

Chapter 12

Spectrum Policy and the Public Interest

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Abstract This chapter examines how spectrum policy priorities came to shape today’s television broadcast system and the issues that will influence the future of wireless video. As video services come to migrate freely between wired and wireless platforms and as broadcast television merges with other forms of wireless video, spectrum policy and the public interest values that it reflects will shape the video value chain. These values are often cross-cutting and require tradeoffs among such interests as maintaining existing communications services, technical innovation, spectrum efficiency, universal service, media diversity and competition. What tradeoffs are made and what they cost, is too frequently hidden from public view.

Introduction

The provision of video services in the United States has long been linked to spectrum policy. In particular, the structure of broadcast television – its system of local stations and national networks – is a direct result of policy decisions in the early part of the twentieth century that produced a particular allocation of spectrum usage rights. The transition from analog to digital broadcasting in the first decade of the twenty-first century similarly reflects specific policy choices grounded in visions of the public interest and the pressures of interest group politics. So too, how video services develop in the future will depend in large part on battles currently being fought over the distribution of spectrum rights.

Spectrum Policy

The term “spectrum” refers to an intangible natural resource – the capacity of the environment to carry electromagnetic waves of various frequencies. Waves with frequencies between 3 kilohertz (kHz) and 300 gigahertz (GHz) travel in a subset of spectrum called the “radio spectrum.” Until recently, the only commercially useful

spectrum was located below 3 GHz, but technical advancements now allow services to use ever shorter wavelengths well above 3 GHz.

Spectrum policy debates arise whenever there is rivalry among parties (both public and private) seeking to use what US law calls the “public spectrum resource.”¹ The potential for interference between signals creates such rivalry for the most desirable frequencies. There are essentially two ways to deal with the threat of interference. The first and most common, is to license mutually exclusive rights to use the spectrum in a way that separates users by space, time or frequency. The second is to allocate spectrum for shared (often known as unlicensed) use and to rely on technological measures to reduce harmful interference. Such measures include smart radios that are able to adjust signal levels to avoid interference, low power transmissions and technical protocols that prioritize some transmissions over others. These technological measures have, to date, been capable of managing interference only for a limited set of low power applications, such as WiFi service and cordless telephones. For that reason, they have not supplanted exclusive spectrum licenses as the dominant form of interference control for wireless services. Unless and until technology enables much more widespread use of shared spectrum applications, there will be spectrum scarcity and rivalry among users.

In order to manage and allocate rights to the scarce spectrum resource, the Radio Act of 1927 asserted federal control over “all the channels of interstate and foreign radio transmission” and authorized federal licensing authorities “to provide for the use of such channels, but not the ownership thereof, by individuals, firms, or corporations, for limited periods of time.” Management of the spectrum resource thus became (and under subsequent legislation remained) the job of the federal government.

The Communications Act of 1934 created an independent Federal Communications Commission (“FCC”) to manage spectrum use by private entities (such as broadcasters) and non-federal public entities (such as police and fire departments). In 1993, Congress gave the FCC the authority to auction spectrum instead of assigning it by lottery and other methods.² The government’s ability to gain financially from the sale of spectrum rights, combined with the explosion of mobile communications, made spectrum controversies of ever greater interest to Congress. As a result, spectrum policy can be highly political and subject to vigorous lobbying by groups that include technology firms, broadcasters, the wireless and satellite communications industries, state and local public safety providers and consumer advocates.

Spectrum is divided into blocks or “bands,” which are then further divided into channels of varying bandwidths. Spectrum allocation is the process of defining particular bands and designating services that may be provided in those bands. In practice, since all the commercially usable spectrum in the United States has already been allocated to some service, it makes sense to think of this process as a resource *re*-allocation – one that can easily lead to contests between incumbent service providers and prospective new entrants competing to unseat the incumbents. In allocating spectrum, the FCC typically determines not only the type or types of service for which spectrum can be used (*e.g.*, cellular, broadcast television, etc.) but also stipulates how many licenses will be issued and the technology that may be deployed, as well as whether operators will be private or common carriers.

