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MAINTAINING CRITICAL RULES TO ENABLE SUSTAINABLE COMMUNICATIONS INFRASTRUCTURES

Barbara A. Cherry*

INTRODUCTION

Under traditional monopoly regimes in the United States, the combination of regulatory requirements imposed on telecommunications carriers enabled the development and sustainability of telecommunications infrastructure that was widely available, affordable and reliable. With the transition from monopoly to competitive regimes, some regulatory requirements *within the industry-specific telecommunications regime* had to be modified to continue pursuit of underlying policy goals. For example, universal service policy was modified in the Telecommunications Act of 1996 to shift reliance from implicit subsidies within the rate structure to a combination of explicit funding mechanisms and rate rebalancing.¹ However, explicit funding mechanisms have presented their own sustainability problems.²

Further deregulatory telecommunications policies are also *shifting the boundaries between the traditional industry-specific (common carriage/public utility) and general business legal regimes*, but in ill-defined ways and with considerable conflict in interpretation among the courts.³ This is exemplified by considerable disagreement and uncertainty related to judicial interpretation of the preexisting savings

* Professor, Department of Telecommunications, Indiana University.

1. Barbara A. Cherry & Steven S. Wildman, *Review of Federal Universal Service Policy in the United States*, in MAKING UNIVERSAL SERVICE POLICY: ENHANCING THE PROCESS THROUGH MULTIDISCIPLINARY EVALUATION 167, 167–69 (B. Cherry, A. Hammond & S. Wildman, eds., 1999).

2. See Barbara A. Cherry, *Back to the Future: How Transportation Deregulatory Policies Foreshadow Evolution of Communications Policies*, 24 THE INFORMATION SOCIETY 273, 283 (2008).

3. Barbara A. Cherry, *Consumer Sovereignty: Redrawing the Boundaries Between Industry-Specific and General Business Legal Regimes for Telecommunications and Broadband Access Service* 13–31, Paper presented at the 35th Telecommunications Policy Research Conference (TPRC 2007), Arlington, VA (2007).

clause in section 414 of the Communications Act of 1934 as well as interpretation of the new antitrust-specific savings clause in section 601(b) of the Telecommunications Act of 1996, the FCC's Truth-in-Billing rules and its savings clause, and the savings clause for state regulation in section 332(c)(3)(A) related to CMRS services.⁴ Perhaps most notable is the FCC's classification of broadband access services as information services in its *Cable Modem Declaratory Ruling*⁵ and *Wireline Broadband Access Order*,⁶ and thereby not subject to common carriage regulation under Title II of the Communications Act of 1934. These FCC orders have triggered debate regarding important issues collectively referred to as *network neutrality*.⁷

I have previously asserted that mischaracterizations of the law of common carriage and its relationship to other bodies of law have created a foundational problem for constructive discourse of deregulatory policies for communications technologies in general⁸ and for network neutrality in particular.⁹ The mischaracterizations lie in an inadequately understood and misrepresented description of the lineage of legal principles that evolved in the United States to address differing forms of access problems.¹⁰ More specifically, the mischaracterizations arise because the statutory regime—instead of the common law—is misidentified as the original regulatory regime of common carriage.¹¹ Such mischaracterizations have led “to a conflation of the legal bases for addressing access problems for end

4. *See id.* at 13–29.

5. *See generally* Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities; Internet Over Cable Declaratory Ruling; Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities, 17 F.C.C.R. 4798, 4802 (2002) [hereinafter *Cable Modem Declaratory Ruling*].

6. *See generally* In the Matter of Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities, Universal Service Obligations of Broadband Providers, 20 F.C.C.R. 14,853, 14,858 (2005) [hereinafter *Wireline Broadband Access Order*].

7. Barbara A. Cherry, *Misusing Network Neutrality to Eliminate Common Carriage Threatens Free Speech and the Postal System*, 33 N. KY. L. REV. 483, 501 (2006).

8. *See* Cherry, *supra* note 2, at 277–281.

9. *See* Cherry, *supra* note 7, at 500–03.

10. *Id.* at 500.

11. *Id.* at 501.

user customers and competitors. As a result, there is a preoccupation with regulation of the provider-to-provider relationship, and unsubstantiated reliance on antitrust principles to address provider-to-customer access problems.”¹² Furthermore, such preoccupation with the provider-to-provider relationship, or wholesale market, and antitrust theory is symptomatic of an analytical failure to consider critical issues of policy sustainability.¹³ Yet, based on a historical analysis of the evolution of legal rules and the effects on network infrastructures in the United States, I have asserted that the sustainability of deregulatory telecommunications policies will likely require retention of elements of the common law principles of common carriage and public utilities.¹⁴

This article builds on this prior work, utilizing a complexity theory perspective for both framing the inquiry and guiding analysis, to examine the fundamental question as to what legal rules are necessary for the sustainability of critical communications infrastructures that generate *the desired emergent properties of widespread availability, affordability and reliability*. This paper asserts that, just as a market economy requires an institutional infrastructure to sustain it, critical network infrastructures with desired emergent properties require specific legal rules for their sustainability. Historically in the United States, infrastructures providing varying types of essential services, such as transportation and communications, were governed by principles embedded in common carriage and public utilities. These legal principles were left intact under deregulatory policies for transportation,¹⁵ but have been eliminated for broadband by the recent FCC rulings that triggered the network neutrality debate.¹⁶ Thus, this article asserts that, properly framed, the network neutrality debate in the United States is symptomatic of the need for a deeper inquiry as to the critical legal

12. *Id.* at 500.

