

A Common Carrier Approach to Internet Interconnection

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I. INTRODUCTION

The Internet is rife with disputes over interconnection. These disputes take many forms, ranging from complaints over unfair peering policies by “backbones,” to assertions that instant messaging is being monopolized, to arguments for mandatory Internet Service Provider (“ISP”) access to cable television Internet systems, to compensation disputes among local telephone companies over the delivery of Internet-bound telephone calls. And yet, despite these controversies and many others, the only legal rules governing Internet interconnection are a limited number of company-specific conditions imposed in some merger reviews. Certainly, the Federal Communications Commission (“FCC”) has developed no rules governing Internet carriers, frankly admitting that it “has struggled with how to treat Internet traffic for regulatory purposes.”¹ Indeed, it is fair to say that no comprehensive regulatory scheme exists.

Of course, the FCC’s general approach is to declare that the Internet is competitive and that there is no need for comprehensive regulation; such regulation, it is said, might even be harmful by stifling innovation, increasing costs, or distorting competition. In fact, one chairman said that the agency would not regulate the Internet because, in that manner, it was sure to “do no harm.”² This dominant rhetoric, however, is belied by the government’s action in particular cases. For example, in each of the recent communications industry megamergers, opponents claimed that the combination would hurt competition in the Internet. These claims varied from the assertion that Internet backbone markets were concentrated and that the dominant Internet backbones would discriminate against their smaller competitors (MCI/Worldcom); to the assertion that cable companies would gain the ability and incentive to restrict their subscribers’ access to the content and services of unaffiliated companies (AT&T/TCI, AT&T/MediaOne, AOL/Time Warner); to the assertion that those entities controlling Internet transmission facilities should be required to sell raw

1. Implementation of the Local Competition Provisions in the Telecomm. Act of 1996: Intercarrier Competition for ISP-Bound Traffic, *Order on Remand and Report and Order*, FCC No. 01-131, para. 19 (Apr. 27, 2001) [hereinafter Local Competition Provisions, *Order on Remand and Report and Order*].

2. *E.g.*, William E. Kennard, The Unregulation of the Internet: Laying a Competitive Course for the Future, Remarks Before the Federal Communications Bar Northern California Chapter *available at* <http://www.fcc.gov/Speeches/Kennard/spwek924.html> (July 20, 1999).

transmission capacity to permit unaffiliated companies to market competing services directly to consumers (including the cable mergers and Baby Bell mergers as well). In one fashion or another, opponents of the mergers argued that the essential nature of the Internet—open, democratic, and fiercely competitive—was threatened by the mergers.

Although, on the surface, the government seemed unpersuaded and the dominant rhetoric of “no regulation for the Internet” continued, in each of these mergers, the antitrust authorities or the FCC permitted the merger only after the companies agreed to specific conditions designed to address the competitive structure of the Internet. In the MCI/Worldcom merger, the government required the divestiture of MCI’s Internet backbone. In the various Bell Company mergers, the government required specific steps to open the local loop for greater competition among DSL providers. In the AOL/Time Warner merger, the government required the merged company to develop new wholesale transport arrangements favoring unaffiliated Internet service providers. What seems to be missing is a generalized approach to Internet interconnection problems. Some of the specific merger conditions seem right, and some seem wrong or irrelevant to the competitive issues raised by the mergers. But all of them were imposed only on specific players in a market and were based on reasoning specific to a single (albeit important) transaction in that market. Moreover, many interconnection disputes arise in contexts other than mergers.

This Article argues that some generalized interconnection rules are broadly appropriate. Specifically, this Article suggests that some lessons learned from the ancient regime of common carrier regulation provide the appropriate regulatory foundation for the modern Internet. Since at least the middle ages, most significant carriers of communications and commerce have been regulated as common carriers. Common carrier rules have resolved the disputed issues of duty to serve, nondiscrimination, and interconnection. These were the problems of seventeenth-century ferry owners and innkeepers, eighteenth-century steamships, nineteenth-century railroads, and twentieth-century telephone networks. They are similar to the problems of the twenty-first-century Internet, and similar rules can govern its evolution as well.

This is not to say, of course, that the rules of innkeepers, railroads, or telephones should be imported wholesale to govern the Internet. Rather, the history of common carrier regulation demonstrates the fundamental importance of interconnection rules for transportation and communications networks. Interconnection had a common law analog in the duty of common carriers to serve the public generally, and explicit interconnection requirements, when later imposed by statute, helped create extensive

transportation and communications networks. These networks were extraordinarily useful in their own right, but they also permitted the development of new markets that used their services as inputs.

Thus, this Article argues for a general interconnection obligation for Internet carriers. The legal history lessons sketched out above do not stand alone, however. The Article also reviews the technical scheme of the Internet, and the economics of networks generally. Both the technical side of the Internet and the economics of it as a network similarly demonstrate the value of a general interconnection obligation for a bearer network such as the Internet. The technical and economics reviews also help identify precisely how the interconnection obligation should be defined.

The plan of the Article is as follows: Part II describes several current Internet interconnection disputes as case studies for the general Internet interconnection problem. These case studies—peering, cable open access, instant messaging, and reciprocal compensation for Internet-bound telephone calls—are interesting interconnection disputes in their own right. But they also demonstrate the various layers, from the core to the periphery of the Internet, at which Internet interconnection disputes occur. Part III describes the current technical, legal, and economic dimensions of Internet interconnection. At a technical level, the Internet is designed for the very purpose of interconnecting networks, but no legal rules require pure Internet carriers to interconnect with one another. Interconnection results, or is resisted, based upon the economic costs and benefits of interconnecting.

Part IV provides a relevant history of common carrier regulation, from the common law to twentieth-century regulation of many parts of the economy. The duties now associated with common carrier regulation originally applied both to carriers (such as ferrymen, coaches, and railroads) and to noncarriers (such as innkeepers, farriers, and other skilled tradesmen). Later statutory enactments focused common carrier duties on carriers alone. An examination of the common law and leading common carrier statutes demonstrates that common carrier duties were imposed to combat monopolies or to address other public interests. Moreover, the inquiry demonstrates that specific interconnection obligations, and duties to establish joint services, evolved from the original duty to serve (and the duty of nondiscrimination).

Part V addresses the Internet interconnection disputes in the language of the law of common callings. Internet carriers generally undertake to serve all, and the Internet's construction and operation were advanced through direct and indirect government benefit. Moreover, Internet markets may exhibit at least localized monopoly, and they certainly exhibit strong

network effects. For these reasons, Internet carriers fit well within the tradition of common carriers. Part V therefore proposes a tempered interconnection duty, which addresses competitive concerns without requiring mandatory unbundling and its inevitable complementary pricing regulation. This proposed approach would require interconnection between backbones and other Internet carriers and between both Internet and telephone carriers. It would also require interoperability at the core of instant messaging technology. It would not, however, require the fundamental unbundling associated with cable open access demands. The interconnection requirement proposed here ensures that the Internet remains a single network, while limiting the threat that heavy-handed regulation would pose to the Internet's vibrancy.

II. A SAMPLER OF INTERNET INTERCONNECTION DISPUTES

Many of the most significant clashes among Internet carriers and businesses are actually conflicts over interconnection—either over the threshold question of whether interconnection will be allowed or over the terms and conditions of interconnection. This Part assembles a sampler of those interconnection disputes. In particular, it describes (a) the concerns over peering and transit arrangements, through which Internet backbones and smaller ISPs interconnect; (b) open access disputes concerning ISP access to high speed Internet access services offered by cable companies; (c) instant messaging disputes, centering around the market leader AOL's refusal to make its instant messaging system interoperate with other systems; and (d) reciprocal compensation disputes surrounding Internet-bound telephone calls. This list is not intended to be exhaustive, but rather a collection of some of the more publicized interconnection disputes which can serve as general examples of the need for an Internet interconnection policy.³ Additionally, as to these selected disputes, the FCC has engaged in at least preliminary consideration. In general, the FCC has not adopted specific rules requiring interconnection or otherwise regulating on a comprehensive basis.

3. Other disputes that might be characterized as Internet interconnection problems, and which could be addressed using the same general framework developed in this Article, include the dispute over "triggers" being made available for interactive television service, *see generally* Nondiscrimination in the Distribution of Interactive Television Serv. Over Cable, *Notice of Inquiry*, 16 F.C.C.R. 1321 (2001); the disputes over unbundling telephone local loops for DSL carriers, *see generally* Jerry A. Hausman & J. Gregory Sidak, *A Consumer-Welfare Approach to the Mandatory Unbundling of Telecommunications Networks*, 109 *YALE L.J.* 417 (1999); or even the dispute over alleged preferential treatment by search engines of certain Web sites, *see* Jon Muehlbauer, *Fess Up, Search Engines*, *THE INDUSTRY STANDARD* (July 17, 2001), *available at* <http://www.thestandard.com/article/0,1902,27975,00.html>.

A. Peering

By contrast to the voice telecommunications network, which has fairly regularized interconnection practices, the Internet's practices are unsettled. The telecommunications network interconnects under the well-established Integrated Services Digital Network ("ISDN") and Signalling System 7 standards.⁴ The economic aspects of connections between voice telecommunications providers are similarly well-settled. The "access charge" system of payments governs compensation from long-distance carriers to local carriers when they must interconnect for the completion of a long-distance telephone call.⁵ "Reciprocal compensation" rules govern the completion and termination of calls between local carriers, and unbundled network element charges govern the compensation one carrier receives for an element used by another carrier.⁶ Admittedly, there are gaps in these rules, largely arising where the traditional phone network interconnects with the Internet (which will be discussed later),⁷ but the fundamental rules are established and understood.

By contrast, the economic rules for interconnection of Internet transport providers are not well-settled. In fact, they are not regulated at all. The FCC has refused to apply the Communications Act of 1934 (the 1934 Act) to Internet transport.⁸ The National Science Foundation ("NSF") exited the Internet in 1995,⁹ and the primacy of the NSF-established public peering points has faded as those points have become backlogged. Indeed, with the privatization of the domain-name system, government has almost completely exited the Internet.¹⁰

4. See generally MARTIN P. CLARK, NETWORKS AND TELECOMMUNICATIONS: DESIGN AND OPERATION 249-66 (2d ed. 1997).

5. See generally Access Charge Reform, *First Report and Order*, 12 F.C.C.R. 15982, 15990-94, 7 Comm. Reg. (P & F) 1209, 1220-23 (1997), *aff'd* Southwestern Bell Tel. v. FCC, 153 F.3d 523 (8th Cir. 1998), *subsequent history omitted* [hereinafter Access Charge Reform].

6. See 47 U.S.C. § 251(b)(5) (Supp. V 1999); Implementation of the Local Competition Provisions in the Telecomm. Act of 1996: Interconnection Between Local Exch. Carriers and Commercial Mobile Radio Serv. Providers, *First Report and Order*, 11 F.C.C.R. 15499, paras. 1033-1034, 4 Comm. Reg. (P & F) 1 (1996), *subsequent history omitted* [hereinafter Telecomm. Act of 1996, *First Report and Order*].

7. See Implementation of the Local Competition Provisions in the Telecomm. Act of 1996: Inter-Carrier Compensation for ISP-Bound Traffic, *Declaratory Ruling and Notice of Proposed Rulemaking*, 14 F.C.C.R. 3689, 15 Comm. Reg. (P & F) 201 (1999), *vacated by* Bell Atlantic Tel. Cos. v. FCC, 206 F.3d 1 (D.C. Cir. 2000) [hereinafter Local Competition Provisions, *Declaratory Ruling and Notice of Proposed Rulemaking*].

8. See JASON OXMAN, THE FCC AND THE UNREGULATION OF THE INTERNET 15 (F.C.C. Working Paper No. 31, 1999).

9. *Id.* at 59-60.

10. See Jay P. Kesan & Rajiv Shah, *Fool Us Once Shame on You – Fool Us Twice*

Privately negotiated interconnection has become the dominant form of interconnection for Internet transport.¹¹ In 1997, UUNet (then the largest backbone) announced that it would end open-peering, and other backbones followed suit.¹² This private interconnection comes in two flavors: (1) peering, under which the few Tier-1 backbone providers interconnect and exchange traffic on a bill-and-keep basis, and (2) transit arrangements, under which smaller ISPs purchase interconnection with a Tier-1 backbone.¹³

Complaints of excessive pricing and discrimination have inevitably followed the backbone providers' decisions to charge smaller ISPs for connectivity. The backbones are vertically integrated—that is, they compete with smaller ISPs for retail customers (both individual and business subscribers and content providers).¹⁴ Smaller ISPs perceive that the backbones are attempting to stifle competition (or at least disadvantage them as competitors) by limiting peering to a favored club and by charging excessive prices for the necessary connection to a national backbone.¹⁵ Concern over concentration in the Internet backbone market was one of the leading reasons that the U.S. Department of Justice and the European Union announced that they would challenge the proposed Worldcom/Sprint merger.¹⁶

Moreover, most commentators agree that even the current peering arrangements are under substantial pressure. Part of this pressure arises from the need for all Internet and telecommunications carriers to now show a current profit, which will cause Internet backbone carriers to vigorously

Shame on Us: What We Can Learn from the Privatizations of the Internet Backbone Network and Domain Name Systems, 79 WASH. U. L.Q. 89 (2001) (providing a recent, excellent discussion of the government's role in fostering and controlling, but later exiting, the Internet).

11. See, e.g., Brian Quinton, *NAP Time's Over*, TELEPHONY, May 31, 1999, at 52; Nancy Weil, *Owning the Net*, INFOWORLD, Mar. 20, 2000, at 36.

12. See Bernadette Jew, *New Issues for Internet Interconnection*, TELECOMMUNICATIONS, Feb. 2000, at 67.

13. E.g., *id.*; OXMAN, *supra* note 8, at 56.

14. OXMAN, *supra* note 8, at 56-57; Stanley Besen et al., *Advances in Routing Technologies and Internet Peering Agreements*, 91 AM. ECON. REV. 292, 292 (2001).

15. See, e.g., Denise Pappalardo, *When Private Peering Arrangements Go Bad*, NETWORK WORLD, June 11, 2001, at 8; Kesan & Shah, *supra* note 10, at 196-98; Jew, *supra* note 12, at 67-68; Neil Weinberg, *Backbone Bullies*, FORBES, June 12, 2000, at 236; Jonathan Angel, *Toll Lanes on the Information Superhighway*, NETWORK, Feb. 1, 2000, at 27.

16. Seth Scheisel & David Leonhardt, *Justice Dept. Moves to Block Merger of Two Phone Giants*, N.Y. TIMES, June 28, 2000, at A1; Complaint, United States v. Worldcom, Inc., available at <http://www.usdoj.gov/atr/cases/f7000/7043.htm> (Nov. 17, 2000) [hereinafter WorldCom Complaint] (identifying Internet backbone services as a relevant market in which the merger would have anticompetitive effects).

enforce their peering policies.¹⁷ In one concrete example, Tier-1 backbone Cable & Wireless cut off backbone PSINet and fourteen other ISPs for failure to maintain minimum traffic volumes required by their peering policies, the result being that some customers lost interconnection for several days.¹⁸ Another part of this pressure arises from the backbones' attempts to differentiate themselves by offering quality-of-service guarantees. Transit between networks is one of the most significant causes of delay and lost data, and backbones are therefore pushing on-network service arrangements. The focus on such on-network quality, however, may diminish the networks' incentives to peer at high quality because inefficient interconnection may attract more subscribers to their own networks.¹⁹

The FCC's Office of Plans and Policy has recently issued a working paper in which it defends the FCC's decision not to require Internet backbones to provide interconnection and not to regulate (or even investigate) the backbone's peering and pricing requirements.²⁰ It concludes that there is no need for regulation of peering or transit arrangements. The paper concedes that a dominant Internet backbone might engage in various anticompetitive activities, including charging excessive prices for interconnection, engaging in a price squeeze, or discriminating in the quality of interconnection against competitors.²¹ The paper concludes, however, that five nationwide Internet backbones currently compete against each other²² and that, absent a merger or significant technological advance for only one of the backbones, no dominant backbone is likely to emerge.²³ Moreover, the paper argues that the backbones' continued reluctance to peer with new entrants into the market is no cause for concern because the backbones do compete with each other for transit arrangements. As a result, the theory goes, the backbones cannot charge supracompetitive prices for interconnection.²⁴ This working paper does not represent the official position of the FCC, but as described below, the FCC has in several

17. See, e.g., Lenny Liebman, *Peer Pressure*, COMMUNICATIONS NEWS, June 1, 2001, at 92; Lenny Liebman, *The Other Peer-to-Peer, ISPs Are Likely to Rethink Traffic Exchange as Profit Pressures Grow*, NETWORK MAGAZINE, July 1, 2001, at 84.

18. See Pappalardo, *supra* note 15, at 8; Eric Krapf, *Straightening Out the Internet Backbone*, BUS. COMM. REV., July 1, 2001, at 14.

19. See, e.g., Jade Boyd, *Cross-Carrier SLAs Still a Distant Goal*, INTERNETWEEK, July 9, 2001, at 11; John C. Tanner, *Peering into the Future*, AMERICA'S NETWORK, May 15, 2001, at 69; Kesan & Shah, *supra* note 10, at 151-54.

