

SPECTRUM EQUITY

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INTRODUCTION

A decade after the 1996 overhaul of the Communications Act, work is underway on another rewrite of communications law for the Internet age.¹ Among the Act's many deficiencies is its use of grand principles

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1. Telecommunications law reform is on the agenda of the 109th Congress. *See e.g.*, Bill McConnell, *New Threat to Broadcasters; Overhaul of Telecom Act Will Legislate Station Fare*, BROADCASTING & CABLE, May 3, 2004, at 21 (reporting on then-Senate Commerce Committee Chairman McCain's intention to re-open the Communications Act this year); COMM. DAILY, Aug. 31, 2004 (reporting on the same intention of House Commerce Committee Chairman Barton). *See generally* James B. Speta, *Making Spectrum Reform "Thinkable"*, 4 J. TELECOM. AND HIGH TECH. L. 159 (2005). Commentators have called for a Communications Act re-write as well. *See e.g.*, James B. Speta, *Deregulating Telecommunications in Internet Time*, 61 WASH. & LEE L. REV. 1063, 1065-66 (2004) (providing examples).

that are appealing, but vague, making them maddening for regulators to implement and for regulated entities to obey. The most notorious of such principles is that the Federal Communications Commission (FCC) must regulate in the “public interest.”² A more obscure, but equally illusive, principle can be found in the Act’s “spectrum equity” provisions.

These provisions require the FCC to auction rights to use the electromagnetic spectrum in ways that “recover[] for the public . . . a portion of the value of the public spectrum resource . . .” and avoid the “unjust enrichment” of licensees.³ The venerable common law doctrine of “unjust enrichment” appears nowhere else in the United States Code as a substantive command.⁴ Its inclusion in the alien medium of communications law raises intriguing questions about how spectrum access should be valued and how fairness in the distribution of access rights can be achieved.

This essay probes the Act’s spectrum equity provisions and notions of spectrum equity in general, highlighting problems of definition and scope. Fairness as a goal in the distribution of spectrum access rights is controversial. From a Chicago School economic perspective, equitable considerations have no place in the formation of policies properly aimed at maximizing the efficient provision of wireless services.⁵ By contrast, equity is central to a broader “public resource” perspective of spectrum. According to this perspective, spectrum users – generally meaning the entities licensed to provide spectrum-based services – should be required

2. For a discussion of the uncertain meaning of the “public interest” in the context of spectrum management, see Ellen P. Goodman, *Spectrum Rights in the Telecosm to Come*, 41 SAN DIEGO L. REV. 269, 303-11 (2004).

3. 47 U.S.C. § 309(j)(3)(C) (2005).

4. Unjust enrichment appears elsewhere in federal law only as a carve-out for common law actions not preempted by the federal statute. See 15 U.S.C.A. § 80a-46(b)(3) (2005) (securities law).

5. See e.g., EVAN KWEREL & JOHN WILLIAMS, A PROPOSAL FOR A RAPID TRANSITION TO MARKET ALLOCATION OF SPECTRUM (FCC Office of Plans and Policy, Working Paper No. 38, Nov. 2002), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-228552A1.pdf. (proposing a two-sided auction in which incumbents would have the chance to convert licenses to property rights, even though this would bestow windfall value on such licensees); ROBERT M. ENTMAN, CHALLENGING THE THEOLOGY OF SPECTRUM: POLICY REFORMATION AHEAD 21 (2004) (quoting Robert Pepper of the FCC, saying “Get over it; we need to benefit the consumers even if there’s a windfall”); Gregory L. Rossten & Thomas W. Hazlett, Comments of 37 Concerned Economists, in WT Dkt. No. 00-230 (FCC filed Feb. 7, 2001) at 6 (“Efforts to extract gains from licensees . . . should not be permitted unduly to hinder or delay realization of the public benefits from promoting greater competitiveness through spectrum liberalization.”). See also Thomas W. Hazlett, *Property Rights and Wireless License Values* 32-32 (AEI-Brookings Joint Center, Working Paper No. 04-08, 2004), available at <http://ssrn.com/abstract=519602> (arguing that the grant of flexible usage rights to incumbents does not constitute a windfall, but actually reduces windfall benefits since a regulatory structure that “restrict[s] flexibility of operators effectively award[s] windfalls to incumbent licensees via reduced competitive entry.”).

to provide a fair return on access to public spectrum and “giveaways” should be avoided.⁶ Echoing some of these arguments are wireless users themselves, who deploy fairness arguments strategically to keep their competitors from obtaining regulatory advantages.⁷

Were we to jettison considerations of fairness, Telecommunications Act reform with respect to spectrum equity would be easy: Congress need simply remove references to unjust enrichment and permit, even mandate, the distribution of spectrum access rights without regard to distributional effects. Such an approach is both politically unrealistic and, as I argue below in Part I, undesirable. Substantive fairness and efficiency in spectrum management are not inconsistent and fairness is a value that should influence access to the critical communications resource of spectrum.

If we are willing to engage in questions of fairness, we must grapple with the value of spectrum rights and the selection of equitable goals. A wireless user can only be unjustly enriched by spectrum access if we know how much spectrum access he is due. The measure of unjust enrichment will thus depend on baseline entitlements in spectrum. Under current law, these entitlements are poorly defined. Licensees purchase, or are granted for free, the rights to transmit signals within a particular band in a particular area. But the scope of these rights depends on the degree to which these users are expected not to cause interference to others and to bear interference caused by others. These interference entitlements are grossly under-determined.⁸

Even if it were possible to quantify the unearned benefits a spectrum user has received, the appropriate remedy for unjust enrichment in spectrum depends on whether the regulator is concerned primarily with public restitution or competitive parity. What it takes to remedy the public’s loss of value in the exclusive use of spectrum might be quite different from what it takes to put similarly situated users on equal footing. Part II explores these complexities in the context of the

6. See e.g., Michael Calabrese & Norman Ornstein, Editorial, *A Private Windfall for Public Property*, THE WASH. POST, Aug. 12, 2003, at A13 (arguing against policy proposals that would confer “a massive and undeserved financial windfall – up to \$500 billion – on a few lucky industries” and proposing spectrum use fees instead); *Future of Spectrum Policy: Before the Senate Comm. On Commerce Science and Technology*, 109th Cong. (2003) (statement of Michael Calabrese, Director, New America Foundation) (arguing that allowing incumbent licensees greater flexibility to use spectrum, or allowing them to convert licenses to property rights, would constitute a windfall). See also Michael H. Rothkopf & Coleman Bazelon, *Interlicense Competition: Spectrum Deregulation Without Confiscation or Giveaways* (New America Foundation Spectrum Policy Program, Spectrum Series Working Paper No. 8, 2003), available at http://www.newamerica.net/download_docs/pdfs/pub_file_1329_1.pdf. (arguing on efficiency as well as fairness grounds that licensees should have to compete in an auction in order to get expanded spectrum usage rights).

7. See *infra* notes 27, 51, and 66.

8. See *infra* notes 56-57 and accompanying text.

FCC's innovative steps to solve the interference problems between Nextel Communications, Inc. and public safety users of shared spectrum.

Equitable considerations are likely to become both more complex and widespread as spectrum use intensifies. In particular, as Part III shows, fairness issues may come to be implicated in unlicensed spectrum use. There is a growing literature on the legal mechanisms required to prevent and resolve interference disputes as unlicensed applications like WiFi grow more dense and complex.⁹ In developing these proposals, scholars have considered spectrum conflicts in the context of an interference dispute. Spectrum equity implicates a different conflict. It is the conflict between the spectrum user and the public or between competing spectrum users, whether or not they are antagonists in an interference dispute. Claims of spectrum fairness cannot be answered in either the licensed or unlicensed arenas without a clearer articulation of the goals and measures of equity, as well as the underlying set of entitlements that spectrum users can justly claim.

I. EQUITY IN SPECTRUM ACCESS

Terms like “windfall”, “unjust enrichment”, “parity,” and the “public interest” form a regulatory jurisprudence of equity in the allocation of spectrum access rights. This Section identifies the contexts in which fairness concerns have typically arisen in the past, defends fairness as an important principle in spectrum management, and highlights both the normative and logistical difficulties of implementing such a principle.

A. Contexts for Fairness

A fair distribution of spectrum access rights means a distribution that treats like-situated spectrum users alike and fairly compensates the public for exclusive uses of the spectrum. Analogizing the right to use spectrum to the right to graze cattle on federal lands, we can easily identify two distinct issues of equity. One is whether the rancher has paid fair market value for the grazing rights, or otherwise compensated the public for access to the public resource. The other is whether one rancher has been given special privileges unavailable to others. The Communications Act's spectrum equity provisions, which address only initial licenses, actually cover very few of the circumstances in which these fairness issues arise. The law is as important for supplying the

9. See Philip J. Weiser & Dale N. Hatfield, *Policing the Spectrum Commons*, 74 *FORDHAM L. REV.* 101 (forthcoming 2005), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=704741; Kevin Werbach, *Supercommons: Toward a Unified Theory of Wireless Communication*, 82 *TEX. L. REV.* 863, 936-49 (2004); Gerald Faulhaber, *The Question of Spectrum: Technology, Management, and Regime Change* (December 2004, draft on file with author) at 22-26; Goodman, *supra* note 2 at 384-402.

vocabulary of unjust enrichment as for its technical force. As discussed below, this vocabulary, and the underlying norm of fair spectrum access, exerts force even when the statutory provisions do not apply.

1. Initial Licenses

Congress legislated against unjust enrichment in the award of initial spectrum licenses in 1993 when it gave the FCC the authority to auction spectrum.¹⁰ Prior to that, the FCC had made spectrum available either on a shared basis to all or to the winners of lotteries or administrative hearings.¹¹ Four years after Congress first authorized spectrum auctions, it made them obligatory for most commercial services.¹² As the law stands today, the FCC *must* auction spectrum when (a) there are mutually exclusive applications for (b) any initial license to be used primarily for (c) commercial services, (d) unless the spectrum use is one of several enumerated exceptions.¹³

Both efficiency and fairness goals played a part in the move to auctions. There was consensus that auctions are efficient because they put spectrum use rights into the hands of those who value them most highly.¹⁴ But other methods of assigning spectrum rights had done this

10. Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, § 6002, 107 Stat. 312, 388 (1993) (“If mutually exclusive applications are accepted for filing for any initial license or construction permit which will involve a use of the electromagnetic spectrum. . . then the Commission shall have the authority . . . to grant such license or permit to a qualified applications through the use of a system of competitive bidding that meets the requirements of this subsection”).

11. See STUART MINOR BENJAMIN ET AL., TELECOMMUNICATIONS LAW AND POLICY 144-46 (2001).

12. See Balanced Budget Act of 1997, Pub. L. No. 105-33, § 3002, 111 Stat. 251, 258 (1997) (codified at 47 U.S.C. § 309(j)) (“If . . . mutually exclusive applications are accepted for any initial license or construction permit, then, except as provided [herein], the Commission shall grant the license or permit to a qualified applicant through a system of competitive bidding that meets the requirements of this subsection”). See also H.R. REP. NO. 109, at 557 (1997) (confirming that the amendments “require[d] all radio-based licenses for which mutually exclusive applications are filed with the FCC to be assigned by means of competitive bidding”); *id.* at 567 (“The subsection requires the FCC to employ a system of competitive bidding if presented with mutually exclusive applications for use of the spectrum.”). Congress had previously, though less clearly, attempted to convert spectrum auctions from permissive to mandatory in the Telecommunications Act of 1996. See H.R. REP. NO. 612, § 421(4), (5) (1996) (assuming that “services would be auctioned where the [FCC] has not yet conducted auctions for such services . . . [and that] the Commission should act expeditiously and without further delay to conduct auctions of licenses in a manner that maximizes revenue, increases efficiency, and enhances competition.”).

