously, the FCC had determined that the separate subsidiary requirement was not a sound policy because it needlessly sacrificed economies of scale and scope, [FN113] but Congress determined otherwise in the new Act.)

Most dramatically, BOCs may not offer long-distance services [FN114] or ***20** manufacture telecommunications equipment [FN115] until they have first been certified by the FCC. To be certified for these purposes, a BOC must demonstrate to the Commission that it meets the fourteen requirements specified in a "competitive checklist" established by new section 271(c)(2) (B). [FN116] Most of these conditions relate to the interconnection obligations, detailed above, that other provisions of the Act impose on each incumbent LEC. For example, the BOC must show that it is providing or has offered to provide nondiscriminatory access to its poles, [FN117] number portability, [FN118] and unbundled services. [FN119] In short, the BOC's ability to offer long-distance services and to manufacture equipment is conditioned on meeting its new open interconnection responsibilities, which in turn may make feasible true competition in the market(s) for local exchange services.

Further, before the FCC authorizes a BOC to offer long-distance services, the agency must ask for an opinion of the Attorney General. [FN120] What, if any, weight the Commission must give to the Attorney General's opinion is not specified. A BOC that manufactures and sells equipment must also disclose vast quantities of information about its protocols, technical requirements, and network configuration. [FN121] The goal of these provisions is to prevent the BOC from using inside information gained in its role as a local exchange service to become the sole supplier of equipment to operate that service.

In sum, it is difficult to imagine a regulatory strategy, other than a permanent complete ban on entry into allied markets, [FN122] for coping with the possibility of predatory cross-subsidization and discriminatory interconnection by Bell operating companies that is not employed, at one point or another, in the 1996 Act. The new Act does abandon the MFJ's premise that the newly created BOCs should be strictly confined to offering regulated plain vanilla local exchange service. But the Act does not permit unrestricted entry into other markets or deny the MFJ's premise that the BOCs, if not regulated, will likely unfairly monopolize allied markets. ***21** Rather, the 1996 Act expresses a preference for seeking the benefits of competition in these markets, by letting the BOCs in, while strictly overseeing these carriers' behavior so that BOC entry does not perversely retard competition. (These provisions of the new Act apply only to those local exchange carriers that are former Bell companies.)

3. Universal Service

"Universal service" has been an articulated goal of telephone regulation at least since the 1960s. [FN123] What it means, however, has never been clear, although the concept has always been tied, in some fashion, to the presence of internal cross-subsidies in the pricing of phone service and has been limited to the subsidized pricing of basic voice-grade dial tone.

For example, [FN124] to some, "universal service" means that a telephone line should be available to every U.S. residence at an average, roughly standardized, cost. Principally, this entails pricing basic phone service to outlying rural areas below the costs of that service. [FN125] To others, "universal service" means keeping the costs of basic dial tone service to residences as low as is feasible. Principally, that has entailed charging higher rates to businesses than to residences for equivalent phone service. To yet others, "universal service" means charging lower rates to people with lower incomes. One method of pursuing this goal at the national level has been to price long-distance service substantially above its costs, so that residential rates could be subsidized by the override. (Lower income people make fewer long-distance calls than higher income people.)

Until the 1996 Act was passed, no statutory codification of the principle of universal service existed. Now we have new section 254 of old Title II. [FN126] It requires the Commission to set up a federal-state joint board (Joint Board) to implement the universal service goal. [FN127]

What is "universal service" now? Well, it is everything. Certainly, it is no longer restricted to providing simple basic voice-grade dial tone to favored classes. One key provision states that the Joint Board and the ***22** Commission are to observe this principle:

Consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services, including interexchange (that is, long-distance) services and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas. [FN128]

Nothing seems to be left out of this list. Universal service encompasses below cost treatment on the basis of income, geography, and quality of service. Nor is the subsidy limited to basic voice-grade dial tone service.

But wait; there's more. Another key provision states that "[u]niversal service is an evolving level of telecommunications services that the Commission shall establish periodically . . . taking into account advances in telecommunications and information technologies and services." [FN129] Further, universal service includes the principle that "[e]lementary and secondary schools and classrooms, health care providers, and libraries should have access to advanced telecommunications services." [FN130] Both the "universal" and the "service" aspects of "universal service" will grow over time.

How will these universal service goals be achieved? By giving universal service support, for specific universal service purposes, to telecommunications carriers. [FN131] Whence the money? The Commission and the Joint Board will place a tax [FN132] on telephone operators. "All providers of telecommunications services should make an equitable and nondiscriminatory contribution to the preservation and advancement of universal service." [FN133] In particular, "[e]very telecommunications carrier that provides interstate telecommunications services shall contribute, on an equitable and nondiscriminatory basis." [FN134]

Universal service is now an explicitly articulated goal of telecommunications regulation. It is to be achieved by levying a proportionate tax on all telecommunications service providers, which should make more visible both ***23** the nature and amounts of the cross-subsidies encompassed within the universal service program. Several classes of customers are to be protected by the universal service policy. Exactly what services will be encompassed within the concept of universal service remains quite unclear, however, because no specific or fixed meaning may be ascribed to the list of items that make up "universal service"; it is an "evolving level" of services to be established "periodically" by the FCC, [FN135] not just a basic dial tone.

IV. Content Controls

Government cannot effectively control the content of the electronic mass media in this country. [FN136] And when it tries to do so, it inevitably acts to advantage privileged speech and to penalize that which is unpopular and out of fashion. [FN137] At times, the FCC has appeared to grasp the truth of these virtually self-evident propositions. [FN138] But neither the Senate nor the House has ever been able to resist for long the temptation to try to make radio and television "better" [FN139] and the Supreme Court seems to delight in cheering on their efforts to do so. [FN140]

In the 1960s, the hot button topics were media access and drug use among the cultured elite (children of senators, representatives, and commissioners). So we got the fairness doctrine, cable access channels, and bans on playing songs that "promoted" or "glorified" drug use. [FN141] Today, the hot button issues are the virulent corruption of young people's morals by the sounds of profanity and the sight of human genitals and the brutalizing, dehumanization of our youth by permitting them to watch simulated violence.

So, Congress added to the 1996 Act a variety of censorship regulations designed to turn the Internet into a souped-up version of My Weekly Reader and to return broadcast and cable television to the glory years of Amos 'n' Andy. These new regulations are embedded in Title V of the new Act, ***24** which is called the "Communications Decency Act of 1996." [FN142]

A. The Internet

The key provision here is section 502 of the new Act, [FN143] entitled "Obscene or Harassing use of Telecommunications Facilities Under the Communications Act of 1934." The section is, to say the least, somewhat opaque. People are already arguing about its meaning and these arguments will persist through at least several court challenges. [FN144]

The central part of section 502 makes it a crime to "use [ ] an interactive computer service to send to a specific person or persons under 18 years of age; or [to] use [ ] any interactive computer service to display in a manner available to a person under 18 years of age, any comment . . . image, or other communication that, in context, depicts or describes, in terms patently offensive as measured by contemporary community standards, sexual or excretory activities or organs, regardless of whether the user of such service placed the call or initiated the communication." [FN145]

Literally, these provisions would appear to criminalize transmission over the Internet (or any other pathway to a personal computer accessible to anyone under eighteen [FN146]) of countless novels, poems, photographs, or motion pictures. Adults appear to be required to converse, through their interactive computers, in language fit for a nine-year-old.

But with a statute like this, literalness may not get us very far. After all, the Communications Decency Act literally distinguishes between "an interactive computer service" and "any interactive computer service." [FN147] The Act also provides some defenses that suggest that the merely passive act of transmitting what someone else has posted does not violate the Act. [FN148] Further, the Act is quite silent--perhaps deliberately so--with respect to the kind of intent (or mens rea) necessary to make the behavior ***25** criminal. Must a message transmitter intend that a specific underage person receive the communication? Nor does the Act address the question of what knowledge (or scienter) the sender must have. Presumably, the sender must be aware of the contents of the message; [FN149] must s/he also be aware that the message is "patently offensive"? And whose "community standards" provide the guideposts for this inquiry into offensiveness? Nor does the Act address the issue of extraterritoriality: does Congress mean to punish someone sitting in Estonia who posts a picture of a naked person on his home computer bulletin board that can be accessed by an enterprising U.S. teenager? [FN150]

All of these questions ask, in part, what Congress meant. To the extent that anyone can talk about the "intention" of a corporate body, we can say only that Congress meant to get (many or most) discussions or pictures of sexual activities or organs off the Internet. To the extent that we have any memory of censorship efforts in this country, we know that this is a futile task, doomed to failure, but perhaps a few pitiable folks will be sent to prison in the effort. [FN151]

Somewhat more helpfully, the Communications Decency Act also contains section 509, entitled "Online Family Empowerment." [FN152] This adds a new section 230 to Title II of the 1934 Act, which is to be entitled "Protection for Private Blocking and Screening of Offensive Material." [FN153] The new section essentially immunizes from liability any "provider or user of an interactive computer service" who restricts "access to or [the] availability of" indecent material or helps others gain the technical means to do so. [FN154] Without such a provision, a person or firm operating as a common carrier might have been liable for failure to transmit "indecent" material. As an ordinary rule, common carriers are not expected or ***26** permitted to censor the contents of communications they carry. [FN155] Because this section apparently simply facilitates the creation of "indecency-free safe harbors" for those who desire them, this may be regarded as a helpful measure that may affirmatively assist people in the exercise of their constitutional rights to choose what they read, see, or hear. [FN156]

B. Cable

The Communications Decency Act contains a few measures designed to reduce the amount of nudity on cable television. Section 505 of the new Act tells cable operators that they must scramble the signal of "any channel of its service primarily dedicated to sexually-oriented programming." [FN157] Section 506 tells operators that they can refuse to transmit any public access or leased access program "which contains obscenity, indecency or nudity." [FN158] Most interesting in this regard is section 504: "Upon request by a cable service subscriber, a cable operator shall, without charge, fully scramble or otherwise fully block the audio and video programming of each channel carrying such programming so that one not a subscriber does not receive it." [FN159] No definition of "such programming" is provided, nor is any reference back apparent. Can this mean that any single subscriber can force an operator to scramble the signal for any channel, without regard to whether the channel carries sex or violence?

Note that Congress structured each of these sections so as not to engage in strict censorship. Operators are only told to scramble certain channels or permitted to decline to carry certain programs. The first tactic nevertheless risks invalidation because of its selectivity. Why are only sexually-oriented programs to be scrambled? The second tactic will test the bounds of the Supreme Court's recent decision invalidating a statute that ***27** required cable operators to segregate indecent programs on certain channels. [FN160]

C. The V-chip

Section 551 of the new Act is entitled "Parental Choice in Television Programming." [FN161] The

section contains Congressional findings that children are harmed by exposure to violent video programming [FN162] and to pervasive and casual treatment of sexual material. [FN163] Further, "[t]here is a compelling governmental interest in empowering parents to limit the negative influences of video programming that is harmful to children." [FN164] Based on these findings, section 551 attempts to facilitate private, parental screening and blocking of sexual or violent programming. Accordingly, the Act directs the Commission to establish ways to identify and rate "video programming that contains sexual, violent, or other indecent material about which parents should be informed before it is displayed to children." [FN165] To devise this ratings system, the FCC is to employ an advisory committee. [FN166] These provisions, however, do not become effective for one year. [FN167] And they do not become effective at all if the distributors of video programming have "established voluntary [rating] rules" [FN168] and "agreed voluntarily to broadcast signals that contain ratings of such programming." [FN169]

In short, through section 551, Congress calls on the industry to adopt a uniform rating code. That "request" is backed up by the direction to the Commission to do the job itself if the industry fails to do it. Unsurprisingly, the television industry fears the outcome of an FCC-initiated process. Shortly after passage of the new Act, an industry committee was formed which is expected to devise and implement a ratings system. [FN170]

***28** What will be done with these ratings? First, as noted, they will be embedded in the signal broadcasters (and cablecasters) transmit. Then they can be scanned by television sets. The Act also directs the Commission to regulate television set manufacture so that in the future TV sets are "equipped with a feature designed to enable viewers to block display of all programs with a common rating." [FN171] In short, the ratings code will be inserted into broadcast signals, where it will be "read" by a feature added to the decoder on these new TV sets. If the new feature (in political parlance, a "V-chip" [FN172]) is activated by the set owner, the feature will block reception of encoded signals. [FN173]

V. Overview

The Telecommunications Act of 1996 is to a large extent a grab-bag, a pastiche of provisions aimed at a variety of real or imagined ills. One might say that the only thing all these provisions have in common is that they reform the law the Federal Communications Commission applies.

That would be too simple, of course. Recall that at the outset, I suggested the Act might also be characterized principally as a legislative response to the twin features of technological convergence and legal balkanization. Also, the censorship features of the Act, while interesting and important, are by no means its dominant features.

Because the Act deals with so many diverse subjects, an evaluation of it must be also somewhat piecemeal. Nevertheless, I attempt some interconnected criticisms in what follows.

VI. Evaluation

What are we to make of this complicated new Act? In part, one's judgment will be influenced by which provisions one cares about. To take an easy example, the owner of a radio station will find almost nothing to dislike in this Act, while the removal of group ownership caps is quite likely to increase the station's value. Count the AM/FM radio licensees as supporters.

More critically, one's judgment depends on the values one brings to evaluation of telecommunications regulation generally. For an obvious ***29** example, consider a person who is comfortable with the post-World War II British model, in which the government owns and operates all the facilities of telecommunications and programs its airwaves. I suspect this person would find little to applaud in the interconnection provisions of the new Act but would presumably not be fazed by the regulation of "indecent" telecommunications. Personally, I do not like the old British model. It does not comport at all with our notions of freedom of speech and our reliance on market mechanisms to appraise and allocate goods and resources.

By what criteria do I suggest we ought to judge regulation of the electronic media? Writing at the time only about broadcast regulation, [FN174] Lucas Powe and I spelled out criteria that we would employ and which I am satisfied would make admirable baselines for all mass media regulation. (Indeed, we argued that a very compelling reason for adopting our criteria was that, in this country, citizens and scholars of virtually all political persuasions adhere steadfastly to these standards when judging the regulation of non-electronic mass media.)

In brief, [FN175] we advance four criteria for measuring whether telecommunications regulation serves truly public (not private) interest goals: (1) Editorial control over what is said and how it is said should be lodged in private, not governmental, institutions. (2) Government has an important role to play in fostering access by speakers to mass media. For purposes of this criterion, "access"

means the ability to reach any willing recipient by any speaker willing to pay the economic costs [FN176] of doing so (and does not mean that government must or should require others to subsidize the would-be communicator). (3) Government policies should foster diversity in the media marketplace. Diversity is achieved when people are allowed to bid for any information or entertainment they desire and to receive what they seek, so long as they are willing to pay the economic costs of receiving it. (4) Government is not permitted to sacrifice any of the three foregoing principles to further goals associated with either or both of the others. Where such sacrifice is not entailed, however, government may extend the goals associated with any of these principles. Put somewhat less formally, these criteria suggest that we should evaluate government regulation of any medium of mass communications by whether it avoids content controls, reduces entry barriers, prevents anticompetitive behavior, ***30** and facilitates technological progress.

Using those criteria, I judge the Telecommunications Act of 1996 to be a mixed blessing. It seems to me that some of its features are good, others bad, and some plain ugly. [FN177]

A. The Good

1. Broadcasting

It seems to me that, by the criteria I urge, three aspects of the new rules regarding broadcasting, both radio and television, are indisputably "good." First, the removal of limits on the number of stations group owners may control (or the increasing of those limits) should increase competition. Efficient firms should now be freer to purchase inefficient ones. Costs of access should go down.

I would not rate this as a very large plus. After all, station buyers other than existing group owners have always been available to purchase less efficient stations. Nor does there seem to be a shortage of managerial talent in the industry that would suggest that only group owners are efficient acquirors. Nevertheless, removing this artificial barrier to the market for trading in station licenses ought to make the broadcast industry more efficient.

The second and third "good" provisions operate in tandem. By both extending the broadcast station license term and ending the comparative renewal proceeding, the Act should greatly lower the regulatory costs of doing business as a broadcaster. Those lower costs ought to translate into more stations on the air, operating at (and therefore providing access at) lower rates.

Further, now that radio licenses are essentially perpetual, licensees should also be able to make, at lower cost, better long-term investments in programming and talent. Until these revisions, broadcasters had to rely on the FCC and reviewing courts agreeing that they were entitled to a "renewal expectancy" to justify renewing their licenses. [FN178] Now, station owners can show lenders and investors that, so long as they abide by the rules, they have a statutory right to a renewal (and for a longer term).

*31 2. Cable

Two features of the Act regarding cable seem to me "probably good."

a. Partial Repeal of Rate Regulation [FN179]

I applaud the removal of rate regulation from the "cable tier." This is because I think that the principal effect of cable rate regulation to date has been to degrade the cable plant. Let me say immediately that I do not know how to prove or disprove that assertion. Now, let me explain why I believe it nevertheless.

When the Commission imposed rate regulation (at Congress's directive), it chose not to employ traditional rate-of-return regulation, in which the agency monitors all costs and chooses an acceptable additional rate-of-return. Today, most observers agree that such regulation is more costly than any good it produces. Rather, the Commission chose to impose "price caps" on cable systems. Under this method, the FCC sets a limit on ("caps") the regulated firm's (cable's) prices. The firm is then free to lower prices as much as it wishes.

A principal asserted advantage of the price caps approach is that this method gives price regulated firms an incentive to become more efficient, an incentive denied them by rate of return regulation, which (in theory) would lower permissible prices as soon as costs were lowered. It is true that price caps increase the incentive to be more efficient. That is because it increases the incentive to cut costs, and another way to cut costs is to let the system go to seed. Price caps also make it next to impossible to increase costs in order to increase quality of service.

Thus, the imposition of price caps on cable systems rendered them almost powerless to increase consumer satisfaction by offering subscribers better quality, albeit at higher cost. [FN180] So, it

appears, the nation's cable plant has just sat there, gathering moss, since the imposition of price caps. To keep profits up, cable systems had the further option actually to let their systems begin to rot. Whether they did, or will, do this only time will tell.

This begrudging partial removal, in three years, of some cable rate regulation ought to offer some possibility for new investment in the cable ***32** infrastructure. Meanwhile, competition from even more recent technologies, like direct broadcast satellites, video rentals, and other local entertainment sources, ought to constrain the prices for the "cable network" tier.

b. Dropping the Telco Ban

The repeal of the prohibition on telephone companies (telcos) offering cable services is also commendable, at least in theory. The FCC's "video dial tone" rules already permitted telcos to offer a pure common carrier cable service in their telephone service area, [FN181] but the new Act permits greater vertical integration of programming and pipeline in a telco cable system. This may enable the telcos to diversify their risk and, thus, to invest more; it certainly offers them the opportunity to create a cable system "just like that" already offered by competing cable firms. If providing cable television service is to become a competitive market, this may occur in many ways, but surely one of the most likely is by the entry, in many local markets, of the local phone company.

3. Telephony

On balance, I think it was the better part of wisdom to unleash the Baby Bells, permitting them to enter long-distance and manufacturing markets, and to open up the local exchange carriers to interconnection/access so that competitive LECs might arise. Certainly, these approaches follow the path we usually prefer of choosing to pursue the goals of access and diversity by fostering open competitive markets.

One should not let this point pass, however, without noticing that there is another side. Phrased as a smorgasbord of acronyms, perhaps the LECs and BOCs should have been confined to POTS ("plain old telephone service"). In longer and plainer terms, maybe it would be better to permit monopoly firms (or monopoly government agencies) to superintend the infrastructure, while others (excluding the monopoly firms) operate services provided through and upon that infrastructure. This is somewhat analogous to the way we run the highway transportation system. Government builds and operates the roads (infrastructure) but leaves the provision of transportation services (cars, buses, trucks on the highways) to the private sector.