20. MICHAEL KENDE, THE DIGITAL HANDSHAKE: CONNECTING INTERNET BACKBONES (F.C.C. Working Paper No. 32, 2000).

21. *Id.* at 22-23.

22. *Id.* at 7, 24, 39.

23. *Id.* at 22.

24. *Id.* at 20.

different orders written that Internet backbones are not telecommunications carriers and therefore are not subject to the mandatory interconnection requirements of the 1934 Act.²⁵

By contrast to the FCC's optimistic conclusions, several economists have developed models that suggest that, under certain conditions, there are genuine competitive concerns in backbone markets. For example, some economic modeling has demonstrated that a larger backbone may have the ability and incentive to degrade connections to its rivals, thus injuring overall competition in the backbone market.²⁶ Although, as the FCC notes, there are five Tier-1 backbones, Worldcom's backbone still had twenty-nine percent of the market, far ahead of number-two backbone Sprint's fifteen percent.²⁷ On the other hand, some economists have argued that multihoming and lower-tier peering (i.e., peering among non-Tier-1 ISPs) can mitigate the ability of Tier-1 backbones to behave anticompetitively.²⁸ There are limits, however, to the degree to which the Internet's protocol can tolerate multihoming and low-level peering, and the proliferation of those practices could degrade Internet performance substantially.²⁹ Given the recent collapse of telecommunications stocks, a further concentration of Internet backbones is expected.³⁰

In sum, there continue to be disputes over the fairness and completeness of Internet backbone providers' willingness to interconnect and the fairness of their interconnection policies. The FCC's current position is that the market is competitive and needs no regulation, while the economic work is indeterminate on the question. The stakes, however, are significant, given the amount of activity that depends upon the Internet. If a few providers are able to behave anticompetitively, then both commercial and noncommercial users of the Internet will suffer by paying a higher price for the universal interconnection that makes the Internet valuable.

B. *Open Access*

Moving from the core to the periphery of the Internet, the past three years have also seen a battle over so-called "open access" rules for high-speed Internet access providers—typically cable modem providers. The

25. See *infra* notes 120-24 and accompanying text.

26. See generally Jacques Cremer et al., *Connectivity in the Commercial Internet*, 48 J. INDUS. ECON. 433 (2000).

27. See Krapf, *supra* note 18, at 14.

28. See Besen et al., *supra* note 14, at 294-96.

29. See Sandra Borthwick, *Today's Internet Can't Scale*, BUS. COMM. REV., May 2001, at 28.

30. See Krapf, *supra* note 18, at 14.

issue first arose with the AT&T/TCI merger, and has gained steam with subsequent mergers (AT&T/MediaOne and AOL/Time Warner) and with the continued and expanding lead that cable modem service has over its main high-speed competitor, DSL service, at least in residential markets.³¹ The FCC rejected calls for open access conditions in the AT&T/TCI and AT&T/MediaOne merger decisions, but both the FTC and the FCC imposed open access rules on the AOL/Time Warner merger.

The dispute over such rules arose because cable providers generally offered Internet access only through a particular ISP such as Excite@Home or Roadrunner. Although consumers could reach other ISPs and could even configure their systems to avoid having the affiliated ISP as their “first screen,” consumers could not purchase high-speed Internet access from other ISPs. In addition, those other ISPs have no direct role in the engineering or performance of the cable system’s service.³² This “exclusive” arrangement led to fears that cable providers would discriminate against unaffiliated ISPs and content providers by degrading access, charging higher prices, or blocking certain content—especially next-generation content such as streaming video that cable operators might find competes with their traditional video programming.³³ Two respected commentators have gone so far as to claim that the failure to require general open access rules puts at risk the entire “architecture of the Internet.”³⁴

The regulatory response to these arguments has been uneven to say the least. The FCC refused to impose open access conditions in the AT&T/TCI and AT&T/MediaOne merger proceedings.³⁵ Several

31. See generally James B. Speta, *Handicapping the Race for the Last Mile?: A Critique of Open Access Rules for Broadband Platforms*, 17 YALE J. ON REG. 39 (2000) [hereinafter *Critique of Open Access Rules*]; James B. Speta, *The Vertical Dimension of Cable Open Access*, 71 U. COLO. L. REV. 975 (2000) [hereinafter *Vertical Dimension*]; Mark Cooper, *Open Access to the Broadband Internet: Technical and Economic Discrimination in Closed, Proprietary Networks*, 71 U. COLO. L. REV. 1011 (2000); Phil Weiser, *Paradigm Changes in Telecommunications Regulation*, 71 COLO. L. REV. 819, 832-37 (2000); Mark A. Lemley & Lawrence Lessig, *The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era*, 48 UCLA L. REV. 925 (2001). The First Amendment dimensions of cable open access, which are largely beyond the scope of this paper, are comprehensively discussed in Stuart Minor Benjamin, *Proactive Legislation and the First Amendment*, 99 MICH. L. REV. 281 (2000), and Harold Feld, *Whose Line is it Anyway? The First Amendment and Cable Open Access*, 8 COMMLAW CONSPECTUS 23 (2000).

32. *Vertical Dimension*, *supra* note 31, at 979.

33. See generally Cooper, *supra* note 31; Lemley & Lessig, *supra* note 31.

34. See Lemley & Lessig, *supra* note 31, at 944.

35. See App’n of AT&T Corp. and Tele-Communications, Inc. for Transfer of Control of Tele-Communications, Inc. to AT&T Corp., *Memorandum Opinion and Order*, 14 F.C.C.R. 3160, 14 Comm. Reg. (P & F) 29 (1999); App’n For Consent to the Transfer of

municipalities attempted to impose such conditions, but each attempt was invalidated in subsequent court proceedings.³⁶ In the AOL/Time Warner merger, the FTC imposed conditions on the merger that required a minimal level of open access for other ISPs to a high-speed Internet access service,³⁷ and the FCC followed suit.³⁸ These conditions essentially required AOL/Time Warner to permit Earthlink and two other ISPs to sell high-speed Internet service over any cable system on which AOL/Time Warner sold high-speed AOL Internet access service.³⁹ The FTC and FCC refused to apply a general open access condition in favor of all unaffiliated ISPs, and the open access condition that was imposed applies only if the merged company offers AOL service on the cable systems instead of the existing Roadrunner service.⁴⁰ In the meantime, AT&T has been holding open access trials after announcing a commitment to implement open access in 2002.⁴¹ Also, the FCC has announced a *Notice of Inquiry* into cable open access rules on an industry-wide basis, although it has yet to reach any conclusions.⁴²

C. Instant Messaging

Instant messaging is a now very familiar service that permits real-time, text-based conversation between two or more people. According to some estimates, more than 200 million people now subscribe to instant messaging; the undisputed market leader is AOL, with over 150 million of

Control of Licenses and Section 214 Authorizations from MediaOne Group, Inc., Transferor, to AT&T Corp., Transferee, *Memorandum Opinion and Order*, 15 F.C.C.R. 9816, para. 5 (2000).

36. *See* MediaOne Group, Inc. v. County of Henrico, 257 F.3d 356 (4th Cir. 2001) (holding that federal law forbade municipality from imposing open access conditions); AT&T Corp. v. City of Portland, 216 F.3d 871 (9th Cir. 2000) (holding that cable Internet services are “telecommunications” and, therefore, municipalities may not order cable companies to provide those services); Comcast Cablevision of Broward County, Inc. v. Broward County, 124 F. Supp. 2d 685 (S.D. Fla. 2000) (holding that county open access condition violated First Amendment).

37. *See* AOL Corp. & Time Warner, Inc., *Decision and Order* (Dec. 14, 2000) at <http://www.ftc.gov/os/2000/12/aoldando.pdf>.

38. *See* App’n for Consent to the Transfer of Control of Licenses and Section 214 Authorizations by Time Warner, Inc. and America Online, Inc., Transferors, to AOL Time Warner, Inc., Transferee, 16 F.C.C.R. 6547, 23 Comm. Reg. (P & F) 157 (2000) [hereinafter *AOL/TW Merger Order*].

39. *See id.* para. 126.

40. *See id.* para. 127 & n.363.

41. Kara Swisher et al., *AT&T’s Access Plan Draws a Mixed Reaction*, WALL ST. J., Dec. 7, 1999, at B6.

42. *See* Inquiry Concerning High-Speed Access to the Internet over Cable and Other Facil., *Notice of Inquiry*, 15 F.C.C.R. 19287 (2000) [hereinafter *Notice of Inquiry*].

those subscribers.⁴³ Currently, AOL's instant messaging system is not interconnected with any other system; that is, one must be an AOL instant messaging subscriber in order to communicate with other AOL instant messaging subscribers.⁴⁴ In the proceedings over the AOL/Time Warner merger, several parties argued that the FTC and the FCC should condition the merger on the requirement that AOL permit interconnection or interoperability between its instant messaging service and the instant messaging services of other companies.⁴⁵ On the one hand, the FTC and the FCC refused to do that; on the other hand, the FCC made a condition of the merger that AOL ensure interoperability at the time it introduces so-called "advanced instant messaging service" (i.e., instant messaging employing streaming multimedia).⁴⁶

All instant messaging programs rely on a names and presence database ("NPD") as the core of the service. The NPD lists all of the subscribers and keeps track of each subscriber's "buddies"—those other subscribers that a given subscriber may wish to communicate with.⁴⁷ When a subscriber signs on to the instant messaging service, the NPD records the subscriber's current Internet Protocol address.⁴⁸ The "IP address" is the actual Internet "address" of the subscriber's computer. The NPD is necessary because most ISPs and corporate networks assign IP addresses on a dynamic basis.⁴⁹ That is, they own a total number of IP addresses smaller than their total number of subscribers, and not all subscribers are logged on at the same time. So, they assign an IP address to a subscriber each time the subscriber logs on to the Internet. As a result, instant messaging could not work without the NPD, because an instant messaging subscriber could have a different IP address each time he or she signed on to the service. The NPD solves this problem by keeping track of each subscriber's real-time IP address.⁵⁰

43. See, e.g., Joe Wilcox, *MSN Fails to Deliver*, CNET NEWS.COM (July 5, 2001) at <http://news.cnet.com/news/0-1005-200-6464354.html>; Nick Wingfield, *Changing Chat*, WALL ST. J., Sept. 18, 2000, at R28.

44. See *AOL/TW Merger Order*, *supra* note 38, para. 164.

45. See *id.* paras. 143-47.

46. *Id.* para. 190.

47. *Id.* paras. 138-39.

48. M. Day et al., *Instant Messaging/Presence Protocol Requirements*, INTERNET SOCIETY, Request for Comment 2779, 5, at <http://www.cis.ohio-state.edu/cgi-bin/rfc/rfc2779.txt> (2000).

49. REGIS J. BATES, *BROADBAND TELECOMMUNICATIONS HANDBOOK* 516-17 (2000); RAYMOND GREENLAW & ELLEN HEPP, *INTRODUCTION TO THE INTERNET FOR ENGINEERS* 103 (1999).

50. Jeff Tyson, *How Instant Messaging Works*, at <http://www.howstuffworks.com/instant-messaging.htm/printable> (last visited Jan. 23, 2002).

Apart from the NPD, instant messaging services diverge with respect to use of a centralized system or a peer-to-peer system. A centralized instant messaging service routes all of the messages between subscribers through centralized services.⁵¹ In a peer-to-peer service, the NPD provides each subscriber's computer with the IP addresses of the other subscribers he or she wishes to communicate with, and the messages are sent directly from machine to machine.⁵² Of course, an instant messaging system may use a combination of the two systems, as AOL's apparently does by using a centralized protocol for text messages and peer-to-peer for audio or video components.⁵³

In the AOL/Time Warner merger, parties argued that AOL's refusal to create an interoperable instant messaging service was impeding competition in that market.⁵⁴ Indeed, an instant messaging subscriber will want to subscribe to the service that the people it wishes to communicate with are most likely to subscribe to, and hence, the company with the largest subscriber base has a substantial advantage. AOL argued that interoperability—which in this context is really just an interconnected NPD system—was technically difficult and could compromise the privacy and security of its subscribers.⁵⁵

The FCC ruled that the merger would not be conditioned on terms requiring the interoperability of instant messaging systems, although it did impose conditions requiring interoperability of future, multimedia, instant messaging services. As Phil Weiser has succinctly put it, however, “[i]n terms of setting a precedent for future regulation of information platforms, the FCC's AOL/Time Warner Order failed to set forth a principled model of analysis.”⁵⁶ As to current instant messaging, the FCC simply ruled that whatever advantage or anticompetitive activity surrounded AOL's instant messaging, the merger did not affect it. Because Time Warner had no instant messaging service, the merger did not increase concentration in instant messaging or otherwise enhance AOL's ability to behave anticompetitively.⁵⁷ By contrast, the FCC held that the merger would affect AOL's ability to deploy so-called “advanced instant messaging”—instant messaging that deployed multimedia capabilities for real-time video

51. Michael Gowan, *How it Works: Instant Messaging*, May 25, 2000, at <http://www.cnn.com/2000/TECH/computing/05/25/how.messaging.works.idg>.

52. *Id.*

53. *Id.*

54. *AOL/TW Merger Order*, *supra* note 38, paras. 168-69.

55. *Id.* para. 170.

56. Philip J. Weiser, *Internet Governance, Standard Setting, and Self-Regulation*, 28 N. KY. L. REV. 822, 844 (2001).

57. *AOL/TW Merger Order*, *supra* note 38, para. 188.

streaming. Time Warner was the second largest cable system in the country and one of the leaders in the deployment of high-speed cable data services such as broadband Internet access. As a result, the merger would affect AOL's advantage in advanced instant messaging.⁵⁸ Thus, the FCC conditioned the merger on AOL's agreeing to deploy an interoperable advanced instant messaging service if and when it deployed such service.⁵⁹

The stakes in the instant messaging interconnection debate are significant, especially if instant messaging becomes a substitute for other types of communications such as telephone calls.⁶⁰ In its original form as exclusively a text-based chat service, instant messaging was unique in that it indirectly substituted for some telephone calls. But even today, instant messaging permits two users to have voice conversations and to exchange messages that include pictures or music.⁶¹ The fear (of those other than AOL) is that instant messaging will become a communications platform for all of these services—text chat, voice calls, and even “picture phone.” In such a circumstance, AOL's control over the most important NPD could give it significant control over the communications network (and the Internet).⁶² At a minimum, as the FCC concluded, having multiple NPDs—which would be required if systems did not interconnect—and requiring consumers to have multiple instant messaging clients on their computers, would be inefficient.⁶³

D. *Reciprocal Compensation*

The last interconnection dispute for discussion here is the debate over reciprocal compensation payments among local exchange carriers (“LECs”) for the delivery of so-called Internet-bound calls. This dispute is somewhat different from the others discussed in this Part, for there is indisputably a legal interconnection requirement.⁶⁴ The dispute centers around the compensation due between carriers that interconnect for the transport and termination of traffic exchanged. Potentially billions of dollars are at issue, but because the courts have recently vacated the FCC's rules in this area, there is no current resolution of whether or how much compensation should be paid.

“Reciprocal compensation” refers to the payments that are made

58. *Id.* paras. 176-79.

59. *Id.* paras. 189-90.

60. *See also* Weiser, *supra* note 56, at 843.

61. *AOL/TW Merger Order*, *supra* note 38, para. 187.

62. *Id.* paras. 160, 185.

63. *Id.* paras. 154-56.

64. *See infra* notes 116-19 and accompanying text.

between local telephone companies (local exchange carriers in the Communications Act's parlance) for calls initiated on one network and terminated on another interconnected company's network. The Telecommunications Act of 1996 (the 1996 Act) requires all local exchange companies to interconnect,⁶⁵ and requires interconnecting LECs "to establish reciprocal compensation arrangements for the transport and termination of telecommunications."⁶⁶ The 1996 Act requires that these compensation arrangements provide for the recovery of "costs associated with the transport and termination on each carrier's network facilities of calls that originate on the network facilities of the other carrier"⁶⁷ But the Act also expressly permits a "bill-and-keep" arrangement, whereby neither interconnected carrier pays the other for the termination of specific calls.⁶⁸

Instead of negotiating bill-and-keep arrangements, most incumbent local exchange carriers ("ILECs") entered into reciprocal compensation arrangements with new carriers (the competitive local exchange carriers or "CLECs") that required the actual payment of money for the completion of each call—usually a fraction of a cent per minute.⁶⁹ It is not clear why the ILECs pushed for reciprocal compensation instead of bill-and-keep arrangements.⁷⁰ But the result, as even the FCC has found, was a classic case of "regulatory arbitrage."⁷¹ Some CLECs decided to focus on serving

65. 47 U.S.C. § 251(a)(1) (Supp. V 1999).

66. *Id.* § 251(b)(5) (Supp. V 1999).

67. *Id.* § 252(d)(2)(A)(i) (Supp. V 1999).

68. *Id.* § 252(d)(2)(B)(i) (Supp. V 1999).