The FCC must conduct the allocation process in furtherance of the “public convenience, interest or necessity.”³ Although there is increasing reliance on market forces to dictate the allocation and use of spectrum, the FCC continues to define spectrum rights (that are then allocated through market mechanisms such as auctions) in accordance with particular values. Spectrum-related public interest goals typically fall into two basic categories: economic and social goals. Economic goals include the public interest in efficient spectrum use, innovation and competition. Social goals include the public interest in telecommunications access, diverse programming and emergency telecommunications services. Both types of goals – and the tradeoffs among them – were instrumental in determining what kind of broadcast television system emerged and what kind of wireless video services will thrive in the future.

Spectrum Policy and the Development of Television

The FCC created what it called “a table of allocations” for television in 1952. This table specified what channels were available for television broadcasting in each of the 210 local television markets across the country. The table of allocations implemented the FCC’s statutory mandate to make radio services broadly available throughout the nation and in large and small communities on an equitable basis.⁴

The design of the table of allocations dictated the structure of broadcasting and for several decades, the nature of video services in the US. Although many take for granted that television broadcasting should be offered on a localized basis, there was nothing natural or inevitable about the decision to allocate television channels to smaller communities like Paducah, Kentucky or Altoona, Pennsylvania. As a technical matter, these communities could have been covered by signals transmitted from larger neighboring cities. Indeed, in most countries, this is exactly how broadcast television is structured.

An allocation table with fewer stations covering larger areas would have been much more spectrally efficient. Television stations cannot operate on the same channels or even on adjacent channels in close proximity. Thus, many more channels must be allocated for television broadcasting within a given area than are actually used to transmit signals. Suppose, for example, that 20 channels are set aside in order to provide five channels of broadcast television within a local community. Because of interference concerns, additional channels must be reserved in a neighboring community. As a result, more of the spectrum must be allocated for television in a system that seeks to accommodate multiple stations covering smaller areas within the same region. A system that provides for hundreds of local stations (more than 1600 in the American system) will require more channels to be set aside for television broadcasting than one that provides for fewer, more powerful regional stations. Fewer people will be reached for every hertz of spectrum that is allocated for television. Thus, the choice to support a system of local, as opposed to regional or national broadcasting, sacrificed spectrum efficiency for the benefits of what is often referred to as “localism.”⁵

Another spectrum policy choice at the dawn of broadcast television turned out to be as important as the spectrum allocation choice. This was the decision to allow the holders of broadcast facility licenses to control the content that they transmitted. There were other options. Television broadcasters could have been regulated as common carriers. Licensees could have been required to carry the programming of content providers on a nondiscriminatory basis, opening up their broadcast transmission capabilities to all comers. The elaborate regulatory apparatus that developed in the 1960's and 1970's in order to influence the content of television programming was in large part a byproduct of the decision not to regulate broadcasters as common carriers.⁶ In place of nondiscrimination principles, the Communications Act and implementing FCC regulations substituted a substantive vision of desirable broadcast content and broadcast structure.

Broadcast content regulation, such as requirements that broadcasters transmit political advertising and children's programming, are alternatives to the non-discrimination rules that apply to common carriers. Where the owner of the physical transmission capacity necessary for communications is under a non-discrimination requirement, we assume that communications will flow freely for the benefit of consumers and society at large. However, where network owners also have the right to control the content they transmit and are under no non-discrimination obligations, other rules may be needed to ensure the delivery of certain forms of content. Structural regulations such as ownership limits to prevent undue media concentration perform a complementary function. They seek to influence the content that licensees transmit by controlling who the licensee is, rather than by imposing non-discrimination requirements. The object, however, is much the same: to expand opportunities to access the airwaves and to expand the pool of voices that individuals receive.