13. 47 U.S.C. § 309(j)(1)-(2). The FCC is not permitted to auction licenses for public safety radio services, for noncommercial educational or public broadcast stations, or for digital television service provided by incumbent television broadcast licensees. 47 U.S.C. § 309(j)(2). The FCC is also prohibited from auctioning licenses for satellite orbital slots or to provide international or global satellite communications services. *Id.* § 765(f).

14. See Implementation of Section 309(j) of the Communications Act, Competitive Bidding for Commercial Broadcast and Instructional Television Fixed Services Licensees,

too, albeit more expensively. Ronald Coase taught us that the ultimate distribution of entitlements will be efficient so long as parties can negotiate around initial entitlements, free from material transaction costs.¹⁵ Spectrum licensees have always been able to transfer their licenses, whether they won them at auction or in a lottery. In the pre-auction environment, the most valuable licenses did indeed come to be possessed by the most efficient user.¹⁶

Certainly a great advantage of well-designed auctions was that they reduced the transaction costs associated with this migration of licenses, and therefore improved allocative efficiency. But auctions promised something more. What galled members of Congress was that lottery winners were reaping windfall profits when they transferred their licenses in what amounted to private auctions.¹⁷ Auctions shifted these profits from the private to the public sector, making the distribution of spectrum rights fairer and more efficient.¹⁸

The spectrum equity provisions, adopted alongside the FCC's auction authority, grew out of these fairness concerns. Congress required the FCC to design auctions to "avoid[] unjust enrichment through the methods employed to award uses" of spectrum.¹⁹ The FCC must control the disposition of spectrum rights after they are in the hands of licensees, "as may be necessary to prevent [the] unjust enrichment" of licensees that receive special advantages in the auction process and then seek to flip the

First Report and Order, 13 FCC Rcd. 15,920, 15,928 (1998) (auctions assign spectrum "to those who value it most highly."); *Mobile Communications Corp. of America v. FCC*, 77 F.3d 1399, 1405 (D.C. Cir. 1996) (auctions ensure that "the license will end up in the hands of the firm best able to develop its potential."). This economically efficient use of spectrum is often, and was by Congress, conflated with the technically efficient use of spectrum. See e.g., H.R. REP. NO. 111, 253 (1993) (auctions "promote efficient and intensive use of the electromagnetic spectrum"). See also Goodman, *supra* note 2 at 305-09 (identifying various notions of efficiency embedded in FCC policy).

15. R. H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 15 (1960) ("if . . . market transactions are costless, . . . a rearrangement of rights will always take place if it would lead to an increase in the value of production."). See also, Stewart Schwab, *Coase Defends Coase: Why Lawyers Listen and Economists Do Not*, 87 MICH. L. REV. 1171, 1195 (1989) (discussing the distributional implications of Coase's transaction cost theory).

16. See Congressional Budget Office, *Where Do We Go From Here? The FCC Auctions and the Future of Radio Spectrum Management* 5 (1997) (reporting that more than 75% of all cellular licenses distributed by lottery were transferred at least once in the first years of the service).

17. *Id.* at 5.

18. See H.R. REP. 111, 248-49 (1993) (cataloging the ways in which distribution of licenses by lottery resulted in the distribution of licenses to unqualified persons and firms).

19. 47 U.S.C. § 309(j)(3)(C). Also, as part of the auction process, the FCC was required to "prevent unjust enrichment" in according preferential treatment to entities that make pioneering technical contributions "by ensuring that the value of any such contribution justifies any reduction in the amounts paid for comparable licenses" at auction. 47 U.S.C. § 309(j)(13)(D)(ii). This "pioneer's preference" policy is no longer in effect.

licenses to entities that would not have qualified for these advantages.²⁰ The FCC has recently interpreted this provision to require “unjust enrichment payments” in the case of spectrum leases as well as the transfer of licenses.²¹

Congress also instructed the FCC to ensure public restitution for spectrum use. In designing auctions, the FCC would have to allow “recovery for the public of a portion of the value of the public spectrum resource made available for commercial use.”²² In other words, the FCC is required to contract for the sale of spectrum rights so as to fairly compensate the public.²³

2. License Modifications

Equitable concerns arise outside of the auction process and the reach of the spectrum equity provisions. Claims of unfairness tend to surface when it appears that a spectrum user has obtained a windfall through regulatory largesse having nothing to do with the award of initial licenses. In particular, such claims arise when the FCC distributes exclusive spectrum use rights without auction or expands the rights of an incumbent licensee without imposing additional payment or other obligations.²⁴

Fairness concerns manifested most publicly when the FCC gave incumbent broadcasters the exclusive rights to use spectrum for digital television, without resorting to the auction process. This decision, endorsed by Congress, was lambasted by critics who called it a “giant

20. 47 U.S.C. § 309(j)(4)(E); 47 C.F.R. §§ 1.2111, 24.714(c) (2004) (rules requiring unjust enrichment payments when certain licenses are transferred). *See also* Implementation of Section 309(j) of the Communications Act – Competitive Bidding, *Second Report and Order*, 9 FCC Rcd. 2348, 2385 (1994) (Congress wanted “to prevent auction winners from acquiring licenses for less than true market value at auction and then transferring them for a large profit prior to providing service.”); *id.* at 2,394 (adopting unjust enrichment provisions to “prevent designated entities” that received credits in spectrum auctions “from profiting by the rapid sale of licenses acquired through the benefit of preference policies.”).

21. *See* Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets, *Report and Order and Further Notice of Proposed Rulemaking*, 18 FCC Rcd. 20,604 (2003) (establishing rules to require unjust enrichment payments by licensees that leased spectrum to entities unqualified for preferential payment plans licensees obtained). *But see id.* at 20,676 (not requiring unjust enrichment payments for short-term leases).

22. 47 U.S.C. § 309(j)(3)(C).

23. *See* H.R. REP. NO. 111, 253 (1993) (“[A] carefully designed system to obtain competitive bids from competing qualified applicants can . . . produce revenues to compensate the public for the use of the public airwaves.”); 139 CONG. REC. S2348 (1993) (statement of Sen. Inouye) (auctions will “allow the Government to receive significant revenues from the use of this public asset.”); *id.* at S2353 (statement of Sen. Stevens) (auctions will “fairly compensate Federal Taxpayers for use of a scarce public resource.”).

24. These gains are not technically windfalls, since they are usually foreseen and may be the result of productive activities that society wants to reward. *See* Eric Kades, *Windfalls*, 108 YALE L.J. 1489, 1491-92 (1999) (distinguishing windfalls from other benefits or advantages).

corporate welfare program” and a “rip off on a scale vaster than dreamed of by yesteryear’s robber barons.”²⁵

Similar, if less vociferous, complaints arise when the FCC modifies incumbent users’ licenses to expand their rights. These modifications tend to be efficient because they allow licensees to use spectrum more intensively.²⁶ At the same time, the modifications can confer windfall benefits on licensees who have not bargained for them.²⁷ The FCC has been especially receptive to these fairness claims when it can be done without sacrificing efficiency. For example, the FCC has refused to allow licensees to benefit from policy changes that would effectively reinstate expired licenses²⁸ or give some licensees a competitive advantage over others.²⁹

B. Norm of Fairness

Fairness advocates face skepticism about why equity should figure in the distribution of spectrum access rights, particularly when spectrum users deploy fairness arguments strategically simply to impose costs on their competitors. This skepticism tends to start from the premises that fairness is at odds with efficiency and too indeterminate to address profitably. While each premise has some merit, neither is entirely accurate. Moreover, the anti-fairness argument runs headlong into the powerful counterforce that is the norm of equity. There are at least three

25. Paul Taylor, *Superhighway Robbery*, NEW REPUBLIC, May 5, 1997, at 20 (quoting Senator Robert Dole and columnist William Safire respectively). See also Thomas W. Hazlett, *Physical Scarcity, Rent Seeking, and the First Amendment*, 97 COLUM. L. REV. 905, 938-43 (1997) (criticizing the auction-free assignment of spectrum to broadcasters).

26. See e.g., Revision of Part 22 and Part 90 of the Commission’s Rules to Facilitate Future Development of Paging Systems, *Memorandum Opinion and Order on Reconsideration and Third Report and Order*, 14 FCC Rcd. 10,030, 10,101 (1999) (allowing licensees increased operational flexibility even though this threatens “the value that other licensees place on their competitively won licenses” because the benefit of flexibility “outweighs any possible disadvantage of allowing . . . licensees to receive a financial windfall” through flexibility). See also Hazlett, *supra* note 5 (advocating flexibility despite distributional implications).

27. See e.g., Kathleen Q. Abernathy, *Government Doesn’t Always Know Best: Harnessing Self-Interest to Advance the Public Interest*, 11 COMM. L. CON. 5, 17 (2003) (citing comments of Verizon Wireless, Motorola, Inc. and Cingular Wireless LLC in proceeding that gave broadband wireless incumbents in 2.5 GHz band additional operational flexibility).

28. See e.g., Amendment of Section 2.106 of the Commission’s Rules to Allocation Spectrum at 2GHz for Use by the Mobile Satellite Service, *Third Report and Order and Third Memorandum Opinion and Order*, 18 FCC Rcd. 23,638, 23,664 (2003) (incumbents that started operations knowing they would have to relocate out of a band “should not receive the windfall of relocation at the expense of new licensees in the band.”).

29. See e.g., Review of the Pioneer’s Preference Rules, *Memorandum Opinion and Order on Remand*, 9 FCC Rcd. 4055 (1994) (changing policies that award licenses to technical innovators to prevent them from obtaining financial windfall).

reasons why fairness should factor into the distribution of spectrum rights.

First, fairness supports efficiency in spectrum management. The economic argument against evenhandedness in the distribution of entitlements to competitors is based on the theory of sunk costs: In competitive markets, it should not matter that two competitors expended very different amounts for the same resource, because prices reflect marginal costs, not sunk costs. Since the cost of spectrum is a sunk cost, the price that a company paid for spectrum should not materially affect the prices it charges consumers for its services.³⁰ According to this conventional wisdom, the only legitimate function of regulation with respect to sunk costs is to address barriers to entry that arise when sizeable upfront investment is required (as is the case with satellites, for example), not to raise costs in order to equalize barriers to entry.³¹

This theory of sunk costs, which is itself somewhat controversial,³² helps to explain why differential grants of spectrum access rights might not harm consumers in the short term. It does not, however, deal with the possibility that unearned spectrum access rights might distort investment, resulting in inefficient competitive outcomes in the longer term. If company A pays \$10 million dollars for particular spectrum access rights, and company B pays \$1 million dollars for the same rights, the theory of sunk costs suggests that company A cannot charge more for its services than does company B. But, all things being equal, company B will have a better balance sheet and be more attractive to capital. With these advantages, company B might then be able to drive prices down and out-compete company A.³³ In the end, windfalls in spectrum rights

30. See Stuart Benjamin, *Spectrum Abundance and the Choice Between Private and Public Control*, 78 N.Y.U. L. REV. 2081 n.237 (2003); J. Gregory Sidak & Daniel F. Spulber, *Deregulatory Takings and Breach of the Regulatory Contract*, 71 N.Y.U. L. REV. 851, 868 (1996) ("Ordinarily, sunk costs do not affect business decisions, which are only concerned with available benefits and avoidable costs."). Courts have taken the FCC to task for failing to recognize this conventional wisdom. See e.g., *Fresno Mobile Radio, Inc. v. FCC*, 165 F.3d 965, 969 (D.C. Cir. 1999) ("the use to which an asset is put is based not upon the historical price paid for it, but upon what it will return to its owner in the future."). The FCC has since embraced the wisdom. See generally, PHILIP J. WEISER & JONATHAN E. NUECHTERLEIN, *DIGITAL CROSSROADS: AMERICAN TELECOMMUNICATIONS POLICY IN THE INTERNET AGE* 249-51 (2005) (arguing that "policymakers should be circumspect in weighing claims that it would be 'unfair' if - because of changes or anomalies in the government's assignment regime - some but not all providers within a given market had to pay for their spectrum rights at auction" or otherwise received "windfalls").