13. *Id.* at 503.

14. *Id.* at 504.

15. See Cherry, *supra* note 2, at 278–281.

16. See, e.g., Cable Modem Declaratory Ruling, *supra* note 5; Wireline Broadband Access Order, *supra* note 6.

rules necessary for sustainable communications infrastructures with certain desired properties.

In search of identifying such critical legal rules, analysis starts with examination of policy developments in the United States. It stresses that a historically accurate understanding of legal developments in the United States reveals the importance of common law principles of common carriage and public utility law—which include imposition of *ex ante* requirements on providers in the retail market—in generating the desired emergent properties of widely available, affordable and reliable transportation and telecommunications infrastructures. It also shows how recent FCC policy decisions affecting broadband access services, whereby common carriage obligations are not imposed in either the wholesale or retail markets, is a *radical* departure from the deregulatory policies that have been adopted for transportation as well as narrowband telecommunications networks. It is the elimination of the common law scaffolding for application to broadband infrastructure that has triggered the current network neutrality debate; yet, at the same time, it is the misleading discourse of network neutrality that not only masks the significance of the inapplicability of the common law principles in the retail broadband market but also blocks inquiry into the legal rules in the retail market that may be necessary for the desired network properties to emerge.

This article also incorporates prior research stressing the importance of liability rules on economic incentives to invest in performance, such as network reliability, of communications systems.¹⁷ In this respect, liability rules for telecommunications carriers in the United States evolved along a unique trajectory, differing in substantial ways from that of all other common carriers.¹⁸

17. See generally Barbara A. Cherry, *Improving Network Reliability—Liability Rules Must Recognize Investor Risk/Reward Strategies*, in *RETHINKING RIGHTS AND REGULATIONS: INSTITUTIONAL RESPONSES TO NEW COMMUNICATION TECHNOLOGIES* 309, 309–33 (Lorrie Faith Cranor & Steven S. Wildman eds., 2003) [hereinafter *Improving Network Reliability*]. See also BARBARA A. CHERRY, *THE CRISIS IN TELECOMMUNICATIONS CARRIER LIABILITY: HISTORICAL REGULATORY FLAWS AND RECOMMENCED REFORM* (1999) [hereinafter *CRISIS IN TELECOMMUNICATIONS CARRIER LIABILITY*].

18. See *Improving Network Reliability*, *supra* note 17, at 311–14; *CRISIS IN TELECOMMUNICATIONS CARRIER LIABILITY*, *supra* note 17, at 14–28.

As a result, under deregulatory policies, the shift in the liability regime for telecommunications carriers is also unique, posing potential liability for catastrophic losses (previously capped under tariffs) and threatening the long-term sustainability, reliability, and ubiquity of communications infrastructures.¹⁹ Although the need for unique liability rules for technologies of high-risk high-reliability organizations has been acknowledged in other contexts—such as nuclear power plants—it has thus far been inadequately considered by policy making bodies in the United States for application to communication networks.²⁰

This article concludes that further research is vital for improving our understanding of those critical legal rules necessary for the sustainability of communications network infrastructures with the desired emergent properties of widespread availability, affordability and reliability. As research progresses, we may better understand how the U.S. common law principles of common carriers and public utilities, which historically addressed certain forms of demand-side failures, were an important means of fulfilling this function. Furthermore, their elimination through deregulatory policies, but without replacement by some other legal rules to fulfill a similar function, may render unsustainable the development of critical communications infrastructures with the desired emergent properties.

I. FRAMING INQUIRY FROM A COMPLEXITY THEORY PERSPECTIVE

Changes in communications technologies and services—particularly with development of digital technology and the Internet—coupled with the transition from monopoly to competitive regulatory regimes have created a fundamental shift in their governability.²¹ This reality undermines the appropriateness of the

19. See *Improving Network Reliability*, *supra* note 17, at 317–24.

20. See *id.* at 318–21; CRISIS IN TELECOMMUNICATIONS CARRIER LIABILITY, *supra* note 17, at 60–66.

21. Barbara A. Cherry, *The Telecommunications Economy and Regulation as Coevolving Complex Adaptive Systems: Implications for Federalism*, 59 FED. COMM. L. J. 369, 373–74 (2007) [hereinafter *The Telecommunications Economy*]; Barbara A. Cherry & Johannes M. Bauer, *Adaptive Regulation:*

traditional policy analysis paradigm, based on optimizing some measure of societal preferences reflected in an objective function. Instead, a new paradigm of policy analysis must be developed that expressly recognizes the need for, and difficulties of, designing sustainable telecommunications policies.

In seeking a new paradigm, Bauer and I assert that a complexity theory perspective facilitates our ability to appreciate the difficulties of designing sustainable telecommunications policies for regulatory regimes based on competition rather than monopoly.²² “[I]f the telecommunications sector and the legal/policymaking institutions are viewed as coevolving and complex adaptive systems, then there are important implications for regulatory policy.”²³ Implications include a greater appreciation of the diminishing capacity to achieve specifically desired outcomes, and the unpredictability of efforts to influence trajectories of economic sector performance.²⁴ “Instead, greater focus must be placed on how to design policies and policymaking processes that are more suitable for interacting with, interpreting, and responding to the telecommunications sector over time.”²⁵

Complex systems are nonlinear, dynamic systems. Complexity theory refers to the component areas of study that address distinctive properties of complex systems:

These properties include: *catastrophes* resulting from discontinuity in sudden jumps in behavior, *chaos* resulting from unstable aperiodic behavior and sensitivity to initial conditions; *uncomputability* because system output transcends rules; *irreducibility* because system behavior can not be understood by

Contours of a Policy Model for the Internet Economy 5, Paper presented at the ITS Fifteenth Biennial Conference, Berlin, Germany (2004) (on file with Georgia State University Law Review).