69. See Local Competition Provision, *Declaratory Ruling and Notice of Proposed Rulemaking*, *supra* note 7, at 3689-93; Thomas W. Bonnett, *Is ISP-Bound Traffic Local or Interstate?*, 53 FED. COMM. L.J. 239, 269-71 (2001); Kasey A. Chappelle, *The End of the Beginning: Theories and Practical Aspects of Reciprocal Compensation for Internet Traffic*, 7 COMMLAW CONSPECTUS 393, 397-98 (1999).

70. It is sometimes speculated that the ILECs miscalculated that their larger networks would deliver more traffic to the CLEC's newer and smaller networks than returned in the other direction. See Bonnett, *supra* note 69, at 270; Chappelle, *supra* note 69, at 398. This is simply bad traffic engineering, for there is no reason that, on average, traffic flows between two networks should be equal even if the networks are radically different in size. CLARK, *supra* note 4, at 539-40. However, the ILECs may have been misled by their experience with cellular networks, which generate a much larger outflow of calls to the landline network than inflow to the cellular network. Owners of wireless phones do not give out or encourage incoming calls to the same degree that they make outgoing calls. Perhaps the ILECs expected their experience with the new CLECs would be the same and therefore pushed for reciprocal compensation. Or perhaps ILECs thought CLECs would focus on business customers that make more outgoing than incoming local calls. Bonnett, *supra* note 69, at 270-71.

71. See Local Competition Provisions, *Order on Remand and Report and Order*, *supra* note 1, para. 2. ("The regulatory arbitrage opportunities associated with intercarrier payments are particularly apparent with respect to ISP-bound traffic, however, because ISPs

customers that generated large numbers of incoming calls and few outgoing calls, so that the net reciprocal compensation flow would be positive to them. The biggest example of such customers are ISPs, who generate almost no outgoing calls.⁷² After a short period of time, ILECs recognized that they were paying substantial sums to CLECs for ISP-bound calls, and they sought relief from the state public utility commissions that supervised the interconnection agreements⁷³ and from the FCC.⁷⁴ The ILECs argued that ISP-bound calls were not “local calls” and therefore were not subject to the reciprocal compensation requirement, which the FCC had previously held only applied to “local” calls.⁷⁵ The ILECs also argued that, if they were local calls, ISP-bound calls were not “telecommunications” and were not subject to the reciprocal compensation requirement.⁷⁶

The large reciprocal compensation payments to CLECs for ISP-bound calls were particularly difficult for the ILECs to tolerate, because they were in such sharp contrast to the regulatory regime that had governed calls the ILECs would deliver directly to ISPs. As noted above, ISPs usually interconnected with the local carriers as customers; they paid for business lines or trunk group access. The ILECs had, in fact, long sought to have them pay more—to pay the same “access charges” that long-distance carriers paid for the origination and termination of long-distance calls. “The business line rates are significantly lower than the equivalent interstate access charges, given the ISPs’ high volumes of usage.”⁷⁷ The FCC has repeatedly rejected that argument, holding that the exemption from access charges helped the growth of information services and the Internet, in part because access charges include non-cost elements intended to subsidize local service.⁷⁸

typically generate large volumes of traffic that is virtually all one-way—that is, delivered to the ISP.”).

72. See *id.*; see also Bonnett, *supra* note 69, at 270-73; Chappelle, *supra* note 69, at 398.

73. Under the 1996 Act, disputes over interconnection agreements are first adjudicated by state public utility commissions and then reviewed by federal district courts. See Philip J. Weiser, *Chevron, Cooperative Federalism, and Telecommunications Reform*, 52 VAND. L. REV. 1, 5-10 (1999).

74. See Local Competition Provisions, *Order on Remand and Report and Order*, *supra* note 1, paras. 9-18 (describing history of ILEC petitions).

75. See Telecomm. Act of 1996, *First Report and Order*, *supra* note 6, para. 1034 (section 251(b)(5) reciprocal compensation requirements “apply only to traffic that originates and terminates within a local area”), *aff’d in part and vacated in part*, Competitive Telecomm. Ass’n v. FCC, 117 F.3d 1068 (8th Cir. 1997).

76. See Bonnett, *supra* note 69, at 274-75; Chappelle, *supra* note 69, at 399.

77. Access Charge Reform, *supra* note 5, para. 342.

78. *Id.* paras. 344-47; see also MTS & WATS Market Structure, *Memorandum Opinion and Order*, 97 F.C.C.2d 682, paras. 75-90, 54 Rad. Reg. 2d (P & F) 615 (1983) (FCC’s

In the early rounds, the FCC essentially rejected the ILECs' arguments and ordered that reciprocal compensation is owed on ISP-bound traffic. The FCC first held that ISP-bound calls were interstate in nature, because a typical Internet connection would involve the user accessing Web sites in many different locations and usually across state lines.⁷⁹ The FCC nevertheless held that it had not regulated the payment of reciprocal compensation for such calls, and the inclusion of such calls in interconnection agreements was proper (if state commissions so ruled).⁸⁰ The FCC then initiated a rulemaking proceeding in which it again held that the calls were interstate calls (and thus retained its jurisdiction over the calls) and that the calls were subject to the reciprocal compensation requirement, until such time as new interconnection agreements were negotiated and approved by the state commissions.⁸¹

The D.C. Circuit reversed this ruling, finding unpersuasive the FCC's holding that the calls were "interstate."⁸² The court held that the FCC should reconsider whether a caller's Internet session should actually be included in determining whether the call was interstate. Rather, the court wrote, because section 251(b)(1) requires reciprocal compensation to be paid for the termination of "telecommunications," the FCC needed to explain why the only "telecommunications" was not the local call dialed by the Internet user to his or her local ISP access number.⁸³ Viewed in this manner, it looks like a local call—notwithstanding that the ISP may itself be using interstate communications to enable Web surfing.⁸⁴

The FCC recently issued an order affirming its prior results and attempting to remedy the deficiencies that the D.C. Circuit found in its reasoning.⁸⁵ The FCC reaffirmed that reciprocal compensation was not due to CLECs on ISP-bound calls under section 251(b). But the FCC altered its reasons for so holding. Instead of holding that ISP-bound calls were not "local calls" and therefore were outside of 251(b), the Commission concluded that a separate section of the Act—section 251(g)—exempted all

original order exempting all information service providers from payment of access charges; prior to AT&T break up, there was no formal access charge system).

79. Local Competition Provisions, *Declaratory Ruling and Notice of Proposed Rulemaking*, *supra* note 7, at 3695-701.

80. *Id.* at 3703-06.

81. *Id.* at 3707-09.

82. *Bell Atl. Tel. Co. v. FCC*, 206 F.3d 1 (D.C. Cir. 2000).

83. *Id.* at 5, 8.

84. *Id.* at 6-8.

85. Implementation of the Local Competition Provisions in the Telecomm. Act of 1996; Intercarrier Compensation for ISP-Bound Traffic, *Order on Remand and Report and Order*, 16 F.C.C.R. 9151, 23 Comm. Reg. (P & F) 678 (2001) [hereinafter Telecomm. Act of 1996, *Order on Remand and Report and Order*].

exchange access and information access services from the reciprocal compensation requirement.⁸⁶ ISP-bound calls were information access services.⁸⁷ The agency then held that, as an information access service, ISP-bound calls were an interstate information access service, because the intrastate and interstate portions of the calls could not be separated.⁸⁸ As a result, the FCC asserted its jurisdiction under section 201(b) to require interconnection between ILECs and CLECs for this interstate information access service.⁸⁹ Although the FCC reaffirmed that it was up to state utility commissions to determine retrospectively whether reciprocal compensation payments were owed based on interconnection agreements, the FCC now asserted its section 201(b) authority to require payments—although at much lower per-minute rates and at rates that would decrease over time.⁹⁰ The FCC also asserted that it intended to move to a bill-and-keep regime for such interconnection,⁹¹ and it released on the same day a *Notice of Proposed Rulemaking* that proposed to mandate that all intercarrier interconnection be set on a bill-and-keep basis.⁹²

Although this dispute has centered on the question of pricing for interconnection, and not on the prior issue of whether interconnection is mandatory, it highlights several important dimensions for Internet interconnection controversies. First, it identifies the possibility that interconnection can be achieved in a manner other than by a carrier-to-carrier interconnection requirement, as it was achieved by ordering that information service providers (including Internet carriers) have the right to interconnect with a network as a customer. Second, it provides an example of an interconnection regime that created an opportunity for profits based solely on the regulation, a result that should be avoided if regulation is intended to both simulate and stimulate competition. And, third, it of course provides a reminder that a mandatory interconnection regime will often need to be backed up by pricing rules—even if those pricing rules mandate that no money changes hands, as in bill-and-keep.

86. *Id.* paras. 31-41. Hence, the FCC reversed its position that section 251(b)(5) requires reciprocal compensation only for “local calls.” Instead, the FCC held that section 251(b)(5) requires reciprocal compensation for all interconnection arrangements, except where section 251(g) governs.

87. *Id.* paras. 42-47.

88. *Id.* paras. 52-55.

89. *Id.* paras. 52-65.

90. *See id.* para. 66.

91. Telecomm. Act of 1996, *Order on Remand and Report and Order*, *supra* note 85, paras. 67-76.

92. Developing a Unified Intercarrier Compensation Regime, *Notice of Proposed Rulemaking*, 16 F.C.C.R. 9610 (2001).

III. PHASES OF INTERNET INTERCONNECTION

The Internet both depends upon and is defined by interconnection. In significant part, the Internet's interconnectedness arises from definitional circularity: those providing information and services "on the Internet" and those purchasing access "to the Internet" share an expectation of mutual, universal interconnection. That is, everyone using the Internet has an expectation that he or she will be able to reach everyone else using the Internet. As background for developing appropriate legal rules to govern an Internet interconnection regime, this Part describes the technical and economic aspects of Internet interconnection. It also describes the current legal regime governing Internet interconnection. It is only slight hyperbole to say that the entire Internet project was about developing the appropriate protocols for interconnecting computers and computer networks. And it is no exaggeration at all to say that the Internet is particularly valuable because these Internet protocols successfully integrate a staggering number of computers and networks. Currently, the Internet interconnection regime largely succeeds despite the absence of legal rules requiring interconnection, although a significant body of law requires the interconnection between Internet carriers and other types of carriers.

A. *Technical Interconnection*

As is well known, today's Internet had its origins in the academic and defense project known as the ARPANET, a project of the U.S. Department of Defense Advance Research Projects Agency ("ARPA").⁹³ In the 1960s, ARPA was funding a variety of computer research projects at universities throughout the country. The initial ARPA interconnection project was an attempt to develop a network that would interconnect these various computers so that all ARPA researchers and administrators could share the resources, thereby decreasing the need for duplication of expensive computing facilities.⁹⁴ By 1969, ARPANET came into existence, linking together four different research centers,⁹⁵ and by 1971, the network infrastructure to connect ARPA's fifteen major computing centers was in place.⁹⁶

93. See, e.g., Peggy M. Karp, *Origin, Development and Current Status of the ARPA Network*, in SEVENTH ANNUAL IEEE COMPUTER SOCIETY INTERNATIONAL CONFERENCE, DIGEST PAPERS 49-52 (1973); CHRISTOS J.P. MOSCHOVITIS ET AL., HISTORY OF THE INTERNET: A CHRONOLOGY, 1843 TO THE PRESENT 54-62 (1999); Barry M. Leiner et al., *A Brief History of the Internet 2* at <http://www.isoc.org/internet/history/brief.html> (last revised Aug. 4, 2000).

94. JANET ABBATE, INVENTING THE INTERNET 43-47 (1999).

95. *Id.* at 64; MOSCHOVITIS, *supra* note 93, at 61-62.

96. ABBATE, *supra* note 94, at 78; Leiner, *supra* note 93, at 3.

This first phase of the ARPANET connected only different computing resources, not networks, but it provided much of the theoretical basis and practical engineering for the next step toward the Internet. For example, the ARPANET was a packet-switched network, the first large-scale operational network to employ that technology.⁹⁷ Similarly, ARPANET relied upon specific minicomputers dedicated to the task of maintaining the communications network. This simplified the development of the communications protocols, because it did not require the programming of each different kind of computer connected to the network with all of the communications protocols.⁹⁸ It also resulted in greater network reliability, because the network computers could be directed by a single network operations center.⁹⁹

The next critical phase, begun in 1973, was the project to devise protocols to permit the transmission of information across different networks which themselves were operating with different internal protocols.¹⁰⁰ The first successful demonstration of the new inter-networking protocol is illustrative: in 1977, researchers succeeded in sending messages from a van in California that was connected to a packet radio network, through the ARPANET to a satellite network linking the East Coast to Europe, and back through the ARPANET to a research center in California.¹⁰¹ Each of these three networks operated on a different internal protocol, so the inter-networking protocol “wrapped around” the message to provide information to gateway computers that connected the networks about how the message should be routed.¹⁰² A more modern example is the familiar manner in which inter-networking protocols permit the interconnection of corporate local area networks, which often run on an Ethernet-type protocol, with metropolitan area data networks that may run

97. See Leiner, *supra* note 93, at 2. Packet-switching is the technique of breaking a communications session into discrete pieces and applying to each packet an addressing header that allows each packet to be independently routed through the network. It is distinguished from “circuit switching,” in which the network dedicates a certain amount of transmission capacity to a session between two users and maintains that connection whether or not the users are actually transmitting information. See generally CLARK, *supra* note 4, at 11-14. Packet-switched networks can be further distinguished as to whether they are “connection-oriented” or “connectionless.” In the former, the sending computer establishes contact with the receiving computer and develops a path for the packets to travel through the network before transmitting. In the latter, the sending computer simply delivers the addressed packets to the network without first establishing contact or routing. The Internet is a connectionless network. See *id.*

98. Leiner, *supra* note 93, at 2-3; ABBATE, *supra* note 94, at 31-32.

99. See ABBATE, *supra* note 94, at 52-53, 60-64.

100. *Id.* at 122.

101. *Id.* at 131.

102. *Id.*

on a SONET-type protocol, with long-distance Internet backbones, which often run their protocols over frame relay or ATM switches. As some of the founders of the Internet have put it:

The Internet as we now know it embodies a key underlying technical idea, namely that of open architecture networking. In this approach, the choice of any individual network technology was not dictated by a particular network architecture but rather could be selected freely by a provider and made to interwork with the other networks through a meta-level "Internetworking Architecture."¹⁰³

Out of these two major projects eventually emerged the initial versions of the Transmission Control Protocol ("TCP") and the Internet Protocol ("IP"), now known together as TCP/IP.¹⁰⁴ TCP provides the overall "message management" functions that enable computer-to-computer communication. In simplified form, TCP breaks a computer message into the appropriate packet sizes, numbers the packets, creates a check sum so that the receiving computer can check the integrity of the message, provides the information for the reassembly of the message into the proper sequence by the receiving computer, and orders the re-sending of any lost or damaged packet.¹⁰⁵ TCP is therefore a protocol used by the sending and receiving computers to communicate a message.¹⁰⁶

The IP is the basis of the interconnection among the networks that make up the Internet, and it therefore bears somewhat closer examination here. IP wraps a header around each packet created through the TCP. This IP header contains the information necessary to route the packets properly from the sending computer to the receiving computer.¹⁰⁷ Thus, the IP header provides the Internet address of the sending computer and the Internet address of the destination computer, as well as the other pieces of information necessary for each network and network gateway to properly handle the packet.¹⁰⁸ Whereas TCP provides information necessary for the receiving computer to handle the message as it arrives in its various packets, the IP header is the only information that each transit router (itself

103. Leiner, *supra* note 93, at 3.

104. In the earliest phases of the inter-networking project, there was a single protocol that both routed messages between computers and networks and provided error-checking and other message integrity functions. In the late 1970s, the key scientists agreed that the two protocols should be separately defined. See Leiner, *supra* note 93, at 4; ABBATE, *supra* note 94, at 130.

105. See generally Charles L. Hedrick, *Introduction to the Internet Protocols* § 2, at <http://oac3.uth.tmc.edu/staff/snewton/tcp-tutorial/> (July 3, 1987).