Perhaps, due to economies of scale and scope, it is cheaper to have just one telecommunications wire going into each and every home. If so, it might be wise to let one firm build and operate those wires (and their attendant switches and interconnection points) without being able to sell services to businesses and consumers (that is, without having the ability to ***33** prey in allied markets). Indeed, one might say that such a policy--which we might describe by the slogan "Let the BOCs do POTS"--was the central feature of the consent decree that dissolved AT&T and created these BOCs. [FN182] I reject this wishful thinking because I believe it is insufficiently sensitive to the dynamism of telecommunications technologies. How could we define POTS today in a manner that we thought would be intelligible ten years from now? Would these infrastructure providers also have to provide the mobile telephone services that are growing today? Would we include airplane-to-ground telephones in the LECs' protected zone? Is "call waiting" or "call forwarding" plain old telephone service or an enhanced service?

In 1956 AT&T signed an antitrust consent decree in which it agreed to confine its services to regulated telecommunications offerings. [FN183] Two decades later, everyone was squabbling over whether this meant AT&T could operate and sell services for interactive computers. [FN184] I think an attempt to impose a legal straitjacket on the local exchange carriers would fail similarly.

In short, given the constantly evolving technologies of mass telephonic communication, I believe we will just have to live with competition in this area, like it or not. How to induce and oversee that competition is discussed below.

4. Summary

Particularly in light of the more negative commentary that follows, I should say that what is good about the Telecommunications Act of 1996 is quite good indeed. It seeks to end monopolization and balkanization, especially of cable and wired telephone markets, by breaking down entry barriers. Whether, to what extent, and in what form telecommunications technologies will converge ought to be decided, then, by the free interactions of producers and consumers in marketplaces rather than by five FCC commissioners construing a sixty-year-old statute. Put in terms of the criteria set forth

above, access and diversity should increase, while the increasingly evident powers that consumers exercise over the media should reduce public pressures for censorship.

***34** B. The Bad

In my view, most of the main features of the new Act contain "bad" features along with the "good." Candidly, one might describe these not as "bad" features of the Act, but as reasons not to be too optimistic about the good parts. I, however, call these "bad" parts of the Act because of the foregone opportunities to achieve real reform that they represent.

1. Broadcasting

The new Act does very little to reform broadcasting law and policy in helpful ways. Censorship is not repealed, but rather is extended. The horrors of spectrum allocation for television are not ameliorated, but compounded. [FN185] The extended license terms and abolition of the comparative renewal hearing will have modest practical consequences because, in practice, licensees who do not flout the FCC or its rules always get their licenses renewed. [FN186]

The Telecommunications Act of 1996 was supposed to pull together the major needs and ideas for reform in this area of the law. With respect to broadcasting, however, the Act is just a series of missed opportunities. Congress gave the broadcasters some money by increasing the value of their licenses. Viewers and listeners may perhaps benefit from a slightly more competitive and slightly less costly system. Those of us who do not own stations could have done a lot better had Congress seriously considered reform, in the public interest, of broadcasting law and policy. I discuss in subsequent sections of the Article what I believe some of those reforms would entail.

2. Cable

Here, too, I believe Congress labored mightily and brought forth a mouse. I think there is some, but not much reason to believe that cable can be provided competitively. Probably, it is a natural monopoly, [FN187] so consumers are unlikely to be able to protect themselves by switching to another cable company in their neighborhood. This means that, at least in the long run, subscribers are most likely to seek, and perhaps obtain, protection from the monopoly ills of cable in three other ways.

***35** First, and most importantly, cable is likely to encounter direct competition from other multi-video program distributors (MVPDs) using other technologies, such as direct broadcast satellites and multichannel multipoint distribution service (MMDS), to which cable subscribers can easily switch. Second, to the extent that cable remains a natural monopoly, cable service providers are likely to want to discriminate in the prices they charge, for example by offering cheap alternatives to the poor and more expensive ones to the wealthy. Such discrimination would still leave monopolist cable services with unjustifiably high incomes, but would also at least expand options available to all while providing some protection for low income consumers. Finally, modest leased access provisions--say, a requirement that 5 to 10 percent of channel capacity be set aside for programmers' access to cable systems on a common carrier basis--is likely to protect against the chance that a cable monopolist would cause real harm to viewers' welfare by selecting programs on the basis of ideological bias or by engaging in gross price discrimination.

If these arguments are correct, then letting telcos into cable will be, in the long run, of little consequence. [FN188] It would be more important, by far, to focus on establishing other MVPDs as viable competitors and strengthening and clarifying leased access rules. Further, the merely partial relaxation of rate regulation, to occur three years hence, does not seriously address the issue whether cable systems ought to be freed to compete, with other MVPDs and with other sources of information and entertainment, on the basis of quality of service offered.

3. Telephony

a. Everyone into LECs

What I have just said about the natural monopoly aspects of cable television [FN189] applies equally to the attempts to spur facilities-based competition in the local loop. It is most likely that running a telecommunications wire to the home is a natural monopoly and so one ought to concentrate on regulating that monopoly or mitigating its ill effects.

To some extent, the new Act accomplishes this. By placing on incumbent LECs extensive interconnection requirements, the 1996 Act creates a new vision of competition at the local loop level. In this vision, one firm may superintend the wires and switches that make up the local ***36** loop while

. that firm competes with others to sell exchange services, including the basic dial tone, to customers. The difficulty, I believe, with this aspect of the Act is not its vision, but its execution. The interconnection sections impose so many restrictions, and direct the Commission to write so many rules, [FN190] that one must fear that the regulatory costs of this open access regime will exceed its payoff in reduced rates or improved service quality.

At the same time, the new Act does little to expand the competitive opportunities of the most likely competitors to incumbent LECs, the wireless phone (and other) services providers. Mobile, cellular telephony is now a rather mature technology employed by a large industry. "Personal communications services" (PCS)--which utilize even smaller devices that can carry even more data--are squarely on the horizon. The 1996 Act misses opportunities to make wireless a more robust competitor. LECs are still permitted to own wireless phone operations in their service area. The Act does not clearly grant wireless phone providers a federally protected right to interconnection with LECs at real economic costs. [FN191] The rules for auctioning off the spectrum that PCS uses are still loaded with special rules for special groups [FN192] so that the spectrum is less likely to be used efficiently, while the auctions provide modest "welfare" benefits to small businesses.

Two cheers, then, for the local loop interconnection aspects of the new 1996 Act. One can hope that a subsequent Congress will return to this important topic and strip many of the interconnection regulations away while acting further to foster wireless as a competitive alternative.

b. BOCs Into Everything

In a preceding section, I explained why I believe it is unwise and infeasible to try to impose line of business restrictions on local exchange carriers. With respect to those LECs that are not Bell operating companies, we have had no such restrictions for some time now. None of these LECs appears to have monopolized long-distance or alarm services markets. ***37** Consequently, I believe one must applaud those features of the new bill that admit the BOCs into the long-distance services, equipment manufacturing, electronic publishing, and alarm monitoring services markets.

But there is a "bad" side to this "good" reform as well. Recall the numerous regulations with which the new Act surrounds any BOC wishing to enter these markets. [FN193] To enter the long-distance market, for example, a BOC must not only employ a separate subsidiary, [FN194] but it must also show that it is now confronting (or has done all it can to bring about) facilities-based competition in its local loop services. [FN195] At the same time, because the theory underlying the MFJ has now become part of the standard wisdom of antitrust law, the BOC remains constrained by the Sherman Act from engaging in discriminatory interconnection or predatory cross-subsidization. [FN196] Meanwhile, the imposition of price caps instead of rate of return regulation makes a predatory cross-subsidy strategy impractical in any event. [FN197]

What is the point of these countless regulations? To keep the BOC from preying against AT&T! The theory of the MFJ is now being used to protect AT&T. Is this because we need to protect AT&T from a new monolithic monster? No, these redundant provisions shelter AT&T from seven distinct, uncoordinated firms who will presumably have to compete against each other in the long-distance market, as well as against AT&T, Sprint, MCI, and others.

Simply put, the case for this kind of extensive, overlapping regulation has not been made and probably cannot be made. A BOC is not AT&T. BOC entry into long-distance or equipment manufacturing does not threaten AT&T in the same way that AT&T's long-distance operations threatened MCI or its equipment-manufacturing arm threatened Rolm. A BOC that wants to enter long-distance or equipment manufacturing must face not only AT&T and its rivals, but other BOCs as well, while its prices are capped and it operates in an antitrust climate that now clearly sanctions the strategic anticompetitive behavior the BOC might find profitable. [FN198] If the BOCs are to be let in, I believe they should be let in like everyone else.

***38** C. The Ugly

The "good" features of the new Act, then, are clouded somewhat by "bad" features that prevent this legislation from being as good as it could be. Perhaps more significantly, the new Act contains several "ugly" features, each of which perpetuates and to some extent magnifies some fundamentally flawed aspects of telecommunications law and regulation.

Oversimplifying, we employ two methods to discipline privately operated telecommunications firms so that they will serve the public interest. One is by subjecting them to the oversight of an independent regulatory agency, the FCC. The other is by subjecting them to the rigors of marketplace competition, the oversight of consumers. The new Act purports to shift the balance between these two methods decidedly in favor of reliance on consumer-driven market forces as disciplining agents. At the same time, however, the statute does nothing to correct some very deep flaws in our policy of regulating telecommunications by competition.

1. The Problem of Spectrum Allocation

"The spectrum" is not tangible; it is nothing that someone can possess. Rather what we call "the spectrum" is a list of frequencies on which we currently know how to transmit data through electronic sinusoidal waves. [FN199] Like the chemist's Table of Periodic Elements, the electrical engineer's spectrum has been a constantly growing list as technology has evolved to permit effective data transmission at higher and lower ends of the spectrum.

The ability to transmit encoded data electronically on a particular frequency, free from (a substantial amount of) interference, is a valuable resource. [FN200] I will call this resource "spectrum use." Spectrum use is a resource in precisely the same way that transmitters, electrical energy, microphones, and cameras are resources. Each of these goods, when assembled in various combinations with other goods, permits an operator to create value, to perform a service for which people are willing to pay.

Spectrum use differs from these other resources, however, in one key respect. It is the sole resource used in telecommunications industries that has historically been given away without an explicit charge for it. Broadcasters buy microphones, transmitters, electrical energy, and so forth, ***39** but they are "given" spectrum use. [FN201]

This government "gift policy" creates a huge competitive imbalance between those who would transmit through the air and those who would do so by wire. Congress has recognized this problem and ameliorated it a bit, in other legislation, by permitting/requiring the FCC to auction off spectrum for nonbroadcast uses in the future. [FN202] Perversely, however, the newer 1996 Act seems oblivious to the problem.

For example, the true emerging competitors to cable appear to be direct broadcast satellites and multichannel multipoint distribution service (MMDS). Yet most firms in these markets were given free spectrum use while cable had to purchase spectrum use. The true emerging competitors for the local exchange carriers appear to be the mobile, cellular industry. But this industry was given its spectrum in large markets and acquired it via lottery in smaller ones. [FN203] The new Act virtually directs the Commission to give free spectrum use to television broadcasters so that they may develop high definition television (HDTV). Why is cable not receiving a similar hand-out for the same purpose?

In all of these instances, we face the dilemma of trying to judge the outcome of competitive markets when the game was rigged at the outset. Suppose we decided to let competition dictate to what extent people drank coffee or tea and what would be the relative prices of each--and then gave away coffee beans, but not tea leaves? The new Act, supposedly designed to make markets work in telecommunications regulation, not only does nothing to create further markets in spectrum, but it exacerbates some existing imbalances between wire-based and ether-based transmitting technologies.

Because we have no markets in spectrum use, we have had to invent a method to create property rights in the spectrum. This has been accomplished by allocating the rights to use the spectrum by administrative fiat. [FN204] Because the FCC has no prices for its spectrum use rights, it has little idea how valuable one use is as compared to another. And, of course, the agency is susceptible to political pressures to favor certain technologies or services over others.

***40** For these reasons, administrative allocation of the electromagnetic spectrum has not been a shining example of what regulation can do for us. Nowhere is this more evident than in television broadcasting. There, a series of FCC decisions in the 1950s essentially confined us, unnecessarily, to a closed entry, three commercial network system that persisted until the growth of cable made additional television broadcast stations and therefore additional television networks profitable. [FN205]

To those with a detailed knowledge of the history of misallocation and misassignment of the television spectrum, the grant to every existing television station of an additional channel for HDTV is an irony that borders on the tragic. A 100 percent increase in the amount of spectrum allocated to commercial television broadcasting, and not one single additional licensee! The new Act doubles the national resources committed to TV, yet leaves the level of concentration in this industry completely untouched! For decades, first the FCC, and subsequently Congress, bemoaned the virtual absence of minority ownership [FN206] and very small participation of women in television broadcasting. Now, over 800 additional licenses are to be handed out, without increasing the ratio of minority or female or small business ownership one whit!

The acquisition by broadcasters of an additional license (apparently at no charge), then, is more than a property rights grab without parallel in the United States since the days of our previous robber barons, the railroads. It is also an extraordinary denial of our professed commitments to increase competition, to lower entry barriers, and to expand opportunities for historically excluded persons in the broadcasting industry. Ironically, it was claimed that pursuit of these commitments partially

justified failure to rely on simple market mechanisms to allocate the broadcast spectrum.
Fortunately, the consequences of this extraordinary sellout will not be so dire. We now have cable. Cable networks and operators are free to offer high definition television today. So are DBS, MMDS, and videocassette ***41** entrepreneurs. More importantly, these technologies are technologies of plenty; they expand opportunities for program suppliers and open the television viewing markets to competition. Today, one who does not enjoy the fare produced by an oligopoly can simply tune out the conventional broadcasters.
Nevertheless, the fact remains that the new Act does nothing to redress a fundamental flaw in our competition policy in telecommunications: the competitive imbalance we create between wired and wireless carriers. At the same time, it exacerbates a fundamental flaw in our regulatory policy toward broadcasting: the use of spectrum allocation authority to confer market power on a closed class of privileged broadcasters.

2. The Problem of Universal Service

Universal service, as defined in the new Act, and competitive markets cannot coexist, where the goods produced have many substitutes or where the technology is dynamic. We are so used to universal service in telephone markets, that the point may be better illustrated from another perspective.
Suppose government decided to establish "universal housing" by requiring that every third new house built be sold at 20 percent below its cost. What would happen? The number of new homes built would fall dramatically. Builders would need to price two of every three new houses well above cost. Purchasers would shift to the "used house" market (at least until they drove prices in that market up to a new balance with the "new house" market).
Similarly, the same shifting would occur with telecommunications. If you tell a telephone company to provide basic residential phone service to low income neighborhoods or computer services to elementary schools at below cost prices, it will have to charge above cost prices to someone else. But that someone else will then just shift his or her purchases to a supplier other than the regulated telephone company.
There are three ways around this dilemma. First, government could subsidize the purchase directly from general tax funds. That's what we do for low income housing, but not for low income telephony, in the U.S. We cannot escape the "universal housing" tax by shifting our purchases in the housing market. Second, government could give the phone company a monopoly, so that the customers to whom it would raise prices would have nowhere else to turn. That's what we used to do for low income and rural telephony in the U.S., when AT&T operated a fairly complete monopoly in several product lines and was able to generate subsidies internally. (Indeed, the FCC knew this. It tried to prevent courts from authorizing competition in long-distance precisely because AT&T, in its monopoly incarnation, ***42** could cross-subsidize pro-social goals. [FN207]) A third option, embraced by the new Act, is to levy an equivalent charge on everyone in the industry and then use those funds to subsidize directly the provider of the pro-social service(s). Thus, the new Act specifies that providers of interstate telecommunications services will "contribute, on an equitable and nondiscriminatory basis," [FN208] to a fund that will be used to subsidize those who provide "universal service." [FN209] An "equitable and nondiscriminatory" fee might be, for example, a 1 percent gross receipts "tax." This is "equitable and nondiscriminatory" in the sense that it is competitively neutral--its collection should not bias consumer choices toward one seller rather than another.
But, of course, this tax will bias choices. Consumer choices will be biased. First of all, nontelecommunications services will become relatively more attractive. It may be less efficient, measured by the value of resources expended, to mail a letter than to make a phone call but, due to the "telecommunications tax," less expensive to write than to call. A sensible consumer will choose the (personally) cheaper, but (societally) less efficient alternative. [FN210] Note, however, that this is a problem only to the extent that nontelecommunications information technologies are nearly equivalent in costs to those data transmission services that are subject to the tax.
More daunting than the problem of old technologies is the problem of new ones. With the new Act in place, people will now have incentives to create and to purchase methods of data transmission that are (a) not as efficient as existing telecommunications services but (b) not subject to the tax. To revert to the "universal housing" example, a firm might start selling newly constructed mobile homes and argue that they were not "houses" as defined in a hypothetical Universal Housing Act. MCI started a long-distance telephone service, but called itself a "specialized common carrier" and thus got to offer deals that AT&T could not. [FN211] Neither the mobile home builder nor MCI would have to be more efficient to succeed. Because telecommunications technology is so dynamic, it is difficult to conceive of a regulatory regime that treats every such technology and every effective ***43** substitute for it on a competitively neutral basis. [FN212]

Candidly, it is hard to argue against the concept of universal service without sounding like someone who hates little children and people who dwell in rural areas. But the point is not that school children, poor people, or rural folk do not deserve or need subsidized access to telephone services. Rather, the point is that I think we have already learned that we cannot give these benefits to them through a system of industry generated internal cross-subsidies unless we dictate that that industry be monopolized.

I have no doubt that incumbent LECs will argue against competitive entry on the grounds that such entry will retard the universal service goals of the Act. They will frequently be right. One simply cannot have unbundled services with nondiscriminatory access and a system of subsidized universal service obligations existing side by side.

In my judgment, it is both bad competition policy and bad regulatory policy to think that one can achieve properly functioning competitive telecommunications markets while a regulator sees to it that these same markets generate subsidized pro-social benefits. Sadly, I suspect that many people in Congress know these things, but voted for the bill anyway.

3. The Problem of Competition Analysis

An extensive, thoughtful literature on the economics of industrial organization and behavior underlies current antitrust law. This literature teaches us that, in order to analyze the effects on competition of the behavior at issue, we should first define the market(s) in which the firm(s) operate, then determine who controls what firms in that market, and then calculate the extent of concentration of control in that market. [FN213] These might seem obvious and elementary principles. To any student of antitrust they are quite simple and basic. Yet one who had read only the Telecommunications Act of 1996 would think that Congress was completely unaware of this antitrust learning.

a. Defining Markets

Industrial organization economists and antitrust lawyers alike start with ***44** markets. They know (or believe) that we employ competition to discipline firms to keep them from producing shoddy goods or restricting output to raise prices. A "market" is the group of firms that, with respect to any other particular firm, disciplines that firm by threatening to steal its customers if the firm produces shoddy goods, or to expand output if the firm tries to raise its price. Thus, to know the competitive consequences of a merger or an agreement, we need to know the market or markets within which firms that are parties to the merger or agreement operate.

With respect to telecommunications firms, it is particularly important to distinguish between local and national markets. Conventional telecommunications delivery services to the home operate mostly in local markets. I believe it is safe to assert that no one ever moved from New York to Chicago to get better television reception or cable or telephone service. Thus, Chicago broadcasters do not discipline New York broadcasters in the market for selling broadcasts to listeners and viewers. [FN214]

The new Act appears to recognize this principle when it removes all national limits on radio station ownership. But it does not remove them for television. Moreover, the new Act, as we have seen, greatly hobbles local Bell operating companies' entry into long-distance telephone service. But long-distance service is provided in a national market. It is at best unclear how control over a few local switched networks can be translated into market power in the national long-distance market.

b. Measuring Control

Once markets are defined, one needs to know who controls what firms in those markets. The new Act perpetuates a time-honored failing of broadcasting law in treating formal and informal integration as worlds apart, when they are in fact two phenomena that exist on a single continuum. Depending on the length and complexity of an informal, contractual relationship, it may occupy a spot on that line quite close to a formal merger.