31. See Daniel F. Spulber & Christopher S. Yoo, *Access to Networks: Economic and Constitutional Connections*, 88 CORNELL L. REV. 885, 914-15 (2003).

32. See e.g., Matthew L. Spitzer & Elizabeth Hoffman, *Willingness to Pay vs. Willingness to Accept: Legal and Economic Implications*, 71 WASH. U. L.Q. 59 (1993) (surveying the literature on the irrational valuations of vested interests).

33. Competitors to MCI expressed this concern in relation to the Chapter 11 restructuring of MCI's debt in the aftermath of the company's massive securities fraud. See

could not only reduce competition among existing players, but also deter new entrants from investing in spectrum-related businesses.

Sensitivity to the competitive effects of inequitable treatment is evident in the government's persistent interest in regulatory parity – the practice of regulating like services in a like manner.³⁴ A regulatory system that privileges one technology over a functionally similar one may distort competition, unnecessarily picking winners and losers. This is true whether the regulatory advantage is in the form of reduced regulatory burdens or increased spectrum access rights.

Efficiency concerns aside, a second reason that fairness matters in the distribution of spectrum access rights is that spectrum has characteristics of a public resource.³⁵ Where an entity has an exclusive right to exploit this resource, it should compensate the public as a matter of justice and wise resource management. To be clear, fairness concerns should not stop a licensee from exploiting its spectrum access rights to the fullest extent possible. A licensee who has purchased access rights for A and B purposes should also be able to use the spectrum for C purpose, consistent with the rights of others. We would not want to impede the lumberman who has a permit to harvest timber on public lands from also harvesting the rare mushrooms that lie hidden beneath the trees. Nor does fairness dictate that the increased benefits the licensee realizes from

e.g., Simon London, *Critics Are Hoping It Could be End of Story for Chapter 11*, FIN. TIMES, Dec. 20, 2001, at 22 (quoting Verizon CEO's complaint that WorldCom and Global Crossing can "use Chapter 11 'to cleanse their sins, then drive prices down'"); *The WorldCom Case: Looking at Bankruptcy and Competition Issues: Hearing before Senate Comm. On the Judiciary*, 108th Cong. (July 22, 2003) (testimony of William Barr, General Counsel, Verizon), available at http://judiciary.senate.gov/print_testimony.cfm?id=846&cwit_id=2441 (restructuring "gives MCI an artificial advantage over its honest competitors"). See also J. Gregory Sidak, *The Failure of Good Intentions: The WorldCom Fraud & the Collapse of American Telecommunications After Deregulation*, 20 YALE J. ON REG. 207, 250 (2003) ("If WorldCom, having shed the fixed cost of its debt, emerges from bankruptcy, it could underprice efficient competitors."). To the extent that competitors are concerned about their balance sheets, they can theoretically retire their own debt by issuing more stock. In reality, they cannot do this without imposing often unacceptable costs on their shareholders.

34. The Omnibus Reconciliation Act of 1993, Pub. L. No. 103-66, amended Section 332(c) of the Communications Act to achieve regulatory parity among providers of commercial mobile radio services. See generally Senator Ted Stevens, *The Internet and the Telecommunications Act of 1996*, 35 HARV. J. ON LEGIS. 5, 16 n.77 (1998). The Satellite Home Viewer Improvement Act of 1999, Pub. L. No. 106-113, amended Section 338 of the Communications Act to create regulatory parity between satellite and cable operators with respect to the retransmission of local broadcast station signals. In addition, the FCC has attempted to ensure regulatory parity between cable and telephone providers of Internet services. See generally Rob Frieden, *The FCC's Name Game: How Shifting Regulatory Classifications Affect Competition*, 19 BERKELEY TECH. L. J. 1275, 1286-87 (2004).

35. A number of scholars, focusing on wireless applications that permit widespread spectrum sharing, reject the analogy of spectrum to a depletable natural resource. See *e.g.*, Werbach, *supra* note 9 at 885-86. Indeed, where spectrum use is not rivalrous, the analogy is wrong. But when uses of spectrum are mutually exclusive, spectrum use is by definition rivalrous and in that sense like a natural resource.

C purpose be taxed away simply because the licensed spectrum turns out to be more valuable than originally thought. The issue is whether the public (i.e., federal government) that granted the additional spectrum access rights – akin to additional mining or harvest rights—should share in the value proposition.

Third, and most importantly, if fairness and efficiency goals do not align, reflexively subordinating the first to the second shortchanges relevant ethical considerations. It hardly needs stating that fairness is a powerful and deep-seated social norm.³⁶ In many contexts, as Professor Charles Fried has put it, the fact that an outcome is efficient should not give it “any privileged claim to our approbation.”³⁷ Efficiency properly plays a larger role in spectrum policy than in other areas of the law, but even here the pull of fairness will undermine policy choices that ignore equity. Regulations at odds with such norms lack legitimacy and are more likely to be challenged in the courts and in Congress.³⁸

C. *Measuring Fairness*

Acknowledging that fairness is an appropriate consideration in spectrum policy does not get us very far. Measuring fairness in spectrum, as in other areas, depends on the equitable goal the policy pursues and the baseline from which advantage is measured. The equitable traditions of the common law – traditions that the Communications Act invokes with its use of the term “unjust enrichment” – provide a useful framework for exploring these choices.

1. Equitable Goals

Unjust enrichment is an equitable doctrine developed to achieve just results principally in tort and contract cases where legal doctrines fall

36. Fairness is so powerful that parties may not enter into bargains that benefit them if they think the bargain is not fair. See F. H. Buckley, *Three Theories of Substantive Fairness*, 19 HOFSTRA L. REV. 33, 54 (1990) (providing example of landowner S who will not sell land to a prospective buyer B who offers 20% more than the land is worth to S, but only 10% of what the land, for idiosyncratic reasons, is worth to B). This analysis has been corroborated by experimental research. See e.g., Elizabeth Hoffman & Matthew L. Spitzer, *Entitlements, Rights, and Fairness: An Experimental Examination of Subjects' Concepts of Distributive Justice*, 15 J. LEGAL STUD. 259 (1985). For a discussion of this work, see generally Michael I. Swygert & Katherine Earle Yanes, *A Unified Theory of Justice: The Integration of Fairness into Efficiency*, 73 WASH. L. REV. 249, 309-14 (1998); Daniel A. Farber & Brett H. McDonnell, *Why (And How) Fairness Matters at the IP/Antitrust Interface*, 87 MINN. L. REV. 1817, 1853 (2003). See also Cass R. Sunstein, *Social Norms and Social Roles*, 96 COLUM. L. REV. 903, 945 (1996) (discussing how social norms like fairness can lead people to make what seem to be irrational choices).

37. CHARLES FRIED, *RIGHT AND WRONG* 93-94 (1978).

38. Cf. Farber & McDonnell, *supra* note 36 at 1851-53 (arguing why law should presumptively track social norms and discussing the literature on this point).

short.³⁹ If tort law deals with “nonbargained harms [and] contract law with bargained benefits and harms”, unjust enrichment deals with “nonbargained benefits.”⁴⁰ At common law, a defendant is unjustly enriched when the plaintiff has conferred a benefit on him, which it would be unjust for the defendant to retain.⁴¹ For example, the doctor who provides emergency medical services to an injured person with the expectation of compensation might have a cause of action for unjust enrichment if the patient fails to pay.⁴² The remedy for unjust enrichment is restitution.⁴³

Matters become more complicated when it comes to the measure and goal of restitution. According to most authorities, restitution, despite its name, should be pegged to a defendant’s gain, not a plaintiff’s loss.⁴⁴ That is, the unjustly enriched defendant should disgorge windfall gains even if doing so makes the plaintiff better off.⁴⁵ However, the courts do not uniformly adopt this measure of restitution and often resort to harm-based measures that compensate a plaintiff for her loss, rather than force the defendant to relinquish windfall gains.⁴⁶

We cannot translate equitable considerations directly from common

39. RESTATEMENT OF THE LAW (THIRD) RESTITUTION AND UNJUST ENRICHMENT ch. 1, §1 (Discussion Draft 2000) [hereinafter THIRD RESTATEMENT]. See also, Douglas Laycock, *The Scope and Significance of Restitution*, 67 TEX. L. REV. 1277, 1278 (1989). Under the modern view, unjust enrichment is a body of law independent of contract and tort providing both an exclusive and a supplemental mode of recovery. See Todd Barton, *Filling in the Gaps in Civil Liability: The Development of Unjust Enrichment in Rhode Island*, 9 ROGER WILLIAMS U. L. REV. 695, 697 (2004). For a discussion of alternative ways to view the relationship between unjust enrichment and legal doctrine, see Emily Sherwin, *Restitution and Equity: An Analysis of the Principle of Unjust Enrichment*, 79 TEX. L. REV. 2083, 2084 (2001) (arguing that unjust enrichment can be variously understood as a supplement to legal rules, as a “legal principle” incorporating a broad ideal of justice, and as a catch-all label for various restitution cases).

40. Saul Levmore, *Explaining Restitution*, 71 VA. L. REV. 65, 67 (1985).

41. LORD GOFF OF CHIEVELY & GARETH JONES, *THE LAW OF RESTITUTION* 13 (6th ed. 2002).

42. THIRD RESTATEMENT, *supra* note 39, at ch. 1, § 1, illus. 4. Unjust enrichment is also a common mode of recovery when a transfer is invalid due to mistake, fraud, duress or some other nullifying cause. *Id.* at ch. 1, § 1, cmt. d.

43. See RESTATEMENT OF RESTITUTION § 1 (1937) (“A person who has been unjustly enriched at the expense of another is required to make restitution to the other.”).

44. See THIRD RESTATEMENT, *supra* note 39, at ch. 1, § 2, cmt. b; Andrew Kull, *Rationalizing Restitution*, 83 CAL. L. REV. 1191, 1202 (1995). *But see* Christopher T. Wonnell, *Replacing the Unitary Principle of Unjust Enrichment*, 45 EMORY L.J. 153, 156 (1996) (asserting that the Restatement of Restitution is actually inconsistent as to whether the measure of restitution should be the benefit received or harm caused).

45. See generally James J. Edelman, *Unjust Enrichment, Restitution, and Wrongs*, 79 TEX. L. REV. 1869, 1875-76 (2001) (an examination of disgorgement damages and situations in which they have been recognized).

46. See generally Wonnell, *supra* note 44, at 164-67 (discussing unjust enrichment cases in which defendant is liable for the harm caused regardless of whether the benefit received is greater or less than the harm).

law to communications law. Whereas common law unjust enrichment seeks justice between the benefactor and beneficiary, spectrum equity involves the benefactor (the public), the beneficiary (generally the wireless licensee) and other wireless users who have standing to participate in FCC decisions.⁴⁷ Moreover, the public interests involved in spectrum management are alien to equitable actions – interests like competition and efficient resource use.⁴⁸ Despite these differences, the distinction between gain-based and harm-based approaches to restitution helpfully frames the remedial options for inequity in spectrum distribution, particularly under the spectrum equity provisions of the Act.