22. *The Telecommunications Economy*, *supra* note 21, at 371. Sustainable policies are defined “as rules that are politically adoptable and for which the desired policy goals are reasonably likely to be achievable.” *Adaptive Regulation*, *supra* note 21, at 5 (emphasis omitted).

23. *The Telecommunications Economy*, *supra* note 21, at 371.

24. *Id.* at 371–72.

25. *Id.* at 372.

decomposing the system into parts; and *emergence* of order that spontaneously develops as collective properties from interacting system components. By contrast, simple systems are characterized by predictable behavior, few interactions and feedback/feedforward loops, centralized decision making, and reducibility.²⁶

Complex systems have *rules*, or limitations, that govern their behavior to keep the systems from becoming chaotic.²⁷ Furthermore, in complex adaptive systems (CAS), system feedback enables the system to learn from experience and to adapt to changes in the system's environment.²⁸ In this way, a CAS can actually change its own rules.

Complexity theory enables us to perceive behavior of social systems from a different frame of reference. In so doing, it provides new ways of interpreting phenomenon and framing questions for research.²⁹

A. Importance of Legal Infrastructure for Sustainability of Economic Activities Generally

“Complex systems are characterized by global structure and local randomness. The global structure maintains the strength of the whole. The local randomness creates innovation and resilience. In free market economies, competition is the source of local randomness, and regulation maintains the global structure.”³⁰ The spontaneous order that emerges from complexity in free markets is the basis of the

26. *Id.* at 380 (footnote omitted).

27. EDGAR E. PETERS, COMPLEXITY, RISK, AND FINANCIAL MARKETS 52 (1999).

28. *Id.* at 50–51, 160.

29. For example, from a complexity theory perspective, federalism is a patching algorithm that provides mechanisms for both innovation within patches (policy making within states) and order (policy making by the federal government) that are necessary for an adaptive and resilient governance system. Deregulatory policies of complete federal preemption of state authority should be approached with caution for such policies eliminate the mechanisms for innovation and experimentation within the states. *The Telecommunications Economy*, *supra* note 21, at 399–402.

30. PETERS, *supra* note 27, at 6.

“invisible hand” described by Adam Smith.³¹ In other words, economic efficiency resulting from a free market economy, as if by an “invisible hand,” is an *emergent property* of a market economy (under certain conditions).

An institutional infrastructure provides the global structure to sustain the market economy. Referring to the rise of the Western World, North states that “[t]he economic institutional structure was made possible by the evolution of polities that eventually provided a framework of law and its enforcement. Such a framework is an essential requirement for the impersonal exchange that is necessary for economic growth.”³² As for modern markets, Fligstein asserts that “[o]ne cannot overestimate the importance of governments to modern markets. Without stable, more or less non-rent-seeking states, modern production markets would not exist.”³³

Government plays a critical role in “societal solutions to the problems of property rights, governance structures, conceptions of control, and rules of exchange.”³⁴ Through provision of various bodies of law, such as property rights and contract principles, as well as governance structure for their enforcement, government provides institutional prerequisites for market exchange and economic development.³⁵

Yet, the rule of law—or limits on government power—is also necessary for the sustainability of market capitalism.³⁶ Constraints on government power are particularly important to protect investors who

31. *Id.* at 4.

32. DOUGLASS C. NORTH, UNDERSTANDING THE PROCESS OF ECONOMIC CHANGE 133 (2005).

33. NEIL FLIGSTEIN, THE ARCHITECTURE OF MARKETS: AN ECONOMIC SOCIOLOGY OF TWENTY-FIRST-CENTURY CAPITALIST SOCIETIES 3 (2001).

34. *Id.* at 97.

35. See HERNANDO DE SOTO, THE MYSTERY OF CAPITAL: WHY CAPITALISM TRIUMPHS IN THE WEST AND FAILS EVERYWHERE ELSE 153–72 (2000). See also William Kovacic, *Institutional Foundations for Economic Legal Reform in Transition Economies: The Case of Competition Policy and Antitrust Enforcement*, 77 CHI.-KENT L. REV. 265, 269–72 (2001).

36. See NORTH, *supra* note 32, at 83–85, 133–36. See also BRIAN Z. TAMANAHA, ON THE RULE OF LAW: HISTORY, POLITICS, THEORY 97 (2004); FAREED ZAKARIA, THE FUTURE OF FREEDOM: ILLIBERAL DEMOCRACY AT HOME AND ABROAD 77 (2003).

are vulnerable to expropriation of their investments in the sunk costs of utility infrastructures, such as telecommunications networks.³⁷

With recent efforts to transition from planned economies, economists have increasingly been concerned with understanding how the necessary process of institutional evolution will occur to support market economies. For example, Hoff and Stiglitz find that mass privatization of state enterprises was premature in Russia because conditions of asset-stripping weakened the capacity of the state to enforce the rule of law.³⁸ Similarly, Kovacic stresses the institutional prerequisites required by transition economies to support economic development.³⁹ The necessary legal reform includes the creation of a private property rights system, establishment of contract principles and enforcement mechanisms, recognition of varying forms of business enterprises, promotion of capital formation, and facilitation of the exit of assets and their redeployment through bankruptcy procedures.⁴⁰

Conversely, with the pursuit of deregulatory policies in well-developed market economies, some economists assert that the role of government has been rolled back too far. Stiglitz states that there needs to be a balance between the role of government and the market, and that a country can suffer from underregulation as well as overregulation.⁴¹ In this regard, he asserts that in the United States deregulatory policies of the 1990's have, albeit unintentionally, created a less stable economy.⁴²

37. See generally BRIAN LEVY & PABLO T. SPILLER, REGULATIONS, INSTITUTIONS, AND COMMITMENT: COMPARATIVE STUDIES OF TELECOMMUNICATIONS (1996).