106. *Id.*

107. *Id.*

108. For a complete description of the IP header, see CLARK, *supra* note 4, at 393.

a computer) in the network must process.¹⁰⁹

The decision to separate the TCP from the IP, and to confine the IP to only the protocols necessary to route packets between computers and networks, had several important consequences. First, by confining error-checking and other message-handling functions to the sending and receiving computers, it simplified the operations of the routing computers that stand between the various networks and permitted them to handle messages at greater rates.¹¹⁰ Second, it ensured that routing computers on the Internet were completely indifferent to the content of the data within each packet. This meant that the network could permit two computers to communicate even if the two computers were running a new application never before seen on the Internet; so long as the two computers packaged the information they wished to communicate inside an IP packet, the interconnected networks could transmit the information. In this, the contrast with the traditional telephone network could not be more stark.¹¹¹ The traditional telephone network was designed to do only one thing: transmit voice telephone calls. Of course, as anyone using dial-up Internet service knows, the telephone network can be made to carry all sorts of other applications—including all of the Internet applications. But it can do this only if a device translates the data being transmitted into a form that the telephone network can carry, namely, audible tones within the range of the human voice. This is exactly what modems do. By contrast, the Internet transmits the content of each communications session without requiring the transformation of the computer's application or session data. This design feature of the Internet is sometimes referred to as its "end-to-end" functionality: that application control is remitted to the computers at the ends of the network and the network transmission and inter-networking protocols are kept as simple as possible.¹¹²

The TCP/IP protocols exist in a well-defined computing and networking "space." Telecommunications and computer networking experts have long conceived of networks and their associated computers as exhibiting a variety of well-defined "layers."¹¹³ At the bottom of this

109. See Hedrick, *supra* note 105.

110. ABBATE, *supra* note 94, at 175.

111. J.H. Saltzer et al., *End-to-End Arguments on System Design*, in INNOVATIONS IN INTERNETWORKING 195-206 (Craig Partridge, ed. 1998); Leiner, *supra* note 93, at 4; ABBATE, *supra* note 94, at 171-77.

112. For a policy-oriented summary of the end-to-end argument, see generally Lemley & Lessig, *supra* note 31.

113. See generally CLARK, *supra* note 4, at 194-99 (describing the Open Systems Interconnection ("OSI") model which defines the layers of traditional telecommunications networks); THOMAS J. FALLON, THE INTERNET TODAY 31-35 (2001) (describing the different

“stack” are the physical links between computers. Proceeding “upward” through the stacks, there next come the protocols necessary to run the links, the protocols necessary to connect the links together, the protocols necessary for two computers at the ends of the links to communicate, the protocols necessary for the two computers to open communications sessions, the protocols necessary for the computers to associate data with the appropriate applications, and the protocols necessary for the computer to execute the application associated with the data.¹¹⁴ TCP/IP is an effective communications protocol for inter-networking because it confines its standardization to the middle of these layers. Although it forces standardization on the network connection protocols, it permits substantial flexibility at lower levels of the protocol stack (permitting various types of heterogeneous networks to connect) and at the higher levels of the protocol stack (permitting various types of applications to network communication).¹¹⁵

B. *Legal Interconnection Requirements*

Internet carriers—including Tier-1 backbones, smaller regional backbones, and ISPs—operate under no legal requirements to interconnect. Although the FCC almost certainly has the authority under the relevant statutes to impose such a requirement, it has, to date, refused to do so. The FCC has generally argued that such an interconnection requirement is unnecessary and would be contrary to the “unregulated” nature of the Internet. Nevertheless, a substantial body of law exists that requires traditional telephone companies to interconnect with Internet carriers, and it is this body of law that has made the mass-market Internet a success in the first instance. This Section summarizes existing interconnection regulation, as well as the debate over extending such regulation to Internet carriers.

Telecommunications carriers are required to interconnect. Section 201(a) of the 1934 Act made an interconnection requirement contingent upon a finding by the FCC that “such action [was] necessary or desirable in the public interest”¹¹⁶ The 1996 Act made the requirement absolute:

layer descriptions under TCP/IP and comparing them to the OSI model).

114. This is, admittedly, more of an OSI manner of describing the layers. The number of described layers are fewer in TCP/IP and its associated protocols. As a conceptual matter, however, the important feature is to highlight the notion of layering in communications and computer networks.

115. See David P. Reed et al., in *Commentaries on “Active Networking and End-to-End Arguments,”* 12 IEEE NETWORK 66, 69-71 (May/June 1998); Lemley & Lessig, *supra* note 31, at 929-31.

116. 47 U.S.C. § 201(a) (1994).

“Each telecommunications carrier has the duty . . . to interconnect directly or indirectly with the facilities and equipment of other telecommunications carriers”¹¹⁷ Additionally, the 1996 Act included detailed provisions governing the negotiation of interconnection agreements between telecommunications carriers and ILECs,¹¹⁸ and supervision of those negotiations by the state public utility commissions and the federal courts.¹¹⁹

These interconnection requirements do not extend to Internet carriers. Section 201(a)’s interconnection requirement extends only to “common carrier[s] engaged in interstate or foreign communication by wire or radio,” and section 251(a)’s interconnection requirement extends only to “telecommunications carriers” which, under the Act’s definitions, are synonymous with common carriers.¹²⁰ The FCC has repeatedly held that all of the various Internet carriers—from backbone carriers to ISPs—do not provide common carrier telecommunications service. Rather, drawing on long-standing Commission precedent, the FCC treats Internet carriers as providing an “information service.”¹²¹ An information service may involve “telecommunications,” but is not itself a telecommunications service because it also includes the processing of information or the forwarding or retrieval of stored information.¹²² Some commentators have persuasively argued that this distinction no longer makes sense,¹²³ but the FCC continues to hew closely to this line as a way of furthering its stated policy of not

It shall be the duty of every common carrier engaged in interstate or foreign communication by wire or radio . . . in accordance with the orders of the Commission, in cases where the Commission, after opportunity for hearing, finds such action necessary or desirable in the public interest, to establish physical connections with other carriers, to establish through routes and charges applicable thereto and the divisions of such charges, and to establish and provide facilities and regulations for operating such through routes.

Id.

117. 47 U.S.C. § 251(a) (Supp. V 1999).

118. *See id.* §§ 251(c)(1), 252.

119. *See id.* § 252. For an excellent description of the structure of ILEC interconnection negotiations, including the supervision by the state Public Utility Commissions and the federal courts, see Weiser, *supra* note 73.

120. Title 47 U.S.C. § 153(44) (Supp. V 1999) defines “telecommunications carrier” as a carrier offering “telecommunications service,” and 47 U.S.C. § 153(46) (Supp. V 1999) says “telecommunications services” are common carrier services.

121. Oxman, *supra* note 8, at 3-6; Jonathan Weinberg, *The Internet and “Telecommunications Services,” Universal Service Mechanisms, Access Charges, and Other Flotsam of the Regulatory System*, 16 YALE J. ON REG. 211, 227-32 (1999) (discussing the definition of “information services” and its application by the FCC to the Internet).

122. *See* 47 U.S.C. § 153(20) (Supp. V 1999) (defining “information service”); Weinberg, *supra* note 121, at 227-32.

123. *See* Weinberg, *supra* note 121, at 232-34.

regulating the Internet.¹²⁴ Because the Act's legal interconnection requirements do not directly apply to Internet carriers, those carriers have no legal basis apart from the antitrust laws on which to demand interconnection with each other.¹²⁵

Nevertheless, even though the Communications Act does not provide a basis for Internet carriers to demand interconnection with one another, the Act, and the FCC's regulations under the Act, do extend the reach of Internet carriers by requiring interconnection between Internet carriers and some telecommunications carriers. As a threshold matter, an Internet carrier can always get interconnection with a telecommunications carrier by simply forming an affiliated telecommunications carrier which can then demand interconnection, or by gaining interconnection to the entire telecommunications network through an agreeable telecommunications carrier. This strategy may not be optimal, for it may increase an Internet carrier's costs compared to direct interconnection and it may create obligations to make interconnection payments. Yet, as a legal matter, interconnection should be available through an affiliate.¹²⁶

Additionally, a telecommunications carrier's nondiscrimination duty requires it to treat an Internet carrier as if it were any other customer, i.e., without regard to its status as an Internet carrier.¹²⁷ Thus, dial-up ISPs could (and did) simply buy business lines or trunk groups from the ILEC and connect their modem pools to those lines.

Moreover, the biggest ILECs have long been required, under FCC regulations, to provide access services to ISPs and other information service providers. In the 1990s, the FCC promulgated open network architecture ("ONA") and comparably efficient interconnection ("CEI") rules that required ILECs to identify a basket of telecommunications services that must be offered to information service providers.¹²⁸ In part, the

124. *E.g.*, Deployment of Wireline Servs. Offering Advanced Telecomm. Capability, *Memorandum Opinion and Order and Notice of Proposed Rulemaking*, 13 F.C.C.R. 24,011, 24,030, 13 Comm. Reg.2d (P & F) 1, 12 (1998).

125. In *AT&T Corp. v. City of Portland*, 216 F.3d 871 (9th Cir. 2000), the Ninth Circuit, unbidden by any party to do so, labeled cable Internet access service a "telecommunications service." *Id.* at 878-80. The FCC has specifically refused to endorse this decision, *see Notice of Inquiry*, *supra* note 42, paras. 14-24, and other courts have disagreed, *see id.* But, if the Ninth Circuit is right, then section 251's interconnection obligations would seem to attach to this Internet service.

126. *See Critique of Open Access Rules*, *supra* note 31, at 68-69 (2000).

127. *See* 47 U.S.C. § 202(a) (1994) (the 1934 Act's nondiscrimination obligation).

128. *See generally* Expanded Interconnection with Local Tel. Co. Facils., *Report and Order and Notice of Proposed Rulemaking*, 7 F.C.C.R. 7369, 71 Rad. Reg.2d (P & F) 506 (1992).

rules required the development of certain new transport tariffs.¹²⁹ But their real bite came from the FCC's requirement that these biggest ILECs make available to other information service providers any transport services that the ILECs used in their own information service offerings.¹³⁰ The FCC has held that these requirements survive the 1996 Act's more specific ILEC interconnection requirements and extend interconnection rights to ISPs even though ISPs have no interconnection rights under section 251.¹³¹ The unbundling required by the ONA and CEI rules ensures that the telecommunications service that is used in conjunction with the information services is available to other information service providers.

C. *Economic Dimensions of Interconnection*

As the ubiquitous telephone network and the Internet demonstrate, significant value rests in interconnection. For communications services in particular, consumer value depends on the extent of interconnection to other consumers. Economists call this phenomenon "network effects" or "network externalities," but those are only the names they have placed on the simple intuition that, for some goods, the value of the good depends on the number of people consuming the good and the number of people on (or in) the network. This Section briefly summarizes some of the lessons of network economics: the manner in which networks have value, the manner in which network effects can create barriers to entry, and the manner in which network effects can affect innovation in associated markets.

Network economics focuses on those markets in which consumer demand for goods or services depends upon the number of other consumers also expected to consume the same good or service.¹³² A telephone or a fax machine is not terribly useful if no one else buys one; each becomes more useful as more people have them. To some extent, network effects resemble

129. *Id.* para. 121.

130. *Id.* paras. 11-12.

131. Telecomm. Act of 1996, *First Report and Order*, *supra* note 6, paras. 610-11.

132. The following summary addresses only so-called "direct" network effects, in which the feedback effect arises directly from consumers purchasing the good in question. Such direct networks as telephones, fax machines, and Internet access are different from "indirect" networks typically characterized by the presence of a durable hardware good and complementary software goods. In markets such as those for CD players and CDs, or computer operating systems and applications, the feedback effect results because a larger number of persons buying the hardware good induces a greater number and variety of compatible software goods, thus making the hardware good more attractive. On this point, and on network economics, see generally Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 AM. ECON. REV. 424, 426-27 (1985); Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CAL. L. REV. 479 (1998).

economies of scale, where goods are cheaper to produce as more are produced; but network effects are entirely a result of changes in how consumers value the good based on the number of others consuming it, and hence are a demand-side phenomenon.¹³³

Where network effects occur, products or manufacturers may become entrenched. Consumers may be unwilling to switch to a new technology, even if that technology is better or cheaper, if they are not convinced that a sufficient number of other consumers will also switch. In other words, consumers may value the current network's interconnectedness more than they value the new technology.¹³⁴ The corollary is that the current owners of the networks will often have strong incentives to exclude rivals, especially new entrants.¹³⁵

Where there are network effects, one manner of decreasing the barriers to entry is an interconnection technology or requirement. In this manner, new (and smaller) companies can connect to the incumbent's installed base.¹³⁶ It is for this reason that communications law (from the 1934 Communications Act to and including the Telecommunications Act of 1996) has always included interconnection requirements. Without the ability for new companies to promise customers that they will also be able to place calls to and receive calls from subscribers of the incumbent telephone carriers, new entrants would never stand a chance.¹³⁷

IV. A BRIEF HISTORY OF COMMON CARRIER RULES

This Part provides a relevant history of common carrier rules in order to lay the groundwork for an Internet interconnection requirement. The English common law imposed special duties on certain professions to serve all who sought service, on just and reasonable terms, and without discrimination.¹³⁸ Beginning in the 1800s, English and American statutes

133. See generally Nicholas Economides, *The Economics of Networks*, 14 INT'L J. INDUS. ORG. 673 (1996).

134. See, e.g., Michael L. Katz & Carl Shapiro, *Technology Adoption in the Presence of Network Externalities*, 94 J. POL. ECON. 822, 825 (1986).

135. See, e.g., Stanley Besen & Joseph Farrell, *Choosing How To Compete: Strategies and Tactics in Standardization*, J. ECON. PERSP. 117, 120 (Spring 1994).

136. See *id.*

137. See generally *Critique of Open Access Rules*, *supra* note 31, at 81-82 (discussing the interconnection requirements of the 1934 and 1996 Acts as explicitly favoring new entrants and solving the entrenching aspects of network effects).

138. The common law of common callings was much broader and more complex than these three issues and, to some extent, was more focused on concerns other than the duties to provide service on just and reasonable terms and without discrimination. In its earliest stages, the law of common callings developed to provide a cause of action (unknown previously) against those who refused to serve. It was also first concerned with defining a

applied these rules—what are now called common carrier rules—to the dominant mode of transportation, the newly emerging railroads. In 1910, Congress partially extended the common carrier regulation of railroads to telephone and telegraph companies, finding that the carriage of electronic intelligence should be regulated in the same manner as the carriage of goods and passengers. In many states, courts and legislatures had already declared telegraphy and telephony to be common carrier services. Finally, in 1934, the Communications Act imposed a fuller set of common carrier duties, and the FCC was created to provide an independent and more vigorous enforcement of these rules.

The history of common carrier duties in general, and of the common carrier interconnection requirement in particular, illuminates the reasons supporting the imposition (and the occasional elimination) of those requirements. Common carrier duties have been imposed based variously upon theories of de facto and de jure monopoly, on the theory that the enterprise had become “essential,” and upon theories that the enterprise was publicly concerned in a particular manner. As will become apparent, many of these factors exist in the current Internet and may therefore support the application of common carrier-type rules to Internet carriers. Even more importantly, the history of common carrier regulation shows the particular importance of interconnection requirements. Such requirements, which were most prevalent in later statutory common carrier schemes, both helped create unified bearer networks and enabled the development of competitive markets adjunct to more concentrated ones.

A careful review of this history should also shed some light on the difference between common carrier duties and mandatory unbundling as embodied both in some provisions of the 1996 Act and in more radical proposals for Internet regulation. On the whole, common carriers were required to interconnect, but they were not required to refrain from participation in related markets and they were not required to sell their service at wholesale prices to their competitors. As noted above, both proposals are currently presented as solutions to various Internet carrier disputes. The historical review here demonstrates that such market quarantine or mandatory wholesaling requirements were not typically part of common carrier duties. In Part V, I will argue that they should not typically be part of common carrier duties for Internet carriers.

standard of care for those engaged in businesses. *See generally* JOSEPH STORY, COMMENTARIES ON THE LAW OF BAILMENTS, art. VIII (9th ed. 1878); 1 MAURICE ROBERTS, FEDERAL LIABILITIES OF CARRIERS, §§ 50-107 (2d ed. 1929); M.E. HOLDSWORTH, THE LAW OF TRANSPORT (1932). These branches of carrier law, while still important, are beyond the scope of this paper.

Before launching into the history, two notes (caveats, perhaps) about methodology are in order. First, this Part does not attempt to comprehensively review the history of all of the undertakings that have been subjected, at some time or another, to common carrier duties, nor does it attempt to discuss all of the duties to which common carriers have been subjected. Rather, the principal focus is on the railroad, telegraph, and telephone industries, although some attention is paid to the common law of common carriage. Moreover, the inquiry is focused on two particulars: identifying the reasons for imposing common carriers duties, and identifying the content of the specific interconnection and nondiscrimination duties to which those carriers were subject. This focus is appropriate. In the United States, railroad regulation under the Interstate Commerce Act of 1887 provided the basis for almost all of the significant common carrier regulation that followed.¹³⁹ Moreover, the regulation of telegraphs and telephones is most analogous to current interconnection disputes on the Internet. The specific substantive focus is thus simply an attempt to mine the history for those facts most relevant to the project at hand.

Second, the focus on the historical reasons for imposing legal duties is a particularly legal manner of approaching the question of current regulations for Internet carriers. Alternative approaches—such as attempting to create economic models that capture the Internet market and arguing based on those models whether regulation is necessary—are certainly possible and desirable.¹⁴⁰ Nevertheless, both approaches seem to contribute to the ultimate conclusion: history can demonstrate the market factors that have been considered important. Part of the project in Part V will be to interpret the lessons of history in light of the relevant differences in Internet markets and in light of current economic theory.

A. *The Common Law and Regulation Before 1887*

The early common law focused first on the duty to serve and on the standard of care required by a person engaged in a common calling. At this

139. Joseph D. Kearney & Thomas W. Merrill, *The Great Transformation of Regulated Industries Law*, 98 COLUM. L. REV. 1323, 1333-34 (1998).