The aim of “recover[ing] . . . value” for the public for use of the spectrum resource essentially expresses the restitutionary goal of making the benefactor whole.⁴⁹ By contrast, the spectrum equity provisions’ other aim of avoiding “unjust enrichment” is more consistent with the gain-based conception of restitution: Spectrum users should not gain advantages that it would be unjust for them to retain, whether or not the public has recovered value for the spectrum resource. The injustice in this sense is not to the public, but to other spectrum users. Where the harm is to competitive parity, the remedy is for the spectrum user to disgorge gains, not to restore value.

We see the emphasis on unfair gains as opposed to uncompensated losses in the only other appearance of “unjust enrichment” in the Act – in the provisions governing the “ancillary and supplementary” use of digital television broadcast frequencies, which were added by the Telecommunications Act of 1996. Broadcasters obtained the rights to use spectrum for digital television without having to pay for them at auction. In the absence of any special provision, then, the use of these frequencies would not result in any compensation to the public. Congress enacted a special provision to produce compensation, but only for the “ancillary or supplementary” services offered over the spectrum, such as those for which the licensee either charges a subscription fee or receives compensation from a third party.⁵⁰ These are services that compete with commercial wireless services provided on auctioned

47. Issues of fairness most frequently arise in FCC rulemakings, not in adjudications. By contrast, the Bureau of Land Management modifies grazing permits, in some cases increasing rancher entitlements without additional compensation, using procedures that exclude third party participation. See Harold J. Krent & Nicholas S. Zeppos, *Monitoring Governmental Disposition of Assets: Fashioning Regulatory Substitutes for Market Controls*, 52 VAND. L. REV. 1703, 1761-62 (1999).

48. The FCC is required to promote the deployment of new technologies, competition, and the efficient and intensive use of spectrum. 47 U.S.C. § 309(j)(3)(A), (B), (D). See also, Goodman, *supra* note 2, at 304-11 (discussing equitable and efficiency goals of FCC spectrum management decisions).

49. 47 U.S.C. § 309(j)(3)(C).

50. 47 U.S.C. § 336(e)(1).

spectrum. As to these alone, Congress instructed the FCC to assess a fee.⁵¹ Like the spectrum equity provisions contained in the FCC's auction authority, the digital television provisions require that the fee on ancillary and supplementary DTV services "recover for the public a portion of the value of the public spectrum resource made available for such commercial use" and avoid "unjust enrichment".⁵²

The grant of rights to use the spectrum for digital broadcasting services clearly posed a problem of public compensation.⁵³ It did not, however, create a competitive imbalance as far as broadcast television services were concerned, since all broadcasters were similarly situated. Had restoring value to the public been the primary goal, one might have expected the fee to cover all broadcast services, not just ancillary and supplementary ones. The decision to levy the fee on only a subset of broadcasters' services – those offered in competition with wireless users who had paid for spectrum rights—reflects a concern for spectrum equity *vis a vis* competitors, not the public.

To a large extent, the value the public loses will be coextensive with the value a wireless user gains when spectrum access rights are unfairly granted. A license that is auctioned for less than market value will deprive the public of the full benefit of the spectrum resource and enrich the licensee, and in roughly the same amounts. The spectrum user can effect public restitution and competitive parity by paying market value for the spectrum.

But this will not always be the case. If the public receives benefits from spectrum use in a form other than Treasury receipts, these benefits are unlikely to level the playing field for competitors deprived of the same spectrum benefits. The reverse is also possible, although less likely. The spectrum user who disgorges the gains from special access rights will, in satisfying the claims of a competitor, restore some economic value to the public. Whether this value is sufficient to make the public whole depends on what the alternative spectrum management scenarios might

51. *Id.*

52. 47 U.S.C. § 336(e)(2)(A). The method for determining this value should be "an amount that, to the extent feasible, equals . . . the amount that would have been recovered had such services" been auctioned. 47 U.S.C. § 336(e)(2)(B). *See also* Fee for Ancillary or Supplementary Use of Digital Television Spectrum Pursuant to Section 336(e)(1) of the Telecomms. Act of 1996, *Memorandum Opinion & Order*, 14 FCC Rcd. 19,931, 19,938 (1999) (the fee imposed must "approximate the revenue that would have been received had these services been licensed through an auction" and must "recover a portion of the value of the spectrum used for these services and avoid 'unjust enrichment' of DTV licensees who have been given the exclusive right to apply for DTV channels without having to bid for them at an auction."); Ancillary or Supplementary Use of Digital Television Capacity by Noncommercial Licensees, *Report & Order*, 16 FCC Rcd. 19,042, 19,058 (2001) (applying the same approach to noncommercial licensees).

53. *See* TAYLOR *supra* note 25; HAZLETT *supra* note 25.

be. For example, it might be that the fee broadcasters pay to offer ancillary and supplementary services over free spectrum raises their costs of doing business to a level that ensures competitive parity, but is less than the public would get if the broadcast spectrum were allocated for other purposes.

2. Baseline Problems

Whether the primary equitable goal is restoring value or disgorging gains, baseline entitlements need to be clear before we can say that a benefited party has taken more than her due. If Jane is entitled to pick fruit from public property, then she is not unjustly enriched by her harvest. If she is not so entitled, then her harvest is an unjust gain.⁵⁴ Valuing benefits is hard enough for courts dealing with ordinary property rights, where the scope of the baseline entitlement is relatively clear.⁵⁵ The baseline problems in spectrum are more difficult because spectrum entitlements, unlike property lines, are not clearly drawn.

Some baseline spectrum rights *can* be precisely articulated, like the right to transmit at a certain power or the right to operate as a mobile service. But other rights, like the right to be protected from interference from other operators, are not delineated.⁵⁶ In many cases of conflict over interference, licensees are expected simply to “work it out.”⁵⁷ If the government then provides a class of licensees with interference protection, thus increasing the value of their licenses, it is not obvious how to measure this new entitlement as against the shadowy baseline.

The baseline problem in spectrum is made even more complex by the reality that most spectrum users have benefited from spectrum management decisions considered unfair by someone. In some cases, a licensee that received its license for free complains that another licensee is receiving new spectrum rights for free. There are no clean hands. As FCC Commissioner Kathleen Abernathy has put it:

54. See Wendy J. Gordon, *Of Harms and Benefits: Torts, Restitution, and Intellectual Property*, 21 J. LEGAL STUD. 449, 451-52 (1992) (discussing the importance of stable baselines for restitution).

55. See Ofer Grosskopf, *Protection of Competition Rules Via the Law of Restitution*, 79 TEX. L. REV. 1981, 2010-12 (2001) (discussing the dependence of restitution law on baseline entitlements).

56. See Werbach, *supra* note 9, at 918 (“The rights encoded in existing FCC licenses are broadly under-specified or mis-specified.”). See also *id.* at 915 n.234 (discussing the failure of commentators to define spectrum property rights).

57. See *e.g.*, Wireless Operations in the 3650-3700 MHz Band, *Report & Order & Memorandum Opinion & Order*, 20 F.C.C. Rcd. 6502, 6512 (2005) (adopting rules for the non-exclusive, licensed use of spectrum under which licensees have “the mutual obligation to cooperate and avoid harmful interference to one another. . . [and to] act in good faith to help eliminate” any interference caused).

The Commission is constantly put in the position of having to balance the equities in granting rights, limiting rights, auctioning spectrum and responding to technological change. . . . [T]he evolving nature of the Commission's statutory authority has ensured disparate treatment already. For instance, cellular service was authorized before the Commission had auction authority, international satellite is barred from auction and mutually exclusive terrestrial applications must be auctioned.⁵⁸

Even after establishing a baseline, it may be difficult to value a windfall benefit, which is necessarily unbargained for.⁵⁹ There is the problem of subjective valuation. The owner of a vacant lot who "benefits" from plaintiff's mistaken construction on the property may not actually consider the structure an "improvement."⁶⁰ So too with spectrum, users may value the same access rights very differently depending on the wireless technologies they deploy. Moreover, with spectrum, there are also problems of objective valuation since there is not yet a robust market yielding reliable prices for spectrum access rights. The next section explores these complexities of definition and valuation in a real world spectrum context.

II. THE PROBLEM OF EQUITY IN ACTION

Unjust enrichment, windfall benefits, restitution, and equity in spectrum access were all at issue in the recent restructuring of the 800 MHz band.⁶¹ In 2004, the FCC "rebanded" this spectrum used by public safety and commercial wireless services, shifting entitlements to the spectrum in creative ways. The 800 MHz proceeding, which resulted in a "spectrum swap" among Nextel Communications, Inc., the federal government and other spectrum users, was "the most difficult, complex, and challenging issue [former FCC Chairman Michael Powell] faced in seven years at the Commission."⁶² It was so hard largely because of

58. Abernathy, *supra* note 27, at 17.

59. See Saul Levmore, *Explaining Restitution*, 71 VA. L. REV. 65, 69-79 (1985) (identifying difficulties of fixing value in the absence of a bargain because of uncertain objective value and presence of subjective value).

60. See generally Kelvin H. Dickinson, *Mistaken Improvers of Real Estate*, 59 N.C.L. REV. 37 (1985) (examining implications for restitution of mistaken improvements on real estate); Levmore, *supra* note 40, at 77 (noting that a "homeowner is unambiguously worse off when his usable water is polluted but not unambiguously better off after a forced purchase of additional pure water").

61. Improving Pub. Safety Communications in the 800 MHz Band, *Report & Order, Fifth Report & Order, Fourth Memorandum Opinion & Order*, 19 FCC Rcd. 14,969 (2004), as amended by *Second Erratum*, 19 FCC Rcd. 19,651 (2004) [hereinafter 800 MHz Report & Order]. The "800 MHz band" in this context refers to spectrum at 806-824 MHz and 851-869 MHz. *Id.* at 14,972 n.2.

62. News Release, Federal Communications Commission, Statement of FCC Chairman

fairness concerns. The FCC's reallocation of spectrum access rights in this proceeding illustrates both the power of fairness as a regulatory norm and the difficulty of achieving it in the morass of current spectrum management goals.

The 800 MHz band is used by public safety agencies like fire and police departments for both routine and "first response" communications. Nextel also uses the 800 MHz band for cellular service that is technically incompatible with public safety communications. Public safety and cellular frequencies are interleaved, meaning that the spectrum use alternates, frequency by frequency. This integration of two incompatible technologies has resulted in significant interference problems.⁶³

For years, the FCC was under intense pressure from the public safety community, and its supporters in Congress, to remedy the interference problem. In an ideal world, public safety agencies might have solved the problem themselves by investing in systems that were more immune to interference, but this solution proved financially impractical. The burden thus fell on Nextel. The company offered to disentangle its operations from those of public safety users.⁶⁴ Specifically, Nextel proposed to vacate most of the 800 MHz frequencies and pay public safety agencies at least \$850 million to move in. In return, the FCC would modify Nextel's licenses to provide it with 10 MHz of contiguous spectrum in the 1.9 GHz band adjacent to the spectrum held by Nextel's commercial wireless service competitors.⁶⁵

Nextel's competitors, particularly Verizon Wireless, expressed outrage at the proposed spectrum swap.⁶⁶ A vigorous debate ensued about whether the proposal was fair.⁶⁷ No one disputed that Nextel would gain spectrum that was more valuable than the spectrum it would

Michael K. Powell Regarding Acceptance of Nextel of 800 MHz Interference Solution (Feb. 7, 2005), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-256597A1.pdf.

63. See Improving Pub. Safety Communications in the 800 MHz Band, *Notice of Proposed Rulemaking*, 17 FCC Rcd. 4873, 4881-82 (2002), as amended by *Erratum*, 17 FCC Rcd. 7169 (2002) (documenting interference problems) [hereinafter 800 MHz NPRM].

64. See 800 MHz Report & Order, *supra* note 61, at 14,980.

65. See *id.* at 14,977-78, 14,987-88, 15,084-85. In addition, Nextel offered to pay the \$512 million it estimated would be required to move existing users out of the 1.9 GHz spectrum. *Id.* at 15,098.