38. Karla Hoff & Joseph E. Stiglitz, *After the Big Bang? Obstacles to the Emergence of the Rule of Law in Post-Communist Societies*, 94 AM. ECON. REV. 753, 759–62 (2004).

39. Kovacic, *supra* note 35, at 269–70.

40. *Id.*

41. JOSEPH E. STIGLITZ, THE ROARING NINETIES: A NEW HISTORY OF THE WORLD'S MOST PROSPEROUS DECADE 87–114 (2003).

42. *Id.*

B. Importance of Legal Infrastructure for Sustainability of Network Infrastructures

Just as insights from complexity theory enable us to better understand the critical role of legal rules and governance structure in providing an institutional infrastructure to sustain a market economy and to reap the benefits of its “invisible hand” emergent property, it can also enlighten inquiry as to the critical legal rules and governance structure necessary for sustainable communications infrastructures. Key insights of complexity theory particularly relevant here are that one of the distinctive properties of complex systems is *emergence*, and that emergent properties evolve from *rules* that govern system behavior to keep it from becoming chaotic.

Applying these concepts, this article asserts that widespread availability, affordability, and reliability of critical communications infrastructures are *desired emergent properties* of such infrastructures, and that *specific legal rules* are necessary to provide the institutional infrastructure for the sustainability of critical communications networks that generate such desired emergent properties. The central question then becomes: what exactly are those legal rules necessary for communications infrastructures to generate the desired emergent properties? Relatedly, what specific functions must those rules serve so as to enable generation of the desired emergent properties?

II. EXAMINING THE LEGAL INFRASTRUCTURE FOR SUSTAINABLE UTILITY INFRASTRUCTURES IN THE UNITED STATES

In search of identifying such critical legal rules, this section reviews aspects of my prior historical analyses of the evolution of legal rules and the effects on network infrastructures in the United States which form the basis for my assertion that the sustainability of deregulatory telecommunications policies will likely require retention of elements of the common law principles of common carriage and

public utilities.⁴³ It stresses the importance of the common law principles embedded in the traditional industry-specific regimes under which the transportation and telecommunications network infrastructures developed. Although the industry-specific regimes were augmented at times through enforcement of legal rules under antitrust and consumer protection laws applicable to general businesses, it also stresses the importance of understanding the temporal sequencing in the coevolution of the industry-specific and general business statutory regimes. Importantly, the general business statutory regimes of antitrust and consumer protection largely *post-date* the industry-specific regimes for common carriers and public utilities.

The significance of the industry-specific regimes *pre-dating* the general business regimes is that many analyses of deregulatory policies (that eliminated key elements of the common carriage and public utility regimes) falsely assume that the general business regimes can adequately solve industry-specific problems that such regimes did not evolve to address. These analyses are particularly problematic when focusing primarily on antitrust type remedies for the wholesale market, ignoring that the resultant shift in the interrelationship of the industry-specific and general business regimes under deregulatory broadband policies may generate *legal gaps* for issues affecting the retail market for consumers that may no longer be adequately addressed by either regime.

A. Differential Evolution of Industry-Specific and General Business Regimes in the United States

As a starting point, it is important to recognize some basic trends in the general evolution of regulation in the United States, which is elsewhere discussed in greater depth.⁴⁴ As a general matter,

43. See Cherry, *supra* note 7.

44. Barbara A. Cherry, *Pursuing Telecommunications Legislation Through a Systems Approach to Policymaking Processes* 1–2, Paper presented at the World Multi-Conference on Systemics, Cybernetics and Informatics, Orlando, FL (July 8–11, 2007).

government regulation has evolved *institutionally* in response to limitations of the existing regime to adequately respond to technological, economic, and societal changes. More specifically, primary reliance started with the common law, shifting during the Industrial Revolution to increasing reliance on statutory law, and resulting for some industries in the delegation of regulatory authority to administrative agencies. Furthermore, within the progression of institutional change, new *bodies of law* have evolved and changed over time. The main bodies of law under the common law consisted of torts (including common carriage), contracts, and property; whereas, the establishment of corporations and administrative agencies, for example, are of statutory origin, and statutory requirements were enacted more frequently over time to address inadequacies of common law requirements and remedies. Moreover, the co-evolution of institutional change and bodies of law has created *coexisting industry-specific and general business regulatory regimes*, among which the interrelationships change over time.

Within these general trends, the institutional progression of both the industry-specific (common carrier and public utility) and general business (antitrust and consumer protection) regimes has many similarities. These include placing initial reliance on the common law, increasing reliance on statutory law, delegating some enforcement to administrative agencies, and creating the coexistence of federal and state regulation.