The Interstate Commerce Act—in its substantive requirements of just, reasonable, and non-discriminatory rates and practices, in its procedural device of publicly filed tariffs setting forth these rates and practices, and in its disallowance of deviations from the tariffs—was essentially copied by Congress and the states into numerous subsequent regulatory acts.

Id.

140. I have used such an approach in a prior writing on open access rules for cable Internet services. See *Critique of Open Access Rules*, *supra* note 31; *Vertical Dimension*, *supra* note 31.

stage, the law responded to the development of a class of persons engaged in trades as their full-time professions. In the prior era of the common law, in which the agrarian, feudal model dominated, the common law provided no remedy where a person refused to perform an undertaking for which he had not yet received consideration, and it refused to impose liability for negligent work unless the parties had explicitly contracted for a particular result.

The judge-made law of common callings created an action against tradesmen who had held themselves out to actually serve the public and to do so with ordinary skill.¹⁴¹ Thus, the law created actions that required those engaged in serving the public to, in fact, serve the entire public with reasonable care. The duties applied to all persons doing business generally open to the public, not simply to carriers, and turned on whether the person had made the business his "calling."¹⁴² A famous case from 1441 shows that the key to liability under the common law of common callings was a showing that the defendant was engaged in the activity as his business, and not merely casually or intermittently.¹⁴³ Writing in the early 1900s, Bruce

141. These were actions on the case of two different kinds. An action based on a defendant's wrongful refusal of service was an action on the case in the nature of an *assumpsit*, and it proceeded upon the theory that a person engaged in a common calling had made a representation (agreement) to serve all who applied. Because the defendant was engaged in a common calling, the promise could be enforced despite the absence of consideration. An action alleging that the defendant had injured the plaintiff while practicing a common calling was a pure action on the case (i.e., a tort action). In this regard, the innovation in the common law was that, prior to the development of actions based on common callings, the law provided no relief from negligence unless the parties had specifically contracted for a particular result. See generally F. B. Ames, *The History of Assumpsit*, 2 HARV. L. REV. 1, 58 (1888).

142. Blackstone's classic summary proceeds as follows:

There is also in law always an implied contract with a common inn-keeper, to secure his guest's goods in his inn; with a common carrier or bargemaster, to be answerable for the goods he carries; with a common farrier, that he shoes a horse well, without laming him; with a common taylor, or other workman, that he performs his business in a workmanlike manner: in which if they fail, an action on the case lies to recover damages for such breach of their general undertaking. But if I employ a person to transact any of these concerns, whose common profession and business it is not, the law implies no such *general* undertaking; but in order to charge him with damages, a *special* agreement is required. Also if an inn-keeper, or other victualler, hangs out a sign and opens his house for travellers, it is an implied engagement to entertain all persons who travel that way; and upon this universal *assumpsit*, an action on the case will lie against him for damages, if he without good reason refuses to admit a traveller.

3 WILLIAM BLACKSTONE, COMMENTARIES *164.

143. The court dismissed plaintiff's suit against a horse surgeon: "You have not shown that he is a common surgeon to cure such horses, and so, although he killed your horse by his medicines, you shall have no action against him without an *assumpsit*." Y.B. 19 Hen. 6, 49, pl. 5 (1441) (Paston, J.), cited in Ames, *supra* note 141, at 4.

Wyman suggested that in the infancy of England's trade economy, these duties applied to all trades and businesses, because in any area, few persons were engaged in each trade.¹⁴⁴ Indeed, during the middle ages, Parliament reinforced the common law duties of tradesmen by passing statutes specifically requiring almost all workers and tradesmen to serve the public generally and to do so on just and reasonable terms.¹⁴⁵

As the common law emerged into the sixteenth and seventeenth centuries, however, cases based on the law of common callings focused on a narrow set of trades and professions: carriers of all kinds, and occupations (such as warehousing) associated with transportation—most notably innkeepers.¹⁴⁶ In a series of books and articles, Wyman explained this narrowing by arguing that common carrier duties were applied only to those occupations that continued to exhibit effective monopoly.¹⁴⁷ These duties were applicable in earlier times because transportation was very limited and because each town's craftsmen, therefore, had monopolies in their own services. Later, the duties of common calling focused on innkeepers and carriers because those occupations entailed legal or economic monopolies. By contrast to Wyman, Charles Burdick, also writing in the early 1900s,¹⁴⁸ challenged this view, noting that common carrier duties were often imposed without a specific finding of monopoly power. Burdick argued that the callings could be identified by a number of indicators that the enterprise was considered "public." First, common carrier duties were applied to those activities which historically had been provided by the king or under the king's writ. Second, common carrier duties applied when the public had assisted the enterprise in some manner—through public spending,¹⁴⁹ a grant of eminent domain authority,¹⁵⁰ the use of public property,¹⁵¹ or the establishment of a legal

144. Bruce Wyman, *The Law of the Public Callings as a Solution of the Trust Problem*, 17 HARV. L. REV. 156 (1904).

145. BRUCE WYMAN, *THE SPECIAL LAW GOVERNING PUBLIC SERVICE CORPORATIONS AND ALL OTHERS ENGAGED IN PUBLIC EMPLOYMENT* § 17, at 15 (1911).

146. *Munn v. Illinois*, 94 U.S. 113, 125 (1876) ("it has been customary in England from time immemorial, and in this country from its first colonization, to regulate ferries, common carriers, hackmen, bakers, millers, wharfingers, innkeepers, & c. [sic], and in so doing to fix a maximum charge to be made").

147. See Wyman, *supra* note 144; WYMAN, *supra* note 145; JOSEPH H. BEALE, JR. & BRUCE WYMAN, *CASES ON PUBLIC SERVICE COMPANIES, PUBLIC CARRIERS, PUBLIC WORKS, AND OTHER PUBLIC UTILITIES* (3d ed. 1920). Wyman was not the only one to hold this view. See, e.g., WILLIAM ROBSON, *NATIONALIZED INDUSTRY AND PUBLIC OWNERSHIP* 17 (2d ed. 1962); ELI CLEMENS, *ECONOMICS AND PUBLIC UTILITY* 25 (1950).

148. See Charles K. Burdick, *The Origin of the Peculiar Duties of Public Service Companies*, 11 COLUM. L. REV. 514, 616, 743 (1911).

149. *Id.* at 632-33.

150. *Id.* at 629.

monopoly.¹⁵² When the legislature had acted in one of these manners, the courts drew on the law of common callings to require that the enterprise serve all.

Viewed from a current perspective, it seems that Burdick's view, in which the imposition of common carrier duties included, but also extended beyond, the scope of simple monopoly, is the more accurate. In part, the views may be reconciled by a shift in the roles of court and legislature. In the early common law period, the common law judges were the center of legal authority and they alone set the terms of commercial interaction. Later, after Parliament's supremacy became more or less settled (during a time in which free-market ideas were also more in currency),¹⁵³ judges were more reluctant to impose common carrier duties without an indication from the legislature. That indication was often found in one of the typical forms of public support mentioned above. Moreover, judges were reluctant to question the wisdom of legislative controls of business, and hence did not inquire deeply into the monopoly question.

The early common carrier cases decided by the United States Supreme Court bear out this conclusion. *Munn v. Illinois*¹⁵⁴ is the classic case for students of regulated industry. *Munn* antedated the Interstate Commerce Act by eleven years, but it was decided in an era in which the railroads and their associated businesses had already become the dominant mode of transportation and otherwise dominated a new commercial economy. The 1870 Illinois Constitution and 1871 state legislation imposed rate caps and required Chicago grain elevators to serve all customers. The Supreme Court upheld this legislation against dormant commerce clause, takings, and due process challenges on the grounds that the elevators were "public callings" and that the legislation was consistent with historic regulation of public callings.¹⁵⁵ The opinion has two strands: that of common carrier duties regulating monopoly, and that of public interest more generally. Drawing on the writings of Lord Hale, the Court emphasized that the common law had always imposed a duty to serve at

[T]he potential general usefulness of an undertaking to the members of a community justifies the grant of the power of eminent domain for the furtherance of the undertaking, and the acceptance of such a grant carries with it the duty to use such powers reasonably and impartially for the benefit of all applicants

Id.

151. *Id.* at 632-34.

152. *Id.* at 620.

153. See LARS GROTON, THE CONCEPT OF THE COMMON CARRIER IN ANGLO-AMERICAN LAW 27-29 (1971).

154. *Munn v. Illinois*, 94 U.S. 113 (1876).

155. *Id.* at 133-36.

just and reasonable prices upon those holding a legal or factual monopoly over transportation and similar services.¹⁵⁶ But, the Court also emphasized that certain professions—again, typically transportation and similar services—were affected by “public interest” in that all members of the public needed to rely on their availability.¹⁵⁷ In applying these precedents to the case at hand, the Court found that the grain elevators in Chicago were controlled by nine firms which jointly agreed on prices.¹⁵⁸ The Court also found that almost all grain from Western states passed through the Chicago elevators on the way to the East.¹⁵⁹

Many commentators have read *Munn* as standing for the proposition that common carrier duties to serve and rate regulation were imposed only when a monopoly was proved.¹⁶⁰ This is too narrow a reading. In *Munn*, the Court made it clear that it required no proof of the actual monopoly power of the Chicago grain elevators. Rather, the Court’s holding rested on the notion that warehousing generally was subject to such regulation and that, if the legislature saw fit to regulate it, the Court would not inquire further.¹⁶¹ If *Munn* itself leaves any doubt, the Supreme Court in *Brass v. North Dakota ex rel. Stoesser*¹⁶² made clear that the *Munn*’s approval of common carrier regulation by statute applied whenever the legislature saw fit to regulate an appropriate commercial endeavor. In *Brass*, the Court relied on *Munn*’s holding that “it [was] competent for the legislative power to control the business of elevating and storing grain.”¹⁶³ Because the enterprise was of a type customarily regulated in this manner, the Court would not review the legislative findings to determine whether, in fact, the regulation responded to a concern of actual monopoly.¹⁶⁴

At common law, a common carrier had a duty to serve, and common carriers that transported goods (or otherwise were bailees) generally were insurers of the goods entrusted to them. From our perspective, the duty to

156. *Id.* at 128-29.

157. *Id.* at 130.

158. *Id.* at 131.

159. *Id.*

160. *E.g.*, Wyman, *supra* note 144, at 222-25; GROTON, *supra* note 153, at 30-31.

161. *See Munn*, 94 U.S. at 132-33.

For our purposes we must assume that, if a state of facts could exist that would justify such legislation, it actually did exist when the statute now under consideration was passed. For us the question is one of power, not of expediency Of the propriety of legislative interference within the scope of legislative power, the legislature is the exclusive judge.

Id.

162. 153 U.S. 391 (1894).

163. *Id.* at 403.

164. *Id.* at 403-04.

serve was the fundamental common carrier duty. This duty was fundamental because it extended the enterprise, and because a carrier could not easily modify the rules through contract. Of course, the duty did not require a person practicing a common calling to provide any service that he did not typically provide—even if that service was related to the “common” service or was otherwise within the capacity of the person practicing the common calling.¹⁶⁵

The common law of common carriage did, however, omit two of the obligations that were generally imposed on common carriers by later statutory enactments. First, at common law, the nondiscrimination obligation was relatively weak. Courts repeatedly held that there was no breach of the nondiscrimination obligation if two people were charged different prices for the same service, so long as each of the prices was reasonable.¹⁶⁶ Furthermore, the common law did not permit any inquiry into the equivalence of charges for services that were not identical.¹⁶⁷ Second, and more importantly for current purposes, the common law imposed no obligation on railroads (or other carriers) to interconnect with the lines of other carriers or to establish joint or through rates for services. Although common carriers were bound to receive traffic from all submitting shippers, whether those shippers were customers or other carriers, the duty extended only to those points, and in those manners, in which the carriers themselves offered service. There was no obligation to establish either a physical connection or a joint business operation.¹⁶⁸

B. *Railroad Regulation*

The first great federal legislation imposing common carrier duties was of course the Interstate Commerce Act of 1887 (ICA),¹⁶⁹ and it was

165. KENT'S COMMENTARIES *590.

166. See *Interstate Commerce Comm'n v. B&O R.R. Co.*, 145 U.S. 263, 275 (1892) (collecting common law cases).

167. *Id.* at 283-84.

168. See *Atchison Topeka & Santa Fe R.R. Co. v. Denver & New Orleans R.R. Co.*, 110 U.S. 667, 680-82 (1884) (no common law requirement that railroads interconnect); *Wis., Minn. & Pac. R.R. Co. v. Jacobsen*, 179 U.S. 287, 296 (1910). As applied to telephone, see *Pac. Tel. & Tel. Co. v. Anderson*, 196 F. 699, 703 (D. Wash. 1912) (no common law requirement for telephone companies to interconnect); *State v. Cadwallader*, 87 N.E. 644 (1909); *Okla.-Ark. Tel. Co. v. S.W. Bell Tel. Co.*, 45 F.2d 995 (8th Cir. 1930) (no common law or statutory duty to interconnect).

169. An Act to Regulate Commerce, 24 Stat. 379 (1887). Prior to the federal legislation, most states had imposed common carrier duties and rate regulations on the railroads, and the U.S. Supreme Court had held on a number of occasions that railroads were common carriers, both under common law tests and under their state charters. See, e.g., *R.R. Co. v. Lockwood*, 84 U.S. 357, 377 (1873); *Chicago, Burlington & Quincy R.R. v. Iowa*, 94 U.S. 155, 161 (1876); *Atchison*, 110 U.S. at 674-75. But the Supreme Court, in the decision that

similarly based both upon strictly economic concerns over the abuse of monopoly power and upon less strict economic notions that the railroads had a duty to serve the public interest. The original ICA imposed variants of the traditional common carrier duties to serve at just and reasonable prices, and without discrimination. But it was not until several subsequent amendments that railroads were subjected to mandatory and effective interconnection requirements. The resulting national rail network revolutionized commerce.

The original ICA was motivated by concerns over the abuse of monopoly, but also over more public interest concerns. The ICA principally imposed requirements of just and reasonable rates and conditions of service, nondiscrimination, and tariff-filing. It also included a mild prohibition on short- and long-haul price discrimination. The nondiscrimination and short/long-haul provisions grew out of monopoly-related concerns, for the short/long-haul discrimination was possible only because carriers lacked competition on interior routes. Price discrimination between large and small volume shippers was perceived to be a result of the railroads' cartel over certain routes.¹⁷⁰ The ICA did not, however, limit its rate regulation or nondiscrimination duties to routes or instances of clear market power, and even the ICA's most ardent legislative advocates recognized that many railroad routes (the long hauls) were the subject of competition.¹⁷¹ The ICA was thus also based upon notions that the public had supported the development of the railroads and was entitled to ensure that their operation continued in the public interest generally. In response to arguments that competition would discipline the abuses of the railroads, the crucial Cullom Report flatly states, "This answer fails to recognize the public nature and obligations of the carrier, and the right of the people, through the Governmental authority, to have a voice in the management of a corporation which performs a public function."¹⁷² The railroads, in fact, were generally commissioned by special state charters and were always given the right of eminent domain.¹⁷³ Though not fully public, their "roads"

provided the spur for the ICA, held in *Wabash, St. Louis & Pac. R.R. Co. v. Illinois*, 118 U.S. 557 (1886), that the dormant commerce clause forbade states from regulating rates of interstate shipments.

170. See generally Kearney & Merrill, *supra* note 139; Clyde B. Aitchison, *The Evolution of the Interstate Commerce Act: 1887-1937*, 5 GEO. WASH. L. REV. 289 (1937); HERBERT HOVENKAMP, *ENTERPRISE AND AMERICAN LAW, 1836-1937*, at 131-48 (1991).

171. See SHELBY M. CULLOM, COMMITTEE ON INTERSTATE COMMERCE, *THE CULLOM REPORT OF 1886, reprinted in 1 THE ECONOMIC REGULATION OF BUSINESS AND INDUSTRY* 31, 59 (Bernard E. Schwartz ed., 1973).

172. *Id.* at 58.

173. In the initial Senate debate, Senator Palmer stated:

Under our somewhat complicated system of government the railroads were

were considered public roads for taxing, postal, and other purposes.¹⁷⁴

It took several amendments to the ICA before it unambiguously required railroads to interconnect their lines. The original ICA did not require railroads to interconnect or to establish joint or through routes.¹⁷⁵ The 1906 Hepburn Act gave the Interstate Commerce Commission ("ICC") authority to order such interconnection and through routes.¹⁷⁶ The 1910 Mann-Elkins Act required carriers to interconnect and establish through routes without prior Commission order.¹⁷⁷ And the 1920 Transportation Act gave the ICC power to require railroads to extend their lines and to build facilities to facilitate interconnection.¹⁷⁸

The result of this mandatory interconnection requirement was, eventually, the creation of an integrated rail network.¹⁷⁹ After this integrated network emerged, it permitted a revolution in the provision of commodities and other goods across great distances.¹⁸⁰ Moreover, rail transportation had such an advantage over all alternatives that, for a significant period of time at the beginning of the twentieth century, "[a]ll industrial and commercial activity was closely dependent upon rail connections."¹⁸¹ Moreover, it simply revolutionized certain industries, especially agriculture, and permitted the urbanization of America.¹⁸²

chartered by States, who bestowed upon them the right of eminent domain, and they were builded [sic] wholly or in part by contributions directly from the State or by the people along their line, and they were intended for the common and equal service of all who chose to make use of them It was believed that the railway, like the toll-roads of that day, would be built by one company and used by any and all who chose to prepare suitable carriages.