66. Verizon Wireless ultimately agreed not to appeal the FCC's final order in exchange for Nextel's agreeing to refrain from asserting a trademark claim against Verizon's use of Nextel's phrase "push to talk" for one of its wireless voice services. See Ken Belson, *Verizon and Nextel Agree to Drop Lawsuits*, N.Y. TIMES, Nov. 3, 2004, at C12.

67. See Jesse Drucker, *Interference Call: Nextel's Maneuvers for Wireless Rights Has Rivals Fuming*, WALL ST. J., Apr. 19, 2004, at A1; 800 MHz Report & Order, *supra* note 61, at 15,017 (discussing windfall concerns with Nextel relocation). See also 800 MHz NPRM, *supra* note 63, at 15,083 (Cellular Telecommunications Industry Association proposed an alternative plan under which spectrum in the 2.1 GHz band would be sold to Nextel).

relinquish.⁶⁸ What was disputed⁶⁹ was whether Nextel was unjustly enriched by the swap, given the cash it was putting on the table.⁷⁰ Because no initial licenses, and thus no auctions, were involved in the band reconfiguration, the Act's spectrum equity provisions did not apply. Nevertheless, the possibility that Nextel would receive "windfall" gains

68. Nextel itself acknowledged that the licenses it would give up were not well-suited for its business as a broadband wireless provider even setting aside the harm caused to public safety. See Reply Comments of Nextel Communications, Inc., to the *Notice of Proposed Rule Making* in 1998 Biennial Regulatory Review—Spectrum Aggregation Limits for Wireless Telecommunications Carriers, WT Dkt. No. 98-205 at 4 (Feb. 10, 1999) (citing FCC's own recognition that the fragmented 800 MHz spectrum is "not currently equivalent to cellular or broadband PCS spectrum." Because the channels are encumbered, non-contiguous and assigned on a site-by-site basis, an SMR [specialized mobile radio] licensee [in the 800 MHz band] faces more significant obstacles than its competitors in configuring a wide-area system."), available at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6006242156. Whereas the 800 MHz spectrum supports only low-bandwidth transmissions, the 1.9 GHz spectrum would allow Nextel to roll out high-bandwidth next generation technologies. See *FCC Eyes Draft Giving Nextel 1.9 GHz, But at Higher Pricetag*, COMMUN. DAILY, Mar. 11, 2004, at 8 (predicting that Nextel would use the new spectrum to provide "high-speed, IP-based broadband access"); Legg Mason, *Logjam Breaks on FCC Consideration of Nextel Spectrum Swap*, Mar. 10, 2004, at 3 (predicting that "the new spectrum would give [Nextel] more operational flexibility not only to formulate a data strategy but also to more effectively manage its voice service and improve quality over time") Legg Mason Wood Walker is an investment firm with ties to Nextel.

69. Another important issue was whether the FCC had authority to approve the spectrum swap without making the new contiguous spectrum available for auction. See *Ex Parte* Presentation by Verizon Wireless, to the *Notice of Proposed Rule Making* in Improving Pub. Safety Communications in the 800 MHz Band, WT Dkt. No. 02-55 (Apr. 6, 2004) at 4 (presenting legal argument that the spectrum swap constituted a private sale of spectrum to Nextel), available at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6516086686. See also *Ex Parte* Presentation of Verizon Wireless, Legal Memorandum of Cooper & Kirk, to the *Notice of Proposed Rule Making* in Improving Pub. Safety Communications in the 800 MHz Band, WT Dkt. No. 02-55 (June 28, 2004) at 7 (arguing that the FCC violated the Antideficiency Act, 31 U.S.C. § 1341(a)(1)(B) by making unauthorized "expenditures" in the form of credits to Nextel, and violated the Miscellaneous Receipts Act, 31 U.S.C. § 3302(b), by depriving the Treasury of revenue for a public asset ordinarily subject to auction), available at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6516282241. The Government Accountability Office ruled in favor of the FCC on these charges. Letter to Senator Lautenberg from Anthony H. Gamboa, General Counsel, U.S. Government Accountability Office (Nov. 8, 2004) at 2, available at <http://www.gao.gov/decisions/appro/303413.pdf>.

70. See e.g., Comments of Cingular Wireless Inc., to the *Notice of Proposed Rule Making* in Improving Pub. Safety Communications in the 800 MHz Band, WT Dkt. No. 02-55 (Feb. 10, 2003) at 10 (arguing that the spectrum swap would result in a "disproportionate and unwarranted 'exchange' that the record amply shows is contrary to Section 309(j) of the Communications Act, case law precedent, and the FCC's policy of not favoring one competitor over another"), available at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6513410791; Comments of the United States Cellular Corp., to the *Notice of Proposed Rule Making* in Improving Pub. Safety Communications in the 800 MHz Band, WT Dkt. No. 02-55 (May 6, 2002) at 4 (arguing that spectrum swap would give Nextel an "unjustified windfall" and that Nextel "has presented no compelling justification for such a gratuitous enhancement"), available at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6513190812.

was central to the FCC's decision.⁷¹ The elements of, and omissions from, the decision highlight the challenges of spectrum equity.

A. Valuing Spectrum

The FCC could not consider fairness without first valuing the spectrum rights involved in the spectrum swap. Placing a value on the right to use spectrum involves two separate determinations. First, there is the market value of the right to use a set of frequencies in a particular area under applicable service rules (e.g., power level, equipment requirements).⁷² Second, there is the market value of the spectrum user's entitlement to cause interference to others or to be free from interference caused by others. Such interference is possible even when all users are operating lawfully.⁷³ The very same frequency subject to the very same service rules will be worth more if the spectrum user is not liable for causing interference.

The record in the 800 MHz band proceeding reveals the radical uncertainty in the valuation of spectrum rights. The FCC set out to confer new spectrum rights on Nextel on a "value for value" basis in exchange for spectrum rights Nextel would surrender, plus the company's expenses in relocating incumbent users affected by the swap.⁷⁴ In other

71. 800 MHz Report & Order, *supra* note 61, at 15,017. The FCC grounded its anti-windfall rules on 47 U.S.C. § 154(i) (authorizing the FCC to "perform any and all acts, make such rules and regulations, and issue such orders, . . . as may be necessary in the execution of its functions") and 47 U.S.C. § 303(r) (requiring the FCC to "[m]ake such rules and regulations and prescribe such restrictions and conditions, not inconsistent with law, as may be necessary to carry out the provisions of this" Act). *Id.*

72. *See* Goodman, *supra* note 2, at 315-20 (identifying the bundle of rights a spectrum user has under a licensed or property rights model). Frequencies have differential value depending on the propagation characteristics of the band, the interference constraints imposed by other spectrum users, and any service restrictions the FCC has placed on the band. These differences make it difficult to extrapolate from spectrum auctions to arrive at a generic dollar value for megahertz of spectrum per population served. Moreover, spectrum values have fluctuated widely depending on the supply of spectrum and the economic conditions under which spectrum is auctioned. 800 MHz Report & Order, *supra* note 61, at 15,107 (The FCC does not typically value spectrum because it knows "from experience that the value of spectrum is seldom static and hinges on multiple variables, some of them intangible, which exist at the moment a willing buyer and willing seller agree to a transaction, or when an informed bidder places its bid at auction.").

73. *See* Goodman, *supra* note 2, at 289-96 (showing how faulty modeling and changing technology can result in unexpected interference).

74. 800 MHz Report & Order, *supra* note 61, at 15,105. The FCC credited Nextel for (1) the net value of spectrum rights that it relinquished; (2) the actual cost Nextel will bear in relocating its own operations and those of other licensees in the 800 MHz band; and (3) the costs incurred by Nextel to clear operators out of the 1.9 GHz band. If the relocation costs turn out to be less, Nextel will have to disgorge the difference to the U.S. Treasury. *Id.* at 15,066, 15,124-25 (providing for financial reconciliation process). In a subsequent ruling, the FCC credited Nextel with an additional \$452 million for its surrender of 800 MHz spectrum based on the "granular data provided by Nextel" about coverage of the relevant licenses.

words, the goal of the spectrum swap was to help public safety without advantaging Nextel – something Nextel thought could be accomplished without any offsetting payments on its part.⁷⁵ Industry analysts and competitors, by contrast, foresaw Nextel walking away from the swap with significant additional rights.⁷⁶

In making its own judgments about the net benefit to Nextel, the FCC had to put a value on the spectrum Nextel was giving up and the spectrum it was gaining. As to the contiguous spectrum that Nextel would gain in the 1.9 GHz band, Verizon Wireless offered to pay at least \$5 billion to gain access rights for itself,⁷⁷ making it relatively easy for the FCC to value the spectrum in that range.⁷⁸

The two sections of 800 MHz spectrum were more difficult to value. Even spectrum in the same frequency range may not be worth the same on a per unit basis. One source of disparity is that contiguous spectrum, which Nextel was gaining, is generally more valuable than spectrum shared with other users.⁷⁹ In this case, the FCC concluded that there was little premium for contiguity. Looking at the subjective value of the spectrum to Nextel, given the company's past and probable future uses, the FCC concluded that the value of the interleaved spectrum Nextel was relinquishing was unusually high, and the value of the

Improving Public Safety Communications in the 800 MHz Band, *Supplemental Order & Order on Reconsideration*, 19 FCC Rcd. 25,120, 25,135-136 (2004).

75. Nextel claimed that it would break even after swapping the spectrum and paying for public safety's relocation. See Supplemental Response of Nextel Communications, Inc., to the *Notice of Proposed Rule Making* in Improving Public Safety Communications in the 800 MHz Band, WT Dkt. No. 02-55 (Apr. 2, 2004) at 15 ("Nextel would receive little direct value, if any, from replacing" 800 MHz spectrum with 1.9 GHz spectrum), available at http://gulfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&cid_document=6516086270.

76. See Letter of John T. Scott, III, Vice President & Deputy General Counsel, Verizon Wireless, to Chairman Michael K. Powell, to the *Notice of Proposed Rule Making* in Improving Pub. Safety Communications in the 800 MHz Band, WT Dkt. No. 02-55 (Apr. 8, 2004) (citing industry analysts' reports that valued the spectrum swap to Nextel at \$1.5 billion to \$3.2 billion).

77. See *Ex Parte* Presentation of Verizon Wireless, in Improving Public Safety Communications in the 800 MHz Band, WT Dkt. No. 02-55 (FCC filed June 9, 2004); Letter of William P. Barr, Executive Vice President & General Counsel, Verizon Wireless, to Chairman Michael K. Powell, in Improving Public Safety Communications in the 800 MHz Band, WT Dkt. No. 02-55 (June 28, 2004) (valuing spectrum at over \$5 billion), available at http://gulfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&cid_document=6516282241.

78. 800 MHz Report & Order, *supra* note 61, at 15,112 (valuing the 1.9 GHz spectrum at \$4.8 billion using a combination of methodologies that Nextel and its competitors proposed). Legg Mason valued the spectrum at \$4.5 billion. Legg Mason, *supra* note 68, at 2. Nextel itself valued the spectrum at \$3.3 billion. *Ex Parte* Presentation of Nextel Communications, in Improving Public Safety Communications in the 800 MHz Band, WT Dkt. No. 02-55 at 3 (Mar. 5, 2004), available at http://gulfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&cid_document=6515784904.

79. See 800 MHz Report & Order, *supra* note 61, at 15,115-16 (discussing Nextel's competitors valuation of contiguous spectrum).

contiguous spectrum Nextel was acquiring unusually low.⁸⁰ Just like common law unjust enrichment courts, the FCC seemed to be taking into account subjective valuations.