Yet, there are important differences in the institutional progression of these respective regimes. For the industry-specific regimes relative to the general business regimes, both the relevant common law and statutory law developed earlier. Furthermore, for the industry-specific regimes, state regulation preceded federal regulation with the expansion of intrastate to interstate commerce during the nineteenth century, and state administrative agencies were established prior to the relevant federal agencies with a primary focus on protecting consumers. In this regard, the Report of the Senate Select Committee on Interstate Commerce (“Cullom Report”) concluded that federal legislation for the regulation of interstate transportation of railroads

was necessary and expedient because, among other things: state regulation was ineffective as interstate commerce was beyond the jurisdiction of the states under the United States Constitution; common law remedies were inadequate to address the myriad forms of discrimination imposed on customers; and statutory regulation was likely to be ineffective without providing adequate machinery, here a commission, for its execution.⁴⁵ As a result, the Interstate Commerce Act was enacted in 1887, creating the Interstate Commerce Commission (ICC) with jurisdiction over railroads.⁴⁶ ICC jurisdiction was extended to telegraphy and telephony in 1910, and subsequently replaced by the FCC in 1934.⁴⁷

However, for the general business regime, the federal statutory regimes preceded the state statutory regimes, and initially to protect business competitors before consumers.⁴⁸ For example, the Sherman Act was enacted (after the Interstate Commerce Act of 1887) in 1890, creating the first federal antitrust statute.⁴⁹ Both the Clayton Act and the Federal Trade Commission Act were enacted in 1914, with the latter creating the FTC (whereas the ICC was created in 1887) but its authority directed for the purpose of protecting business competitors.⁵⁰ It was not until the Federal Trade Commission Act

45. S. REP. NO. 49-46, pts. 1 & 2 (1886).

46. Act of Feb. 4, 1887, ch. 104, 24 Stat. 379, *repealed by* Pub. L. 95-473, § 4(b), 92 Stat. 1467 (1978).

47. The Communications Act of 1934, creating the FCC, was based on the statutory framework created in the Interstate Commerce Act and copied much of the language nearly verbatim. Act of June 19, 1934, ch. 652, 48 Stat. 1064, *repealed by* Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996).

48. See J.R. Franke & D.A. Ballam, *New Applications of Consumer Protection Law: Judicial Activism or Legislative Directive?*, 32 SANTA CLARA L. REV. 347, 350-58 (1992).

49. The Sherman Act prohibited certain forms of monopolization as well as agreements or conspiracies in restraint of trade. Sherman Act, 15 U.S.C. §§ 1-7 (2000).

50. The Clayton Act was the first federal statute that expressly prohibited certain forms of price discrimination, and was further amended by the Robinson-Patman Act in 1936 to assure that, "to the extent reasonably practicable, businessmen at the same functional level would stand on equal competitive footing with regard to price." Donald S. Clark, *The Robinson-Patman Act: General Principles, Commission Proceedings, and Selected Issues*, Speech presented before the Ambit Group Retail Channel Conference for the Computer Industry, San Jose, CA (1995). The Robinson-Patman Act applies to the sale of commodities, and not to the sale of services—such as rail and telecommunications services. Harvey I. Saferstein, *An Overview and Update of the Federal and State Law of Price Discrimination*, 1485 PRACTICING L. INST. CORP. L. & PRAC. HANDBOOK SERIES 135, 169-79 (2005).

was amended in 1938 that the FTC was given the responsibility to regulate unfair and deceptive acts or practices affecting commerce for the purpose of protecting consumers. In the 1960's and 1970's, Congress passed numerous statutes to protect consumers against unfair practices, and increased enforcement and regulatory authority of the FTC. Yet, it was not until the 1960's and 1970's, at the FTC's urging, that most states adopted statutes to curb unfair or deceptive acts and practices. Some state statutes directly provided private causes of action and associated remedies, whereas some other state legislatures gave state courts a mandate to create a common law of unfair trade practices.⁵¹ The enactment of such state statutes for general consumer protection purposes long post-dates the creation of the state commissions governing common carriers and public utilities that were established with jurisdiction over telecommunications beginning in the late nineteenth century and in the majority of states by the 1920's.

B. Relevance of Differential Evolution to Issues of Consumer Sovereignty

Averitt and Lande define consumer sovereignty "as the state of affairs in which consumers have an unimpaired ability to make decisions in their individual interests and markets operate efficiently in responding to the collective effect of those decisions."⁵² They assert that antitrust and consumer protection laws share a common purpose to facilitate the exercise of consumer sovereignty or effective consumer choice.⁵³ Antitrust law is intended to ensure that *a meaningful range of options is available to consumers through market competition*. Consumer protection laws seek to *protect the ability of consumers to freely choose among such options*.

51. See Franke & Ballam, *supra* note 48, at 355-424.

52. Neil W. Averitt & Robert H. Lande, *Consumer Sovereignty: A Unified Theory of Antitrust and Consumer Protection Law*, 65 ANTITRUST L.J. 713, 722-23 (1997).

53. *Id.* at 723.

The antitrust and consumer protection laws are applicable to general businesses. The industry-specific regimes of common carriers and public utilities were designed to address issues of consumer sovereignty by significantly different means, for which the relevant administrative agencies have primary jurisdiction, often preempting the applicability of the general business regime.