Id. at 103-04.

174. *E.g., id.* at 43-44; *see also Atchison*, 110 U.S. at 680-82 (collecting mid-nineteenth century state constitutions declaring railways to be public highways).

175. Joint or through routes are simply services provided over the lines of more than one railroad, but tariffed and offered to the public by one (or all) of the participating railroads. *See, e.g., Chicago, Milwaukee, St. Paul & Pac. R.R. Co. v. United States*, 366 U.S. 745, 746 nn.2-3 (1961).

176. Hepburn Act, 34 Stat. 584 (1906).

177. Mann-Elkins Act, ch. 309, 36 Stat. 539, 552 (1910); *see Interstate Commerce Comm'n v. N. Pac. Ry.*, 216 U.S. 538 (1910) (finding that, under Hepburn Act, carriers were not required to interconnect or establish through routes until ICC ordered such action).

178. Transportation Act, 41 Stat. 456 (1920); *see generally*, 1 ISIAH SHARFMAN, THE INTERSTATE COMMERCE COMMISSION 240-43 (1931).

179. *See generally* DUDLEY F. PEGRUM, TRANSPORTATION ECONOMICS AND PUBLIC POLICY 55-58 (1961).

180. *Id.* at 12-17.

181. *Id.* at 515.

182. *Id.*; *see generally* Robert L. Rabin, *Federal Regulation in Historical Perspective*, 38 STAN. L. REV. 1189, 1196 (1986).

It would be difficult to overstate the centrality of the railroads to the national economy in the post-Civil War period As the country expanded westward

C. *Telegraphs and Telephones*

The history of common carrier regulation of telephone companies demonstrates a similar dual concern with controlling monopoly and, more generally, with declaring telephony to be a public enterprise. The original ICA did not include telegraph and telephone carriers within its jurisdiction. It was not until 1910, with the Mann-Elkins Act, that the ICA's common carrier duties were partially extended to these new electronic carriers. Prior to 1910, courts struggled with common law claims that telegraph and telephone companies were common carriers and should be subjected to common carrier duties. The earliest cases refused to find that telegraph and telephone companies were common carriers, because the courts could not conceive of them as "carriers" of anything.¹⁸³ Nevertheless, most courts found telegraph and telephone companies to be at least quasi-common carriers or public service companies and subjected them to similar duties of service and nondiscrimination.¹⁸⁴ The decisions rested mainly on the support the state gave to telegraph and telephone companies through franchises and the power of eminent domain.¹⁸⁵ Some decisions also note,

and rural outpost communities proliferated, economic inter-dependency—among producer, warehouser, merchant, and consumer—made the position and practices of the railroads all-pervasive in importance.

Id. at 1197.

183. *E.g.*, *Grinnell v. W. Union Tel. Co.*, 113 Mass. 299 (1873).

The liability of a telegraph company is quite unlike that of a common carrier. A common carrier has the exclusive possession and control of the goods to be carried, with peculiar opportunities for embezzlement or collusion with thieves A telegraph company is intrusted with nothing but an order or message, which is not to be carried in the form in which it is received, but is to be transmitted or repeated by electricity

Id. at 301-02.

184. The principal debate over declaring telegraph companies subject to the full panoply of common law common carrier duties arose over those companies' liability for service failures and, conversely, their ability to limit liability by contract or tariff. In general, common carriers of goods were strictly liable for nondelivery or damage of goods, in part to eliminate difficult questions of proof when all of the facts would be within the carrier's control and to eliminate the consequent opportunities for carrier misfeasance. *See generally* STORY, *supra* note 138, §§ 489-90. Out of recognition that electric communications were not yet proved, courts generally did not hold telegraph companies strictly liable and permitted those companies to limit their liability by contract or tariff. *See, e.g.*, *Grinnell*, 113 Mass. at 299; *Bartlett v. W. Union Tel. Co.*, 62 Me. 209 (1873); *W. Union Tel. Co. v. Priester*, 276 U.S. 252 (1928). *See also generally* *The Law of Telegraphs and Telegrams*, 13 AM. L. REGISTER 193 (1865) (discussing earlier cases on common carrier obligations of telegraph companies); *Liability of Telegraph Companies for Fraud, Accident, Delay, and Mistakes in the Transmission and Delivery of Messages*, 32 AM. L. REGISTER 281, 353 (1884) (same); *The Law Relating to Telephones*, 37 AM. L. REGISTER 65, 70-71 (1889) (same for telephone companies).

185. *See, e.g.*, *Marr v. W. Union Tel. Co.*, 3 S.W. 496 (Tenn. 1887).

There is, however, much analogy between the common carrier and the telegraph

however, that in many locales the telegraph or telephone company had a virtual monopoly over its service,¹⁸⁶ and some decisions rest on no more than a declaration that the companies had come to provide a “necessary” service to the public.¹⁸⁷

The Mann-Elkins Act,¹⁸⁸ as the 1910 amendment to the ICA was known, principally concerned railroad matters, and the regulation of telephone and telegraph companies was added by way of a floor amendment with very little debate.¹⁸⁹ The Mann-Elkins Act, moreover, did not extend all of the ICA’s provisions to telephone and telegraph carriers. In particular, while the Act declared telephone and telegraph companies to be common carriers and subjected those companies to the Act’s just and reasonable rates and nondiscrimination requirements, it did not require telephone and telegraph carriers to establish interconnections with each other or to file tariffs.¹⁹⁰ As a result, the ICC was hampered in regulating

company. Both are in the exercise of a *quasi* public occupation, and both have by the public conferred upon them valuable franchises, and both may and do invoke the high prerogative of exercising the state’s right of eminent domain. The obligation to serve the public without discrimination, and for reasonable charges, is imposed upon both occupations. The use of the facilities afforded by telegraph companies has become as much of a public necessity as were common carriers at the same relative stage of development.

Id. at 498-99. In 1901, the Supreme Court applied common law common carrier principles to a telegraph company’s charges. It wrote: “Common carriers . . . are performing a public service. They are endowed by the State with some of its sovereign powers, such as the right of eminent domain, and so endowed by reason of the public service they render. As a consequence of this, all individuals have equal rights both in respect to service and charges.” *W. Union Tel. Co. v. Call Publishing Co.*, 181 U.S. 92, 99-100 (1901).

186. *W. Union Tel. Co. v. Carew*, 15 Mich. 525, 533 (1867); *Am. Rapid Tel. Co. v. Conn. Tel. Co.*, 49 Conn. 352 (1881).

187. *E.g.*, *Hockett v. State*, 5 N.E. 178 (Ind. 1886).

[The telephone] has become as much a matter of public convenience and of public necessity as were the stage-coach and sailing vessel a hundred years ago, or as the steam-boat, the railroad, and the telegraph have become in later years. It has already become an important instrument of commerce. No other known device can supply the extraordinary facilities which it affords. It may therefore be regarded, when relatively considered, as an indispensable instrument of commerce. The relations which it has assumed towards the public make it a common carrier of news,—a common carrier in the sense in which the telegraph is a common carrier,—and impose upon it certain well-defined obligations of a public character. All the instruments and appliances used by a telephone company in the prosecution of its business are consequently, in legal contemplation, devoted to a public use.

Id. at 182.

188. Mann-Elkins Act, ch. 309, 36 Stat. 539 (1910).

189. See Kenneth A. Cox & William J. Byrnes, *The Common Carrier Provisions—A Product of Evolutionary Development*, in *A LEGISLATIVE HISTORY OF THE COMMUNICATIONS ACT OF 1934* 25, 27-28 (Max D. Paglin ed., 1989).

190. See Mann-Elkins Act, §§ 7, 12.

these newer carriers, and took little action with respect to communications carriers.¹⁹¹

The Communications Act of 1934 removed telephone and telegraph companies from the ICC's jurisdiction, establishing the FCC to govern those companies as well as radio transmissions. The common carrier provisions of the Act largely copied the ICA.¹⁹² In 1934, there were no burning issues forcing new regulation of telephone companies. Rather, the Act responded to the facts that most states had established commissions governing local telephone service and that the ICC felt overburdened by its regulation of railroads.¹⁹³

AT&T had "largely supported" the Mann-Elkins Act, for it sought regulation as a complement to developing a monopoly on telephone service.¹⁹⁴ In fact, in 1910 and (to a lesser extent) 1934, local telephony was competitively provided in many areas.¹⁹⁵ The 1934 Act, however, responded in part to the concerns of state regulators that the Bell System had grown so big and powerful that state regulation had become ineffective.¹⁹⁶ Although AT&T opposed the Act, it made clear that it did not oppose regulation per se but only certain provisions of the Act that increased the powers of the FCC beyond those held by the ICC.¹⁹⁷ Moreover, the 1934 Act was passed against the background of the so-called Kingsbury Commitment, which resolved the first U.S. antitrust action against the Bell System. One of the principal complaints leading to the Kingsbury Commitment (and resolved by that undertaking) was that the Bell System refused to interconnect its long-distance lines with unaffiliated local telephone companies.¹⁹⁸ Thus, section 201(a) requires interconnection

191. See Cox & Byrnes, *supra* note 189, at 28-29; Glen O. Robinson, *The Federal Communications Act: An Essay on Origins and Regulatory Purpose*, in A LEGISLATIVE HISTORY OF THE COMMUNICATIONS ACT OF 1934, at 8 (Max D. Paglin ed., 1989).

192. E.g., Cox & Byrnes, *supra* note 189, at 25; Robinson, *supra* note 191, at 3.

193. E.g., Cox & Byrnes, *supra* note 189, at 30.

194. *Id.* at n.39.

195. Robinson, *supra* note 191, at 7-8.

196. E.g., *A Bill to Provide for the Regulation of Interstate and Foreign Communications by Wire or Radio, and for Other Purposes: Hearings on S. 2910 Before the Senate Comm. on Interstate Commerce*, 73d Cong., 2d Sess. 179 (1934). State regulators also sought legislation to put certain limits on the federal regulators in order to preserve state authority over intrastate rates in the face of the Supreme Court's decision in the *Shreveport Rate Case* (Houston & Tex. Ry. v. United States, 234 U.S. 342 (1914)) that the ICC could determine intrastate rates.

197. *A Bill to Provide for the Regulation of Interstate and Foreign Communications by Wire or Radio, and for Other Purposes: Hearings on H.R. 8301 Before the House Comm. on Interstate and Foreign Commerce*, 73d Cong., 2d Sess. 165-71 (1934) (statement of Walter S. Gifford, President, AT&T Co.).

198. See Joseph D. Kearney, *From the Fall of the Bell System to the Telecommunications*

upon FCC order.¹⁹⁹ The legislative history indicates that the provision was added because of the history of Bell's refusal to interconnect with independent local telephone companies and to eliminate wasteful duplication of facilities by competing carriers.²⁰⁰

Title II of the 1934 Communications Act applied common carrier duties to common carriers engaged in interstate communication by wire. The Act's Title II jurisdiction, therefore, had three elements: (1) interstate communication, (2) by wire, and (3) by common carriers. The first two requirements are easily identified, but the Act defines a common carrier as "any person engaged as a common carrier for hire,"²⁰¹ and this definition's circularity has been frequently noted.²⁰² As the common law definition of common carrier always has,²⁰³ the leading cases under the 1934 Act turn on whether the carrier holds itself out indiscriminately to a class of persons for service.²⁰⁴ Of course, the 1934 Act does not include any explicit monopoly test before applying common carrier obligations. And, while the 1996 Act does give the FCC expansive power to forbear from applying the 1934 Act where competition has taken root, even this provision declares that regulation may be eliminated only where nondiscriminatory service will continue in its absence.²⁰⁵ In other words, the common carrier obligations of the Communications Act were motivated by (and continued to be motivated by) concerns over both monopoly and discrimination.

In two notable areas, however, the FCC has declared important communications markets to be outside of the domain of common carriage, and those decisions are instructive as to the rationale of common carrier obligations. First, the FCC declared that customer premises equipment ("CPE") would not be considered common carrier service.²⁰⁶ The Commission found (and the courts agreed) that CPE did not constitute a

Act: Regulation of Telecommunications Under Judge Greene, 50 HASTINGS L.J. 1395, 1404 n.22 (1999); GERALD W. BROCK, *THE TELECOMMUNICATIONS INDUSTRY: THE DYNAMICS OF MARKET STRUCTURE* 151-58 (1981).

199. 47 U.S.C. § 201(a) (1994).

200. See Cox & Byrnes, *supra* note 189, at 42-43 & n.132.

201. 47 U.S.C. § 153(h) (1994).

202. *E.g.*, Nat'l Ass'n of Regulatory Util. Comm'rs v. FCC, 525 F.2d 630, 640 (D.C. Cir. 1976).

203. See *supra* notes 141-43 and accompanying text.

204. *Southwestern Bell Tel. Co. v. FCC*, 19 F.3d 1475, 1480 (D.C. Cir. 1994); Nat'l Ass'n of Regulatory Util. Comm'rs v. FCC, 525 F.2d at 641; Nat'l Ass'n of Regulatory Util. Comm'rs v. FCC, 533 F.2d 601, 608 (D.C. Cir. 1976).

205. See 47 U.S.C. § 160 (Supp. V 1999).

206. Amendment of Section 64.702 of the Commission's Rules and Regs., *Second Computer Inquiry*, 77 F.C.C.2d 384, para. 9, 47 Rad. Reg.2d (P & F) 669 (1980), *aff'd*, *CIAA v. FCC*, 693 F.2d 198 (D.C. Cir. 1982), *cert. denied*, 461 U.S. 938 (1983) [hereinafter *Second Computer Inquiry*].

mandatory part of a common carrier's network. The FCC's principal reason was that CPE could be independently interconnected to the network, as its experience since the *Carterfone* decision had shown, and that innovation in CPE could proceed independently of the network.²⁰⁷ The FCC's secondary reason (in reality, subsidiary to the first) was that competition among multiple independent suppliers was possible in CPE markets.²⁰⁸

Even as the FCC was deregulating CPE as a competitive market, it took pains to ensure the standardized interconnection between CPE and the telecommunications network. The FCC set rules that specified the technical characteristics of the interface between CPE and the network, and it established a system through which manufacturers could have their products qualified as meeting those standards.²⁰⁹ The FCC's explicit purpose was "to provide for uniform standards" to maximize competition in the CPE market.²¹⁰ These CPE rules have been extended to include not only simple, single-line telephones, but also to more complicated private branch exchanges ("PBXs"), key telephone systems, and payphones.²¹¹

Second, the FCC declared that computer services (later renamed enhanced services, and now information services) were not common carrier services under the Communications Act (or, perhaps more accurately, would not be regulated as common carriers under the Act).²¹² The Commission's principal reasoning was that the computer processing industry was relatively new, was fairly competitive, and needed freedom from regulation in order to innovate.²¹³ Common carriers were permitted to offer data processing services, so long as they separated their carrier operations to protect against cross-subsidy and discrimination.²¹⁴

207. *Id.* para. 141.

208. *Id.* para. 143, 144.

209. See Proposals for New or Revised Classes of Interstate and Foreign Message Toll Tel. Serv. (MTS) and Wide Area Tel. Serv. (WATS), *First Report and Order*, 56 F.C.C.2d 593 (1975) [hereinafter *MTS and WATS First Report and Order*]; Proposals for New or Revised Classes of Interstate and Foreign Message Toll Tel. Serv. (MTS) and Wide Area Tel. Serv. (WATS), *Second Report and Order*, 58 F.C.C.2d 736 (1976), *aff'd*, N.C. Utils. Comm'n v. FCC, 552 F.2d 1036 (4th Cir. 1977) [hereinafter *MTS and WATS Second Report and Order*].

210. See *MTS and WATS First Report and Order*, *supra* note 209, at 615.

211. See *MTS and WATS Second Report and Order*, *supra* note 209; Registration of Coin Operated Tel. under Pt. 68 of the Commission's Rules and Regs., *Memorandum Opinion and Order*, 57 Rad. Reg.2d (P & F) 133 (1984).

212. Reg. and Policy Problems Presented by the Interdependence of Computer and Comm. Servs. and Facils., *Final Decision and Order*, 28 F.C.C.2d 267, 21 Rad. Reg.2d (P & F) 1591 (1971) [hereinafter *First Computer Inquiry*].

213. *Id.* paras. 31, 33.