The new Act seems not to recognize this principle. For example, at one point, the bill establishes rules limiting the television stations a firm may own nationwide. [FN215] The Act does nothing, however, to limit the number (or collective reach) of stations with which a television network may affiliate nationwide. Yet, as my colleagues and I have shown ***45** elsewhere, the distinction between a network's ownership of a television station and its affiliation with another is a good deal more formal than real. [FN216] For example, the difference is quite small between the rate at which affiliated stations, on the one hand, and owned stations, on the other, clear major networks' prime time programs. [FN217] In a similar vein, the new Act establishes limits on the number of radio stations any firm may own in one local market, but does not count as an "owned" station one that is staffed and programmed by another under a "local marketing agreement," a form of joint venture that is

rather common in today's commercial radio broadcasting industry. [FN218]

c. Measuring Concentration

Conventional wisdom has it that the number of firms in a market is, at best, only a partial measure of the extent to which firms within it probably compete fiercely. Also important, certainly in markets with less than a dozen firms, are the percentage shares of the market that each controls. Not all firms are created equal and the impact on market behavior of commercial practices or mergers is partly dependent on whether the firms engaged in the questioned behavior are among those who were created more equal than others. [FN219]

Again, the new Act largely perpetuates a method by which regulators measure acceptable levels of concentration by how many stations a firm acquires, not by the size or power of those stations. Thus, for example, one firm may own eight radio stations in a market of forty-five or more. [FN220] This applies regardless of whether those are the most or least popular in the market or propagate a broad or a relatively narrow signal.

A clever person might argue, that for purposes of measuring concentration, all stations should be treated as equal, because each has an equal potential to be most productive. That might explain employing simple numbers counting for the radio multiple ownership rules, but would not explain why the new Act establishes national television station ownership rules based on the collective reach of the owned stations. [FN221]

Why do I rate as "ugly" the failure of the new Act to engage in serious competition analysis at several points? Not, I confess, because this ***46** omission will do great harm to consumers. Multiple ownership of radio and television stations or the grounds on which BOCs are allowed into long-distance do not seem to bear enormously on listener, viewer, or consumer welfare.

Rather, I object to the implications of this shoddy analysis. These features of the new Act seem to bespeak an absence of genuine commitment to competition as the prime regulator of telecommunications markets. These provisions appear to reflect instead a simple private interest give and take, in which legislators bicker over a series of numbers--eight stations or seven stations per large radio market--rather than deliberate over an important legislative principle. Why would we not simply leave formal and informal consolidation to the antitrust authorities, as we do for most other U.S. industries and markets?

4. The Problem of Censorship

Lucas Powe and I recently published both a book [FN222] and a law review article [FN223] about the evils, the futility, and the wastefulness of censorship of the electronic media. [FN224] While neither is hot off the press, both are still pretty warm, so I see little need to repeat our arguments here. Further, I think my description, above, of the censorship features of the new statute is sufficiently non-neutral to convey my distaste for most of them.

I do wish to add three points. First, as a whole, the censorship features of the new Act are anticable. The indecency rules aimed at the Internet cannot prove enforceable, but those aimed at cable will be. Further, violence has pretty much been scrubbed from conventional network television, but not from cable which is full of old network shows that had lots of violence ***47** as well as movies and cable network fare that are comparatively violent. [FN225] Whether those who voted for the Act know it or not, it is cable that will bear the brunt of the bill's censorship features.

Second, all of these censorship features of the new Act, as all other acts of censorship, at bottom reflect hostility to the programmer's (or editor's) status or class or points of view. Although this is not stated in the new Act, we all know that the V-chip proposal is not aimed at the most violent fare on television--sports (especially football) and news coverage of crime, war, and terrorism. The indecency provisions are aimed at those obsessed with sexual acts, not those obsessed with racist hatred, religious intolerance, or greed. That is, the "indecency" targeted by the new Act does not include racial epithets, expressions of religious bigotry, or advertisements for alcohol and tobacco, each of which may well be more damaging to young psyches than a joke about farting or a picture of testicles. We say we care about children, but we are at least equally concerned to punish speakers we dislike and to absolve those with whom we are familiar and comfortable.

Third, the new Act will put some strains on existing constitutional jurisprudence because of the clever (too clever, perhaps?) way in which some of the censorship features are crafted. After telling cable operators that they must carry smut, then Congress tells them to segregate it. The Act may thus be portrayed as an attempt to shield children and to support operators' editorial preferences and control. The FCC shall manage the V-chip system only if the industry does not voluntarily undertake to do so first. Consequently, the industry's response may be characterized as private, rather than governmental, action. [FN226] Although governmental censorship is forbidden by the First

. Amendment, private censorship is protected by it. [FN227]

Conclusions

I have argued that the Telecommunications Act of 1996 is neither a miracle drug nor a poison pill for what ails our telecommunications law and policy. The new Act has good, bad, and ugly features. How does it all balance out? That depends on what matters most to ***48** you. I have a friend who buys and sells radio stations. At any given time, he owns lots of them. He told me that the V-chip was the best thing to happen to him in years. Why? Because, he believes, the presence of the V-chip sections got the White House interested in supporting the bill, so my friend got expanded radio group ownership rules.

What matters most to me? Two things. First, I think it is downright shameful to pretend to enact a procompetition policy, while continuing to preserve the worst features of our old spectrum allocation policies; while exacerbating the anticompetitive, antiefficiency effects of universal service policy; and while steadfastly refusing to ask (or require the FCC to ask) real questions about real competitive conditions in real markets. My objection is not simply to the inelegance or intellectual shallowness of these policies, but to the real harms they threaten to the goal of competition: serving consumers efficiently. No one of these failings is likely to cause "pretend competitive" markets to perform badly, but in combination they may do much harm.

My second large objection to the new Act stems from the fact that I continue to believe that the case has never been made for maintaining a large, independent agency with industry-specific powers over telecommunications firms and markets. Perhaps we need a Federal Spectrum Commission to manage spectrum assignment and to mediate interference claims. Certainly, we need a Telecommunications Bureau to represent us in international negotiations over frequency use and assignments. We may need an Interconnection Department (or just an amendment to the antitrust laws) to establish the principle that local telecommunications carriers that possess market power must provide sophisticated and nondiscriminatory access to other providers of allied or competing telecommunications services. But what other sound, important public policies are reflected in the 1934 Communications Act or the Telecommunications Act of 1996 that cannot be pursued by agencies--like the FTC, the SEC, the NLRB--that are not industry specific and so are much less susceptible to capture by private interests? Without the Communications Act, neither Congress nor its constituents would assume that government is charged with superintending communications in this country.

These seem to be the larger questions that a true reform of U.S. telecommunications law and policy would address. The 1996 Act not only failed to address these questions, but created an even larger Federal Communications Commission, charged with even more responsibilities. One Commissioner reports that the new law will require the FCC to conduct ***49** eighty rulemakings! [FN228] One reads the new Act in vain for something that reflects Congressional awareness that the FCC may not be omnipotent, its commissioners not omniscient. I find it difficult to see how such an enlargement of the FCC and its duties can be squared with a determination to reduce the extent of government management of telecommunications and to increase the role of competition--discipline inflicted by consumers--on the industry. [FN229]

Finally, and perhaps most fortunately, I believe we can be quite sure that all the matters I have raised in this Article are relatively short term transitory issues. Telecommunications technology marches forward. We cannot retard it any more than we can catch lightning in a bottle. Some people are now using the Internet for long-distance phone calls. Who knows what technologies will dominate in 2025? Just as we now snicker and guffaw over earlier attempts to regulate the telephone industry through the Kingsbury Commitment of 1913 and the AT&T consent decree of 1956, [FN230] so will our grandchildren wonder what all this fuss was about.

U.S. governments, both state and federal, have erected countless entry barriers in the course of writing and rewriting telecommunications laws. Not one of them has withstood the critical analysis of those blessed with hindsight. Technological change has circumvented them all. To oversimplify one final time, to the extent that the new Act destroys entry barriers, I would judge it a success while, to the extent that it creates or strengthens them, I would judge it a failure.

[FNd]. This article originally appeared in the Connecticut Law Review, 29 Conn. L. Rev. Issue 1 (1996), along with comments by Loftus E. Becker, Jr., Angela J. Campbell, Henry Geller, Thomas W. Hazlett, Mark F. Kohler, Lili Levi, Glen O. Robinson, Philip Rosario, and Matthew Spitzer. For information on obtaining a copy of that complete issue, please see the advertisement at the end of this issue. The editors thank the Connecticut Law Review and Dean Thomas G. Krattenmaker for permission to include this article.

[FNa]. Dean and Professor of Law, William and Mary School of Law. I wish to thank Tom Koonce for

his research assistance and F. John Barker for his editorial assistance. I am grateful for the comments on previous versions of this work, to participants in the AALS Mass Media Law workshop and the William and Mary School of Law Colloquium series. I also wish to point out that at note 191 infra I disclose a minor, potential conflict of interest.

[FN1]. Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (to be codified at scattered sections of 47 U.S.C.).

[FN2]. Mike Mills, Ushering in a New Age in Communications; Clinton Signs 'Revolutionary' Bill into Law at a Ceremony Packed with Symbolism, Wash. Post, Feb. 9, 1996, at C1.

[FN3]. President Bill Clinton, Remarks by the President at the Signing Ceremony for the Telecommunications Act Conference Report (Feb. 8, 1996) (transcript available at <http://www.whitehouse.gov/WH/eop/op/telecom/release.html>).

[FN4]. "The term 'telecommunications' means the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received." Telecommunications Act, sec. 3, s 153(r)(48), 110 Stat. at 60. As written, this section describes equally well a person mailing a letter and the same person sending a fax or telephoning and leaving a message on the recipient's answering machine.

[FN5]. Communications Act of 1934, ch. 652, 48 Stat. 1064 (codified as amended in scattered sections of 47 U.S.C.).

[FN6]. See Thomas G. Krattenmaker, Telecommunications Law and Policy (1994) [[[hereinafter TLP]. When I cite to this casebook, I am usually citing to primary sources, or to the research work of others, as well. See also Thomas G. Krattenmaker & Lucas A. Powe, Jr., Regulating Broadcasting Programming (1994) [hereinafter RBP]; Stanley M. Besen et al., Misregulating Television: Network Dominance and the FCC (1984) [hereinafter MTV].

[FN7]. Radio Act of 1927, Pub. L. No. 69-632, 44 Stat. 1162, repealed by Communications Act, s 602, 48 Stat. at 1102.

[FN8]. TLP, supra note 6, at 11-17.

[FN9]. Id. at 20-21.

[FN10]. Id. at 29-31.

[FN11]. Id. at 30-31.

[FN12]. Id.

[FN13]. In many cases, telecommunications transmissions can also be rendered (relatively) secure from eavesdroppers, thus increasing their value.

[FN14]. The smoke signal analogy is suggested by Don L. Cannon & Gerald Luecke, Understanding Communications Systems 1 (2d ed. 1984).

[FN15]. TLP, supra note 6, at 29.

[FN16]. Id. at 20.

[FN17]. Milton Mueller, Universal Service in Telephone History, Telecomm. Pol'y, July 1993, at 354.

[FN18]. Network Inquiry Special Staff, FCC, 2 New Television Networks: Entry, Jurisdiction, Ownership and Regulation 49-59 (1980) [hereinafter NISS Vol. II].

[FN19]. TLP, supra note 6, at 20, 77-84.

[FN20]. Id. at 14-17.

[FN21]. Id. at 24-25.

[FN22]. U.S. Subscriber Base Increases by 36 Percent, Mobile Phone News, Mar. 25, 1996, available in LEXIS, Market Library, Iacnws File.

[FN23]. TLP, supra note 6, at 29-35.

[FN24]. 47 C.F.R. s 76.501(a) (1995).

[FN25]. TLP, supra note 6, at 354-76.

[FN26]. See 17 U.S.C. s 119 (1994), which gives satellite providers the practically necessary "compulsory license" for network stations only in those few areas not served by conventional or cable television.

[FN27]. TLP, supra note 6, at 565-87.

[FN28]. Id.

[FN29]. See, e.g., In re Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Notice of Proposed Rulemaking, CC Dckt. No. 96-98, FCC 96-182, 1996 FCC LEXIS 2063, para. 5 (Apr. 16, 1996).

[FN30]. TLP, supra note 6, at 543-53.

[FN31]. Id.

[FN32]. Id. at 544.

[FN33]. Id. at 565-87.

[FN34]. Id. at 55-58.

[FN35]. This is what Steve Salop and I call the "bottleneck" method of raising rivals' costs. See Thomas G. Krattenmaker & Steven Salop, Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power over Price, 96 Yale L.J. 209, 234-36 (1986).

[FN36]. This is a sophisticated, or special case of, predatory pricing. Unlike most alleged predatory pricing schemes, this one does not require the sacrifice of profits in the short run. For a fuller discussion see TLP, supra note 6, at 510-12, 514-23.

[FN37]. Id. at 467.

[FN38]. As we shall see, it is this conclusion especially that accounts for the fact that the new Act is just about as much regulatory as it is deregulatory in its provisions and effects.

[FN39]. As explained in greater detail below, these three goals are not easily compatible with each other. Some of the law's less satisfactory aspects arise from its attempts to achieve simultaneously inconsistent goals.

[FN40]. I assume it is clear by now (if there was ever any doubt) that one cannot determine whether a cross-subsidy is "pro-social" without first making important, subjective value judgments, such as whether services should be provided below cost or how much we dislike gratuitous TV violence.

[FN41]. I am speaking here, of course, of the 1996 Act as it will be described in law, which requires that a public-regarding purpose be articulated as the basis for the statute. See, e.g., the discussion of "rational basis review" in Geoffrey R. Stone et al., Constitutional Law 532-38 (1991). Outside courts of law, many better (or more interesting) ways to analyze the Act might be employed. For example, one might compare the sources and amounts of PAC donations with final provisions in the bill. Senators and representatives may have voted for the Act out of a conviction that this was the best way to maximize their PAC contributions, their chances for reelection, or their likelihood of immortality; but these are beside the point of this Article.

[FN42]. Telecommunications Act of 1996, Pub. L. No. 104-104, sec. 202(a), 110 Stat. 56, 110 (modifying 47 C.F.R. s 73.3555).

[FN43]. Id. sec. 202(b), 110 Stat. at 110.

[FN44]. Unless otherwise indicated, the data presented here with respect to HDTV may all be found at TLP, supra note 6, at 281-93.

[FN45]. The puzzle is thus like that faced by the FCC when it moved the FM radio band. Id. All FM broadcasters' equipment became obsolete overnight and consumers had no radios (decoders) that could receive the new FM signals. The FM industry became a weak step-sister to the AM radio industry instantly and stayed that way for over two decades. See Sydney W. Head & Christopher H. Sterling, Broadcasting in America 152-53 (1982). The puzzle is not like that faced by the Commission when color television was introduced. One does not need a color-equipped set to receive a color-encoded signal. Consumers do not need color receivers to decode transmissions of programs that are coded for color.

[FN46]. See Mike Allen, Wireless Systems Put Out Their Antennas, N.Y. Times, May 27, 1996, at 29; see also George Graham, U.S. Broadband License Bids Start Today: Government Hopes for World's Largest Auction of Public Assets in Forthcoming Wireless Personal Telecoms Sell-off, Fin. Times, Dec. 6, 1994, at 7.

[FN47]. See Edmund L. Andrews, Digital TV, Dollars and Dissent; The Political Battle Grows over the Use of New Broadcast Technology, N.Y. Times, Mar. 18, 1996, at D1; see also Paul Farhi, Clinton Proposes Radio Spectrum Auction; Benefits for Deficit, New Communications Technologies Seen, Wash. Post, Feb. 18, 1993, at B12.

[FN48]. See Tom Foremski, The Key Challenge Is Price--The Cost of Digital Television Sets Will Come Down in Price as New Chips Are Developed, Fin. Times, Mar. 6, 1996, at XI.

[FN49]. Paul Farhi, FCC Gathering to Decide on Fate of HDTV; Broadcasters Want Airwaves for Wireless Communications, Wash. Post, July 27, 1995, at B9.

[FN50]. FCC Chairman Reed Hundt, Speech at the Museum of Television & Radio (June 6, 1996) (transcript available at <http:// www.fcc.gov/Speeches/Hundt/spreh626.txt>).

[FN51]. Telecommunications Act of 1996, Pub. L. No. 104-104, sec. 201, s 336(a), 110 Stat. 56, 107-08 (to be codified at 47 U.S.C. s 336(a)).

[FN52]. Id. sec. 201, s 336(a)(1), 110 Stat. at 107-08 (to be codified at 47 U.S.C. s 336(a)(1)).

[FN53]. There is an informal agreement in Congress that the issue of whether to auction HDTV channels may be revisited in the next year. Inertia suggests there will be no auctions, as does the extraordinary political clout broadcasters possess. However, the broadcasters did not get everything they may have wished for in this section of the Act. Other provisions tell the Commission to allow the holders of the new HDTV licenses to offer "ancillary or supplemental" services. Id. sec. 201, s 336(a)(2), 110 Stat. at 108 (to be codified at 47 U.S.C. s 336(a)(2)). The FCC is to collect a fee (roughly equivalent to what an auction would have brought) for any services for which the licensee charges. Id. sec. 201, s 336(e)(1), 110 Stat. at 108-09 (to be codified at 47 U.S.C. s 336(e)(1)). Additionally, if the FCC does give each broadcaster an extra channel it must require that, at some appropriate time, either the original or the additional license be surrendered. Id. sec. 201, s 336(c), 110 Stat. at 108 (to be codified at 47 U.S.C. s 336(c)(1)).

[FN54]. Id. sec. 203, s 307(c), 110 Stat. at 112 (to be codified at 47 U.S.C. s 307(c)).

[FN55]. Id. sec. 204(a), s 309(k)(1)(A), 110 Stat. at 113 (to be codified at 47 U.S.C. s 309(k)(1)(A)).

[FN56]. Id. sec. 204(a), s 309(k)(1)(B), 110 Stat. at 113 (to be codified at 47 U.S.C. s 309(k)(1)(B)).

[FN57]. Id. sec. 204(a), s 309(k)(1)(C), 110 Stat. at 113 (to be codified at 47 U.S.C. s 309(k)(1)(C)).

[FN58]. Id. sec. 204(a), s 309(k)(1), 110 Stat. at 113 (to be codified at 47 U.S.C. s 309(k)(1)).

[FN59]. Id. sec. 204(a), s 309(k)(2), 110 Stat. at 113 (to be codified at 47 U.S.C. s 309(k)(2)).

[FN60]. TLP, supra note 6, at 89-120.

[FN61]. Id. at 567. This is a classic example of the "legal balkanization" discussed above. Congress feared that telephone companies might be able to prey successfully against cable systems and so banned their participation in cable television. Meanwhile, converging technologies made it more and more difficult to determine just what was "cable television programming" and what was "telephone service." (Consider, for example, video images transmitted over the Internet.)

[FN62]. Id. at 567-87.

[FN63]. Id.

[FN64]. Telecommunications Act, sec. 302(b)(1), 110 Stat. at 124 (repealing 47 U.S.C. s 533(b)).

[FN65]. Id. sec. 302(b)(3), 110 Stat. at 124.

[FN66]. Id. sec. 302(a), s 651(a), 110 Stat. at 118-19 (to be codified at 47 U.S.C. s 651(a)).

[FN67]. Id. sec. 302(a), s 651(a)(2), 110 Stat. at 118-19 (to be codified at 47 U.S.C. s 651(a)(2)).

[FN68]. Id.

[FN69]. Id. sec. 302(a), s 651(a)(3), 110 Stat. at 119 (to be codified at 47 U.S.C. s 651(a)(3)).

[FN70]. Id. sec. 302(a), s 651(a)(4), 110 Stat. at 119 (to be codified at 47 U.S.C. s 651(a)(4)).