Interference entitlements present another difficulty in valuing the spectrum exchange to Nextel. The motivation for the spectrum swap was interference to public safety operations. Nextel's responsibility for causing and remedying that interference should be central to an accounting of the spectrum exchange. This responsibility establishes a baseline entitlement from which it is possible to determine the extent to which Nextel's enrichment is unjust.

Imagine a property dispute between two neighbors. B, who sits uphill from A, uses her property for farming. B's use of irrigation increases the flow of water onto A's property. A uses her property as a summer residence. Because of the flooding from B's property, A's grounds are often too wet for recreational use. If A and B were to arrange for an exchange of properties, plus payments for any differential in property value, A would want the value of B's property discounted by B's responsibility for flooding A's property. B would in turn assert that A herself was responsible for this flooding because she chose not to take steps, like landscaping, to absorb the water. Thus, important to the valuation of the properties and the structure of the property exchange is the determination of whether A was entitled to be free from water draining off of B's property without mitigating the damage.

The FCC should have determined whether or not Nextel was enriched by *not* having to remedy the interference problem that required the spectrum swap in the first place. This analysis would have turned on two findings. First, is Nextel responsible for interfering with public safety operations and, second, does it bear liability for such interference? In a fairly offhand manner, the FCC refused to assign interference responsibility to Nextel or any other party, instead concluding that the interference was a matter of mutual incompatibility.⁸¹

This conclusion sidesteps the problem. As Coase observed, the interference of one activity with another incompatible activity is in some sense always reciprocal.⁸² The complaining homeowner interferes with the polluting factory just as the factory interferes with the homeowner.

80. See *id.* at 15,121 (FCC valuation of 800 MHz spectrum); *id.* at 15,116 (basing valuations in part on Nextel's "technical efficiencies").

81. See 800 MHz Report & Order, *supra* note 61, at 15,113 ("[W]hile Nextel has been implicated in great number of interference incidents, the interference problem has not been not 'caused' by any single party-Nextel, cellular, or public safety-but rather has been caused collectively by the proximity of all of these parties to one another in the 800 MHz band, even though all parties are operating in compliance with Commission rules."). See *generally id.* at 15,112-15 (discussing offsets).

82. See Coase, *supra* note 15, at 19.

But this reciprocity does not keep the FCC from adopting rules, or nuisance courts from making judgments, that identify the “source” of the interference.⁸³

Ordinarily, a finding that Nextel had indeed caused the interference would not end the inquiry, since licensees in this band do not have an absolute entitlement to be free from interference.⁸⁴ In this particular case, however, Nextel had told the FCC that it would assume liability for interfering with public safety operations in return for more operational flexibility.⁸⁵ By declining to find Nextel responsible for the interference, the FCC in effect absolved Nextel of this commitment and granted the company an entitlement to interfere. This removed the question of how liability for interference might relate to spectrum value. Had the FCC found Nextel liable for the interference, it would have had to value the liability averted and added that value to the benefits that Nextel obtained from the spectrum swap.⁸⁶

One explanation for the FCC’s generous treatment of Nextel on the interference front is that Nextel was “supporting the optimal solution” to a problem that had multiple causes. The agency deemed this solution “consistent with equitable principles” and found that it furthered “the public interest goals of this proceeding in achieving a comprehensive long-term solution to the interference problem.”⁸⁷ What we see here,

83. Labeling a licensee as the interferor does not necessarily result in liability for the interferor. See Goodman, *supra* note 2, at 337-56 (showing how the FCC’s allocation of interference entitlements sometimes protects the victim of interference and sometimes the interferor).

84. When the interferor and its victim are both operating within the terms of their license, the interferor bears a duty to take steps to avoid interference. See 47 C.F.R. § 90.403(e) (“Licensees shall take reasonable precautions to avoid causing harmful interference.”). However, the extent of responsibility for actually remedying interference is not clear. See 47 C.F.R. § 90.173(b) (“Licensees of stations suffering or causing harmful interference are expected to cooperate and resolve this problem by mutually satisfactory arrangements.”). Indeed, the lack of clarity in the FCC’s interference liability standards is among the biggest problems in spectrum management. See R. Paul Margie, *Can You Hear Me Now? Getting Better Reception from the FCC’s Spectrum Policy*, 2003 STAN. TECH. L. REV. 5.

85. Many of Nextel’s 800 MHz licenses were originally usable only for private, two-way radio communications like taxi dispatching. In successfully seeking a waiver of these regulatory constraints, and substantially increasing the value of its licenses, Nextel promised to accord public safety systems “full and continuing protection” from interference. See Petition for Waiver of Fleet Call, Inc., FCC File No. LMK-90036 (Apr. 15, 1990), at A-12.

86. For the suggestion of an argument along these lines, see *e.g.*, Comments of Motient, Inc., Improving Public Safety Communications in the 800 MHz Band, Consol. the 900 MHz Industrial/Land Transp. & Bus. Pool Channels, WT Dkt. No. 02-55, 11 (FCC filed May 6, 2002) available at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&cid_document=6513190888 (arguing that the relocation plan “should not create windfalls for those causing interference to public safety.”).

87. 800 MHz Report & Order, *supra* note 61, at 15,113. See also *id.* at 15,125 (explaining that the “central purpose” of proceeding was to alleviate “interference to public safety” communications).

then, is that interference did play a role in evaluating the equities of the spectrum reallocation, but only on one side of the ledger. While Nextel was not “charged” for being relieved of interference liability, it was credited with abating interference to public safety. This abatement was one of the ways in which Nextel restored value to the public for use of the spectrum resource.

B. Equitable Goals

The FCC’s approach to interference highlights another complication in valuing spectrum rights. This is the potential disparity between restoring value to the public and ensuring fairness among competitors. Nextel’s competitors used equity as a way to protect against competitive harm. Cingular, for example, argued that the spectrum swap would result in a “disproportionate and unwarranted ‘exchange’ that . . . is contrary to Section 309(j) of the Communications Act . . . and the FCC’s policy of not favoring one competitor over another.”⁸⁸ The FCC accepted the goal of competitive parity, at least in theory.⁸⁹

The problem with competitive parity, when laid alongside the goal of public restitution, is that the two goals may not entail the same remedy. The interests of competitive parity will usually be served by requiring the competing spectrum user to disgorge (or forego) unfair gains, as measured by the market value of particular spectrum access rights. The resulting payments may also serve to make the public whole, but there may be other ways, such as by providing service benefits or enabling other wireless users to provide them. The wireless user that is unjustly enriched \$100 by obtaining preferential access to spectrum can make the public whole by paying \$100 to the Treasury, thereby also leveling the playing field for its competitor. Or, the user can pay less and take other steps (costly or not) to enhance service to the public, like accommodating public safety communications.

This potential divergence between public restitution and competitive parity materialized in the 800 MHz proceeding. Focusing

88. Comments of ALLTEL Communications Inc., AT&T Wireless Services, Cingular Wireless LLC, Coupe Communications, Inc., Nokia, Inc., Southern LINC, & United States Cellular Corporation, Improving Pub. Safety Communications in the 800 MHz Band, WT Dkt. No. 02-55, 10 (FCC filed Feb. 10, 2003) available at http://gulfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6513410791. See also Comments of the United States Cellular Corporation, Improving Pub. Safety Communications in the 800 MHz Band, Consolidating the 900 MHz Industrial/Land Transp. & Bus. Pool Channels, WT Dkt. No. 02-55, 4 (FCC filed May 6, 2002) available at http://gulfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6513190812 (arguing that Nextel’s plan would result in an “unjustified windfall” and that Nextel “has presented no compelling justification for such a gratuitous enhancement . . .”).

89. 800 MHz Report & Order, *supra* note 61, at 14,975 (“Nextel, other licensees and the public” must all be “treated equitably” and Nextel must “not realize any windfall gain.”).

on value to the public, the FCC took into account contributions by Nextel that Nextel's competitors did not, such as the spectral efficiency and public safety benefits of the spectrum swap. For example, Nextel's competitors proposed that the FCC give Nextel the same amount of 1.9 GHz spectrum as the company was relinquishing in the 800 MHz band (4.5 MHz). The FCC rejected this proposal in order to avoid segmenting the 1.9 GHz band into units that were too small to be used efficiently.⁹⁰ Had the FCC been more concerned with Nextel's disgorging windfall gains, it might have assessed with greater rigor what Nextel was gaining. Instead, it concluded that "no strictly economic analysis can satisfactorily resolve the ultimate question of whether interference-free public safety communications—a largely unquantifiable benefit—has a dollar value commensurate with the fair market value of the 1.9 GHz spectrum Nextel will receive."⁹¹ Nextel's help in achieving the FCC's spectrum management goal conferred value on the public for the use of the spectrum resource even though it did not necessarily reduce (at least not in equal amounts) Nextel's "windfall" gains.

Placing a precise and consistent value on interference abatement, efficient spectrum use, or the value of spectrum to the public is almost certainly impossible.⁹² It should, however, be possible for Congress and the FCC to define more clearly their equitable goals and the extent to which they include competitive parity or simply restoration of value to the public. It should also be possible for the FCC to adopt clearer spectrum entitlements, particularly in the way of interference rights, so that there is a baseline against which to measure just and unjust enrichment. Without these advances in legislative and regulatory clarity, we will see more flailing about for justice as the FCC reallocates spectrum and tweaks spectrum access rights.

III. EMERGING ISSUES OF EQUITY

The Nextel spectrum swap shows how little the Act's spectrum equity provisions or general notions of fairness really tell us about the appropriate valuation and fair distribution of spectrum access rights. The mere fact that the FCC tried so hard to avoid "unjust enrichment" in that proceeding, even though it was not required to under the Communications Act, shows something else: that the desire for equity

90. *Id.* at 15,105 ("[P]roviding Nextel uniform nationwide access to ten megahertz in the 1.9 GHz band not only helps to ensure that Nextel receives comparable value for its loss of spectrum rights and expenses it will incur, but also will promote efficient use of the 1.9 GHz band.")

91. *Id.* at 15,107.

92. *Id.* at 15,083 (the FCC admitted that its order did not "reflect complete financial exactitude.")

exceeds the scope of the statutory command.

When the spectrum equity provisions were enacted, auctions covered the most valuable spectrum being made available for commercial wireless services. But now, large and increasing amounts of spectrum are being made available on a non-exclusive and unlicensed basis.⁹³ And spectrum access rights are being created as modifications to existing licenses.⁹⁴ These grants of spectrum access are not covered by the spectrum equity provisions since they do not involve initial licenses for commercial services.⁹⁵ As a result, the power of those provisions is waning even as the instinct for equity in the distribution of spectrum access rights persists.

When existing licensees receive enhanced spectrum access rights for free as a result of a license modification, the fairness questions are

93. The FCC has adopted a policy of making more spectrum available on an unlicensed basis. FEDERAL COMMUNICATIONS COMMISSION, SPECTRUM POLICY TASK FORCE REPORT, ET Dkt. No. 02-135, 65 (Nov. 15, 2002), available at <http://hraunfoss.fcc.gov/edocspublic/attachmatch/DOC-228542A1.pdf> [hereinafter, SPECTRUM POLICY TASK FORCE REPORT]. It has recently opened up unlicensed spectrum in the 5 GHz band, Revision of Parts 2 and 15 of the Comm'n's Rules to Permit Unlicensed Nat'l Info. Infrastructure (U-NII) Devices in the 5 GHz Band, *Order*, 20 FCC Rcd. 4883 (2005) and in the 3.6 GHz band, Wireless Operations in the 3650-3700 MHz Band, *Report & Order & Memorandum Opinion & Order*, 20 FCC Rcd. 6502 (2005). It has changed the unlicensed equipment rules to enhance unlicensed operations. See Revision of Part 15 of the Comm'n's Rules Regarding Ultra-Wideband Transmission Sys., *Second Report & Order & Second Memorandum Opinion & Order*, 19 FCC Rcd. 24,558 (2004). It has also made it easier to use radios that take advantage of unlicensed or opportunistic spectrum. See Facilitating Opportunities for Flexible, Efficient, and Reliable Spectrum Use Employing Cognitive Radio Technologies, *Report & Order*, 20 FCC Rcd. 5486 (2005). Currently, the FCC is deliberating over whether to open up licensed spectrum to unlicensed use on a non-interfering basis, Unlicensed Operation in the TV Broadcast Bands, *Notice of Proposed Rulemaking*, 19 FCC Rcd. 10,018 (2004).