As part of a survey of the regulatory actions that shaped the broadcast system we have today, we should not overlook the inactions. In the prevention of radio interference, both transmitters and receivers have a role. Transmitters can be sited, or can manage signals, in such a way, that the transmitted signals are less likely to interfere with each other. Alternatively, receivers can be built that are more capable of rejecting undesired signals. Arguably one of the greatest inefficiencies in today's system of broadcasting is that television receivers perform relatively poorly in rejecting signal noise. As a result, the broadcast television system is more prone to signal interference than necessary, given state of the art technology. The FCC, by not mandating better receiver performance, chose to build interference protection into transmitter, rather than receiver, design. It did this principally by reserving buffer channels between television stations, thereby effectively reducing interference, but at the price of inefficient spectrum use. In other words, the decision not to regulate receiver quality reduced burdens on receiver manufacturers at the expense of would-be users of the reserved spectrum who cannot use the reserved channels.

Another regulatory policy the FCC might have adopted was to give broadcasters the right to use their licenses flexibly to provide alternative, non-broadcast services. Instead, broadcast spectrum is allocated exclusively for broadcast services. As discussed below, broadcasters can use their digital channels for ancillary services, but they cannot freely alienate their licenses or parts of their licensed spectrum to

non-broadcasters or use it entirely for non-broadcast purposes. The rigidity with which broadcasting is regulated stands in marked contrast to the increasing flexibility in the regulation of other wireless services. Spectrum allocated for commercial mobile radio services, for example, can typically be used for a wide array of services and technical architectures. So long as operators stay within prescribed power limits and control the interference they cause to other users, they have the freedom to innovate and to alienate spectrum resources they cannot exploit. Use and alienation restrictions on the broadcast spectrum reduce the incentives of broadcasters to improve the efficiency of their spectrum use and to make associated technical innovations because the licensees cannot extract full value from the spectrum resources they save.

Although efficiency interests might be served by permitting more flexible use of the broadcast spectrum, such a relaxation on use restrictions is not politically feasible. In the politics of spectrum management, the fact that broadcasters did not bid for their spectrum at auction shapes the ways in which they are regulated and therefore, the structure of the broadcast system. Restrictive broadcast regulations have come to be seen as a quid pro quo for operation on spectrum that was not auctioned.⁷ In other words, broadcasters pay for their spectrum by serving the public interest in various ways. Any expansion of the rights that broadcasters have under their licenses, including the right to use those licenses for non-broadcast purposes, would be seen as enriching broadcasters at the expense of the public.⁸

I have suggested that broadcast television policy reflects a particular vision of the public interest and has required tradeoffs between various public interest goals like efficiency and localism. Regulatory paradigms, such as a common carrier or broadcast model of regulation, establish limitations on the wireless licenses they govern. These limitations in turn affect how the spectrum is used, how highly it is valued, what spectrum markets develop and what the demand is for alternative spectrum allocations in the future. In other words, the regulation of wireless services is closely bound to the underlying spectrum policy regime. This interrelationship between spectrum policy and service offerings is apparent in the evolution of digital broadcast television.

DTV and the Public Interest

The creation of a digital broadcast television system in the 1990's can be seen either as a colossal failure or a tremendous success of spectrum policy, depending on the public interests that one values most highly.

When the push for digital television began in the late 1980's, broadcast television had existed for more than 30 years without having made any substantial technical advancement other than the shift from black and white to color.⁹ And this advance had been achieved in a way that was backwards compatible so that existing service was not interrupted; no consumer had to purchase a color television set in order to continue to receive the legacy black and white service.

Incremental innovation in the broadcast industry has always proved difficult in part because of the public interest goals the system was meant to serve. There is an expectation that broadcasting, unlike other forms of mass media, should be universally available and for free. In addition, there is an expectation that broadcast receivers, unlike handheld devices and computers, will be long-lived, inexpensive and interoperable nationwide. These characteristics are much more attainable if there is a single broadcast technology that facilitates scale in equipment production, as well as interoperability. That means that significant technical changes must be system-wide. Broadcast ownership restrictions that were adopted to enhance broadcast diversity make systemic change difficult and costly to coordinate by preserving a diffuse ownership structure with hundreds of broadcast station owners. It is thus as a byproduct of a locally-based, but nationally interoperable system, that major technical adjustments are difficult to achieve.