[FN71]. See, e.g., 47 U.S.C. s 533(b) (1994), repealed by Telecommunications Act, sec. 302(b), 110 Stat. at 124.

[FN72]. TLP, supra note 6, at 442-60.

[FN73]. See Cable Television Consumer Protection and Competition Act of 1992, Pub. L. No. 102-385, 106 Stat. 1460 (codified in scattered sections of 47 U.S.C.). "Effective competition" was defined so that few cable systems were subject to it and therefore exempt from rate regulation. 47 U.S.C. s 543 (a)(2) (1994).

[FN74]. TLP, supra note 6, at 442.

[FN75]. Id.

[FN76]. Viewers do pay for most of these services, but not separately. Rather, each cable program network usually charges the cable operator a set fee per month per subscriber and the cable system that carries that network then sets the fee for its cable programming tier high enough to cover those charges. Think of the nonbasic and non-per-channel part of your cable lineup as one gigantic tie-in, if you will.

[FN77]. TLP, supra note 6, at 442.

[FN78]. Telecommunications Act of 1996, Pub. L. No. 104-104, sec. 301(b)(1)(C), s 543(c)(4), 110 Stat. 56, 114-15 (adding 47 U.S.C. s 543(c)(4)).

[FN79]. TLP, supra note 6, at 442.

[FN80]. Telecommunications Act, sec. 301(b)(3), s 543(l)(1), 110 Stat. at 115 (amending 47 U.S.C. s 543(l)(1)).

[FN81]. Id. sec. 301(b)(3)(C), s 543(l)(1)(D), 110 Stat. at 115 (adding 47 U.S.C. s 543(l)(1)(D)).

[FN82]. United States v. American Tel. & Tel. Co., 552 F. Supp. 131 (D.D.C. 1982), aff'd sub nom., Maryland v. United States, 460 U.S. 1001 (1983) [hereinafter MFJ].

[FN83]. TLP, supra note 6, at 510-13.

[FN84]. MFJ, 552 F. Supp. at 170-86.

[FN85]. Id. at 186-96.

[FN86]. TLP, supra note 6, at 513.

[FN87]. Please: you do not have to believe the underlying story. I'm not sure I do. AT&T may not have committed all these predatory acts. Even if it did, one BOC may not have the same opportunity to profitably prey, as I argue below. The point is only that the MFJ rested on this account of how AT&T acquired and maintained such size and breadth and on the assumption that the newly created BOCs would enjoy the same opportunities that AT&T had exploited.

[FN88]. Telecommunications Act of 1996, Pub. L. No. 104-104, sec. 101(a), s 251(a), 110 Stat. 56, 61-62 (adding 47 U.S.C. s 251(a)).

[FN89]. Id. sec. 101(a), s 251(b), 110 Stat. at 62 (to be codified at 47 U.S.C. s 251(b)).

[FN90]. Id. sec. 101(a), s 251(c)(1), 110 Stat. at 62 (to be codified at 47 U.S.C. s 251(c)(1)).

[FN91]. Id. sec. 101(a), s 251(c)(2), 110 Stat. at 62 (to be codified at 47 U.S.C. s 251(c)(2)).

[FN92]. Id. sec. 101(a), s 251(c)(3), 110 Stat. at 62-63 (to be codified at 47 U.S.C. s 251(c)(3)).

[FN93]. Id. sec. 101(a), s 251(c)(4), 110 Stat. at 63 (to be codified at 47 U.S.C. s 251(c)(4)).

[FN94]. Id. sec. 101(a), s 251(c)(6), 110 Stat. at 63 (to be codified at 47 U.S.C. s 251(c)(6)).

[FN95]. Id. sec. 101(a), s 251(b)(2), 110 Stat. at 62 (to be codified at 47 U.S.C. s 251(b)(2)).

[FN96]. Id. sec. 101(a), s 251(b)(3), 110 Stat. at 62 (to be codified at 47 U.S.C. s 251(b)(3)).

[FN97]. Id. sec. 101(a), s 251(b)(4), 110 Stat. at 62 (to be codified at 47 s U.S.C. s 251(b)(4)).

[FN98]. TLP, supra note 6, at 477-79, 485-89.

[FN99]. Telecommunications Act, sec. 151(a), 110 Stat. at 86.

[FN100]. MFJ, 552 F. Supp. 131, 86-91 (D.D.C 1982), aff'd sub nom., Maryland v. United States, 460 U.S. 1009 (1983).

[FN101]. Id. at 189-90.

[FN102]. United States v. Western Elec. Co., 993 F.2d 1572 (D.C. Cir.), cert. denied, 114 S. Ct. 487 (1993). So Nynex could not supply a stock quotation system for which it had assembled the data, but it could transmit a ticker service whose content was managed by others.

[FN103]. Id. at 1582.

[FN104]. Telecommunications Act, sec. 151(a), s 274(h), 110 Stat. at 103-05 (adding 47 U.S.C. s 274(h)).

[FN105]. The 1996 Act also addresses two lines of business not expressly covered by the MFJ. New section 275 regulates BOC provision of alarm monitoring services. Telecommunications Act, sec. 151 (a), s 275, 110 Stat. at 105-06 (to be codified at 47 U.S.C. s 275). New section 276 sets new ground rules for any Bell operating company that provides pay phone services. Id. sec. 151(a), s 276, 110 Stat. at 106-07 (to be codified at 47 U.S.C. s 276).

[FN106]. Id. sec. 151(a), s 275(a)(1), 110 Stat. at 105 (to be codified at 47 U.S.C. s 275(a)(1)).

[FN107]. Id. sec. 151(a), s 275(b)(1), 110 Stat. at 105 (to be codified at 47 U.S.C. s 275(b)(1)).

[FN108]. Id. sec. 151(a), s 275(b)(2), 110 Stat. at 105 (to be codified at 47 U.S.C. s 275(b)(2)).

[FN109]. Id. sec. 151(a), s 274(b), 110 Stat. at 106-07 (to be codified at 47 U.S.C. s 274(b)).

[FN110]. Id. sec. 151(a), s 274(g)(2), 110 Stat. at 94 (to be codified at 47 U.S.C. s 274(g)(2)).

[FN111]. Id. sec. 151(a), s 272(a)(2), 110 Stat. at 92 (to be codified at 47 U.S.C. s 272(a)(2)).

[FN112]. Id. sec. 151(a), s 272(f)(1), 110 Stat. at 94 (to be codified at 47 U.S.C. s 272(f)(1)).

[FN113]. See California v. FCC, 905 F.2d 1217, 1223-52 (9th Cir. 1990).

[FN114]. Telecommunications Act, sec. 151(a), s 271(a), 110 Stat. at 86 (to be codified at 47 U.S.C. s 271(a)).

[FN115]. Id. sec. 151(a), s 273(a), 110 Stat. at 95 (to be codified at 47 U.S.C. s 273(a)).

[FN116]. Id. sec. 151(a), s 271(c)(2)(B), 110 Stat. at 88-89 (to be codified at 47 U.S.C. s 271(c)(2)(B)).

[FN117]. Id. sec. 151(a), s 271(c)(2)(B)(iii), 110 Stat. at 88 (to be codified at 47 U.S.C. s 271(c)(2)(B)(iii)).

[FN118]. Id. sec. 151(a), s 271(c)(2)(B)(xi), 110 Stat. at 88 (to be codified at 47 U.S.C. s 271(c)(2)(B)(xi)).

[FN119]. Id. sec. 151(a), s 271(c)(2)(B)(vi), 110 Stat. at 88 (to be codified at 47 U.S.C. s 271(c)(2)(B)(vi)).

[FN120]. Id. sec. 151(a), s 271(d)(2)(A), 110 Stat. at 89 (to be codified at 47 U.S.C. s 271(d)(2)(A)).

[FN121]. Id. sec. 151(a), s 273(c), 110 Stat. at 95-96 (to be codified at 47 U.S.C. s 273(c)).

[FN122]. Recall that this was the principal regulatory strategy employed in the consent decree.

[FN123]. Mueller, supra note 17, at 355.

[FN124]. Most of the examples in this paragraph are discussed in TLP, supra note 6, at 467-68.

[FN125]. If the point is not intuitively obvious, suppose it costs $100 to string a telephone line one mile. Such a line might service one million people in Chicago, but only 10 people in the rural parts of Montana. If the latter are to receive phone service at the national average cost per home of stringing a wire to the home, then rural Montana residents will pay less than the costs of stringing a wire to them.

[FN126]. Telecommunications Act, sec. 101(a), s 254, 110 Stat. at 71-75 (adding 47 U.S.C. s 254).

[FN127]. Id. sec. 101(a), s 254(a)(1), 110 Stat. at 71 (to be codified at 47 U.S.C. s 254(a)(1)).

[FN128]. Id. sec. 101(a), s 254(b)(3), 110 Stat. at 72 (to be codified at 47 U.S.C. s 254(b)(3)).

[FN129]. Id. sec. 101(a), s 254(c)(1), 110 Stat. at 72 (to be codified at 47 U.S.C. s 254(c)(1)).

[FN130]. Id. sec. 101(a), s 254(b)(6), 110 Stat. at 72 (to be codified at 47 U.S.C. s 254(b)(6)).

[FN131]. Id. sec. 101(a), s 254(e), 110 Stat. at 73 (to be codified at 47 U.S.C. s 254(e)).

[FN132]. I beg every representative and senator who voted for this bill, and the President who signed

it, to forgive me for calling this thing by its correct name. The new Act, of course, does not employ the "T word."

[FN133]. Telecommunications Act, sec. 101(a), s 254(b)(4), 110 Stat. at 72, (to be codified at 47 U.S.C. s 254(b)(4)).

[FN134]. Id. sec. 101(a), s 254(d), 110 Stat. at 73 (to be codified at 47 U.S.C. s 254(d)).

[FN135]. Id. sec. 101(a), s 254(c)(1), 110 Stat. at 72 (to be codified at 47 U.S.C. s 254(c)(1)).

[FN136]. RBP, supra note 6, passim.

[FN137]. RBP, supra note 6, chs. 4, 5 & 9.

[FN138]. See, e.g., In re Inquiry into Section 73.1910 of the Comm'n's Rules and Regs. Concerning the General Fairness Doctrine Obligations of Brdcst. Licenses, Report, 102 F.C.C.2d 145, 58 Rad. Reg. 2d (P & F) 1137 (1985); In re Children's Television Programming and Advertising Practices, Report and Order, 96 F.C.C.2d 634, 55 Rad. Reg. 2d (P & F) 199 (1984).

[FN139]. Consider, for example, Congress's repeated efforts to legislate on "indecent" broadcasting, described in Action for Children's Television v. FCC, 11 F.3d 170 (D.C. Cir. 1993), vacated, 15 F.3d 186 (D.C. Cir. 1994).

[FN140]. RBP, supra note 6, ch. 7.

[FN141]. RBP, supra note 6, chs. 4 & 5.

[FN142]. Telecommunications Act of 1996, Pub. L. No. 104-104, secs. 501- 561, 110 Stat. 56, 133-43 (amending and adding to 47 U.S.C. s 223).

[FN143]. Id. sec. 502, s 223, 110 Stat. at 133-36 (to be codified at 47 U.S.C. s223).

[FN144]. As this Article was written, a three-judge federal district court held the Act unconstitutionally vague and an impermissible intrusion into the First Amendment rights of adults. See ACLU v. Reno, 929 F. Supp. 824 (E.D. Pa. 1996). The Justice Department has filed a notice of appeal to the Supreme Court. See Randall Mikkelsen, Internet Indecency Ruling Appealed to U.S. Supreme Court, Reuters North American Wire, July 2, 1996; Telecommunications Act, sec. 561(b), 110 Stat. at 143.

[FN145]. Telecommunications Act sec. 502(2), s 223(d)(1)(A)-(B), 110 Stat. at 133-34 (adding 47 U.S.C. s 223(d)(1)(A)-(B)).

[FN146]. Anywhere in the world?

[FN147]. Compare id. sec. 502, s 223(d)(1)(A), 110 Stat. at 134 with id. sec. 502, s 223(d)(1)(B), 110 Stat. at 134.

[FN148]. Id. sec. 502, s 223(e)(1), 110 Stat. at 134 (to be codified at 47 U.S.C. s 223(e)(1)).

[FN149]. See Smith v. California, 361 U.S. 147, 154 (1959).

[FN150]. The editors of this journal inform me that this article may be made available, in electronic form, to computer terminals here and abroad. Accordingly, I wish to say for the record that I assume that anyone reading this article, at least in electronic form, is, in fact, fully clothed while doing so. It is certainly not my intention to suggest, much less to incite, coed naked law review reading.

[FN151]. It is, I think, no accident that Blutarsky, the Quasimodo of Animal House, who responded to the classic battle cry, "This situation absolutely requires a really futile and stupid gesture be done on somebody's part!" with the immortal charge, "We're just the guys to do it!," was subsequently elected to the U.S. Senate.

[FN152]. Telecommunications Act, sec. 509, 110 Stat. at 137.

[FN153]. Id. sec. 509, s 230, 110 Stat. at 137 (to be codified at 47 U.S.C. s 230).

[FN154]. Id. sec. 509, s 230(c)(2)(A), 110 Stat. at 138 (to be codified at 47 U.S.C. s 230(c)(2)(A)).

[FN155]. See Michael I. Meyerson, Authors, Editors, and Uncommon Carriers: Identifying the "Speaker" Within the New Media, 71 Notre Dame L. Rev. 79, 114-15, 121-22 (1995).

[FN156]. For a good description of the boundaries of this protected right, see Cohen v. California, 403 U.S. 15, 21-22 (1971).

[FN157]. Telecommunications Act, sec. 505(a), s 641, 110 Stat. at 136 (adding 47 U.S.C. s 641(a)).

[FN158]. Id. sec. 506, ss 531(e), 532(c)(2), 110 Stat. at 136- 37 (amending 47 U.S.C. ss 531(e), 532(c)(2)). The extension to non-indecent nudity is interesting, but what this is supposed to mean escapes me entirely. To "contain ... nudity" must the program depict a completely nude person, portrayed as such from all sides and angles? If not, may the operator censor a program that depicts a baby being diapered? Or a teen-age girl not wearing shoes? One might say that "nudity" in this context must mean "erotic nudity." But, of course, there are pedophiles out there and some people do have foot fetishes. In any event, we are talking here about nudity that is neither obscene nor indecent, according to the statutory text.

[FN159]. Id. sec. 504, s 640(a), 110 Stat. at 136 (adding 47 U.S.C. s 640(a)).

[FN160]. Denver Area Educ. Telecomm. Consortium, Inc. v. FCC, 116 S. Ct. 2374 (1996).

[FN161]. Telecommunications Act, sec. 551, 110 Stat. at 139-42.

[FN162]. Id. sec. 551(a)(4), 110 Stat. at 140.

[FN163]. Id. sec. 551(a)(6), 110 Stat. at 140.

[FN164]. Id. sec. 551(a)(8), 110 Stat. at 140.

[FN165]. Id. sec. 551(b)(1), s 303, 110 Stat. at 140 (amending 47 U.S.C. s 303). Civil libertarians watch out! The notion that "indecency" encompasses more than "sexual" program material (unless meant only as a more polite way of incorporating depictions of excretion) is quite new to the law. What is this "other indecent material" that is neither violent nor sexual in nature, content or theme? See also note 158, supra.

[FN166]. Id. sec. 551(b)(1)-(2), 110 Stat. at 140-41 (adding 47 U.S.C. s 303(w)).

[FN167]. Id. sec. 551(e)(1), 110 Stat. at 142.

[FN168]. Id. sec. 551(e)(1)(A), 110 Stat. at 142.

[FN169]. Id. sec. 551(e)(1)(B), 110 Stat. at 142.

[FN170]. See Media Notes: TV Ratings Group Formed, Media Daily, Mar. 14, 1996, available in LEXIS, Market Library, Iacnws File. See also Paul Farhi, TV Execs Deliver Rating Plan to White House, Wash. Post, Mar. 1, 1996, at D1, D5.

[FN171]. Telecommunications Act, sec. 551(c), s 303(x), 110 Stat. at 141 (adding 47 U.S.C. s 303 (x)).

[FN172]. The "V" is for violence.

[FN173]. Telecommunications Act, sec. 204(b), s 308(d), 110 Stat. at 113 (adding 47 U.S.C. s 308 (d)) (requires all television licensees to keep and make public all complaints they receive concerning violent programming on their stations).

[FN174]. Thomas G. Krattenmaker & Lucas A. Powe, Jr., Converging First Amendment Principles for Converging Communications Media, 104 Yale L. J. 1719, 1726-32 (1995).

[FN175]. Id. (detailing the arguments set out in this paragraph)

[FN176]. By economic costs, I mean the costs (including opportunity costs) of resources employed in communicating, not necessarily the prices charged by (perhaps monopolistic) owners of those resources.

[FN177]. The attempted invocation here of the motion picture The Good, the Bad and the Ugly is deliberate. I find that movie complicated, dull, boring, and unintelligible. So would any English-speaking person, not trained in telecommunications law or practice, who reads the new Act. Accordingly, I think it is quite fair to ask (as did one of my students) of those of us who do find the new Act interesting (and somewhat readable) whether we need to "get a life."

[FN178]. TLP, supra note 6, at 105-15.

[FN179]. The data provided in this discussion are taken from TLP, supra note 6, at 442-60.

[FN180]. Belatedly, the FCC realized this problem and began to offer "upgrade incentives." These permitted cable operators to add channels and recover their costs so long as prices were kept down on existing channels. This provided little aid, of course, to systems that might wish to upgrade by offering better physical connections. And it essentially simply substituted rate of return regulation, a method whose ineffectiveness had supposedly led to the preference for price caps!

[FN181]. TLP, supra note 6, at 567-87.

[FN182]. See id. at 491-514.

[FN183]. Id. at 480.

[FN184]. Id. at 479-81.

[FN185]. Telecommunications Act of 1996, Pub. L. No. 104-104, sec. 201, s 336, 110 Stat. 56, 107 (to be codified at 47 U.S.C. s 336).

[FN186]. TLP, supra note 6, at 105-20.

[FN187]. For a discussion of the concept of a "natural monopoly" and its application to cable TV and to providing telephone service, see id. at 331- 32.

[FN188]. However, if telephone companies can operate cable systems more cheaply than conventional cable operators, then consumers will receive a long term benefit from telco entry that could be quite substantial.

[FN189]. See supra text at notes 187-88.

[FN190]. See, e.g., In re Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Notice of Proposed Rulemaking, CC Dkt. No. 96-98, 1996 FCC LEXIS 2063 (Apr. 19, 1996).

[FN191]. Telecommunications Act of 1996, Pub. L. No. 104-104, sec. 101(a), s 251, 110 Stat. 56, 61-66 (to be codified at 47 U.S.C. s 251). Some states have read section 252, added to the new Act, to commit this issue to the state regulatory commissions. I disagree with this view. I wish to note further that I have expressed this view, at the behest of a private client, to responsible persons at the FCC.

[FN192]. See Jon Van, High-Tech Bet: Cellular's Success Makes New Technology Seem a Surer Thing, Chi. Trib., Dec. 5, 1994, at C1, C4.

[FN193]. See supra text accompanying notes 99-122.

[FN194]. Telecommunications Act, sec. 151(a), s 272(a)(2)(B), 110 Stat. at 92 (to be codified at 47 U.S.C. s 272(a)(2)(B)).

[FN195]. Id. sec. 151(a), s 271(d)(3)(A), 110 Stat. at 89 (to be codified at 47 U.S.C. s 271(d)(3)(A)).

[FN196]. TLP, supra note 6, at 491-526.

[FN197]. Id. at 532-41.

[FN198]. Telecommunications Act, sec. 101(a), s 252, 110 Stat. at 66-70 (to be codified at 47 U.S.C. s 252). Of course, these arguments are not convincing if the BOCs are going to be permitted to merge among themselves to the point where only one or two of them remain.

[FN199]. TLP, supra note 6, at 29-35.

[FN200]. Id. at 35-36.