With respect to consumer sovereignty, the basic trends in the general evolution of regulation in the United States have specific characteristics. Perhaps most fundamentally, the general business regime of antitrust and consumer protection laws coevolved with—and largely post-dates—the development of the industry-specific legal regimes for common carriers and public utilities that originated with railroads and was subsequently applied to telecommunications.⁵⁴ Recognition of this temporal sequence is critical, as the statutory general business regime evolved as an adjunct to the industry-specific statutory regimes. As a result, in numerous cases and circumstances the general business regime has been preempted or superseded by the industry-specific regimes, and, for such situations, further evolution of the general business regime thereby addressed issues *not* covered by the traditional industry-specific regimes. Therefore, as the traditional industry-specific regimes change under deregulatory policies, the resulting interrelationships between the industry-specific and general business regimes necessarily shift. In some ways, the general business regime may now have greater applicability to the “deregulated” industries, but it is unclear whether the general business regime will adequately address the situations or circumstances that had previously been addressed by the traditional industry-specific regimes. For this reason, deregulatory policies may generate a “legal gap” for which some issues may no longer be adequately addressed by either the general business or the deregulatorily adjusted industry-specific regimes.

54. For a comparison of the evolution of the legal regulatory regimes for the telecommunications and transportation sectors, see Cherry, *supra* note 2.

C. Importance of Common Law Principles

As discussed at length in prior work,⁵⁵ the original regulatory regime for common carriers and public utilities in the United States evolved under the common law. Common carriers, merely by virtue of their *status* as public employments, or public callings, bore unique obligations under *tort law* to serve upon reasonable request without discrimination, to charge just and reasonable prices, and to exercise their calling with adequate care, skill and honesty.⁵⁶ They were also subject to a common law rule of strict liability, except for damages arising from acts of God or war, and with severe limitations on the ability to contract out of such tort liability. The common law of public utilities subsequently evolved in the United States during the nineteenth century, incorporating the tort obligations of common carriers to which was added an affirmative duty to extend facilities to provide service with a corresponding barrier to exit.⁵⁷ To enable public utilities to remain financially viable while satisfying these additional obligations, they were protected from competitive entry typically through monopoly franchises.

Statutory regimes arose in the United States during the late nineteenth and early twentieth centuries when common law remedies became inadequate to address the economic abuses of large corporations.⁵⁸ Industry-specific statutory regimes included the creation of expert administrative agencies to which regulatory authority was delegated by the legislature.⁵⁹ The statutory regimes arose initially for railroads and were later adopted for telegraph and telephone companies.⁶⁰

55. Barbara A. Cherry, *The Political Realities of Telecommunications Policies in the U.S.: How the Legacy of Public Utility Regulation Constrains Adoption of New Regulatory Models*, 2003 MICH. ST. L. REV. 757, 761–67 (2003) [hereinafter *Political Realities*]; Barbara A. Cherry, *Utilizing “Essentiality of Access” Analyses to Mitigate Risky, Costly and Untimely Government Interventions in Converging Telecommunications Technologies and Markets*, 11 COMMLAW CONSPPECTUS 251, 256–58 (2003) [hereinafter *Essentiality of Access*]; Cherry, *supra* note 2, at 275–277.

56. *Essentiality of Access*, *supra* note 55, at 257.

57. *Id.*

58. *Id.* at 258.

59. *Id.*

60. *Id.*

The common law legal principles—also, importantly, retained under the statutory regimes—evolved to address specific types of access problems regarding essential services or facilities.⁶¹ The common carrier obligations evolved to address problems of economic coercion between the carrier and its customers, whereas the additional public utility obligation to serve was imposed to assure the availability of an essential service to all customers.⁶²

The common law obligations of common carriers can be seen as an early form of consumer protection, later codified into statutory industry-specific regimes, that long predates the enactment of consumer protection laws applicable to general businesses in the United States.⁶³ Furthermore, public utility obligations can be viewed as an early form of welfare state regulation, given the purpose to better ensure availability of an essential service, that also long predates the more commonly recognized rise of the welfare state after the Great Depression.⁶⁴

1. Importance of Public Utility Principles

Deregulatory policies in the transportation sector began in the 1970's, encouraged by a shift in political philosophy favoring competition over regulation and by the rise of intermodal competition accelerated by the technique of containerization.⁶⁵ In this regard, deregulatory transportation policies modified the statutory regimes but retained important components of the common law regimes. Each mode of transportation—rail, air, and motor carrier—is still statutorily defined as common carriers. Specific elements of the

61. *Id.* at 259.

62. Additional legal principles later evolved to address yet other types of access problems regarding essential services or facilities: the essential facilities doctrine to address refusals to deal with competitors; universal service programs to ensure access to targeted end users; and viewpoint diversity as a government goal to justify regulation of owners of channels of communication to effectuate free speech rights under the First Amendment of the United States Constitution. *Essentiality of Access*, *supra* note 55, at 257–62.

63. See Cherry, *supra* note 3, at 7–10.

64. *Political Realities*, *supra* note 55, at 770–71.

65. See Cherry, *supra* note 2, at 278.

common carriage obligations—to serve upon reasonable request, without unreasonable discrimination, at reasonable prices, and with adequate care—are still imposed, although their manner of expression and enforcement varies by mode and among services or customers within modes. The deregulatory transportation regimes also contain mechanisms that continue to serve public utility functions, including a combination of entry and exit requirements, government ownership of infrastructure and/or carriers, and universal service subsidy programs to benefit targeted groups of customers or areas. As with the common carriage obligations, the manner in which the public utility functions are addressed varies by mode as well as among customers within modes.

However, some of the mechanisms established to fulfill public utility functions are having recurring sustainability problems.⁶⁶ For example, Congress's current approach to intercity passenger rail service—the most significant component of which is Amtrak—is considered unsustainable at historical funding levels. In addition, trends in the aviation industry and rising costs are jeopardizing the long-term viability of the Essential Air Service program that provides subsidies to induce new or additional air service to communities.