Technical alternations are made more difficult by the fact that the FCC mandates the transmission standard and other technical parameters of the broadcast service. Therefore, if broadcasters want to make a major technical change, such as to convert from analog to digital broadcast technology, they need FCC approval. And approval will be difficult to obtain where the change threatens widespread disruption to existing service. This commitment to the seamless, undisrupted provision of free over-the-air broadcasting is rooted in the treatment of broadcast service, unlike cellular telephone service, as a public entitlement with special importance for democratic discourse and the public sphere. The quasi public service characteristic of broadcasting has meant that regulators are unwilling to leave the fate of the broadcast service entirely to market forces.

In the U.S. as in other industrialized countries, the government initiated the shift from analog to digital broadcasting in anticipation of, but without any clear direction from, market demand for higher quality, more flexible and more abundant broadcast television services. The government had a choice among public interest goals to pursue when it began to implement the digital transition in the 1990's. In selecting from among these public interest goals, the FCC yoked spectrum policy to a particular vision of the role of broadcast television in the media landscape.

The federal government announced several public interest goals for the transition from analog to digital broadcasting. Of these, the two most important were the recovery of spectrum for other, non-broadcast uses and the delivery of a more advanced broadcast television service with all the traditional public benefits of existing service.¹⁰ There was widespread consensus among stakeholders that these were appropriate public interest goals, but they were in tension with each other. All other things being equal, the more robust the broadcast television service, the more is the spectrum required. Moreover, the articulated spectrum policy goals left many details to be worked out, such as who should provide the television service, where in the large swath of broadcast spectrum the new digital service should be located, what regulatory steps are required to speed the transition to digital and free up analog spectrum for other uses and what the government's role in defining and effectuating advanced television services should be.

There were three basic fault lines in the policy debates over how to replace analog with digital broadcasting: (1) whether the existing structure of broadcast television, including the spectrum holdings of incumbent broadcasters, should be replicated in digital; (2) whether broadcasters should have to use their digital spectrum for bandwidth-intensive high definition television, or should have the flexibility to provide other digital services; and (3) what the role of the government should be in structuring the relationship between digital broadcasters and their partners in the delivery of digital television, namely consumer equipment manufacturers, cable and satellite. Although the federal government adopted compromise positions among the contending forces on each of these issues, in all cases, it acted conservatively to preserve the status quo of a local, over-the-air, advertising-based broadcast system.

On the first issue – the structure of broadcast television in the digital spectrum – there were many options. Through the early 1990’s, the FCC considered proposals that would have changed the composition of broadcast station ownership and broadcast station coverage. The most radical of these proposals was to auction the digital broadcast spectrum to the highest bidder. This option was quickly rejected because there was no assurance that the high bidder would want to use the spectrum for broadcasting. The decision to not open up the spectrum to new, non-broadcast entrants was a decision to not allow the spectrum to migrate to what might be its most economically efficient use (something other than the status quo), but rather to preserve it for broadcasting.

It would have been possible, consistent with the commitment to broadcasting, to auction the spectrum with a stipulation that it be used for broadcasting services only. The government rejected this proposal for reasons of equity, politics and technical feasibility. Incumbent broadcasters insisted that the digital licenses were not new licenses at all, but rather replacements for the analog licenses they would return at the end of the transition. Broadcasters argued that it would not be fair for the government to mandate that they transition to a new technology, at the collective cost of about \$10 billion and require them to pay for new licenses in addition. Moreover, they made the case that the best way to ensure a seamless transition from analog to digital broadcast technology, without creating additional interference and loss of service, was to physically collocate analog and digital broadcast services on the same tower and on adjacent channels. This would be most easily accomplished if the same entities owned both analog and digital channels. Broadcasters and the FCC used the principle of “replication” as shorthand for the proposition that digital channels should replicate the properties (location, bandwidth, coverage) of and bear the same ownership as, the analog channels.