[FN201]. Of course, one does not really get spectrum from the FCC without incurring any cost. Rather, costs are incurred in different forms, such as filing fees and legal fees, for those seeking licenses to use the spectrum. These costs, however, are unlikely to amount to the full value of the spectrum use license, as Kwerel and Felker have demonstrated. Id. at 121-28.

[FN202]. Id. at 129.

[FN203]. Id. at 129-33.

[FN204]. Id. at 36-38.

[FN205]. The story of this spectrum misallocation and its effects on the number of stations and number and concentration of networks is laid out in summary form in MTV, supra note 6, at 12-20. A full version is in Thomas Schuessler, Structural Barriers to the Entry of Additional Television Networks: The Federal Communications Commission's Spectrum Management Policies, 54 S. Cal. L. Rev. 875 (1981). Perhaps it is not immediately obvious why cable had an impact on television station viability. Briefly, cable improves (indeed, virtually perfects) signal quality to the home. Station assignments that were impractical due to the comparatively poor signals they were authorized to transmit lost that handicap when cable was laid down in their areas. Because the number of TV networks is simply a function of the number and geographical distribution of viable TV stations, the growth of cable also helped fourth (Fox), fifth (Paramount), and sixth (Warner) TV networks to arise.

[FN206]. See TLP, supra note 6, at 93-96.

[FN207]. See MCI Telecomm. Corp. v. FCC (Execunet I), 561 F.2d 365 (D.C. Cir. 1977), cert. denied, 434 U.S. 1040 (1978).

[FN208]. Telecommunications Act of 1996, Pub. L. No. 104-104, sec. 101(a), s 254(d), 110 Stat. 56, 73 (to be codified at 47 U.S.C. s 254(d)).

[FN209]. Id. sec. 101(a), s 254(d)-(e), 110 Stat. at 73 (to be codified at 47 U.S.C. s 254(d)-(e)).

[FN210]. Perhaps then, it was not incompetence but brilliance that led the drafters of the new Act to define "telecommunications" to include the act of delivering a letter from its author to a recipient? See supra note 4.

[FN211]. TLP, supra note 6, at 477-78.

[FN212]. I am not trying to argue here that public interest regulation can never work. One might note, for example, that requiring seat belts in automobiles imposes a "competitively neutral" tax on auto makers. I agree and do not believe that this makes such a tax poor regulatory or market strategy. Rather, I believe the history of telecommunications regulation shows that the technology outruns the regulators and that, in these markets, the pro-social subsidies virtually always become competitive handicaps.

[FN213]. Herbert Hovenkamp, Federal Antitrust Policy: The Law of Competition and Its Practice 2-17 (1994).

[FN214]. Or, if you prefer, the market for selling ears and eyeballs to advertisers.

[FN215]. Telecommunications Act of 1996, Pub. L. No. 104-104, sec. 202(c)(1), 110 Stat. 56, 111 (modifying 47 C.F.R. s 73.3555). Helpfully, the limit is expressed in terms of the collective reach of those stations, not the simple number of them.

[FN216]. MTV, supra note 6, at 31-93.

[FN217]. NISS Vol. II, supra note 18, at 260-66.

[FN218]. FCC Rules would count such stations. TLP, supra note 6, at 276-77.

[FN219]. Hovenkamp, supra note 213, at 455-66.

[FN220]. Telecommunications Act, sec. 202(b)(1)(A), 110 Stat. at 110 (modifying 47 C.F.R. s 73.3555(a)).

[FN221]. Id. sec. 202(c)(1), 110 Stat. at 111 (modifying 47 C.F.R. s 73.3555).

[FN222]. RBP, supra note 6, passim.

[FN223]. Krattenmaker & Powe, supra note 174, passim.

[FN224]. Both the Communications Decency Act and the Parental Choice in Television Programming section are excellent examples of futile, wasteful regulation. Anyone who cares to think about it can figure out that no government official, bureau or commission can keep George Carlin's "Seven Dirty Words" off the Internet, no matter how much legislators (pretend to) wish they could.
Similarly, common sense shows that to encode all television programming for "sexual, violent, or other indecent material" is not a manageable task. The Motion Picture Association of America rates about 600 theatrical films, or about 1200 hours, every year. Let's compare the volume of television programming. Assume that a 70-channel cable system averages 20 hours of cablecasting per day. That's 1400 hours of programming every day. No one can intelligently, responsibly, accurately, and fairly encode 1400 hours of programming every day for "programming that contains sexual, violent, or other indecent material about which parents should be informed before it is displayed to children." See Telecommunications Act, sec. 551(b)(1), 110 Stat. at 140.

[FN225]. RBP, supra note 6, at 123.

[FN226]. To say that the claim is transparently preposterous, which it is, is not to say all that much in terms of Supreme Court jurisprudence. Remember, this is the Court that told us that a law that differentiated on the grounds of pregnancy did not distinguish between men and women, see Geduldig v. Aiello, 417 U.S. 484 (1974), and that a law requiring separate seating, by race, on public transportation facilities provided both blacks and whites the equal protection of the laws. See Plessy v. Ferguson, 163 U.S. 537 (1896).

[FN227]. See Wooley v. Maynard, 430 U.S. 705 (1977).

[FN228]. FCC Commissioner Susan Ness, Remarks at the Public Policy Forum Series, The Wharton School of the Univ. of Penn. (Feb. 22, 1996) (transcript available at <http://www.fcc.gov/Speeches/Ness/spsn604.txt>). Note, further, that a single rulemaking may well spawn dozens of individual rules. We are certainly looking at over 1,000 new FCC rules as a result of the new Act.

[FN229]. For some years now, a soft drink has promoted itself as "The Uncola." Perhaps we might call the new Act the "Un-deregulation bill."

[FN230]. TLP, supra note 6, 468-71.

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The United States Telecommunications Act of 1996

This act will significantly affect all players in the telecommunications industry. The first major legislative change since the original 1934 Act lays out a new regulatory landscape for the Information Age. By Joseph L. Gattuso.(*)

When President Clinton signed the Telecommunications Act of 1996 ("the Act" or "the 1996 Act")[(1)] into law on February 8, 1996, it represented the beginning of a new era in telecommunications regulation in the United States. As the most extensive and significant change in the basic U.S. law governing communications since the Communications Act of 1934 ("the 1934 Act"),[(2)] the new Act's passage represented a bipartisan consensus that advances in technology, as well as the success of regulatory models based on competition rather than monopoly, called for major changes in the regulation of telecommunications.

This law reflects a new thinking that service providers should not be limited by artificial and now antique regulatory categories, but should be permitted to compete with each other in a robust marketplace that contains many diverse participants. Moreover, the Act evidences a renewed government commitment to making sure that all citizens have access to advanced communications services at affordable prices through its "universal service" provisions, even as competitive markets for telecommunications services expand.

The law was immediately hailed as a landmark and the beginning of a new era of innovation, investment, and inclusion. As President Clinton said when he signed the bill:

> *This law is truly revolutionary legislation that will bring the future to our doorstep. . . . This historic legislation in my way of thinking really embodies what we ought to be about as a country and what we ought to be about in this city. It clearly enables the age of possibility in America to expand to include more Americans. It will create many, many high-wage jobs. It will provide for more information and more entertainment to virtually every American home. It embodies our best values by supporting . . . market reforms . . . as well as the V-chip. And it brings us together, and it was passed by people coming together.*[(3)]

Prior to passage of this new Act, U.S. federal and state laws and a judicially established consent decree allowed some competition for certain services, most notably among long distance carriers. Universal service for basic telephony was a national objective, but one developed and shaped through federal and state regulations and case law. The goal of universal service was referred to only in general terms in the Communications Act of 1934, the nation's basic telecommunications statute.

The Telecommunications Act of 1996 among other things: i) opens up competition by local telephone companies, long distance providers, and cable companies with each other; and ii) reconfirms the U.S. commitment to universal service -- in part by helping connect all school classrooms, libraries, and hospitals to the information superhighway by the end of this decade. Additional provisions include those giving families control of the television programming that comes into their homes through the use of "V-Chip" technology, and prevent undue concentration in television and radio ownership so that a diversity of voices and viewpoints can continue to flourish, through modified ownership limits.

The response in telecommunications markets was seen immediately after the new Act was signed into law. Four of the seven Bell regional holding companies announced proposed mergers: Bell Atlantic acquired NYNEX, and SBC acquired Pacific Telesis. The passage of time brought more mergers among the Bell companies and other local carriers -- Bell Atlantic/GTE and SBC/Ameritech are among those pending -- and among other leading U.S. firms, such as AT&T and the video cable giant, TCI. The merger wave shows no signs of abating.

Some of these transactions are directly attributable to regulatory changes effected by the 1996 Act. Others are more likely a reflection of firms attempts to prepare themselves for the more competitive market environment that will be spawned by full implementation of the 1996 Act, the increasing convergence of services and markets, and the continuing globalization of economic markets.

Mergers, however, were only the earliest and most visible industry developments following passage of the Act. The larger and more long term effects will come over time as the many provisions of the Act are implemented. These effects may defy prediction. For example, some observers early on expected cable television firms to lead the way to local competition through upgrades in their networks, but activity in this area has been spare. To the surprise of some, wireless firms have moved quickly to develop "wireless local loop" and other wireless technologies that compete with traditional wireline telephony in urban as well as rural markets.

The U.S. Federal Communications Commission (FCC), working with state governments, was immersed in the process of promulgating regulations required to implement the provisions of the Act. The FCC has focused its attention on a triad of implementation issues -- those involving interconnection, access, and Universal Service. Since passage of the Act, the FCC has seen its interconnection and Universal Service orders challenged successfully in the U.S. courts, and its access rules upheld.

Ultimately, however, it is not the law and government agencies that will bring new telecommunications and information services to the public. That is the job of private industry. The law will help shape a competitive arena open to all providers and provide safeguards to ensure the fairness of that competition.

The Telecommunications Act of 1996 is an extensive document that affects a large number of telecommunications sectors. The committee print of the law runs well over one hundred pages. This short article will review and summarize the more significant of those provisions, describing how they change existing law and the status of their implementation as of the time this article was written. A complete review of all of the law's provisions in a short article is not practical and the reader would be advised to refer to more lengthy analyses.(4)

Scope and Content of the New Law

One common misperception is that the 1996 Act completely supplanted the foundational law of communications in the United States, the Communications Act of 1934. Despite the new Act's length and breadth, most of 1934 Act remains in full force and effect. For example, there were essentially no changes to the 1934 Act's "Title I" provisions, which established and still govern the operations of the FCC, and relatively few changes to those provisions of "Title III," which govern broadcasting. The Act did, however, make extensive revisions to the "Title II" provisions regarding common carriers and repealed the judicial 1982 AT&T consent decree (often referred to as the "modification of final judgment" or "MFJ") that effectuated the breakup of AT&T's Bell System.(5) Furthermore, it made a host of other changes to existing law and adds new provisions regarding, among other things, broadcasting, cable television, and the Internet.

Promoting Local Exchange Competition

To promote competition for local telephone service, the Act contains provisions to encourage competitors to provide local service.(6) No state or local government may prohibit any entity from providing telecommunications services.(7) Although prior law imposed a general interconnection duty on common carriers, the Act now requires local telephone companies: 1) *to interconnect* their network facilities with the networks of competing telecommunications carriers(8) at "any technically feasible point and on just, reasonable, and non-discriminatory terms"; 2) *to unbundle* their services into their constituent network elements and make those elements available to competing telecommunications carriers on just, reasonable, and non-discriminatory terms, and 3) *to provide for resale* of any of their retail services to other telecommunications carriers at a reasonable discount to consumers.

The act requires that local exchange carriers' interconnection, unbundling and resale obligations be made via negotiated agreements with other carriers. Interconnection agreements negotiated between a local exchange carrier and other telecommunications carriers must be approved by a state within the Act's deadlines. If a state fails to take action, the FCC can assume the responsibilities of the state. If the parties cannot agree, state regulatory commissions may arbitrate and resolve disputed issues.

The FCC adopted regulations on 8 August 1996 to implement these provisions, but the rules concerning the pricing of interconnection and unbundled network elements were challenged in court by local telephone companies and state regulatory commissions. Eventually, the court reviewing these matters rejected the FCC's regulations, holding that the 1996 Act authorizes the governments of the various states through their regulatory commissions -- and not the FCC -- to determine the prices for interconnection, unbundled network elements, and resold services, in cases where the parties cannot agree. The U.S. Supreme Court will review the lower court decision in October, 1998. Meanwhile, private parties have continued to negotiate interconnection agreements (subject to state commission review). Moreover, many state commissions have adopted the FCC's pricing rules in setting rates for interconnection, unbundled network elements, and resold services.

Unleashing Local Exchange Carriers into New Markets

The 1982 AT&T consent decree was the culmination of an anti-trust court action pursued by the U.S. Government against monopolistic practices of the Bell System. The consent decree, agreed to by the Government and AT&T, required AT&T to spin-off its affiliated Bell operating companies, which were put under the ownership and control of seven regional holding companies. However, because of concerns over the possibility of discriminatory practices or improper cross-subsidization between regulated and unregulated markets, the decree barred the Bell companies from certain lines of business, most notably long distance service.(9)

The new Act contains provisions to allow local exchange carriers into other markets, but subject to regulatory constraints:

Long Distance.(10) A Bell company may apply to the FCC for authorization to provide in-region long distance services if it has entered into an approved interconnection agreement and meets the requirements of a "competitive checklist" and other requirements in the Act. The FCC may approve the authorization if the company meets these requirements and the authorization is in the public interest. The company must provide such service through a separate affiliate for three years after enactment. The company may also, upon enactment, provide out-of-region and incidental long distance services, as well as already authorized long distance services. Nevertheless, although Bell companies have requested that FCC authorization to provide long distance services originating within a state, the FCC has yet to find that any Bell company has met the requirements above.

Video Services (Cable Television)(11) *The Act gives telephone companies the option of providing video programming on a common carrier basis or as a conventional cable television operator. If it chooses the former, the telephone company will face less regulation but will also have to comply with FCC regulations requiring what the Act refers to as "open video systems." The Act generally bars, with certain exceptions including most rural areas, acquisitions by telephone companies of more than a 10 percent interest in cable operators (and vice versa) and joint ventures between telephone companies and cable systems serving the same areas.*

There has been little development in this area since passage of the Act in 1996. Despite early optimism, open video systems have not materialized. Companies such as Time Warner and Pacific Telesis (now part of SBC) have discontinued their market trials of open video systems.

Universal Service

The goal of universal service, that is, the availability of basic communications services to the public at just, reasonable, and affordable rates, has been a significant cornerstone of U.S. communications policy at the federal and state levels for over 50 years.(12) *The Act makes this goal explicit for the first time in the national law and requires the federal government, through the FCC, to work with states to make changes to the definition* (14)

Because universal service is an objective of the various state governments as well as the federal government, the Act directed the FCC to institute a Federal-State Joint Board to develop recommendations on defining and funding universal service, and enumerates several principles (such as nature of access, service quality, and affordable rates) to guide the deliberations. The Joint Board issued a wide-ranging "Recommended Decision" in late 1996, that the FCC in May, 1997 adopted in large part.

The FCC's action reflects new thinking on Universal Service in the United States. The new Universal Service includes support for high-cost areas, low income households, and for the first time, key institutions in education and health care that otherwise might not be able to meaningfully participate in the information age.

Of great importance to the Clinton Administration, the Act seeks to ensure that schools and libraries (and -- to a lesser extent -- rural health care facilities) become connected to the national information infrastructure (NII) through preferential rates for services as defined by the FCC. This program, popularly called the "E-Rate," is intended to provide basic communications as well as Internet connections to classrooms throughout the country. Upon request, all telecommunications carriers must provide discounted service to schools (kindergarten through twelfth grade), libraries, and rural and non-profit health care facilities, at preferential rates. The Act directs funding of this program to be by telecommunications providers. The FCC has capped funding at $2.25 billion.

Recently, the E-rate program was challenged as an unprecedented extension of the Universal Service concept. Legislation is being considered in Congress to significantly modify the current FCC program by replacing it with a new NTIA grant program which would become subject to the annual appropriations process. The likely funding source would be through some portion of the existing 3% excise tax. Nevertheless, as of the time this article was written the program is scheduled to begin disbursements by the Fall of 1998.

Broadcast Services

The law as it existed prior to passage of the new Act contained certain restrictions on the ownership of broadcast stations in order to protect localism and the diversity of voices reaching people through the media. The new Act contains provisions that loosen those restrictions. The Act eliminates a national ownership cap for radio stations that the FCC had established and modifies local radio ownership limits.(15) The Act increases the national audience reach for television station ownership to 35 percent from 25 percent.(16) In addition, the Act requires the FCC to conduct a rulemaking to determine whether local television ownership limitations should be modified or eliminated. Further, the Act eliminates the FCC's network-cable cross ownership rule and the statutory broadcast station-cable cross ownership restriction, but retains the FCC's regulatory broadcast-cable and broadcast-newspaper ownership bans. The Act extends radio and television license terms to eight years and loosens rules on license renewal, eliminating the need for comparative hearing in most cases. The FCC is currently conducting a rulemaking on these issues.

The Act also affects the licensing of advanced next generation television service ("ATV"; also referred to, depending on context as, "digital television (DTV)" or "high-definition television (HDTV)"). Although the Act did not mandate the FCC to limit eligibility for ATV licenses to existing television broadcasters, it strongly encouraged the FCC to do so. This language essentially precluded the use of an open auction to select ATV licensees other than existing broadcasters. The FCC has now begun to award ATV licenses, with service to begin in the Fall of 1998. Congressional action in 1997 requires that broadcasters surrender their existing "analog" licenses by 2002, unless a large portion of the viewing public does not have digital television by then.

Another provision of the Act gives the ATV licensees the flexibility to use their spectrum for services other than ATV broadcasting -- such as non-broadcast services. A licensee that for any such service receives a fee or other compensation must in turn pay a fee to the FCC based on the market value of the spectrum used for these "pay" services.(17)

Obscenity and Violence

Services provided via the Internet and other computer networks are generally not subject to broadcast or telecommunications regulations. The 1996 Act, however, contained provisions generally known as the Communications Decency Act, which in part criminalized the transmission or making available of obscene or indecent material over the Internet under some circumstances. It provided certain "good faith" defenses for on-line services and users. Nevertheless, provisions of the Communications Decency Act were successfully challenged in the courts as a violation of the right to freedom of speech under the First Amendment to the United States Constitution. The Supreme Court struck down that portion of the Act that criminalized material "harmful to minors," which is a test of indecency, although it let stand the provisions against obscene materials. There is now more focus on self-regulation and user control rather than heavy government regulation, as an effective way to deal with offensive content or content considered inappropriate for children.

To address violence on television and to give viewers greater control over the television programming they receive, the Act required television manufacturers, within two years of enactment, to include blocking technology (the "V-chip") in all television sets. The Act encouraged the broadcast and cable industries to create a voluntary rating system within one year, which it did. Currently, all major networks with the exception of one display ratings for their programming. The ratings system is similar
to that developed and used for many years by the motion picture industry. When V-chip technology is incorporated into television receivers, the use of ratings would remain voluntary, but any rating must be sent electronically. The V-chip, like the self-regulation of the internet, is a way to let users decide what information they will receive or not receive.

Conclusion

The Telecommunications Act of 1996 was a historic change in the basic U.S. law governing communications. The new law is expected to bring radical changes to the provision of services to the public, as competition for these services develops among all telecommunications providers. At the same time, the law takes steps to ensure that advanced telecommunications services are available to all citizens, as part of the policy of universal service. The FCC and the states, as the regulatory bodies, implement the law.

In the almost three years since the law was passed, some people have questioned whether the law was a success or a failure. Critics express disappointment that

extensive competition did not come or come quickly enough, and that the most visible effects were the many mergers of industry giants. Others, however, see in the corporate realignments an entirely new telecommunications industry. Despite almost three years having gone by, it is still too early to tell whether mergers and other developments represent a good or bad trend. The future, perhaps, may not be as simple as local vs. long distance telephony service, or telephony vs. cable, but instead be in end-to-end services through companies with competing technologies. Ultimately, the services brought to the public will depend on the providers of those services and their success in the marketplace.