214. *Id.* paras. 29, 30. Although the *Second Computer Inquiry* changed the terms from "data processing" and "communications" to "enhanced" and "basic" services, the FCC kept

In the information services realm, as noted above, the FCC acted as it did with CPE to require the telephone companies to provide open, standardized interconnection to the telephone network. Thus, the FCC required the tariffing of Basic Service Elements—access elements that information service providers could use for connecting with the public switched telephone network—that would create the opportunity to use network services flexibly, efficiently, and free from discrimination.²¹⁵ The FCC also attempted to require the telephone companies to offer opportunities for information service providers to physically place their equipment in telephone company offices, similar to the opportunities enjoyed by the telephone companies' own affiliates.²¹⁶

There are a number of other instances of specific interconnection rules being adopted in the history of telecommunications carriers. The most famous of these instances is, of course, the 1984 breakup of the Bell System, which was accomplished under the antitrust laws to ensure that developing competitive long-distance carriers could enjoy efficient and nondiscriminatory interconnection with local telephone monopolies.²¹⁷ The breakup decree was the culmination of other regulatory efforts that attempted to create interconnection rights for non-Bell long-distance carriers.²¹⁸ Similarly, Congress and the FCC have supplied mandatory interconnection rules benefiting wireless companies²¹⁹ and the competitive

“enhanced services” outside the scope of Title II for precisely the same reasons. *Second Computer Inquiry*, *supra* note 206.

215. See Amendment of Section 64.702 of the Commission's Rules and Regs., *Report and Order*, 104 F.C.C.2d 958, paras. 177, 178, 60 Rad. Reg.2d 603 (1986), *vacated in part*, *California v. FCC*, 905 F.2d 1217 (9th Cir. 1990) [hereinafter *Third Computer Inquiry*].

216. *Id.* paras. 131-41. The *Third Computer Inquiry* did not specifically require such physical collocation of competitors' equipment, although the Commission did express a preference for such arrangements. *Id.* para. 218. Later Commission regulations attempting to impose physical collocation were struck down by the D.C. Circuit when that court found that the FCC had not been given the statutory authority to require a physical occupation of property (which of course gave rise to constitutional takings concerns). See *Bell Atl. Tel. Co. v. FCC*, 24 F.3d 1441 (D.C. Cir. 1994). Statutory authority requiring all incumbent local exchange carriers to permit physical collocation was added to the 1934 Act by the 1996 Act. See 47 U.S.C. § 251(c)(6).

217. See generally *United States v. AT&T Co.*, 552 F. Supp. 131 (D.D.C. 1982) (entering consent decree to break up Bell System as of January 1, 1984), *aff'd*, *Maryland v. United States*, 460 U.S. 1001 (1984); Kearney, *supra* note 198, at 1412-19; Glen O. Robinson, *The Titanic Remembered: AT&T and the Changing World of Telecommunications*, 5 YALE J. ON REG. 517 (1988); Roger Noll & Bruce Owen, *The Anticompetitive Uses of Regulation: United States v. AT&T*, in *THE ANTITRUST REVOLUTION* 290 (J. E. Kwoka & Lawrence J. White eds., 1989).

218. See *MCI Telecomm. Corp. v. FCC*, 561 F.2d 365 (D.C. Cir. 1977) (requiring the FCC to revise its regulations to permit MCI to purchase interconnection from Bell companies for its long-distance service).

219. See 47 U.S.C. § 332(c)(1)(B) (“Upon reasonable request of any person providing

access providers that offered metropolitan bypass services to large customers.²²⁰

One somewhat esoteric interconnection requirement provides an example relevant to some of the Internet interconnection disputes, especially the dispute over instant messaging. Prior to the break-up of the Bell System, the routing of long-distance calls was simple because a local switch simply delivered any long-distance call to a long-distance trunk group attached to the switch. After the entry of multiple long-distance carriers, however, the local switch needed to know to which long-distance carrier to route the call. For the typical call, this was handled by a local telephone company database (and later by each individual local company switch) that simply created a database that matched each local line with a preferred long-distance company.²²¹

The matter was more complicated for 800 numbers, however, because a local switch could not hold a database of all of the possible 800 numbers and the long-distance company associated with those numbers. This meant, initially, that a company could switch its 800 number from one long-distance carrier to another only by getting a new long-distance number.²²² A business was likely to have a substantial investment in a particular number because, through advertising and otherwise, its customers had likely learned its number (especially if it were a vanity number such as 1-800-CAR-RENT).²²³ Thus, even though there were multiple long-distance carriers, there was not true competition in 800 number services because companies could not easily switch among carriers.²²⁴

The solution to this problem was the construction of a database that contained the ownership information for each 800 number and the development of protocols whereby a local switch could query the database

commercial mobile service, the Commission shall order a common carrier to establish physical connections with such service pursuant to the provisions of section 201 of this title.”); The Need to Promote Competition and Efficient Use of Spectrum for Radio Common Carrier Servs., *Memorandum Opinion and Order*, 59 Rad. Reg. 2d (P & F) 1275 (1986); The Need to Promote Competition and Efficient Use of Spectrum for Radio Common Carrier Servs., *Declaratory Ruling*, 2 F.C.C.R. 2910 (1987) (requiring local telephone companies to provide nondiscriminatory interconnection for wireless carriers).

220. See Expanded Interconnection with Local Tel. Co. Facils., *Memorandum Opinion and Order*, 9 F.C.C.R. 5154, 75 Rad. Reg.2d (P & F) 1040 (1994) (requiring virtual collocation and the provision of facilities necessary for such interconnection).

221. See generally *AT&T Co.*, 552 F. Supp. at 229 (describing equal access regime); Competition in the Interstate Interexchange Marketplace, *Report and Order*, 6 F.C.C.R. 5880, paras. 117-25, 69 Rad. Reg.2d (P & F) 1135 (1991) (discussing equal access regime).

222. See Competition in the Interstate Interexchange Marketplace, *Report and Order*, 6 F.C.C.R. 5880, paras. 10-18, 69 Rad. Reg.2d (P & F) 1135 (1991).

223. *Id.*

224. *Id.* at paras. 16-51.

to determine the ownership of the 800 number being called (and thereby determine how to route the call).²²⁵ The developers of these databases were required to provide the information to all requesting local carriers.²²⁶ A similar database solution has been envisioned for local number portability, which the 1996 Act mandates and which many see as a necessity for true local telephone competition.²²⁷

Thus, from the common carrier's duty to serve came a duty to interconnect with other carriers engaged in similar enterprises. The interconnection duty served numerous economic purposes, especially the fostering of competition in markets adjacent to monopolistic markets and the fostering of competition in markets that required the development of substantial networks. Interconnection permitted smaller players and new entrants to develop markets of their own and, occasionally, to reach the scale necessary to compete with incumbent players. The duty to serve and the interconnection duty also permitted new markets to develop—such as agricultural markets and processing, the CPE markets, and the markets for information services.

V. COMMON CARRIER RULES FOR INTERNET INTERCONNECTION

The foregoing provides a foundation for determining the applicability and content of common carrier interconnection rules for Internet carriers. This Part first applies the legal history to Internet carriers to demonstrate that they fit well within the tradition of common carriage. Next, the Part argues that the economics of Internet carriage support a common carrier duty of interconnection. In particular, the prospect of at least localized monopoly and, in some segments, structural monopoly concerns, as well as the likely persistence of strong network effects, argues for an interconnection requirement. Third, this Part considers the technical characteristics of Internet carriers and demonstrates that the analogy to railroads and telecommunications carriers continues at the technological level. Fourth, the Part considers some of the principal objections to common carrier regulation, particularly the objection that rate regulation will distort market incentives, dampen investment, and actually injure long-term competition. This is a serious objection, and the Part develops a common carrier interconnection requirement that provides only minimal

225. *Id.*

226. *See id.* para. 129.

227. *See* 47 U.S.C. § 251(b)(2) (“Each local exchange carrier has . . . [t]he duty to provide, to the extent technically feasible, number portability”); Implementation of the Local Competition Provisions in the Telecomm. Act of 1996, 11 F.C.C.R. 8352 (1996).

opportunity for regulatory rate setting. To this end, the legal interconnection requirement should be subject to enforcement only through complaints to the FCC, with the FCC requiring a high threshold showing before investigating. Moreover, the FCC should have authority, after inquiry, to suspend the complaint mechanism. As has been done in several telecommunications markets, full competition should permit substantial deregulation, but only after a serious, open inquiry into the competitive dimensions of those markets.

Throughout, this Part discusses the four examples of Internet interconnection disputes, concluding that backbones should be subject to an interconnection duty, as should telephone carriers and all ISPs, and that the NPD underlying instant messaging should be required to be interoperable. The Part also concludes that the unbundling that open access advocates seek is not part of the traditional interconnection requirements and, because of the risks of full-blown price regulation, should not be imposed.

A. *The Legal Dimension*

In the purely legal dimension, Internet carriers seem presumptively to be common carriers. As the legal and historical surveys demonstrated,²²⁸ the principal legal test for whether an entity is a common carrier is whether it has held itself out to serve all indiscriminately, and most Internet carriers seem to do so. Additionally, Internet carriers seem to exhibit at least some of the public aspects which have accompanied the imposition of common carrier duties, such as the indirect use of eminent domain powers and the manner in which the Internet has become an essential aspect of commerce and communication for many people and industries.

Internet carriers—backbones and ISPs—hold themselves out as serving the public generally. Certainly at the retail level, backbones and ISPs make their services generally available to the public at large, or to a significant segment of the public. For example, many ISPs offer business hosting services through standardized terms posted on their Web sites, and virtually all ISPs offer their access services to all customers. At the carrier-to-carrier level, many of the major backbones have recently published their peering policies,²²⁹ stating that “[o]ther ISPs can now plan for the terms and conditions we [the backbones] will be looking for”²³⁰ This willingness

228. See *supra* Parts III.B & IV.

229. See Jennifer Jones, *UUNET Goes Public with Policy for ISP Peering Agreements*, INFOWORLD, Jan. 29, 2001, at 76b; Sarah L. Roberts-Witt, *Opening the Books: Major Telecom Players Make Their Peering Guidelines Public*, INTERNET WORLD, Mar. 15, 2001, at 14.

230. Jones, *supra* note 229, at 76b (quoting Vint Cerf, senior vice-president of Internet

to serve any party that meets established criteria satisfies the historic legal test for common carrier status.

The only Internet carrier market segment in which it is not entirely clear that the service is provided on a common carrier basis is the market for transit arrangements. Although the major backbones have made their peering policies public, there is a clear trend away from peering and toward the sale of wholesale transit.²³¹ These transit policies are not public, and backbone carriers often require nondisclosure agreements to prevent those purchasing transit from comparing terms.²³² Nevertheless, as the FCC's recent working paper concluded, ISPs are able to purchase transit from backbones²³³ (although they are often disgruntled with the prices and other terms).²³⁴ Given that backbones seem to sell transit to all ISPs seeking that service, common carrier status would be justified. In this regard, it is important to note that the backbones' willingness to serve all ISPs justifies common carrier status, even if (as seems unlikely²³⁵) the specific terms of an interconnection agreement must be worked out individually with customers.²³⁶

Internet carriers also exhibit some of the "public aspects" of common carriers that would justify their status as such. Most Internet transmission lines are converted lines originally installed by telecommunications carriers,²³⁷ and telecommunications carriers almost always have had the power of eminent domain.²³⁸ Even where the lines have been newly installed, they have either been installed in public rights of way or in the

architecture at UUNET).

231. *Id.* ("most large ISPs are now shying away from peering arrangements with smaller players in favor of more lucrative wholesale deals for carrying Internet traffic . . ."); Roberts-Witt, *supra* note 229, at 15.

232. See KENDE, *supra* note 20, at 7-8.

233. See *id.* at 21-22.

234. See *supra* notes 14-19 and accompanying text.

235. It seems unlikely, because bandwidth is available in well-defined quantities, and it appears that transit arrangements are sold based upon the bandwidth demanded. See CLARK, *supra* note 4, at 451.

236. See, e.g., Indep. Data Comms. Mfrs. Ass'n, Inc.; Petition for a Declaratory Ruling that AT&T's InterSpan Frame Relay Serv. Is a Basic Serv., *Memorandum Opinion and Order*, 10 F.C.C.R. 13,717, 1 Comm. Reg. (P & F) 409 (1995) (holding that AT&T's Frame Relay Service is a telecommunications (common carrier) service, despite the need to deal individually with each customer as to issues such as bandwidth demands) [hereinafter *Petition for Declaratory Ruling*].

237. See KENDE, *supra* note 20, at 13.

238. See Jennifer Worstell, *Section 253 of the Telecommunications Act of 1996: A Permanent Physical Appropriation of Private Property that Must Be Justly Compensated*, 50 FED. COMM. L.J. 441, 475-81 (1998).

corridors of other carriers (such as railroads or pipelines),²³⁹ and those other carriers had the power of eminent domain when they acquired the right of way.²⁴⁰ Moreover, it is undeniable that the Internet has become a necessity for many other businesses and a popular communications and commerce medium for much of the public. Finally, the early involvement of ARPA and the NSF provided an important, direct government subsidy to the development of the Internet,²⁴¹ a factor which has often pointed in the direction of common carrier regulation.²⁴²

This is not to say that Internet carriers are “telecommunications carriers” and hence common carriers subject to the full obligations of the Communications Act.²⁴³ It is certainly the case that backbones and ISPs provide some transmission of information “without change in the form or content of the information as sent and received.”²⁴⁴ However, the conclusion that Internet carriers are telecommunications common carriers is not necessary to decide that they should, presumptively, be subject to some sort of common carrier duties. Internet carriers are simply the most recent form of carrier, following the great tradition of steamships, railroads, and telephones; and all of their predecessors have been subject to some form of common carrier regulation.

B. *The Economic Dimension*

On two economic dimensions, common carrier interconnection duties seem appropriate for Internet carriers. Common carrier duties were also imposed in situations where the carrier or other enterprise enjoyed either de jure or de facto monopoly power,²⁴⁵ and at least some segments of the Internet carrier market are likely to exhibit at least localized monopoly characteristics. Similarly, common carrier duties to serve and to interconnect have been prevalent where the industry has had strong network effects,²⁴⁶ and the Internet undoubtedly exhibits such effects.

239. See, e.g., Danaya C. Wright & Jeffrey M. Hester, *Pipes, Wires, and Bicycles: Rails to Trails, Utility Licenses, and the Shifting Scope of Railroad Easements from the Nineteenth to the Twenty-First Centuries*, 27 *ECOLOGY L.Q.* 351, 352, 362 (2000).

240. See Danaya C. Wright, *Private Rights and Public Ways: Property Disputes and Rails-to-Trails in Indiana*, 30 *IND. L. REV.* 723, 725 (1997).

241. See *supra* notes 93-105 and accompanying text.

242. See *supra* notes 149-52 and accompanying text.

243. See 47 U.S.C. § 153(44) (Supp. V 1999); see also *supra* notes 116-24 and accompanying text.

244. 47 U.S.C. § 153(43) (definition of “telecommunications”).

245. See *supra* notes 146-47, 170, 191-96, 206-14 and accompanying text.

246. See *supra* notes 137, 179-82 and accompanying text.

Certain Internet carrier markets are concentrated. The backbone market is somewhat concentrated, with only five or six current backbones (depending on the source²⁴⁷) and with the top three backbones carrying a majority of all long-haul traffic.²⁴⁸ Similarly, the market for high-speed Internet access services is concentrated. Only two technologies are currently proven to have any widespread adaptability to high-speed service: cable systems and DSL service. In the absence of the unbundling of physical loops, there would be only two providers in most residential markets, for there is very little overbuilding of cable systems (and virtually no overbuilding of telephone systems).²⁴⁹ In the early broadband merger case, the FCC took the position that high-speed Internet access was not a separate market from the highly-competitive dial-up access market.²⁵⁰ More recently, recognizing that certain next generation services (such as true streaming video and enhanced interactive gaming) will likely be available only through high-speed access services, the FCC (and others) have recognized that broadband access is probably a different product.²⁵¹ Similarly, AOL's lead in instant messaging subscriptions is immense,²⁵² and there is no doubt that the incumbent local exchange carriers command over ninety percent of the local telephone lines.²⁵³

Three of the four example Internet markets are obviously subject to network effects as well. Backbones, last-mile providers, ISPs, and dial-up Internet customers all demand universal connectivity, and there is no doubt that the Internet exhibits network effects in this regard.

As a result of widespread interconnection, end users currently have an implicit expectation of universal connectivity whenever they log on to

247. See KENDE, *supra* note 20, at 7 ("Because of the non-disclosure agreements that cover interconnection between backbones, it is difficult to state with accuracy the number of top-tier backbones; according to one industry participant, there are five: Cable & Wireless, WorldCom, Sprint, AT&T, and Genuity (formerly GTE Internetworking).") *Id.* at 12 (a better number might be six).

248. See, e.g., WorldCom Complaint, *supra* note 16, para. 33 (citing studies).

249. See generally Annual Assessment of the Status of Competition in Markets for the Delivery of Video Programming, *Eighth Annual Report*, FCC Report No. 01-389, paras. 119-20 (Jan. 14, 2002) [hereinafter *Assessment Report*]; Development of Competition in Local Telephone Markets, Report to the Subcomm. on Antitrust, Bus. Rights and Competition, Comm. on the Judiciary, GAO Report RCED-00-38, at 20-21 (Jan. 2000).