One of the consequences of this commitment to replication was that more frequencies were allocated to digital broadcasting than might have been necessary had the government not tried to replicate analog service. Again, there was a tradeoff between the public interest goals of improving spectrum efficiency and maintaining features of the existing broadcast service. Ultimately, the FCC reallocated channels 52–69 – a total of 108 MHz – for non-broadcast services. This left just under 300 MHz of spectrum still allocated for television broadcasting.

The broadcast allocation could have been much smaller and more spectrum could have been reallocated for other purposes, had the FCC been willing to shrink broadcast service areas (thereby disenfranchising a certain number of viewers at the fringes of broadcast coverage), or require broadcast stations to share 6MHz channels.

A principal reason broadcasters were not required to share 6MHz channels was because the FCC early on committed the digital broadcast future to high definition television. HDTV requires that each broadcast station use a single 6MHz channel to accommodate the nearly 20 megabits per second of data that comprise the HDTV signal. Other industrialized countries in Europe and Asia making the shift from analog to digital broadcasting did not embrace HDTV.¹¹ In the United States, by contrast, the early enthusiasm for digital television focused almost exclusively on the excellent sound and video quality that HDTV would deliver. Lower definition formats would enable broadcasters to transmit four or five video streams in a 6MHz channel, permitting multiple stations to share a channel or a single station to broadcast multiple programming streams. The commitment of the FCC and ultimately Congress, to the broadcast transmission of at least some HDTV ruled out the possibility of shared channels. The debate then moved to whether broadcasters should be allowed to transmit anything other than HDTV.

The question of whether broadcasters should be mandated to transmit in HDTV and if not, whether the public should be compensated for any additional value broadcasters receive from transmitting multiple streams of broadcast programming, or a combination of broadcast and other services, raised issues that are central in most spectrum policy debates: what are the respective roles of the market and the government in ensuring public value from use of spectrum. The digital television transition, like most spectrum policy initiatives, involved governmental bets on technologies and public communications needs, as well choices among desirable services and service providers. Notwithstanding the clear and inevitable governmental intervention in the market to create digital television, policymakers wanted the market to shape the emergent DTV services. To this end, when the FCC finally authorized DTV service in 1996, it did not mandate that broadcasters transmit in the HDTV format that the channels were designed to accommodate. Indeed, Congress legislated that broadcasters should be permitted to offer not only multiple broadcast formats, but even non-broadcast services. Wireless service providers cried foul that broadcasters should be allowed to compete in non-broadcast businesses on spectrum that they did not have to pay for. In response, Congress mandated that broadcasters would have to pay a spectrum fee of 5% on the gross revenue of any ancillary (presumably subscription-based) service.¹²

DTV spectrum use issues and the hybrid regulatory-market model that was developed to deal with them, implicated the relationship between broadcasters and other entities in the broadcast delivery chain. One might not ordinarily think of issues like copyright policy, cable must-carry rules and consumer equipment mandates as being part of spectrum policy. But in the case of digital broadcasting, all these issues were tied to the central question of when and how consumers could begin receiving the full complement of digital signals and therefore when the analog channels could be turned off and the spectrum reallocated for other uses. In the

context of analog broadcasting, there were federal rules requiring cable systems to carry local broadcast signals without degradation and requiring television manufacturers to include tuners that could receive all television channels on their sets. These rules were premised on the spectrum policy commitment to free, locally-based broadcast television. Once government had committed the spectrum resources to the broadcast service and consumers had come to rely on it, government felt compelled to take the further steps to ensure that third parties did not obstruct it and even facilitated the reception of over-the-air signals *even if* such reception was not over the air (such as through cable).¹³

In the digital world, it had to be decided whether similar kinds of rules were necessary to further reception of the DTV signals and therefore effectuate the digital transition. Although the issues were not new, the circumstances were. There was a well-developed market for the analog television product that the must-carry regulations supported. There was also evidence in the analog world that, in the absence of regulation, many consumers would not receive broadcast programming. By contrast, there was no established market for digital broadcast signals in the early part of the twenty-first century when the FCC was considering what rules were necessary to facilitate DTV reception. There was scant evidence that the market would fail to deliver digital signals through cable or any other distribution medium. There was no evidence that when the time came to turn off the analog signals – a date that moved from 2006 to 2009 – there would be any shortage of DTV receivers. The strong inclination of regulators to allow parties to work out signal transmission arrangements in the marketplace ran squarely into the articulated spectrum policy interest in recovering spectrum and replicating free over-the-air television (and the existing transmission pathways).