Endnotes

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1. *Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56, codified throughout Title 47 of the United States Code ('47 U.S.C.').*
2. *Communications Act of 1934, 48 Stat. 1064, codified throughout 47 U.S.C.*
3. *President William J. Clinton, Remarks by the President at the Signing Ceremony for the Telecommunications Act Conference Report (Feb. 8, 1996) [Transcript available at the White House World Wide Web Site, http://www.whitehouse.gov /WH/EOP/OP/telecom/release.html.]*
4. *For a critique of the act, see, e.g., Thomas G. Krattenmaker, The Telecommunications Act of 1996, 49 Fed. Comm. Law Journal 1 (1997). A more extensive collection of material regarding the Act and its history can be found in Leon T. Knauer, Ronald K. Machtley, and Thomas M. Lynch, Eds., Telecommunications Act Handbook: A Complete Reference for Business, Government Institutes, Inc. (1996).*
5. *See, e.g., 47 U.S.C. §153 (3); United States v. Western Electric Co., Inc., 797 F.2d 1082 (D.C. Cir. 1986); National Telecommunications and Information Administration, U.S. Dep't of Commerce, Spec. Pub. No. 91-26, The NTIA Infrastructure Report (Oct. 1991); Knauer, Machtley and Lynch, supra note 4, at 18.*
6. *See generally, 47 U.S.C. §§251, 252. Certain exceptions from these requirements are allowed for rural local exchange carriers and those with fewer than two percent of the Nation's subscriber lines.*
7. *47 U.S.C. §253. Limited, non-discriminatory exceptions to this rule are allowed for certain State and local government activities related to public rights-of-way, consumer protection, and other similar issues.*
8. *Under the act, the term 'telecommunications carrier' is defined broadly to mean 'any provider of telecommunications services, except that such term does not include aggregators of telecommunications services (citation omitted).' 47 U.S.C. §153(44).*
9. *See supra note 5.*
10. *See 47 U.S.C. §§271, 272.*
11. *See 47 U.S.C. §§571 through 573.*
12. *Section 1 of the 1934 Act stated a National policy 'to make available, so far as possible, to all the people of the United States, a rapid, efficient, nationwide, and world-wide . . . communication service with adequate facilities at reasonable charges.' (47 U.S.C. §151). The process of fulfiling the universal service obligation has involved the expansion of telephone service into unserved areas and the maintenance of local rates at affordable levels. Government policies have played an important role in this process both through direct assistance, such as loan programmes, and regulatory policies that have provided subsidies for certain services (e.g., residential local exchange), areas of the country (e.g., high cost), and recently, subscribers (e.g., low income). For a history of universal service policy in the United States, see, e.g., The NTIA Infrastructure Report, or Knauer, Machtley and Lynch, both supra note 4.*
13. *See 47 U.S.C. 254.*
14. *See 47 U.S.C. §255.*
15. *See Act, § 202(a), modifying 47 C.F.R. §73.3555, and § 202(b).*
16. *See Act, §§ 202 (c) through (i).*
17. *See 47 U.S.C. §336.*

FCC 96-325

Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Implementation of the Local Competition Provisions in the Telecommunications Act of 1996	)	CC Docket No. 96-98
	)	
Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers	)	CC Docket No. 95-185

FIRST REPORT AND ORDER

Adopted: August 1, 1996 Released: August 8, 1996

By the Commission: Chairman Hundt and Commissioners Quello, Ness, and Chong issuing separate statements.

Table of Contents

I. INTRODUCTION, OVERVIEW, AND EXECUTIVE SUMMARY

A. The Telecommunications Act of 1996 - A New Direction

1. The Telecommunications Act of 1996[1] fundamentally changes telecommunications regulation. In the old regulatory regime government encouraged monopolies. In the new regulatory regime, we and the states remove the outdated barriers that protect monopolies from competition and affirmatively promote efficient competition using tools forged by Congress. Historically, regulation of this industry has been premised on the belief that service could be provided at the lowest cost to the maximum number of consumers through a regulated monopoly network. State and federal regulators devoted their efforts over many decades to regulating the prices and practices of these monopolies and protecting them against competitive entry. The 1996 Act adopts precisely the opposite approach. Rather than shielding telephone companies from competition, the 1996 Act requires telephone companies to open their networks to competition.

2. The 1996 Act also recasts the relationship between the FCC and state commissions responsible for regulating telecommunications services. Until now, we and our state counterparts generally have regulated the jurisdictional segments of this industry assigned to each of us by the Communications Act of 1934. The 1996 Act forges a new partnership between state and federal regulators. This arrangement is far better suited to the coming world of competition in which historical regulatory distinctions are supplanted by competitive forces. As this Order demonstrates, we have benefitted enormously from the expertise and experience that the state commissioners and their staffs have contributed to these discussions. We look forward to the continuation of that cooperative working relationship in the coming months as each of us carries out the role assigned by the 1996 Act.

3. Three principal goals established by the telephony provisions of the 1996 Act are: (1) opening the local exchange and exchange access markets to competitive entry; (2) promoting increased competition in telecommunications markets that are already open to competition, including the long distance services market; and (3) reforming our system of universal service so that universal service is preserved and advanced as the local exchange and exchange access markets move from monopoly to competition. In this rulemaking and related proceedings, we are taking the steps that will achieve the pro-competitive, deregulatory goals of the 1996 Act. The Act directs us and our state colleagues to remove not only statutory and regulatory impediments to competition, but economic and operational impediments as well. We are directed to remove these impediments to competition in all

[1] Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 *to be codified at* 47 U.S.C. §§ 151 *et. seq.* Hereinafter, all citations to the 1996 Act will be to the 1996 Act as codified in the United States Code.

telecommunications markets, while also preserving and advancing universal service in a manner fully consistent with competition.

4. These three goals are integrally related. Indeed, the relationship between fostering competition in local telecommunications markets and promoting greater competition in the long distance market is fundamental to the 1996 Act. Competition in local exchange and exchange access markets is desirable, not only because of the social and economic benefits competition will bring to consumers of *local* services, but also because competition eventually will eliminate the ability of an incumbent local exchange carrier to use its control of bottleneck local facilities to impede free market competition. Under section 251, incumbent local exchange carriers (LECs), including the Bell Operating Companies (BOCs), are mandated to take several steps to open their networks to competition, including providing interconnection, offering access to unbundled elements of their networks, and making their retail services available at wholesale rates so that they can be resold. Under section 271, once the BOCs have taken the necessary steps, they are allowed to offer long distance service in areas where they provide local telephone service, if we find that entry meets the specific statutory requirements and is consistent with the public interest. Thus, under the 1996 Act, the opening of one of the last monopoly bottleneck strongholds in telecommunications -- the local exchange and exchange access markets -- to competition is intended to pave the way for enhanced competition in *all* telecommunications markets, by allowing all providers to enter all markets. The opening of all telecommunications markets to all providers will blur traditional industry distinctions and bring new packages of services, lower prices and increased innovation to American consumers. The world envisioned by the 1996 Act is one in which all providers will have new competitive opportunities as well as new competitive challenges.

5. The Act also recognizes, however, that universal service cannot be maintained without reform of the current subsidy system. The current universal service system is a patchwork quilt of implicit and explicit subsidies. These subsidies are intended to promote telephone subscribership, yet they do so at the expense of deterring or distorting competition. Some policies that traditionally have been justified on universal service considerations place competitors at a disadvantage. Other universal service policies place the incumbent LECs at a competitive disadvantage. For example, LECs are required to charge interexchange carriers a Carrier Common Line charge for every minute of interstate traffic that any of their customers send or receive. This exposes LECs to competition from competitive access providers, which are not subject to this cost burden. Hence, section 254 of the Act requires the Commission, working with the states and consumer advocates through a Federal/State Joint Board, to revamp the methods by which universal service payments are collected and disbursed.[2] The present universal service system is incompatible with the statutory mandate to introduce efficient competition into local markets, because the current system distorts competition in those markets. For example,

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[2] *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Notice of Proposed Rulemaking and *Order Establishing Joint Board*, FCC 96-93 (rel. Mar. 8, 1996) (*Universal Service NPRM*).

without universal service reform, facilities-based entrants would be forced to compete against monopoly providers that enjoy not only the technical, economic, and marketing advantages of incumbency, but also subsidies that are provided only to the incumbents.

B. The Competition Trilogy: Section 251, Universal Service Reform and Access Charge Reform

6. The rules that we adopt to implement the local competition provisions of the 1996 Act represent only one part of a trilogy. In this Report and Order, we adopt initial rules designed to accomplish the first of the goals outlined above -- opening the local exchange and exchange access markets to competition. The steps we take today are the initial measures that will enable the states and the Commission to begin to implement sections 251 and 252. Given the dynamic nature of telecommunications technology and markets, it will be necessary over time to review proactively and adjust these rules to ensure both that the statute's mandate of competition is effectuated and enforced, and that regulatory burdens are lifted as soon as competition eliminates the need for them. Efforts to review and revise these rules will be guided by the experience of states in their initial implementation efforts.

7. The second part of the trilogy is universal service reform. In early November, the Federal/State Universal Service Joint Board, including three members of this Commission, will make its recommendations to the Commission. These recommendations will serve as the cornerstone of universal service reform. The Commission will act on the Joint Board's recommendations and adopt universal service rules not later than May 8, 1997, and, we hope, even earlier. Our universal service reform order, consistent with section 254, will rework the subsidy system to guarantee affordable service to all Americans in an era in which competition will be the driving force in telecommunications. By reforming the collection and distribution of universal service funds, the states and the Commission will also ensure that the goals of affordable service and access to advanced services are met by means that enhance, rather than distort, competition. Universal service reform is vitally connected to the local competition rules we adopt today.

8. The third part of the trilogy is access charge reform. It is widely recognized that, because a competitive market drives prices to cost, a system of charges which includes non-cost based components is inherently unstable and unsustainable. It also well-recognized that access charge reform is intensely interrelated with the local competition rules of section 251 and the reform of universal service. We will complete access reform before or concurrently with a final order on universal service.

9. Only when all parts of the trilogy are complete will the task of adjusting the regulatory framework to fully competitive markets be finished. Only when our counterparts at the state level complete implementing and supplementing these rules will the complete blueprint for competition be in

place. Completion of the trilogy, coupled with the reduction in burdensome and inefficient regulation we have undertaken pursuant to other provisions of the 1996 Act, will unleash marketplace forces that will fuel economic growth. Until then, incumbents and new entrants must undergo a transition process toward fully competitive markets. We will, however, act quickly to complete the three essential rulemakings. We intend to issue a notice of proposed rulemaking in 1996 and to complete the access charge reform proceeding concurrently with the statutory deadline established for the section 254 rulemaking. This timetable will ensure that actions taken by the Joint Board in November and this Commission by not later than May 1997 in the universal service reform proceeding will be coordinated with the access reform docket.

C. Economic Barriers

10. As we pointed out in our Notice of Proposed Rulemaking in this docket[3], the removal of statutory and regulatory barriers to entry into the local exchange and exchange access markets, while a necessary precondition to competition, is not sufficient to ensure that competition will supplant monopolies. An incumbent LEC's existing infrastructure enables it to serve new customers at a much lower incremental cost than a facilities-based entrant that must install its own switches, trunking and loops to serve its customers.[4] Furthermore, absent interconnection between the incumbent LEC and the entrant, the customer of the entrant would be unable to complete calls to subscribers served by the incumbent LEC's network. Because an incumbent LEC currently serves virtually all subscribers in its local serving area,[5] an incumbent LEC has little economic incentive to assist new entrants in their efforts to secure a greater share of that market. An incumbent LEC also has the ability to act on its incentive to discourage entry and robust competition by not interconnecting its network with the new entrant's network or by insisting on supracompetitive prices or other unreasonable conditions for terminating calls from the entrant's customers to the incumbent LEC's subscribers.

11. Congress addressed these problems in the 1996 Act by mandating that the most significant economic impediments to efficient entry into the monopolized local market must be removed. The incumbent LECs have economies of density, connectivity, and scale; traditionally, these have been viewed as creating a natural monopoly. As we pointed out in our NPRM, the local competition provisions of the Act require that these economies be shared with entrants. We believe they should be shared in a way that permits the incumbent LECs to maintain operating efficiency to further fair competition, and to enable the entrants to share the economic benefits of that efficiency in the form of

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[3] *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, Notice of Proposed Rulemaking, FCC 96-182 (rel. Apr. 19, 1996), 61 Fed. Reg. 18311 (Apr. 25, 1996) (NPRM).

[4] *See* NPRM at para. 6.

[5] *See* NPRM at n.13.

cost-based prices.[6] Congress also recognized that the transition to competition presents special considerations in markets served by smaller telephone companies, especially in rural areas.[7] We are mindful of these considerations, and know that they will be taken into account by state commissions as well.

12. The Act contemplates three paths of entry into the local market -- the construction of new networks, the use of unbundled elements of the incumbent's network, and resale. The 1996 Act requires us to implement rules that eliminate statutory and regulatory barriers and remove economic impediments to each. We anticipate that some new entrants will follow multiple paths of entry as market conditions and access to capital permit. Some may enter by relying at first entirely on resale of the incumbent's services and then gradually deploying their own facilities. This strategy was employed successfully by MCI and Sprint in the interexchange market during the 1970's and 1980's. Others may use a combination of entry strategies simultaneously -- whether in the same geographic market or in different ones. Some competitors may use unbundled network elements in combination with their own facilities to serve densely populated sections of an incumbent LEC's service territory, while using resold services to reach customers in less densely populated areas. Still other new entrants may pursue a single entry strategy that does not vary by geographic region or over time. Section 251 neither explicitly nor implicitly expresses a preference for one particular entry strategy. Moreover, given the likelihood that entrants will combine or alter entry strategies over time, an attempt to indicate such a preference in our section 251 rules may have unintended and undesirable results. Rather, our obligation in this proceeding is to establish rules that will ensure that all pro-competitive entry strategies may be explored. As to success or failure, we look to the market, not to regulation, for the answer.

13. We note that an entrant, such as a cable company, that constructs its own network will not necessarily need the services or facilities of an incumbent LEC to enable its own subscribers to communicate with each other. A firm adopting this entry strategy, however, still will need an agreement with the incumbent LEC to enable the entrant's customers to place calls to and receive calls from the incumbent LEC's subscribers.[8] Sections 251(b)(5) and (c)(2) require incumbent LECs to enter into such agreements on just, reasonable, and nondiscriminatory terms and to transport and terminate traffic originating on another carrier's network under reciprocal compensation arrangements. In this item, we adopt rules for states to apply in implementing these mandates of section 251 in their arbitration of interconnection disputes, as well as their review of such arbitrated arrangements, or a BOC's statement of generally available terms. We believe that our rules will assist the states in carrying out their

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[6] *See* NPRM at paras. 10-12.

[7] 47 U.S.C. § 251(f).

[8] *See infra*, Section IV.A.

responsibilities under the 1996 Act, thereby furthering the Act's goals of fostering prompt, efficient, competitive entry.

14. We also note that many new entrants will not have fully constructed their local networks when they begin to offer service.[9] Although they may provide some of their own facilities, these new entrants will be unable to reach all of their customers without depending on the incumbent's facilities. Hence, in addition to an arrangement for terminating traffic on the incumbent LEC's network, entrants will likely need agreements that enable them to obtain wholesale prices for services they wish to sell at retail and to use at least some portions of the incumbents' facilities, such as local loops and end office switching facilities.

15. Congress recognized that, because of the incumbent LEC's incentives and superior bargaining power, its negotiations with new entrants over the terms of such agreements would be quite different from typical commercial negotiations. As distinct from bilateral commercial negotiation, the new entrant comes to the table with little or nothing the incumbent LEC needs or wants. The statute addresses this problem by creating an arbitration proceeding in which the new entrant may assert certain rights, including that the incumbent's prices for unbundled network elements must be "just, reasonable and nondiscriminatory."[10] We adopt rules herein to implement these requirements of section 251(c)(3).

D. Operational Barriers

16. The statute also directs us to remove the existing operational barriers to entering the local market. Vigorous competition would be impeded by technical disadvantages and other handicaps that prevent a new entrant from offering services that consumers perceive to be equal in quality to the offerings of incumbent LECs. Our recently-issued number portability Report and Order addressed one of the most significant operational barriers to competition by permitting customers to retain their phone numbers when they change local carriers.[11]

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[9] Joint Managers' Statement, S. Conf. Rep. No. 104-230, 104th Cong., 2d Sess. 113 (1996) ("Joint Explanatory Statement") at 121.

[10] *See* 47 U.S.C.§ 251(c)(3)

[11] *Telephone Number Portability* CC Docket No. 95-116, First Report and Order and Further Notice of Proposed Rulemaking, FCC 96-286 (rel. July 2, 1996) (*Number Portability Order*). Consistent with the 1996 Act, 47 U.S.C. §251(b)(2), we required LECs to implement interim and long-term measures to ensure that customers can change their local service providers without having to change their phone number. Number portability promotes competition by making it less expensive and less disruptive for a customer to switch providers, thus freeing the customer to choose the local provider that offers the best value.

17. Closely related to number portability is dialing parity, which we address in a companion order.[12] Dialing parity enables a customer of a new entrant to dial others with the convenience an incumbent provides, regardless of which carrier the customer has chosen as the local service provider. The history of competition in the interexchange market illustrates the critical importance of dialing parity to the successful introduction of competition in telecommunications markets. Equal access enabled customers of non-AT&T providers to enjoy the same convenience of dialing "1" plus the called party's number that AT&T customers had. Prior to equal access, subscribers to interexchange carriers (IXCs) other than AT&T often were required to dial more than 20 digits to place an interstate long-distance call. Industry data show that, after equal access was deployed throughout the country, the number of customers using MCI and other long-distance carriers increased significantly.[13] Thus, we believe that equal access had a substantial pro-competitive impact. Dialing parity should have the same effect.

18. This Order addresses other operational barriers to competition, such as access to rights of way, collocation, and the expeditious provisioning of resale and unbundled elements to new entrants. The elimination of these obstacles is essential if there is to be a fair opportunity to compete in the local exchange and exchange access markets. As an example, customers can voluntarily switch from one interexchange carrier to another extremely rapidly, through automated systems. This has been a boon to competition in the interexchange market. We expect that moving customers from one local carrier to another rapidly will be essential to fair local competition.

19. As competition in the local exchange market emerges, operational issues may be among the most difficult for the parties to resolve. Thus, we recognize that, along with the state commissions and the courts, we will be called upon to enforce provisions of arbitrated agreements and our rules relating to these operational barriers to entry. Because of the critical importance of eliminating these barriers to the accomplishment of the Act's pro-competitive objectives, we intend to enforce our rules in a manner that is swift, sure, and effective. To this end we will review, with the states, our enforcement techniques during the fourth quarter of 1996.

20. We recognize that during the transition from monopoly to competition it is vital that we and the states vigilantly and vigorously enforce the rules that we adopt today and that will be adopted in the future to open local markets to competition. If we fail to meet that responsibility, the actions that we take today to accomplish the 1996 Act's pro-competitive, deregulatory objectives may prove to be ineffective.

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[12] NPRM paras. 202-219.

[13] Federal Communications Commission, STATISTICS OF COMMUNICATIONS COMMON CARRIERS 1994-95, at 344, Table 8.8; Federal Communications Commission, REPORT ON LONG DISTANCE MARKET SHARE, Second Quarter 1995, at 14, table 6 (Oct. 1995).

E. Transition

21. We consider it vitally important to establish a "pro-competitive, deregulatory national policy framework"[14] for local telephony competition, but we are acutely mindful of existing common carrier arrangements, relationships, and expectations, particularly those that affect incumbent LECs. In light of the timing issues described above, we think it wise to provide some appropriate transitions.