94. See e.g., 47 C.F.R. § 73.624 (c) (2004) (allowing broadcasters flexibility in the use of digital television spectrum); Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, & the 1.6/2.4 GHz Bands, *Report & Order & Notice of Proposed Rule Making*, 18 F.C.C.R. 1962, 2016 (2003) (modifying existing licenses to grant new spectrum usage rights and noting that Act does not require the FCC to impose fees to prevent unjust enrichment from such modifications). *Id.* at 2071 (admitting that the added flexibility to use satellite licenses for terrestrial transmissions will make licenses "more valuable" but not so much more valuable that it would amount to "unjust enrichment" or is "inequitable" to competing wireless service providers); Amendment of Part 90 of the Comm'n's Rules to Provide for Flexible Use of the 896-901 MHz and 935-940 MHz Bands Allotted to the Bus. & Indust. Land Transportation Pool, *Notice of Proposed Rulemaking & Memorandum Opinion & Order*, 20 FCC Rcd. 3814 (2005). See also 47 U.S.C. § 303(y) (giving the FCC additional authority to allocate spectrum to provide flexibility of use if such allocation would be in the public interest).

95. The legislative history of the Communications Act expressly excludes unlicensed spectrum users from auctions. H.R. REP. 103-111, at 253 (1993) ("competitive bidding would not be permitted for unlicensed uses"). It similarly excludes the beneficiaries of modified licenses from auctions. *Id.* (competitive bidding would not be permitted for "a renewal or modification of the license.").

relatively straightforward and the FCC has engaged them. We saw in the case of the modification to broadcasters' licenses to allow them to provide ancillary and supplementary digital services, for example, that the FCC was under a statutory obligation to collect a fee.⁹⁶ Where it has not been so obliged, the FCC has either determined that the benefits conferred on the licensee do not warrant a charge⁹⁷ or it has wrestled with the amount of the charge, as in the 800 MHz proceeding.⁹⁸

The biggest problem in this area of the law is that so much rides on the threshold decision about whether enhanced spectrum access rights simply modify an existing license or constitute a new license. If the latter, the spectrum equity provisions are triggered and auctions will determine the value of the access rights. By characterizing the new rights as modifications, the FCC can choose whether or not to address equity questions at all and is free to resolve them without auctions.⁹⁹

Because unlicensed spectrum has been regulated, and used, so differently than licensed spectrum, the fairness issues it presents are nascent and obscure. In this Part, I explore how the evolving use of unlicensed spectrum, or what many have called the spectrum commons, may raise issues of spectrum equity in the future.

A. *The Problem of Fairness in the Commons*

The beauty of unlicensed spectrum is that it is open to everyone, so long as they comply with the applicable technical restrictions.¹⁰⁰ For the most part, these restrictions have limited unlicensed spectrum uses to low power applications, such as WiFi or cordless phone transmissions, and

96. See *supra* notes 50-52 and accompanying text.

97. See *e.g.*, Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, & the 1.6/2.4 GHz Bands *Report & Order & Notice of Proposed Rule Making*, 20 FCC Rcd. 4616 (2005) (declining to charge satellite licensees for a license modification enabling the provision of terrestrial wireless services).

98. 800 MHz Report & Order, *supra* note 61.

99. The difference between a modification and an initial license may be very small. Compare *Comty. Television, Inc. v. FCC*, 216 F.3d 1133, 1140-41 (D.C. Cir. 2000) (upholding FCC's decision to treat new digital television licenses as modifications of existing analog licenses even though licensees received rights to provide a new service on new spectrum) with *Fresno Mobile Radio, Inc. v. FCC*, 165 F.3d 965, 970-71 (D.C. Cir. 1999) (upholding FCC's decision to auction enhanced licenses in the specialized mobile radio service as new licenses). There is nothing to prevent the FCC from deciding to auction off spectrum access rights and then classifying those rights as "initial licenses" rather than first classifying the rights and then letting the auction decision follow.

100. See 47 C.F.R. § 15.407 (2003) (listing technical requirements for "Unlicensed National Information Infrastructure Devices"); 47 C.F.R. §15.247 (2003) (listing technical requirements for unlicensed spread spectrum devices). See generally, Yochai Benkler, *Overcoming Agoraphobia: Building the Commons of the Digitally Networked Env't*, 11 HARV. J. L. & TECH. 287, 332-33 (1998).

have required unlicensed users to avoid interfering with licensed users.¹⁰¹ These restrictions have allowed unlicensed operations to coexist with each other and with licensed users.¹⁰² In a commons open to all and degrading to none, equity is assured. No one may appropriate value from the public resource by excluding others and no competitor can be heard to complain of unfair treatment since, in the absence of rivalry, access is available on the same terms to all.

Equity questions will surface, however, if unlicensed spectrum becomes rivalrous and confers some of the entitlements of licensed spectrum. Champions of unlicensed spectrum have emphasized the ways in which network design and new radio technologies can permit spectrum users to operate in harmony with each other, without interference.¹⁰³ It is certainly true that technological advances, like spread spectrum, mesh networks, and cognitive radios, can increase the density of spectrum use, and reduce spectrum rivalry.¹⁰⁴ At the same time, no one has yet shown that the carrying capacity of a band is infinite and, indeed, there is evidence that unlicensed devices have begun to interfere with each other where densely deployed.¹⁰⁵ Particularly as unlicensed uses expand beyond low power, localized transmissions, there

101. Unlicensed users are expressly prohibited from causing harmful interference under Part 15 of the Commission's rules. If an unlicensed device does cause "harmful" interference to a licensed user, the unlicensed device must cease operation until the problem is corrected. 47 C.F.R. § 15.5 (2005). If, on the other hand, harmful interference is caused to an unlicensed device by a licensed or unlicensed device operating within the FCC's rules, the aggrieved unlicensed user has no legal recourse. *Id.* See also FEDERAL COMMUNICATIONS COMMISSION, SPECTRUM POLICY TASK FORCE REPORT OF THE UNLICENSED DEVICES AND EXPERIMENTAL LICENSES WORKING GROUP 5 (2002), available at <http://www.fcc.gov/sptf/files/E&UWGFinalReport.pdf>. ("The basic premise of all Part 15 unlicensed operation is that unlicensed services cannot cause interference to licensed operations nor are they protected from any interference received.")

102. There are, however, reports of interference among WiFi users and between WiFi and licensed uses. See e.g., Associated Press, *High Speed Net, Wi-Fi Interfering with Military Radar*, USA TODAY, Jan. 28, 2005 (reporting on WiFi interference with Air Force radar tracking); Richard Shim, *College Backs Off Wi-Fi Ban*, CNET NEWS.COM (Sept. 16, 2004) (reporting on WiFi interference in college dormitories), at http://news.com.com/College+backs+off+Wi-Fi+ban/2100-7351_3-69921.html?tag=nefd.top; Amy Schatz, *U.S. Airports and Airlines Clash Over Radio Waves in Terminals*, THE ASIAN WALL ST. J., June 9, 2004 at M8 (reporting on WiFi interference in airports).

103. See Werbach, *supra* note 9, at 887-89; Yochai Benkler, *Some Economics of Wireless Communications*, 16 HARV. J.L. & TECH. 25, 45-47 (2002); Yochai Benkler, *From Consumers to Users: Shifting the Deeper Structures of Regulation Toward Sustainable Commons and User Access*, 52 FED. COMM. L.J. 561, 576-78 (2000).

104. See generally, Benjamin, *supra* note 30, at 2025-28; Goodman, *supra* note 2, at 364-72.

105. See Benjamin, *supra* note 30, at 2022-23 (providing examples of interference in unlicensed spectrum). The point at which the carrying capacity is reached will be different for different systems, depending on the sensitivity of its receiving devices to interference. See Goodman, *supra* note 2, at 291-93.

will be more interference and, thus, greater scarcity. In the presence of spectrum scarcity, it becomes possible to appropriate, and to appropriate unfairly, value from the spectrum.¹⁰⁶

Even if unlicensed uses coexist harmoniously with each other, there will likely be conflict between licensed and unlicensed users that raise fairness issues. Questions of equity will surface, as they did in the Nextel case, when a spectrum user who has paid for access rights at auction is competing with another user who has received similar rights on preferential terms.¹⁰⁷ So long as unlicensed users do not have rights to interfere, or to be free from interference, the equity claims of licensed competitors will be weak.¹⁰⁸ But unlicensed users could come to obtain exclusive or quasi-exclusive transmission rights. This could happen if they win enforceable interference protection, entitling them to exclude the signals of licensed operators, or if licensed operators lose this protection along with the entitlement to exclude unlicensed signals.¹⁰⁹ In

106. The open access characteristic of unlicensed bands creates incentives for users to consume as much of the carrying capacity as they can before another user consumes it. *See* Weiser & Hatfield, *supra* note 9, at 14-15 (providing examples of how unlicensed users can hog spectrum). *See generally*, Durga P. Satapathy & Jon M. Peha, *Spectrum Sharing Without Licenses: Opportunities and Dangers*, in INTERCONNECTION AND THE INTERNET: SELECTED PAPERS FROM THE 1996 TELECOMMUNICATIONS POLICY RESEARCH CONFERENCE 49 (Gregory L. Rosston & David Waterman eds., 1997) (discussing the danger that unlicensed devices will over-use the spectrum by cheating on equipment specifications). The pattern of open access leading to greedy spectrum use was evident in the demise of CB radio. *See* Radio Frequency Interference to Electronic Equipment, *Notice of Inquiry*, 70 F.C.C. 2d. 1685 (1978) (describing the domino effect that took place as users resorted to amplifiers to outperform other users, leading to a degradation of service).

107. We see the beginnings of this in some of the opposition to unlicensed use of the TV broadcast band. New entrants into parts of that band (700 MHz), like Qualcomm, Inc., have paid for access through auctions. They have told the FCC that it would be unfair to allow unlicensed users quasi-exclusive use of the band for free and that the burden should be on the unlicensed users to prove non-interference before being permitted to transmit. Comments of Qualcomm, Inc. in Unlicensed Operation in the TV Broadcast Bands, ET Dkt. No. 04-186, 9-10 (FCC filed Nov. 30, 2004), *available at* http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6516883665. *See also* Joint Reply Comments of the Ass'n for Maximum Serv. Television, Inc. and the Nat'l Ass'n of Broadcasters, Unlicensed Operation in the TV Broad. Bands, ET Dkt. No. 04-186, 3-10 (FCC filed Jan. 31, 2005), *available at* http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6516982835 (arguing that the burden should be on new unlicensed entrants to prove that they will not cause interference to licensed incumbents).

108. Licensed users have no rights to exclusivity so long as they are not experiencing harmful interference from new entrants. *AT&T Wireless, Inc. v. FCC*, 270 F.3d 959, 964 (D.C. Cir. 2001) (in the absence of harmful interference, the introduction of new spectrum users to a band "does not trammel upon [the] rights [of] licensees").