There was much at stake in FCC decisions regarding cable carriage. Because more than 70% of American households receive broadcast programming through cable, and another 15% through satellite, the manner in which the DTV signal was carried through these media would have a significant impact on broadcaster use of the DTV spectrum. For example, if cable operators declined to carry DTV signals in full HDTV quality, then broadcasters would have little incentive to undertake the expense of broadcasting in HDTV. If multiple streams of broadcast programming were not carried on cable or satellite, then broadcasters might find something else to do with this spectrum. Indeed, there was a good argument that if broadcasters failed to obtain HDTV or other carriage arrangements with cable operators, it would be because the market had spoken and the DTV spectrum would be better used for other purposes. But because the DTV transition was in no way market driven to begin with, there was also an argument that consumers could not know what DTV services they wanted until such services were available – something that would not happen without the full cooperation (even if government-mandated) of cable and other partners.

The argument for regulation ultimately won out starting in 2002, with the FCC mandating that cable operators carry at least one stream of DTV programming and then in 2007 further requiring that cable operators install the necessary equipment to ensure that at least one stream of DTV programming will be viewable in its

original format in subscriber households. These decisions are a direct result of the chain of spectrum policy choices carried over from analog broadcasting, including the value invested in over-the-air broadcasting, the structure of broadcasting around local signals and multiple overlapping stations, the enlistment of broadcast distribution partners to compensate for poor reception and the interest in recovering analog spectrum relatively quickly.

The regulation of television sets presented old and new issues, all pitting the commitment to market solutions against the interest in speeding the digital transition. The old issue was one that had presented itself in the 1960's when UHF television broadcasting was just getting off the ground: since broadcasters do not control the design and manufacture of receivers, government mandates may be required to ensure that consumer products will be able to receive newly available broadcast signals. In 1967, Congress stepped in to legislate that television receivers be able to receive all broadcast channels, including UHF channels.¹⁴ The corollary issue in the DTV world was whether receivers should be required to receive DTV signals, lest consumers continued to buy analog receivers and found themselves without DTV reception capacity when analog service ceased. Although it had not been willing to mandate receiver performance standards, the FCC did mandate the phase-in of DTV tuners.¹⁵ It later required consumer electronics retailers to ensure that consumers were informed, at the point of sale, about the uselessness of analog tuners after February 17, 2009, when the analog signals would go dark.¹⁶

The new receiver issue involved copyright concerns. While the ability of consumers to record and retransmit broadcast programming had always bothered content producers, analog recordings were so flawed and modes of retransmission so cumbersome that the threat to producer control and revenues was minimal. Digital technology changed the equation. Content producers feared that once they began to make digital programming available over the air, they would lose control of the content to "pirates" who could easily record and retransmit perfect copies of the programming. Producers, in many cases owned by the same companies as the broadcasters themselves, were inclined to use copy control technology that would restrict the copying of certain programming. In order to function properly, the control technology would have to be recognized and effectuated by television receivers. Uncertain that they would be able to get receiver manufacturers to support the copy protection technology, producers and some broadcasters urged the FCC to regulate television receivers so that they would have to recognize what came to be known as the "broadcast flag." The FCC ultimately agreed to do this, but the regulation was overturned in court for lack of jurisdiction to regulate television receivers in this way.¹⁷

Future Battles

Just as the existing analog and new digital broadcasting services have been shaped by spectrum policy values, so too will the future of wireless video. We can expect spectrum policy battles to play out in three general areas: (1) what new services

existing broadcasters will be allowed to offer; (2) what new services will be allowed to operate in the broadcast spectrum; and (3) how spectrum policy will evolve to shape relationships in the video value chain.