22. In this regard, this Order sets minimum, uniform, national rules, but also relies heavily on states to apply these rules and to exercise their own discretion in implementing a pro-competitive regime in their local telephone markets. On those issues where the need to create a factual record distinct to a state or to balance unique local considerations is material, we ask the states to develop their own rules that are consistent with general guidance contained herein. The states will do so in rulemakings and in arbitrating interconnection arrangements. On other issues, particularly those related to pricing, we facilitate the ability of states to adopt immediate, temporary decisions by permitting the states to set proxy prices within a defined range or subject to a ceiling. We believe that some states will find these alternatives useful in light of the strict deadlines of the law. For example, section 252(b)(4)(C) requires a state commission to complete the arbitration of issues that have been referred to it, pursuant to section 252(b)(1), within nine months after the incumbent local exchange carrier received the request for negotiation. Selection of the actual prices within the range or subject to the ceiling will be for the state commission to determine. Some states may use proxies temporarily because they lack the resources necessary to review cost studies in rulemakings or arbitrations. Other states may lack adequate resources to complete such tasks before the expiration of the arbitration deadline. However, we encourage all states to complete the necessary work within the statutory deadline. Our expectation is that the bulk of interconnection arrangements will be concluded through arbitration or agreement, by the beginning of 1997. Not until then will we be able to determine more precisely the impact of this Order on promoting competition. Between now and then, we are eager to continue our work with the states. In this period, as set forth earlier, we should be able to take major steps toward implementing a new universal service system and far-reaching reform of interstate access. These reforms will reflect intensive dialogue between us and the states.

23. Similarly, as states implement the rules that we adopt in this order as well as their own decisions, they may find it useful to consult with us, either formally or informally, regarding particular aspects of these rules. We encourage and invite such inquiries because we believe that such consultations are likely to provide greater certainty to the states as they apply our rules to specific arbitration issues and possibly to reduce the burden of expensive judicial proceedings on states. A variety of formal and informal procedures exist under our rules for such consultations, and we may find it helpful to fashion others as we gain additional experience under the 1996 Act.

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[14] Joint Explanatory Statement at 1.

THE LAW OF PROPERTY AND THE LAW OF SPECTRUM: A CRITICAL COMPARISON

John Berresford* and Wayne Leighton**

> The life of the law has not been logic: it has been experience . . . The substance of the law at any given time pretty nearly corresponds, so far as it goes, with what is then understood to be convenient; but its form and machinery, and the degree to which it is able to work out desired results, depend very much upon its past.
>
> - Oliver Wendell Holmes, Jr.[1]

I. INTRODUCTION

Debate rages about whether the allocation and management of the radio frequency spectrum[2] should be mostly a political process, treating it as "The People's Airwaves," or mostly market-driven, treating it as private property. Those who favor political management warn of "a few corporations controlling

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The opinions expressed in this article are those of the authors and do not necessarily represent those of the United States Government, the Federal Communications Commission, George Mason University, Francisco Marroquin University, or any of their other employees. The authors thank Jerry Ellig, Michael Rowan, Andrew Stephens, and Peter Tenhula for useful comments, while noting that these individuals may not agree with some or all of the conclusions. Any errors of fact or judgment herein are the responsibility of the authors, who welcome comments at jberresford13@comcast.net and leighton@ufm.edu.gt.

[1] OLIVER W. HOLMES, JR., THE COMMON LAW 1-2 (Little, Brown & Co., 1881).

[2] For simplicity, we will use the word "spectrum" to refer to the radio frequency spectrum. We do not mean "spectrum" to include the media by which light and noise audible to humans are transmitted. We also understand that, strictly speaking, the spectrum by which communication is possible is the transient interactivity of electrons rather than relatively permanent and tangible elements such as land or water.

the people's airwaves"[3] and downplay the First Amendment[4] as merely "aspirational."[5] In contrast, the market/property rights side sees television, for example, as "just another appliance—a toaster with pictures,"[6] and calls for the spectrum to be "propertyzed"[7] so that its potential may be realized.[8]

This article attempts to shed some light on these arguments, which have generated much heat. In particular, this article critically examines an analogy between property law, especially about land, and the way the United States treats the spectrum. This analogy has its roots in the observation, first made by Ronald Coase almost half a century ago, that both spectrum and land are scarce resources that require some allocation mechanism, and that the price system coupled with property rights provides an efficient allocation.[9] A common assumption by many who have posited this analogy has been that the law has handled land in an efficient manner producing an efficient outcome[10] – but has not done as well with spectrum. From here, it is straightforward to conclude that spectrum law and policy should be revised, or perhaps largely scrapped, so as to make this resource more property-like.

The analogy between property law and spectrum law, however, is both overstated and underdeveloped. The analogy is overstated because spectrum

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[3] Richard L. Grossman, *Wresting Governing Authority from the Corporate Class: Driving People into the Constitution*, 1 SEATTLE J. SOC. JUST. 147, 148 (2002); *see also* ROBERT W. MCCHESNEY & JOHN NICHOLS, OUR MEDIA, NOT THEIRS: THE DEMOCRATIC STRUGGLE AGAINST CORPORATE MEDIA (Seven Stories Press, 2002); Michael J. Copps, *The "Vast Wasteland" Revisited: Headed for More of the Same?*, 55 FED. COMM. L.J. 473, 478 (2003) (stating "the public interest . . . is the service broadcasters are supposed to provide in return for their licenses to use the people's airwaves."). As we note below, a new version of the political management side is that the spectrum should consist of government-defined "commons" or parks. *See generally* Kevin Werbach, *Supercommons: Toward a Unified Theory of Wireless Communication*, 82 TEX. L. REV. 863 (2004).

[4] The First Amendment to the U.S. Constitution provides that "Congress shall make no law . . . abridging the freedom of speech, or of the press . . ." U.S. CONST. amend. I.

[5] JAMES P. STEYER, THE OTHER PARENT: THE INSIDE STORY OF THE MEDIA'S EFFECT ON OUR CHILDREN 129 (Atria Books, 2002) ("The First Amendment is romantic. It is aspirational.").

[6] Caroline E. Mayer, *FCC Chief's Fears: Fowler Sees Threat in Regulation*, WASH. POST, Feb. 6, 1983, at K1 (quoting former FCC Chairman Mark Fowler).

[7] *See generally* Lawrence J. White, *"Propertyzing" the Electromagnetic Spectrum: Why It's Important, & How to Begin*, 9 MEDIA L. & POL'Y 19 (2000).

[8] *See generally* Stuart Minor Benjamin, *Spectrum Abundance & the Choice Between Private & Public Control*, 78 N.Y.U. L. REV. 2007 (2003).

[9] Ronald H. Coase, *The Federal Communications Commission*, 2 J. L. & ECON. 1, 14 (1959).

[10] RICHARD POSNER, ECONOMIC ANALYSIS OF LAW 29-33 (Little, Brown & Co., 1986). Posner advanced the proposition that the common law, as it pertains to property, is generally efficient. *Id.* By this, it is meant that the development and protection of property rights creates incentives for owners of scarce resources to use these resources efficiently and address conflicts between competing users efficiently. *Id.*

was defined in some of the earliest telecommunications law as not being property *per se*. The Communications Act of 1934 specifically states that its purpose is to allow the "use" by persons of all the "channels of radio transmission . . . but not the ownership thereof."[11] It is true that over time spectrum has acquired property-like characteristics, such as longer license terms with an expectation of renewal, some flexibility in how the spectrum is used, and some ability to transfer the license to other parties; however, these rights are limited. For example, for most licensees, there is little flexibility that allows for different uses of the spectrum, and license transfers are subject to review by the Federal Communications Commission ("Commission").[12]

The analogy is underdeveloped because, despite these differences, there are important parallels, both in terms of their defining characteristics and their development over time. Many of the defining characteristics of property also define spectrum. Both land and spectrum are valuable, divisible, and improvable with technology. Also, some kinds of land and spectrum are more productive than others.[13] There is also a remarkable similarity between the laws, customs, and practices that have emerged over time to govern the usage of each. The same conflicts, the same defining traits, the same principles of decision, and the same solutions can be found in their respective backgrounds.

We agree that if property law is in fact more efficient than spectrum law, then making spectrum more property-like will improve efficiency. To talk of scrapping present spectrum law and replacing it with "property rights," however, is to throw the baby out with the bathwater. First, improving spectrum law will require a better understanding of how it is similar to property law. Second, reform may most need to focus on the precise definition of rights to the spectrum. These rights were ill-defined almost 80 years ago and, despite the emergence of relatively efficient institutions for addressing spectrum use, remain in need of reform today. Finally, such reform must also recognize that, much as defining rights to land has not been simple, clarifying the rights to spectrum will be a complex task.

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[11] 47 U.S.C. §301 (2000).

[12] Much spectrum is regulated under a "command-and-control" model, with prescribed, narrow uses. For a discussion of flexibility in use and different regulatory models for spectrum, *see* FEDERAL COMMUNICATIONS COMMISSION, SPECTRUM POLICY TASK FORCE REPORT, *at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-228542A1.pdf (released Nov. 2002).

[13] White, *supra* note 7, at 21.

II. THE LAW OF LAND AND THE LAW OF SPECTRUM IN THE UNITED STATES

The following admittedly brief survey of the law of property, specifically land law, and the law of spectrum discusses the similarity between these bodies of law in terms of their early development, their key elements, and their means for resolving usage disputes.

A. Early Development

Virtually all land recognized under the jurisdiction of the United States started out as government property. The British colonies were originally comprised of tracts from the King or Queen of England,[14] and westward expansions, such as the Louisiana Purchase, began with the U.S. government's acquisition of land from other entities or governments.[15]

Government subsequently made vast amounts of land available for private ownership. Periodic decisions over the first centuries of American history granted large and small amounts of land to "veterans, settlers, squatters, railroads, states, colleges, speculators, and land companies."[16] These policies were set by Congress and attempted to strike a balance between building essential infrastructure, e.g., railroads,[17] development by small property-holders, e.g., homesteading[18] and, eventually, conservation.[19] Much land never became private property, such as land for police and fire departments, public schools and libraries, other government buildings, and public parks. Laws about other natural resources, such as air and water, also date back centuries.[20] They generally allowed less ownership and focused more on facilitating their use by many persons.[21] In contrast to other resources, spectrum was first used in the United States very recently, about a century ago. The military at first

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[14] LAWRENCE M. FRIEDMAN, A HISTORY OF AMERICAN LAW 59 (2d ed., Simon & Schuster, 1985).

[15] *Id.* at 231; RICHARD B. MORRIS & JEFFREY B. MORRIS, ENCYCLOPEDIA OF AMERICAN HISTORY 150 (7th ed., HarperCollins Publishers, Inc., 1996).

[16] FRIEDMAN, *supra* note 14, at 231.

[17] *Id.* at 414-15.

[18] PAUL JOHNSON, A HISTORY OF THE AMERICAN PEOPLE 289-96, 490-92, 515 (HarperCollins Publishers, Inc., 1997); MORRIS & MORRIS, *supra* note 15, at 612-13.

[19] FRIEDMAN, *supra* note 14, at 352, 419-20.

[20] Contrary to some property rights folklore, government regulation of important resources and economic activities was intense in the colonial and early American times, and did not appear first with the New Deal. FRIEDMAN, *supra* note 14, at 66-67, 183-85; THE OXFORD COMPANION TO AMERICAN LAW 376 (Kermit L. Hall et al. eds., Oxford Univ. Press 2002) (hereinafter HALL ET AL.).

[21] *See, e.g.,* Parker & Edgarton v. Foote, 19 Wend. 309 (N.Y. 1838) (rejecting the English doctrine of ancient lights); *see also* FRIEDMAN, *supra* note 14, at 365-66.

claimed it all for the purposes of national defense and safety at sea.[22] However, other users such as hobbyists and early broadcasters grew so fast and in such numbers that government was forced to allow significant private use.[23] The federal government formally nationalized the spectrum in 1927, but significant use by private persons, mainly for broadcasting, had already become widespread.[24] The federal government, while prohibiting some uses and forbidding persons to own spectrum, allowed most existing private uses of spectrum to continue under licenses.[25] As with land, government (usually through Congress) provided as it thought best for the country's essential infrastructure (national defense and other federal activities on spectrum retained by the federal government, safety-related communications, and broadcasting networks), homesteading (granting licenses for spectrum to persons who had pioneered its use), and conservation for future use.[26]

B. Key Elements

In terms of maximizing efficiency, the most critical rights associated with any property generally are the rights to exclude others from its use, to determine how the property will be used, and to transfer these rights to others.[27] For example, the owner of land may expect to have his or her rights protected against trespassers. Similarly, an owner may decide how, or in what manner, to use his or her land. Finally, the owner of land may transfer it to other parties, either partially, as in the case of easements, rentals, or parcel sales, or completely, as in a fee simple sale of the entire seller's land to one buyer.

Yet landowners' rights are limited, substantially in some cases, by law and regulation. Among other limitations, zoning and environmental laws may regulate the minimum or maximum amounts of land that may be owned by one

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[22] *See generally* ERIK BARNOUW, A TOWER OF BABEL: A HISTORY OF BROADCASTING IN THE UNITED STATES, VOL. I – TO 1933 (Oxford Univ. Press, 1966); MARVIN R. BENSMAN, THE BEGINNING OF BROADCAST REGULATION IN THE TWENTIETH CENTURY (McFarland & Co., 2000); SUSAN J. DOUGLAS, INVENTING AMERICAN BROADCASTING, 1899-1912 (Johns Hopkins Univ. Press, 1988); CHRISTOPHER H. STERLING & JOHN M. KITTROSS, STAY TUNED: A HISTORY OF AMERICAN BROADCASTING (Lawrence Erlbaum Assoc., 2002).

[23] *See generally* BARNOUW, *supra* note 22; BENSMAN, *supra* note 22; DOUGLAS, *supra* note 22; STERLING & KITTROSS, *supra* note 22.

[24] *See generally* BARNOUW, *supra* note 22; BENSMAN, *supra* note 22; DOUGLAS, *supra* note 22; STERLING & KITTROSS, *supra* note 22.

[25] *See generally* BARNOUW, *supra* note 22; BENSMAN, *supra* note 22; DOUGLAS, *supra* note 22; STERLING & KITTROSS, *supra* note 22.

[26] *See generally* BARNOUW, *supra* note 22; BENSMAN, *supra* note 22; DOUGLAS, *supra* note 22; STERLING & KITTROSS, *supra* note 22.

[27] *See* Erik G. Furubotn & Svetozar Pejovich, *Property Rights and Economic Theory: A Survey of Recent Literature*, 10 J. ECON. LIT. 1137, 1139-40 (1972); POSNER, *supra* note 10, at 29-33.

person, the types of structures that may be built on it, and the various uses to which a piece of land may be put.[28] For example, zoning that classifies land as "residential" prohibits it to be used for a night club or toxic waste dump. Transfers, too, are subject to zoning, environmental, and other restrictions. The buyer of land that is zoned for residential use may not, simply by buying it, escape the "residential" limitation and operate a night club or toxic waste dump on the property.

In addition, if government wants to take privately owned land for public use, it may do so by its powers of "eminent domain," although it must afford just compensation to the owner.[29] Conversely, even where land is open to the public, such as roads, parks, and sidewalks, government may set rules of good behavior, such as speed limits and laws prohibiting aggressive panhandling, and punish those who disobey them.[30]

Many of the same restrictions that affect land use also affect the usage of spectrum by private companies and persons. Most of the spectrum that people use everyday is "zoned," meaning that the Commission has allowed for relatively narrow use, e.g., AM radio or mobile service, and prohibited almost all others.[31] In some bands, the Commission's zoning has become relatively permissive in recent years. For example, licensees in the Personal Communications Service have more leeway than the earlier cellular licenses had in what they may do with their spectrum.[32]

Similarly, spectrum licenses are transferable, though in practice they have been less so. All transfers of spectrum licenses are subject to review by the Commission to determine whether "the public interest, convenience, and

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[28] Village of Euclid v. Ambler Realty Co., 272 U.S. 365 (1926); HALL ET AL., *supra* note 20, at 847.

[29] FRIEDMAN, *supra* note 14, at 182; HALL ET AL., *supra* note 20, at 378; U.S. CONST. amend. V ("[N]or shall private property be taken for public use, without just compensation.").

[30] *See, e.g.*, Gresham v. Peterson, 225 F.3d 899 (7th Cir. 2000) (upholding the constitutionality of a city ordinance prohibiting aggressive panhandling).

[31] *See, e.g.*, 47 C.F.R. §2.106 (2003) (allowing 535-1605 kHz to be used for "broadcasting" and allowing 866-869 MHz to be used for "land mobile" service). In other bands, there are various users with primary or secondary status, though their respective rights generally are well-defined. *See, e.g.*, 47 C.F.R. §§2.106 (2003), US Footnote 218 (allowing 902-928 MHz to be used location and monitoring uses, but forbidding them to interfere harmfully with government stations and requiring that they "tolerate interference from . . . industrial, scientific, and medical . . . devices").

[32] *Compare In re* An Inquiry into the Use of the Bands 825-845 MHz & 870-890 MHz for Cellular Communications Systems, 86 F.C.C.2d 469, 507, para. 87 (1981) (relatively narrow definition of cellular service) *with In re* Amendment of the Commission's Rules to Establish New Personal Communications Services, *Second Report and Order*, 8 FCC Rcd. 7700, para. 24 (1993) (relatively broad definition of broadband PCS).

necessity will be served thereby."[33] Some, though not the majority, of all transfers of spectrum licenses are delayed by this review. Also, the threat of such review may deter some transfers that would otherwise occur. No such review occurs for transfers of land in the United States. In addition, until recently, there were prohibitions on dividing spectrum, either by frequency blocks (e.g., a licensee with 20 MHz transferring only 10 MHz to a buyer) or by geographic blocks (e.g., a licensee with spectrum in a geographic area transferring spectrum rights to only a portion of that area).[34]

Also, the Commission occasionally exercises the equivalent of eminent domain by re-allocating spectrum and thereby effectively taking the rights of the previous users of that spectrum.[35] Approximating "just compensation," the Commission usually makes the taking sufficiently slow so that the present user can establish itself elsewhere.[36] The Commission may also explicitly require that the new spectrum user compensate the user being ousted for the cost of moving to equivalent spectrum.[37] Finally, when the Commission creates a spectrum "commons" akin to a park or sidewalk, it often requires that users observe "spectrum etiquette" in order that the few not crowd out the many.[38]

C. Resolving Disputes About Use

Many of the general rules and practices for spectrum use described above are the result, to paraphrase Justice Holmes, not of logic but of specific conflicts between two or more parties. New conflicts continue to occur, especially as more people use spectrum in different ways. The following discussion outlines the remarkable similarity between the principles by which disputes about the use of land and the use of spectrum are decided.

With land and other natural resources, a "nuisance" is one person's substantial and unreasonable interference with the use and enjoyment of the

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[33] 47 U.S.C. §310(d) (2000).

[34] *See In re* Amendment to the Commission's Rules to Establish New Personal Communications Services, *Memorandum Opinion and Order*, 9 FCC Rcd. 4957, 4982-86, 4889-90, paras. 80-83 (1994).

[35] *See, e.g., In re* Improving Public Safety in the 800 MHz Band, *Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order*, 19 FCC Rcd. 14969 (2004).

[36] *See, e.g.*, STERLING & KITTROSS, *supra* note 22, at 249-53 (describing the multi-year move of FM from 42-50 MHz to its present location).

[37] *See generally* Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation, *Notice of Proposed Rulemaking*, 11 FCC Rcd. 1923 (1995).