109. Unlicensed advocates are now proposing that the FCC take steps to upgrade the spectrum access rights of unlicensed devices. *See* Petition for Clarification or Modification of New America Foundation & The Champaign Urbana Internet Network, Amendment of Parts 73 and 74 of the Comm'n's Rules to Establish Rules for Digital Low Power Television, MB Dkt. No. 03-185 (FCC filed Dec. 29, 2004), *available at* http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6516886246 (arguing that the FCC should

either case, unlicensed users would be in a position to appropriate spectrum value.¹¹⁰

Such a shift in interference entitlements from licensed to unlicensed users need not be explicit, but could arise through lax enforcement.¹¹¹ A licensee must be able to prove that any interference caused by an unlicensed device is “harmful” before it can expect FCC enforcement.¹¹² Satisfying the causation requirement alone requires significant spectrum

condition operation of licensed service on acceptance of interference from newly authorized unlicensed devices); Ex Parte Presentation of the Media Access Project relevant to: ET Dkt Nos. 03-108, 03-237, 04-151, & 04-186, *see also* ET Dkt. Nos. 03-108, 03-237, 04-151, and 04-186, 6 (FCC filed Dec. 14, 2004), *available at* http://gulfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6516885217 (“[t]he Commission has the authority to extend exclusive rights to a band of spectrum for Part 15 devices, or to make Part 15 devices co-equal or primary to traditional licensed services.”). Apple Computer unsuccessfully sought protection for unlicensed devices from out-of-band emissions in the mid-1990’s. *See* Benkler, *supra* note 100, at 336.

110. Recognizing the potential problems of un-bargained for protection for commons users, some unlicensed proponents have called for the auctioning of unlicensed spectrum, presumably to device manufacturers. *See* William Lehr, *The Economic Case for Dedicated Unlicensed Spectrum Below 3 GHz*, New American Foundation, 8 (July 2004), *available at* http://www.newamerica.net/Download_Docs/pdfs/Doc_File_1899_1.pdf (“An allocation of additional unlicensed spectrum could be included as part of a spectrum auction.”). The FCC is encouraging the kind of “private commons” Lehr advocates. *See* Service Rules for the 746-764 and 776-794 MHz Bands, and Revision of the Commission’s Rules, *Second Report and Order*, 15 FCC Rcd. 5299, 5311-13 (2000) (auctioning spectrum to band managers who can make spectrum available to users on an “unlicensed” basis); Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets, *Second Report & Order, Order on Reconsideration, & Second Further Notice of Proposed Rule Making*, 19 FCC Rcd. 17,503, 17,549-53 (2004) (allowing licensees to create a private commons with their exclusive rights as a way to “provide[] a cooperative mechanism for licensees (or lessees) to make licensed spectrum available . . . in a manner similar to that by which unlicensed users gain access to spectrum . . .”). Several commentators have developed similar ideas. *See* Benjamin, *supra* note 30, at 2036-43 (endorsing the private commons as an economically efficient means of exploiting the benefits of the commons); Comments of Thomas Hazlett & Matthew Spitzer, Establishment of an Interference Temperature Metric to Quantify and Manage Interference and to Expand Available Unlicensed Operation in Certain Fixed, Mobile and Satellite Frequency Bands, ET Dkt. No. 03-237, *20 (FCC filed Apr. 5, 2004), *available at* http://gulfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6516086620 (proposing that licensees rent spectrum to device manufacturers who permit open access of the spectrum on the basis of the protocols they develop).

111. Indeed, under existing law, a shift in entitlements which allowed unlicensed users to cause harmful interference to licensed services would probably terminate the unlicensed status of the beneficiaries. This is because unlicensed devices are free from the licensing requirement of 47 U.S.C. § 301 only so long as they do not cause harmful interference. *See* Revision of Part 15 of Commission’s Rules Regarding Ultrawideband Transmission Systems, 19 FCC Rcd. 24,558, 24,589 (2004) (a license is required for “any apparatus that transmits enough energy to have a significant potential for causing harmful interference.”).

112. The FCC defines harmful interference as “[i]nterference which endangers the functioning of a radio navigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service.” 47 C.F.R. § 2.1(c) (2004). In the 800 MHz rebanding proceeding, the FCC adopted a *sui generis* definition of “unacceptable interference” to apply to that proceeding only. 800 MHz Report & Order, *supra* note 61, at 14,982.

analysis, and the ability to trace the source of interference to a particular transmitter. In many situations, this will not be possible, either because the responsible party is no longer transmitting, or because the interference was caused by the cumulative emissions of multiple users.¹¹³ Even if an unlicensed device, or set of devices, is creating “harmful interference,” and the source can be pinpointed, the interference may be difficult to stop. As Sprint has observed, “once interfering unlicensed devices are in the market, it will. . . potentially be virtually impossible for the Commission to recall these devices.”¹¹⁴ Political as well as practical difficulties arise, such that licensee requests for recall of popular unlicensed devices risk a public relations debacle.

These sorts of conflicts between licensed and unlicensed users are bound to increase as new types of unlicensed uses proliferate, bringing unlicensed transmissions into closer contact with licensed ones. To date, most unlicensed use has taken place in frequency bands dedicated to the commons like portions of the 2 GHz and 5 GHz bands. These bands are the equivalent of public parks to which anyone can gain access so long as their uses of the parkland are relatively low impact.

Recently, “underlay” unlicensed use has been permitted in bands populated by licensed users, such that the access rights function more as easements on private property.¹¹⁵ Underlay transmissions are too low power to interfere with the licensed transmissions in the same bands.¹¹⁶ Related to the underlay concept is opportunistic, or “white space” use. Opportunistic usage rights, which the FCC is now considering, would allow unlicensed devices to use spectrum in licensed bands, even at higher powers and over greater distances, so long as they cease transmitting when the licensed user needed the spectrum.¹¹⁷

113. *See generally*, SPECTRUM POLICY TASK FORCE REPORT, *supra* note 101, at 12-15, 30-1 (2002) (discussing cumulative interference as the noise floor rises); Establishment of an Interference Temperature Metric to Quantify and Manage Interference and to Expand Available Unlicensed Operation in Certain Fixed, Mobile and Satellite Frequency Bands, *Notice of Inquiry & Notice of Proposed Rule Making*, 18 FCC Rcd. 25,309, 25,315-20 (2003). *See also* Revision of Part 15 of the Commission’s Rules Regarding Ultra-Wideband Transmission Systems, *Report & Order*, 17 FCC Rcd. 7435, 7444 (2002) (discussing the possible effects of cumulative interference from multiple unlicensed devices).

114. Sprint Reply Comments, Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band, ET Dkt. No. 02-380, 2 (FCC filed May 22, 2003), http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6514147353.

115. *See* Gerald R. Faulhaber & David Farber, *Spectrum Management: Property Rights, Markets, and the Commons*, in RETHINKING RIGHTS AND REGULATIONS: INSTITUTIONAL RESPONSES TO NEW COMMUNICATION TECHNOLOGIES 193, 213-14 (Lorrie F. Cranor & Steven S. Wildman eds., 2003) (using the term “easements” for such spectrum access).

116. *See* SPECTRUM POLICY TASK FORCE REPORT, *supra* note 101, at 40.

117. *See* Facilitating Opportunities for Flexible, Efficient, and Reliable Spectrum Use Employing Cognitive Radio Technologies, *Notice of Proposed Rulemaking & Order*, 18 FCC Rcd. 26,859 (2003) (inquiring into uses of cognitive radios to facilitate opportunistic uses of

It takes little foresight to predict that opportunistic users will not always defer to licensees, whether by accident or design. The resulting conflict could result in competitive inequities if spectrum users obtain equivalent interference rights at different prices, as well as harm to the public, which has not been compensated for what amounts to exclusive usage rights.

B. Measuring Unjust Enrichment in the Commons

We return to the valuation and definitional problems of spectrum equity in the context of the commons. Here, I want merely to identify relevant issues that will confront the FCC and Congress as unlicensed use grows and, possibly, becomes rivalrous within dedicated unlicensed bands or as between unlicensed and licensed spectrum users in the bands they share.

The public may be harmed by the *de jure* or *de facto* grant of exclusive rights to use the spectrum without compensation. In the case of unlicensed spectrum, it is typically the provider of unlicensed system equipment (like Intel), rather than a service provider (like Cingular), that extracts value from the spectrum. If an unlicensed system provider is able to benefit by excluding others from the spectrum, then we must ask whether the public would realize more value by auctioning the spectrum on a licensed basis.

Answering this question, of course, requires some methodology for determining the value that licensed users of the spectrum provide. For example, a communications service that operates at elevated power levels on an unlicensed basis, but in a quasi-exclusive manner, might create so much value in terms of service and technological innovation that the public is better off with such an unlicensed service than with auction revenue. On the other hand, there may be very little innovation or poor service, leaving the public under-compensated.

Related to these potential public harms are the equitable considerations that arise when one competitor has received spectrum rights on preferential terms. A commercial unlicensed system that is

licensed spectrum); Unlicensed Operation in the TV Broadcast Bands, *Notice of Proposed Rulemaking*, 19 FCC Rcd. 10,018 (2004) (inquiring into use of broadcast spectrum on an opportunistic basis). The FCC is considering broad application of the underlay and opportunistic use concepts as a way to permit unlicensed users to operate on a non-interfering basis in wide swaths of spectrum. See Establishment of an Interference Temperature Metric to Quantify and Manage Interference and to Expand Available Unlicensed Operation in Certain Fixed, Mobile and Satellite Frequency Bands, *Notice of Inquiry & Notice of Proposed Rulemaking*, 18 FCC Rcd. 25,309 (2003). See also J.H. Snider & Max Vilimpoc, *Reclaiming the "Vast Wasteland," Unlicensed Sharing of Broadcast Spectrum*, New America Foundation, at 2 (July 2003), available at http://www.newamerica.net/Download_Docs/pdfs/Pub_File_1286_1.pdf.

operating on free spectrum may be competing against a cellular system operating on auctioned spectrum. A policy of requiring the competitor to disgorge windfall gains would result in the unlicensed system's paying into the Treasury, but how much? Even if the unlicensed system is benefiting from rules or lax enforcement conferring quasi-exclusive spectrum access rights, these rights are unlikely to be precisely the same as those conferred by a license. As in the Nextel spectrum swap, choices will have to be made about how to factor in interference entitlements and public interest factors.

CONCLUSION

The Act's spectrum equity provisions and general fairness concerns in communications policies pose a number of problems. Ascribing a value to spectrum use, for the purpose of public restitution or disgorging windfall gains, requires an appraisal of spectrum usage rights for which there is no agreed methodology and for which spectrum entitlements must be defined. Then there is the question of coverage. The Act exempted unlicensed spectrum from auction, and thus from the spectrum equity provisions, because it was non-rivalrous.¹¹⁸ Should unlicensed users become rivals with each other or with licensees, their use of spectrum will implicate spectrum equity concerns even though the provisions will not apply. Rivalrous use in the commons will present the same problems of spectrum value and the different kinds of equity that are implicated when spectrum access is granted on preferential terms.

It is tempting in the face of this complexity to abandon fairness in spectrum management reform. But it is neither realistic nor proper to restructure wireless access rights without concern for fairness. The payoff for grappling with questions of equity goes beyond public restitution and competitive parity. The very same judgments about entitlements and value that need to be made for the purposes of spectrum equity need to be made for spectrum dispute resolution in a more complex world of wireless usage. As the Nextel case shows, an assessment of spectrum equity requires clarity about the rights spectrum users have to cause, and to be protected from, interference. This same clarity is needed to manage efficiently the dense and conflicting patterns of spectrum use rapidly developing in the wireless era.

¹¹⁸47 U.S.C. § 309(j)(1). (If "mutually exclusive applications are accepted for any initial license . . . then . . . the Commission shall grant the license . . . through a system of competitive bidding. . .").