Broadcasters recognize that their future may well depend on the ability to offer consumers a mobile product. To that end, they are establishing a mobile broadcasting standard that will allow broadcasters to roll out mobile services to handheld devices on spectrum otherwise devoted to broadcast television.¹⁸ To the extent that these services are subscription based, broadcasters will have to pay a fee on gross revenues. To the extent that they are advertising-based, there will be a question as to what public interest requirements should apply in return for the “free” use of the spectrum. These debates will implicate the question of whether mobile broadcasting is broadcasting that should serve the same localism and diversity functions as traditional broadcasting and be subject to the same kinds of requirements. There will also be the question of whether mobile broadcasting should receive the same regulatory solicitude as traditional broadcasting. Consider, for example, the possibility that a new service could be introduced in the broadcast band that would not interfere with fixed broadcasting services, but would interfere with mobile services. Broadcasters would likely seek interference protection for their mobile offerings. The protection of mobile services would in essence expand the spectrum entitlement that broadcasters have and a case would need to be made for why the spectrum should be allocated for this purpose as opposed to another.

The time is already ripe for the introduction of new services into the broadcast band, whether by broadcasters or new entrants. The use of the broadcast spectrum for new wireless services will impact the scope of DTV services incumbent in the band and will also provide new sources of competition for video transmission. Because so many buffer channels have been left open to prevent high power television transmissions from interfering with each other, there is a considerable amount of broadcast spectrum that is not actually being used to carry broadcast signals. The FCC has dubbed this spectrum “white space.” In 2002, the FCC floated the idea of permitting the operation of low power unlicensed devices on broadcast white space. The technology community, particularly Intel, favored the proposal, along with public interest advocates of unlicensed use such as the New America Foundation. Television incumbents opposed the idea, arguing that the channels, while vacant, were not in fact unused because they served as buffers between high power television channels. To the extent that there were white spaces, the incumbents argued that this available spectrum should be allocated for licensed uses. What services can be offered in the white spaces, by whom and under what regulatory regime is still up in the air. In addition to disputes over technical details about the interference effects of new wireless devices on broadcast television, there is a deeper policy debate about the relative merits of broadcasting and other services and the role of the market in allocating spectrum rights.

The core of the debate over white space usage transcends the technical and policy details of the broadcast band. Both sides – broadcasters and prospective new entrants – assert that the spectrum can be put to more intensive use. The debate is really over whether incumbents should be granted additional rights to exploit

adjacent spectrum, whether these rights should be licensed on an exclusive basis to the highest bidder, or whether the frequencies should be opened up to unlicensed devices. While the debate has been framed in technical terms about interference, it is as much about the course of innovation and governance of the spectrum resource. Centralized control of spectrum through licensing spurs innovation of a kind, as evidenced by the dramatic growth of cellular services. Decentralized control of spectrum through unlicensed usage spurs innovation of another kind, as evidenced by the flourishing of WiFi connections. Even with respect to the single public interest parameter of innovation, spectrum policymakers must make bets as to which kind of innovation is most likely and most productive.

If the vacant space between broadcast transmissions is the white space in the broadcast band, the frequencies that carry broadcast signals are the black spaces. After the transition to DTV, there will be at least 30MHz, and sometimes closer to 100MHz, of spectrum that is used for television broadcasting in each U.S. market. To provide some sense of the value of that spectrum, AT&T recently paid over \$55 million for a 12MHz license covering the Denver metropolitan area.¹⁹ Given the availability of cable, satellite and fiber television transmissions and Internet broadband capability, there will be pressure on the FCC to reallocate broadcast spectrum in its entirety to new wireless uses. This pressure may come from broadcasters themselves who want the chance to sell their spectrum for non-broadcast purposes or to provide new services themselves under a different regulatory regime. At some point relatively soon, there will have to be a reassessment of the continued value of over the air broadcasting and the tradeoffs between preserving this system and the spectrum cost. This calculation will recapitulate the DTV debate over whether it is more important to support existing models or to free up spectrum for new services and secondarily, whether an administrative agency or the market should make this decision.