[38] *See, e.g.*, 47 C.F.R. §15.323(b) (2003) (spectrum etiquette for unlicensed personal communications devices).

resource by its possessor.[39] Its gist is unreasonable interference with use and enjoyment.[40] These same wrongs are recognized and regularly enforced in resolving disputes about radio spectrum. Disputes arise out of similar factual settings and thus similar principles are used to decide them. Often, more than one principle is invoked in a single case. The decision-maker, who may be a common law judge, a Commission attorney, or Commission engineer, must decide which principle bears the most weight in each factual setting. Some of the key principles considered include the following:

1. Is the Interference Worth Government's Attention?

A first principle, which is used to screen out many trivial disputes, is that not all interferences, pertaining to land or spectrum use will be given redress. Residents of urban high-rise buildings must accept "the normal noises of everyday living," such as "the patter of little feet overhead."[41] Only "excessive" or "deliberate" noise can be considered a nuisance.[42]

In the same vein, the Commission does not guarantee spectrum licensees freedom from all interference. To merit the Commission's remedial attention, interference to the complaining licensee must exceed some threshold.[43] To that end, the Commission often directs considerable attention to defining interference, developing such distinctions as "unreasonable,"[44] "unacceptable,"[45] or "harmful" interference.[46]

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[39] DAN B. DOBBS, THE LAW OF TORTS, §463 at 1321-23, §465 at 1325-26 (West Group, 2000); HALL ET AL., *supra* note 20, at 258-59, 808.

[40] DOBBS, *supra* note 39, §463 at 1322.

[41] *See, e.g.*, La. Leasing Co. v. Sokolow, 266 N.Y.S.2d 447, 448 (1966).

[42] *Id.* at 450.

[43] *See, e.g., In re* Amendment of Parts 21 & 74 of the Comm'n's Rules With Regard to Licensing in the Multipoint Distribution Serv. and in the Instructional Television Fixed Serv. for the Gulf of Mexico, *Notice of Proposed Rulemaking*, 17 FCC Rcd. 8446, para. 11 (2002) [hereinafter *In re* Amendment of Parts 21 & 74]; *In re* Flexibility for Delivery of Communications by Mobile Satellite Serv. Providers in the 2 GHz Band, the L Band and the 1.6/2.4 GHz Bands, *Report and Order and Notice of Proposed* Rulemaking, 18 FCC Rcd. 1962, para. 111 (2003) [hereinafter *In re* Flexibility for Delivery of Communications by Mobile Satellite Serv. Providers]; *In re* Richtec Inc., 18 FCC Rcd. 3295, para. 17 (2003) [hereinafter *In re* Richtec].

[44] *In re* Amendment of Parts 21 & 74, *supra* note 43, at para. 11 ("[W]ith respect to . . . concerns about land-based [licensees] receiving potential unreasonable interference from any Gulf system(s), we address these concerns [below] . . .").

[45] *In re* Flexibility for Delivery of Communications by Mobile Satellite Serv. Providers, *supra* note 43, at para. 111 (setting a standard of preventing "unacceptable interference" by satellite receiver noise to certain satellite operations in adjacent channels).

[46] *In re* Richtec, *supra* note 43, at para. 17 ("Richtec shall not cause harmful interference to any other lawfully operating satellite or radio facility and shall cease operations upon notification of such interference."); *see also* 47 C.F.R. §2.1 (2003)

2. Which Use Was First?

Assuming that the interference complained of is at least the minimum that the courts or the Commission will recognize, the arguments on the merits begin. The single strongest argument supporting a party to an interference dispute is that its use came first in time and that the other party knew, or should have known, of such use. For instance, homeowners won a nuisance case against neighbors who stopped using their land to grow wheat and began using it to raise thousands of hogs with the predictable waste and odor.[47]

The Commission may take a similar approach in disputes between two radio licensees operating in the same geographic area, when the latecomer interferes with the first licensee's operation. An example of the Commission's application of this principle is the case of licensees for mobile telephone services operating atop the Peachtree Plaza Hotel in Atlanta, Georgia.[48] A newly licensed television transmitter placed atop the hotel unexpectedly caused interference to many mobile telephone operators who used adjacent frequencies and had been in the area for many years.[49] The Commission required the television broadcaster, who was the latecomer, to compensate the established land mobile licensees.[50]

3. Which Use Is More Valuable?

The second most powerful argument supporting a party to an interference dispute is that its use is more socially beneficial.[51] The more the interfering use serves a social or economic good, the more likely it will be allowed by the law and the Commission.[52] Thus, a cement factory that causes pollution to a modest number of neighboring homes may be allowed to continue in existence

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(defining "accepted interference," "harmful interference," and "permissible interference"). Several FCC rules contain interference limits for different services. *See, e.g.*, 47 C.F.R. §§24.238 (for broadband Personal Communications Services), 90.307 (for Safety and Special Radio Services).

47 Weinhold v. Wolff, 555 N.W.2d 454, 460 (Iowa 1996) ("Here the Weinholds acquired their farm before the Wolffs started their hog feeding and confinement operation. The Weinholds therefore clearly enjoyed priority of possession."); DOBBS, *supra* note 39, §465, at 1327, 1327 n.12.

48 Broad. Corp. of Ga. (WVEU-TV) Atlanta, Ga., *Memorandum Opinion and Order*, 96 F.C.C.2d 901, para. 21 (1984) ("WVEU, as the 'newcomer', should be required to reimburse the land mobile radio licensees for their expenses in modifying their facilities to new frequencies.").

49 *Id.*

50 *Id.*

51 We hasten to add that which of two uses of a resource is more socially useful may be largely in the eye of the beholder.

52 DOBBS, *supra* note 39, §465, at 1329-30.

if it is a major source of investment and employment in the community.[53] Social utility can even trump the "first use" principle in some cases. Thus, in a county that was once agricultural but has become primarily residential, the last farmer can be declared a nuisance and required to move his foul-smelling and insect-ridden operations.[54] Such a result promotes economic development and benefits a larger number of residents. The hog operation mentioned above might have prevailed if it had cost millions to construct and had been a major source of employment for the community.

Likewise with the radio spectrum, greater social utility, even by a latecomer, can force an early user of less value to move or be silenced. Radio stations with few listeners were required to make way for those which the Commission thought would attract many listeners;[55] an early FM network was effectively put out of existence, and hundreds of thousands of radios were made useless, to make way for television.[56] In 1970, much-needed mobile, especially cellular, service won spectrum away from the few UHF stations that had been on the air since 1952,[57] and the Bell System's ability to deploy cellular mobile service across the whole nation quickly won it half the original cellular licenses over antitrust objections that such an award would prevent cellular service from competing with the last monopoly in telecommunications, Bell's own wireline telephone service.[58] A fascinating parallel at the Commission to "the last farmer" nuisance cases is the continuing litigation being pursued by radio astronomy operations in once-uninhabited areas seeking protection from radio transmissions that accompany suburban development, such as certain medical devices and television."[59]

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[53] Boomer v. Atlantic Cement Co., 257 N.E.2d 870 (1970).

[54] Spur Indus., Inc. v. Del E. Webb Dev. Co., 494 P.2d 700 (Ariz. 1972).

[55] A NATION TRANSFORMED BY INFORMATION: HOW INFORMATION HAS SHAPED THE UNITED STATES FROM COLONIAL TIMES TO THE PRESENT 147-48 (Alfred D. Chandler, Jr. & James W. Cortada, eds., Oxford University Press 2000); *cf.* STERLING & KITTROSS, *supra* note 22, at 115, 122-23.

[56] ERIK BARNOUW, The GOLDEN WEB: A HISTORY OF BROADCASTING IN THE UNITED STATES, VOL. II – 1933 TO 1953, 130, 242 (Oxford University Press,1968); ROBERT L. HILLIARD & MICHAEL C. KEITH, THE BROADCAST CENTURY AND BEYOND: A BIOGRAPHY OF AMERICAN BROADCASTING 105-06 (2001); STERLING & KITTROSS, *supra* note 22, at 156-60, 276-77.

[57] *In re* An Inquiry Relative to Future Use of the Frequency Band 806-960 MHz; and Amendment of Parts 2, 18, 21, 73, 74, 89, 91, and 93 of the Rules Relative to Operations in the Land Mobile Service Between 806 and 960 MHz, *Report and Order*, 19 R.R.2d (P&F) 1663, 1667, para. 13 (1970).

[58] *In re* An Inquiry into the Use of the Bands 825-845 MHz & 870-890 MHz for Cellular Communications Sys.; and Amendment of Parts 2 and 22 of the Commission's Rules Relative to Cellular Communications Sys., *Report and Order*, 86 F.C.C.2d 469, paras. 27-47 (1981).

[59] *See, e.g.*, Amendment of the Commission's Rules to Establish a Radio Astronomy Coordination Zone in Puerto Rico, *Memorandum Opinion and Order*, 13 FCC Rcd. 13683

4. Assuming That Some Change Must Occur, Which Solution Will Cost The Least?

In the case described above of the cement factory that provided local investment and employment, the factory was allowed to continue in operation but was required to pay damages.[60] The sum of those damages, $185 thousand, was less than the $45 million investment in the cement factory and the 300 jobs that would be obliterated by an injunction closing down the operation.[61]

Similar minimization of costs can be found in Commission decisions resolving interference disputes. In the above-mentioned case of the new television transmitter that interfered with established mobile receivers atop a building in Atlanta, the Commission first ordered the television transmitter to use filters, modify its transmitter, and shield the mobile receivers.[62] That spared each party the relatively high cost of moving to a new place or changing frequencies, but it did not end the interference. The Commission then required the next least costly remedy, namely requiring the television station to pay the cost of the mobile operations moving to other frequencies.[63]

III. WHAT IS TO BE DONE?

Radio spectrum and private property are remarkably alike. The rules that govern their use are also remarkably alike, despite the rhetoric about "The People's Airwaves" versus "Property Rights." Of these two visions, property rights likely is the better one, for the same reasons that free markets have proven superior to centralized planning over the last hundred years. We take the position that the incentives inherent in a model granting rights such as exclusivity and transferability in the use of resources tend to lead to efficient use of those resources. Thus, to the extent that land law better defines, protects, and enables these rights compared to spectrum law, the latter needs reform.

Of course, as described above, both land and spectrum law impose limitations on use. To the extent these limitations address harmful interference to other users with similar rights, such rules should be economically efficient.

(1998).

60 Boomer v. Atlantic Cement Co., 257 N.E.2d 870, 873 (N.Y. 1970); *see also* Spur Indus. Inc. v. Del E. Webb Dev. Co., 494 P.2d 700, 708 (Ariz. 1992) (requiring that suburbanites pay relocation costs of "the last farm").

61 *Id.* at 873.

62 *In re* Resolution of Interference between UHF channels 14 and 69 and Adjacent-channel Land Mobile Operations, *Notice of Proposed Rulemaking/Notice of Inquiry*, 2 FCC Rcd. 7328, 7328-29 (1987).

63 *Id.*

More generally, effective limitations on use should produce more social gains than losses. Not all limitations can pass such a test, however, and some limitations cause potentially large net social losses. For example, a UHF TV licensee may not use the licensed spectrum for cellular service. A 1992 study by the Commission estimated that in the Los Angeles market alone, removing this restriction and allowing spectrum to move to a higher valued use, such as cellular service, would have produced a net social gain of over $1 billion for the time from 1992 until 2000.[64]

The challenge, therefore, is for the Commission and Congress to produce reforms that result in net social gains. The Commission, for its part, can achieve significant increases in net social welfare through regulatory reform. In one case, it recently decided that it had the authority to allow certain wireless radio licensees to trade spectrum usage rights in secondary markets.[65] For example, it granted this authority to commercial mobile radio and private mobile radio licensees.[66] To further reform at this level, the Commission should seek to apply the principles of property law. New allocations of spectrum should be given considerably more flexibility, while existing allocations should be reviewed to see if additional rights can be given to incumbent or other users.

As already noted, applying the principles of property law will not be simple. Land law includes many forms of ownership, leases, zoning, easements, rights-of-way, and eminent domain. It also changes to account for new technologies. For example, for centuries the ownership of land included the air "up to the heavens." When aircrafts began flying early in the 1900s, land law changed to say that overflights, most of the time, were neither a trespass nor a nuisance.[67] Property rights in spectrum might also draw on the laws about movement of vessels on water – a resource that is not owned but in which "rules of the road" allow use by many and mechanisms for efficient use address scarcity where it exists.[68]

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[64] EVAN R. KWEREL & JOHN R. WILLIAMS, FCC, OFFICE OF PLANS & POLICY, CHANGING CHANNELS: VOLUNTARY REALLOCATION OF UHF TELEVISION SPECTRUM, WORKING PAPER NO. 27, 1992, *at* http://www.fcc.gov/Bureaus/OPP/working_papers/op-pwp27.pdf (last visited Dec. 30, 2003).

[65] *In re* Implementation of Sections 309(j) and 337 of the Communications Act of 1934, as Amended: Promotion of Spectrum Efficient Technologies on Certain Part 90 Frequencies, *Second Report and Order and Second Further Notice of Proposed Rulemaking*, 18 FCC Rcd. 3034 (2003).

[66] *Id.*

[67] DOBBS, *supra* note 39, §54, at 108-10.

[68] For example, while the open seas have considerable space and thus the ability to accommodate virtually all users who obey the rules of the road, harbors and high-traffic waterways must by necessity establish mechanisms, such as docking fees, to efficiently allocate their more scarce operating waters. Where the resources – shipping lanes, specific

Congress can also provide significant increases in net social welfare through legislative reform of spectrum law. For example, Congress authorized the Commission to auction spectrum in 1993, thus creating a more efficient way to move this resource to its highest valued use.[69] Future reform should make rights to spectrum more property-like, authorizing the Commission to follow the model of land and other forms of property law in prosperous, economically developed countries, especially the United States. Other useful reforms might be to replace the statutory standard for regulatory action ("the public interest, convenience, and necessity") with something more narrow and less subject to political and social pressure, such as "productivity" or "efficiency."[70] Care should be taken, however, to avoid substituting one arbitrary standard for another. A more dramatic but potentially useful reform would be to transition more of the responsibility for resolving disputes to courts, in effect eliminating a major role of regulators.[71] As noted above, this role has been played by the Commission throughout its history with some success. Yet assigning to courts the responsibility of resolving disputes would help focus each branch of government on its comparative advantage, in addition to making what would likely be an efficiency-creating move towards a more property-like arrangement.

Perhaps the only reason that spectrum has lacked these improvements is historical, that it was discovered, exploited, and became important in approximately twenty years. It thus provoked more awe and fear than reasoned comparison to other resources for which bodies of law already existed.[72] If so, then we may be in spectrum law where land law was 100 years after the Norman Conquest, and it's catch-up time. While regulatory reforms by the Commission may help considerably, comprehensive catch-up is almost certainly impossible without legislative reform and, thus, action by Congress.

At the same time, visions must meet real needs and must allow for exceptions. Just as this country zones land and leaves much of it in government hands for military activities and parks,[73] even a property rights

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spectrum bands, etc. – are scarce, property-like mechanisms may be necessary for efficient use.

69 47 U.S.C. §309(j) (2000).

70 *Cf.* William H. Read & Ronald Alan Weiner, *FCC Reform: Governing Requires a New Standard*, 49 FED. COMM. L.J. 289 (1997) (proposing a pro-competitive antitrust standard).

71 Thomas W. Hazlett, *The Wireless Craze, the Unlimited Bandwidth Myth, the Spectrum Auction Faux Pas, and the Punchline to Ronald Coase's "Big Joke": An Essay on Airwave Allocation Policy*, 14 HARV. J.L. & TECH. 335, 405 (2001).

72 BRUCE M. OWEN ET AL., TELEVISION ECONOMICS 13 (Lexington Books, 1974).

73 We realize that private owners of land can create efficient parks also, such as Disney World and Six Flags.

system may need to leave much spectrum under non-market control. Also, disruptive new technologies such as Ultra Wideband,[74] if their promoters' claims prove to be true, may make it easier to establish spectrum "parks" or commons. These will enable vast private use with government merely regulating behavior as it does with "Keep off the Grass" signs in parks.[75] On the other hand, private parties may use these new technologies to make spectrum available to even more users, perhaps in innovative ways, which in turn may lessen the need for government commons.[76] The Commission's recent effort to promote the development of "private" commons is an important step in this direction and reflects an understanding of the ways in which new uses and technologies challenge traditionally rigid models of spectrum regulation.[77]

At a more general yet prominent level, the President's Spectrum Policy Initiative ("Report") trumpets efficiency as a primary goal.[78] While the Report also sees a role for non-market treatment of spectrum in some cases, this is not inconsistent with the argument made above. Rather, if pursued faithfully, it will move spectrum away from government planning and towards more property rights, while also retaining commons in specific circumstances.

IV. CONCLUSION

In short, there is significant need for reform, but there also is cause for optimism. The Commission's implementation of spectrum regulations has been better (i.e., closer to the efficiency of a system of property rights and

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[74] Ultra-wideband is a technology that uses very narrow or short duration pulses that result in very large, or wideband, transmission bandwidths. UWB can use spectrum occupied by other radio services without causing significant interference, thus enabling more communication on a finite amount of spectrum than was possible before. *See, e.g., In re* Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems, *Memorandum Opinion and Order and Further Notice of Proposed Rule Making*, 18 FCC Rcd. 3857, paras. 3-4 (2003); *see also* Multispectral Solutions Inc., *at* http://www.multispectral.com/history.html (last visited Nov. 19, 2004).

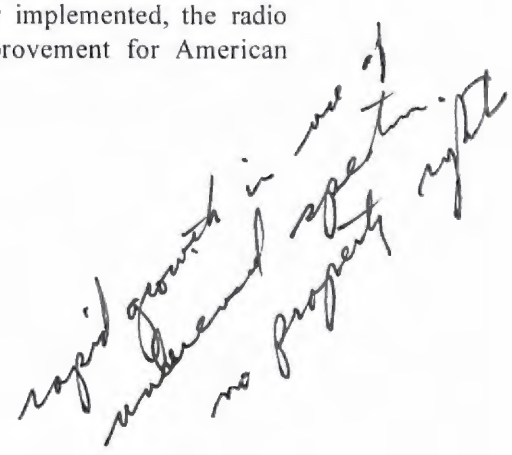
[75] *See generally* Yochai Benkler, *Some Economics of Wireless Communications*, 16 HARV. J.L. & TECH. 25 (2002); *see also* Werbach, *supra* note 3.

[76] *See generally* Benjamin, *supra* note 8.

[77] FCC News, *FCC Expands Spectrum Leasing Rules & Speeds Processing to Create Additional Opportunities for Access to Spectrum Through Secondary Markets*, (Ret. No. 04-167), Dkt. No. 00-230, *at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/Doc-249427A1.pdf (July 8, 2004).

[78] U.S. DEP'T OF COMMERCE, SPECTRUM POLICY FOR THE 21ST CENTURY – THE PRESIDENT'S SPECTRUM POLICY INITIATIVE: REPORT 1, RECOMMENDATIONS OF THE FEDERAL GOVERNMENT SPECTRUM TASK FORCE 4-6, 27 (2004), *at* http://www.ntia.doc.gov/reports/specpolini/presspecpolini_report1_06242004.htm (last visited July 29, 2004). The Report also sees a role for non-market treatment of spectrum in some cases, too. *Id.* at 27.

common law courts) than property rights advocates may admit.[79] At the same time, the opportunity for improvement (i.e., making further efficiency gains) is greater than defenders of the status quo may admit. We call for "bold, persistent experimentation"[80] in the spectrum with property rights and, where appropriate, commons. Perhaps due to inflexible law and regulation, radio spectrum brought only three channels of TV to the United States, but cable TV and telephone wires brought hundreds of channels and billions of web pages. With more efficient law and regulation, speedily implemented, the radio spectrum can spawn the next billion-fold improvement for American consumers.



[79] Indeed, property rights as they pertain to land use continue to be hotly debated in some contexts, such as how they relate to environmental concerns.

[80] Address of Gov. Franklin D. Roosevelt, Oglethorpe University, May 22, 1932, *Works of Franklin D. Roosevelt*, *at* http://newdeal.feri.org/speeches/1932d.htm (last visited June 9, 2003).