250. See Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations from Tele-Communications, Inc., *Memorandum Opinion and Order*, 14 F.C.C.R. 3160, 3192, 3197, 15 Comm. Reg. (P & F) 29 (1999) [hereinafter *Consent Order*].

251. See *AOL/TW Merger Order*, *supra* note 38, paras. 69-73; see also Jerry A. Hausman, et al., *Cable Modems and DSL: Broadband Internet Access for Residential Customers*, 91 AM. ECON. REV. 302, 303-04 (2001) (discussing market definition question).

252. See *supra* note 43.

253. Miscellaneous Data from FCC Form 477, FCC No. 01-22, para. 12 (Jan. 12, 2001), at http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/comp.html.

the Internet, regardless of which ISP they choose. ISPs are therefore in the business of selling access to the entire Internet to their end-user customers; ISPs purchase this universal access from Internet backbones. The driving force behind the need for these firms to deliver access to the whole Internet to customers is what is known in the economics literature as *network externalities*.²⁵⁴

Instant messaging (“IM”), too, exhibits direct network effects, principally through the names and presence database. As discussed above, an instant messaging service is valuable in connecting individuals to others with whom they wish to communicate (and in the unique manner that instant messaging permits). As a result, two people wishing to communicate with each other need to be subscribed to the same service.²⁵⁵ In the AOL/Time Warner merger, the FCC found that “NPD services exhibit strong network effects.”²⁵⁶ It specifically found that the value of an NPD service rose for each consumer as more consumers were subscribed to that specific service.²⁵⁷ The FCC further found that a consumer’s ability to load more than one IM service on his or her computer was not an adequate substitute: network effects still gave an advantage to the larger service.²⁵⁸

C. *The Technical Dimension*

The technical dimension of Internet interconnection also suggests that duties similar to those applied to railroads and telecommunications carriers are appropriate. In each of these predecessor carrier markets, interconnection duties created the possibility of new services that used the carrier as an important input. The Internet is the purest form of this. Building off of the fully digital nature of applications, its standardized protocols create the opportunity for the development of new applications without interference from the network.

The early form of this benefit of interconnection can be seen in railroads. The creation of a nationwide, interconnected rail network depended upon two events: first, the standardization of track gauges that

254. KENDE, *supra* note 20, at 3 (emphasis in original).

255. See *supra* notes 44-46, 54-55 and accompanying text.

256. AOL/TW Merger Order, *supra* note 38, para. 158.

257. *Id.*

[W]hen choosing between rival IM services, a typical new user will place the greatest value on the service with the largest NPD (and therefore the most users) and will choose that service. In all these hypothetical situations, the underlying value (or lack of value) in an IM service resides in the NPD.

Id.

258. *Id.* para. 164 (“We find the ability of users to use several IM services is not a substitute for interoperability.”). The FCC found that this was particularly true with respect to wireless handsets and handheld computers, which might not have the computer power or storage capacity to operate more than one IM service. See *id.*

made interconnection possible; and second, widespread interconnection as a result of economic and legal pressures. Prior to the 1880s, American railroads used many different track gauges, with the consequence that traffic carried on one gauge could not, short of repackaging into new cars or investing in multi-gauge cars or multi-gauge tracks, be shipped on other railroad lines.²⁵⁹ Prior to the 1880s, however, there was little demand for such interconnection, as each railroad saw itself as a regional carrier and principally concerned with interconnecting to water carriers, not to other rail carriers.²⁶⁰ Pressure for gauge standardization resulted only when there was perceived economic benefit from longer distance shipping.²⁶¹ Once tracks were standardized, the process of interconnection began in earnest. Backed up by legal requirements added to the railroad laws in the late 1800s and early 1900s,²⁶² interconnection resulted in a truly national network of railways.²⁶³ This network permitted an explosion in agricultural, manufacturing, and service markets.²⁶⁴

Similarly, the fully interconnected telephone network provided the impetus for the development of new markets. This development includes the expansion of shopping and business enterprises to a nationwide scale. Of course, it includes the development of information services—precursors to the Internet.²⁶⁵

As discussed above, the technical configuration of the Internet makes the development of many new applications easier, because application developers do not need to conform their data streams to any particular protocol and because the TCP/IP inter-networking protocols do not interact with the applications protocols. As three of the original developers of the design schemes underlying the Internet have recently written, the Internet's architecture "serves to remind us that building complex function into a network implicitly optimizes the network for one set of uses while substantially increasing the cost of a set of potentially valuable uses that may be unknown or unpredictable at design time."²⁶⁶ The number of new

259. See generally GEORGE R. TAYLOR & IRENE D. NEU, *THE AMERICAN RAILROAD NETWORK 1861-1890*, 3-7 (1956); Douglas J. Puffert, *The Standardization of Track Gauge on North American Railways, 1830-1890*, 60 *J. ECON. HIST.* 933, 935-37 (2000).

260. Puffert, *supra* note 258, at 944 ("The earliest commercial railways served only a local, or at best regional, purpose: to connect cities with their hinterlands or the western waterways, or to link water routes over territory that was unsuitable for canals.").

261. *Id.* at 945-50.

262. See *supra* notes 175-82 and accompanying text.

263. See, e.g., SHARFMAN, *supra* note 178, at 172-3; LEWIS H. HANEY, *A CONGRESSIONAL HISTORY OF RAILWAYS IN THE UNITED STATES 20-30* (1968).

264. See *supra* notes 178-82 and accompanying text.

265. See *supra* note 121.

266. Reed et al., *supra* note 115, at 70.

applications developed for the Internet—from Web-browsing, to Napster, to instant messaging—is a testament to that system’s flexibility.²⁶⁷

In other words, common carrier services have long served as bearer services for many other economic enterprises. The Internet, based both on its design principles and on the actual experience, is a very important bearer service.

D. *The Fully Specified Model*

Legal, economic, and technical precedents suggest that Internet carriers should be subject to common carrier interconnection duties. At the same time, the regulatory system should attempt to limit the scope of price regulation and the possibilities for the abuse of the regulatory process. As so specified, these common carrier duties should avoid the principal criticisms of price regulation, but should also be superior to relying exclusively on the antitrust laws to monitor Internet markets. An important aspect of avoiding the dangers of price regulation is distinguishing between interconnection and unbundling rules. Common carrier regulation required interconnection, but it almost never required the carrier to unbundle its own network to develop a wholesale service that other entities could sell as their own. The Internet, as a network, demands interconnection; it does not demand unbundling.

The mandatory interconnection obligation should require Internet carriers to interconnect with other carriers or with end users. In order to limit the costs imposed on the party from whom interconnection is being demanded, the carrier demanding interconnection should be required to build its own facilities to a point of interconnection with the carrier. Because Internet carriers already substantially interconnect with other carriers, however, Internet carriers should be required to permit new interconnection at any facility where they currently interconnect. Additionally, to take care of situations of localized monopoly power, carriers should have the right to demand interconnection with other Internet carriers if they can demonstrate that there is no reasonably available facility for direct or indirect interconnection.²⁶⁸ As a result, a legal rule requiring

267. Of course, the network’s flexibility may stand in the way of certain applications, such as streaming video or high-bandwidth interactive gaming. These applications would benefit from a more programmable network that would permit network resources to be prioritized and devoted to these more time-sensitive applications. See Reed et al., *supra* note 115, at 70; Craig Partridge et al., in *Commentaries on “Active Networking and End-to-End Arguments,”* 12 IEEE NETWORK 66, 67-68 (May/June 1998).

268. This interconnection duty thus falls somewhat short of that required of incumbent local exchange carriers, which are required to permit interconnection “at any technically feasible point within the carrier’s network.” 47 U.S.C. § 251(c)(2) (Supp. V 1999).

Internet backbones to interconnect for the exchange of TCP/IP traffic is appropriate.

Although it is relatively easy to assert an interconnection obligation, difficult issues inhere in the correlatives that arise when enforcing a duty to interconnect. In particular, a bare interconnection obligation is probably not very useful if it can be evaded by a carrier's agreement to interconnect, but at an unreasonably discriminatory price. A carrier or user requesting interconnection generally should not be permitted to simply complain that the price is too high. Permitting such a complaint would open the door for carriers to use the regulatory process to seek lower-than-justifiable prices. Rather, the complaint should establish that the price or terms being offered are discriminatory in that they are higher than those that generally prevail in similar situations. Implementing the interconnection obligation therefore requires some mechanism for the discovery of prevailing prices. In some markets, this will be an easy matter, for the relevant prices will be publicly available, and the only issue in a complaint will be whether the proposed different price to the complainant is appropriate. In some markets, one could imagine the FCC imposing a tariffing requirement, which has been the traditional means of enforcing a common carrier's interconnection obligation²⁶⁹ and is still employed in markets in which the telecommunications carrier has market power.²⁷⁰ In general, however, the better solution would be to require the complainant to file with the FCC, which could, under its complaint power, exercise both its discretion and expertise to decide whether there were sufficient merits to warrant the Commission discovering any previously private pricing information.²⁷¹

The interconnection obligation, of course, would not apply to all Internet participants. It would not, for example, apply to private corporate networks that interconnect with the Internet for Web or e-mail services. These networks are not common carriers in any sense, because they do not undertake to serve any segment of the public at large.²⁷² The interconnection obligation would also not apply to Web hosting services or data centers, for these services are likely to be competitive and likely do not exhibit network externalities. In this regard, the interconnection proposal here differs from the one proposed by Eli Noam, who has argued

269. See Kearney & Merrill, *supra* note 139, at 1331-33.

270. See Policy and Rules Concerning the Interstate, Interexchange Marketplace, Implementation of Section 254(g) of the Comm. Act of 1934, as amended, *Second Report and Order*, 11 F.C.C.R. 20,730, 4 Comm. Reg. 1199 (1996) (detariffing long-distance service because it was competitively provided), *aff'd*, MCI v. FCC, 209 F.3d 760 (2000).

271. Compare *id.* paras. 21-25 (discussing FCC's ability to use its complaint authority to resolve discrimination claims, even in the absence of filed tariffs).

272. Compare *supra* notes 201-04 and accompanying text.

that the economic disadvantages that common carriers suffer compared to private carriers will inevitably end the era of common carriage.²⁷³ Noam's interconnection obligation appears to require a private network that interconnects with the public networks to permit any and all traffic from the public network.²⁷⁴ The proposal here is more optimistic than Noam's about the likelihood of maintaining the core of common carrier service, but agrees on the importance of interconnection.

A specific interconnection obligation also seems superior to simply relying on the antitrust laws to combat market failures resulting in lack of interconnection. First, because antitrust litigation requires extensive discovery to establish proof of market power, an antitrust claim is likely to prove difficult and costly to prosecute.²⁷⁵ Indeed, MCI's litigation against AT&T, which was based upon serious and repetitive anticompetitive activities by AT&T, did not by itself result in any substantial change in AT&T's behavior.²⁷⁶ AT&T did agree to divest itself of the Bell companies as the result of government antitrust litigation, but that result came eight years after the government instituted the case and thirty-three years after the government originally tried by antitrust means to control AT&T's anti-competitive behavior.²⁷⁷ The Internet market likely cannot tolerate such delays. Second, because of the technical detail that may be inherent in such cases, it seems better to have them handled by an expert agency such as the FCC, at least in the first instance, rather than by courts of general jurisdiction.

Nevertheless, it does seem important to grant the FCC (or other regulator) forbearance power to be exercised after a comprehensive and open inquiry into the nature of competition. To date, the FCC has not undertaken such a proceeding with respect to Internet markets. If it did, it might be conclusively demonstrated that at least some segments of the industry do not need interconnection regulation. If so, the FCC could forbear under powers similar to those it has to forbear from applying the Communications Act to those telecommunications markets that do not need regulation. Notably, however, even that authority requires the FCC to find more than simply that the market is competitive; it requires a finding that

273. See Eli M. Noam, *Beyond Liberalization II: The Impending Doom of Common Carriage*, 18 TELECOMM. POL'Y 435 (1994).

274. *Id.* at 452.

275. Mark L. Azcuemga, *Market Power as a Screen in Evaluating Horizontal Restraints*, 60 ANTITRUST L.J. 935, 936, 940 (1992).

276. See *MCI Comm. Corp. v. AT&T*, 708 F.2d 1081 (7th Cir. 1983).

277. *United States v. AT&T Co.*, 552 F. Supp. 131, 139-41 (D.D.C. 1982) (case filed in 1974); *id.* at 135-36 (discussing earlier antitrust litigation filed against Bell System in 1949).

deregulation is in the public interest.²⁷⁸

Moreover, the common carrier interconnection obligation does not require a carrier to develop a wholesale arrangement or to otherwise unbundle its own services for the retail sale of third parties. This is particularly important in the cable open access debate. The solution imposed as a condition of the AOL/TW merger,²⁷⁹ as well as the solutions sought by most advocates of open access,²⁸⁰ is to require the cable company to set a "wire only" price and to permit unaffiliated ISPs to sell cable modem services at retail to customers. But this inevitably requires a regulatory agency to set prices, with no benchmark to other market prices. And agency price-setting always carries the significant possibility of distortion through inaccuracy or through abuse of the regulatory process.²⁸¹

The common carrier approach would also require access to the names and presence databases used in instant messaging, and it would require it now, not in the future after even more services depend on it.²⁸² The NPD has the potential to be the addressing service operating at the same layer as IP, and facilitating many services on top of it. In fact, as noted, IM has already transcended text to include voice connections, file swapping, and rudimentary multimedia services.²⁸³ But the common carrier approach would not require the sharing of other infrastructure, such as the servers actually used to exchange information or to manage the services provided. That, again, would require price regulation and does not seem justified. The

278. See 47 U.S.C. § 160(a) (Supp. V 1999) This section requires the Commission to: forbear from applying any regulation or any provision of this Act . . . if . . . enforcement of such regulation or provision is not necessary to ensure that the charges . . . are just and reasonable and are not unjustly or unreasonably discriminatory . . . [if] enforcement of such regulation or provision is not necessary for the protection of consumers; and [if] forbearance from applying such provision or regulation is consistent with the public interest.

Id.

279. See *AOL/TW Merger Order*, *supra* note 38, para. II.A.2.

280. See Cooper, *supra* note 31, at 1041. Lemley and Lessig's most recent work does not fully specify exactly what they mean by "open access." Lemley & Lessig, *supra* note 31, at 968-69 (saying that "open access is simply shorthand for a set of competitive objectives."). Nevertheless, they are quite clear that a "click through system," by which cable operators sell their high-speed Internet access through an affiliated ISP but then permit their customers to reach other ISPs, is insufficient. See *id.* at 965-67; Mark A. Lemley & Lawrence Lessig, *Open Access to Cable Modems*, 22 WHITTIER L. REV. 3, at 25 (2000) ("click through" is inadequate; ISP and access services must be separated).

281. See generally George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. & MGMT. SCI. 3 (1971).

282. Compare Weiser, *supra* note 56, at 842-46 (evaluating FCC's IM conditions in AOL/TW merger, and suggesting the need for a more comprehensive inquiry into information platform regulation).

283. See *supra* note 53 and accompanying text.

common carrier approach also would not require interconnection of the applications that utilize the NPD, although the interconnection of the NPD may create more opportunities for such interoperability.

Finally, the interconnection obligation mandates that local telephone companies interconnect directly with ISPs, without the need for an intermediate local telephone company. Such an interconnection obligation is necessary, as more than eighty percent of all Internet access subscribers still rely on dial-up connections.²⁸⁴ This interconnection should be accomplished, however, not based on the interconnection obligations of the telephone companies, but those that arise specifically with regard to the exchange of Internet traffic. This would be parallel to an interconnection obligation applicable to any access provider—cable, wireless, or wireline. Moreover, this interconnection obligation makes clear the fact that unique pricing rules, such as prevailed in the FCC's first two attempts to solve the reciprocal compensation controversy, are unnecessary.²⁸⁵

VI. CONCLUSION

The history of common carrier obligations, from the common law to the Communications Act of 1934, provides a useful starting point for considering regulation of Internet interconnection issues. That history provides precedent for applying interconnection duties and nondiscrimination requirements to backbone providers and other carriers of Internet traffic, but fails to provide any precedent for open access rules for high-speed Internet services. Evaluating those precedents, with an eye towards the costs of regulation, suggests that Internet interconnection ought to be mandated and backed up by a process that assures that interconnection occurs. Moreover, the proposal advanced in this Article creates an opportunity for the FCC to comprehensively evaluate the structure of Internet markets.

The Internet is the bearer service of today and of the coming future, much as railroads and telecommunications firms were in previous generations. The history, economics, and technical dimensions of those services demonstrate that they work best—and that the public is best served—when there is a comprehensive interconnection requirement. It is time for such a comprehensive approach to Internet interconnection.

284. See *AOL/TW Merger Order*, *supra* note 38, paras. 68-72.

285. See *supra* notes 79-84 and accompanying text.