A third and perhaps most significant, influence on the future of wireless video will be policy choices about the conditions to place on spectrum entitlements used to distribute video and other wireless services. We saw in the case of digital television how FCC actions and inactions with respect to cable operators, receiver manufacturers, and broadcasters structured the rights and responsibilities of these actors. As more of the spectrum is allocated to new kinds of video service providers, the FCC will inquire how the public interest can best be served. In the case of broadcasting, the government has privileged social goals such as diversity, universal service and democratic discourse over economic ones, such as innovation and competition. In all likelihood, the highest ranked public interest values going forward when new spectrum is allocated for video services will be competition and innovation. This was certainly the case in the recent 700MHz auction in which the government auctioned 52MHz of analog broadcast spectrum for new nationwide broadband wireless services for just under \$20 billion.

And yet, because communications services are involved, the importance of free communication in a democracy will push the FCC to look more closely at the power of gatekeepers and to consider special public interest obligations for spectrum licensees than might otherwise be required to advance innovation and competition. This was true in the 700MHz auction. There, even in the absence of evidence

that non-discrimination requirements were necessary to foster competition and innovation, the FCC imposed obligations on the licensees to open their networks to all applications and all devices without discrimination. In other words, the network operator would be required to “carry” third-party applications and give consumers choices about the devices they want to use to receive signals. The arguments for such restrictions on licensee operations are grounded in both economic and social values, with leading advocates emphasizing the free speech benefits of mandating unfettered access to broadband transmission pipes.²⁰

In the future, there will undoubtedly be questions about whether broadband video providers, particularly when they have spectrum rights, should be subject to broadcast-like public interest requirements. The FCC will be put to the question of whether it should regulate via non-discrimination requirements, substantive requirements, or not at all. Particularly if broadcast television ceases and the spectrum is reallocated, the public interest impulses that have shaped ownership limits, programming requirements, must-carry and other regulations will turn towards the new spectrum and services. In place of or alongside broadcasting, there will be new “regulable spaces” where, as was true at the dawn of broadcasting, and then again with the creation of DTV, government will seek to express public interest values in the allocation of spectrum rights. And as was true with respect to the broadcast spectrum, these values will require tradeoffs among both social and economic goals that are invariably less explicitly stated than they ought to be.

Notes

1. 47 U.S.C. § 309(j)(3)(c).
2. 47 U.S.C. § 309(j).
3. 47 U.S.C. § 303.
4. 47 U.S.C. § 307(b) (2000) (“[T]he Commission shall make such distribution of licenses, frequencies, hours of operation, and of power among the several States and communities as to provide a fair, efficient, and equitable distribution of radio service to each of the same.”). The FCC dispersed television station permits throughout smaller towns as well as urban centers within larger regions in order to “protect[] the interests of the public residing in smaller cities and rural areas ... [and ensure that] as many communities as possible ... have the advantages that derive from having local outlets that will be responsive to local needs.” Sixth Report and Order, 17 Federal Register 3905, 68, 79 (1952).
5. *Deregulation of Radio*, 84 FCC 2d 968 58 (1981) (“The concept of localism was part and parcel of broadcast regulation virtually from its inception.”); Cable Act, S. Rep. No. 92, 102d Cong. 42 (1992), reprinted in 1992 U.S.C.C.A.N. 1133, 1175 (“There is no doubt that, over the past forty years, television broadcasting has provided vital local services through its programming, including news and public affairs offerings and its emergency broadcasts.”); *Turner Broadcasting System, Inc. v. FCC*, 512 U.S. 622, 663 (1994) (“[T]he importance of local broadcasting outlets ‘can scarcely be exaggerated, for broadcasting is demonstrably a principal source of information and entertainment for a great part of the Nation’s population.’”); *National Broad. Co. v. United States*, 319 U.S. 190, 203 (1943) (“Local program service is a vital part of community life. A station should be ready, able, and willing to serve the needs of the local community.”)

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