In some ways, deregulatory policies in the telecommunications sector have followed a similar trajectory to that in the transportation sector. “There is increasing variance as to how common carriage obligations are being applied among providers of new services enabled by digitization and the Internet; [and] the current funding mechanism for federal universal service support fund is generally considered economically unsustainable in the long run.”⁶⁷

In terms of whether critical infrastructures will continue to be generally available throughout the country, the sustainability problems of the post-deregulatory mechanisms intended to serve public utility functions are a significant problem for both the transportation and telecommunications sectors. Shifting primary

66. *Id.* at 283.

67. *Id.* at 274.

reliance from implicit subsidies contained in price structures of regulated monopolies to explicitly funded subsidy programs is proving to be a less politically stable regime.⁶⁸ The greater political instability of residualistic (targeted) as opposed to universalistic benefit programs—even though the former tend to be less expensive—has long been recognized by political scientists.⁶⁹ The greater political stability of universalistic programs is illustrated by the long periods during which monopoly legal regimes—whether by privately or publicly owned infrastructures—prevailed. It remains unclear whether the economic-political dynamics underlying sustainable policies can over time provide societally acceptable levels of available critical transportation and telecommunications infrastructures under deregulatory, competitive legal regimes.

2. *Importance of Common Carriage Obligations*

In other ways, deregulatory policies in the telecommunications sector are treading a trajectory that differs from that in the transportation sector. Perhaps the most significant is the elimination of common carriage obligations for provision of broadband access services as a result of FCC rulings in its *Cable Modem Declaratory Ruling*⁷⁰ and *Wireline Broadband Access Order*.⁷¹ In so doing, the FCC has eliminated the centuries-old solution under the common law to address problems of economic coercion between the provider of an essential service or facility and its customers through imposition of obligations to serve upon reasonable request without unreasonable discrimination at reasonable (just) prices and with adequate care, skill and honesty. As a result, not only the traditional statutory regime *but also its common law foundation* has been eliminated with regard to broadband infrastructure.

68. *Political Realities*, *supra* note 55, at 788–89; Cherry, *supra* note 2, at 285–286.

69. THEDA SKOCPOL, SOCIAL POLICY IN THE UNITED STATES: FUTURE POSSIBILITIES IN HISTORICAL PERSPECTIVE 250–74 (1995).

70. See generally *Cable Modem Declaratory Ruling*, *supra* note 5.

71. See generally *Wireline Broadband Access Order*, *supra* note 6.

The elimination of the common law scaffolding for application to broadband infrastructure has triggered debate regarding important issues related to network neutrality.⁷² Although lacking a precise definition, the diversity of goals, problems, and remedies raised in the network neutrality debate relate to concerns with varying forms of discrimination by broadband providers against customers or competitors.⁷³ The significance to the discussion here is that elimination of common carriage obligations for the provision of broadband access services has reintroduced problems of discrimination that now lack the legally enforceable remedies for which the common law principles and the later traditional statutory regime had been erected. Consequently, the dismantling of the historical legal infrastructure is requiring construction of a new one for applicability to broadband access services.

As a result, deregulatory telecommunications policies are shifting the boundaries between the traditional industry-specific and general business regimes.⁷⁴ Given that the general business regime of antitrust and consumer protection law largely *post-dates* the development of the industry-specific legal regimes for common carriers and public utilities, and has been preempted or superseded by the industry-specific regimes in numerous cases and circumstances, it is unclear whether the general business regime will adequately address situations or circumstances that had previously been addressed by the traditional industry-specific regimes. “For this reason, deregulatory policies may generate a legal gap for which some issues related to consumer sovereignty may no longer be adequately addressed by either the general business or the deregulatorily adjusted industry-specific regimes.”⁷⁵

For broadband access services relative to the narrowband telecommunications services, the ensuing legal gap between the

72. See Cherry, *supra* note 7, at 485–90; Cherry, *supra* note 3, at 29–31.

73. See Cherry, *supra* note 7, at 485–87.

74. For a detailed discussion of the evolving interrelationship between deregulatory industry-specific and general business regimes for telecommunications and broadband services in the United States, see Cherry, *supra* note 3, at 13–31.

75. See Cherry, *supra* note 3, at 31.

general business and industry-specific regimes will likely be greater.⁷⁶ This is because the FCC is attempting to construct a new legal regime under its Title I ancillary jurisdiction under the Communications Act of 1934—a more constrained scope of jurisdiction in contrast to the common carriage statutory regime under Title II—and thereby a new interface with the general business regime of antitrust and consumer protection law. The adverse consequences for consumers as opposed to competitors of broadband providers is particularly troublesome because the network neutrality debate has tended to be focused primarily on the provider-to-competitor relationship and “[a]dvocates of a regime based solely on antitrust fail to explain how the issues pertaining to the provider-to-customer relationship, that have been governed by the *ex ante* rules of industry-specific common carriage regulation, will be adequately addressed by antitrust *ex post* remedies.”⁷⁷ Furthermore, without the protection of the traditional *ex ante* rules embedded in common law common carriage obligations, myriad forms of discrimination are legally permissible and threaten consumers’ ability to have access at reasonable prices and under reasonable terms and conditions.

3. *Importance of Inter-Infrastructure Effects*

Unfortunately, the consequences of eliminating common carriage obligations for broadband access services are not likely to be contained to just broadband access to the Internet. This is because the broadband infrastructure both competes and interconnects with other critical infrastructures.

First, the FCC has now “create[d] *intramodal asymmetric regulation* between telecommunications carriers’ narrowband and broadband networks—with common carriage required for the former but not the latter.”⁷⁸ Due to the differential economic effects of differing regulatory obligations on these competing networks, “such

76. *Id.* at 29–31.

77. See Cherry, *supra* note 7, at 502 (emphasis omitted).

78. *Id.* at 498 (footnotes omitted).

asymmetry may ultimately lead to the unavailability of *any* common carriage-provided service, whether narrowband or broadband. Thus, the . . . economic [and welfare] rights of individuals as end users of *both* narrowband and broadband services could be adversely affected.”⁷⁹ To the extent that broadband networks also compete with cable and broadcasting networks, the elimination of non-discrimination obligations—not otherwise provided by other legal requirements—may also adversely affect citizen’s free speech rights.⁸⁰

Second, the deregulatory broadband policies may ultimately lead to devastating, unintended consequences for the United States Postal Service (USPS). “[T]he financial viability of the USPS is now being threatened, in large part, by electronic substitution of correspondence over the Internet.”⁸¹ To address the financial unsustainability of the USPS’ current business model, the President’s Commission on the United States Postal System recommends that the USPS become more Internet-dependent through both coordination of internal operations and provision of value-added services to customers.⁸² This raises questions as to the long-term effects of deregulatory broadband policies on the financial sustainability and ubiquitous deployment of the postal system:

Will there be de facto erosion of common carriage of the postal system that adversely affects customers? Will the geographic availability of postal service significantly deteriorate? What will be the implications for free speech rights? How might government interest in viewpoint diversity be adversely impacted—keeping in mind that postal policies have long played a significant role in the evolution of the press and other print media? . . . *It certainly seems incongruous to eliminate common carriage obligations for providers of broadband Internet access*

79. *Id.* (footnotes omitted).

80. *See id.* at 505–10; *Essentiality of Access*, *supra* note 55, at 272–74.

81. *See* Cherry, *supra* note 7, at 508 (footnote omitted).

82. *Id.* at 509 (footnotes omitted).

*while simultaneously increasing the dependence of the USPS, a common carrier itself, on the Internet.*⁸³

Third, the communications infrastructure interconnects with other critical infrastructures, such as transportation and electricity. Outages, failures, and performance characteristics in one infrastructure can dramatically and adversely affect performance in the others. For example, transportation networks have become increasingly reliant on telecommunications services, including airport operations and highway traffic monitoring and toll systems. Outages in telecommunications services can trigger congestion and even total suspension of transportation services for substantial periods of time. The interdependence of the telecommunications and electricity networks is demonstrated by the effects of the Northeast Blackout of 2003 on the cellular telecommunications network. A blackout that began in the electricity grid in Ohio not only cascaded to blackouts in other states but also disrupted the cellular network as the backup batteries ran dry prior to restoration of service in the electricity grid.

Potential adverse consequences for transportation and electricity networks may increase as their interconnection and reliance on broadband, packet-switched communications services grows. Fundamental reasons are that packet-switched networks are less secure and reliable than traditional wireline, circuit-switched networks,⁸⁴ and the Internet is extremely fragile to targeted attacks.⁸⁵ To the extent that intramodal asymmetric regulation hastens substitution of broadband for narrowband networks, higher security risks and lower network reliability of the communications infrastructure accelerates with cascading effects to the transportation and electricity networks.

83. *Id.* at 509–10 (emphasis added) (footnotes omitted).

84. D. RICHARD KUHN ET AL., U.S. DEP'T OF COMMERCE, SECURITY CONSIDERATIONS FOR VOICE OVER IP SYSTEMS: RECOMMENDATIONS OF THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, NIST SPECIAL PUBLICATION 800-58, at 7 (2005), available at <http://csrc.nist.gov/publications/nistpubs/800-58/SP800-58-final.pdf>.

85. See ROMUALDO PASTOR-SATORRAS & ALESSANDRO VESPIGNANI, EVOLUTION AND STRUCTURE OF THE INTERNET: A STATISTICAL PHYSICS APPROACH, 112–39 (2004).

D. Importance of Liability Rules

Another way in which telecommunications sector has followed a different policy trajectory from the transportation sector is with regard to their respective legal liability regimes.⁸⁶ The initial deviation occurred during the evolution of the traditional, statutory industry-specific regimes. Over time the common law doctrine had evolved that limitations of carrier liability in contracts, referred to as valuation agreements, are not enforceable unless the customer is given a choice of rates under which full liability is an option and the rate is tied to the level of liability accepted by the carrier. Meanwhile, when the statutory industry-specific regime required carriers to file tariffs containing rates, terms and conditions of services with the expert regulatory commission, courts developed the filed rate doctrine in addressing disputes challenging the validity or reasonableness of tariffs. The filed rate doctrine required that a given rate and its associated terms and conditions must be applied non-discriminatorily among customers. In *Union Pacific R.R. Co. v. Burke*,⁸⁷ the Supreme Court held that the common law rule affecting valuation contracts was not altered by the filed rate doctrine applicable to tariffs filed by railroad carriers. The same result was effectively applied to telegraph carriers by virtue of the Supreme Court's decision in *Western Union Tel. Co. v. Esteve Bros & Co.*⁸⁸ and a subsequent order by the Interstate Commerce Commission (then also with jurisdiction over telegraph and telephone carriers) in *Limitations on Liability in Connection with the Transmission of Telegraph Messages*.⁸⁹ However, decades later this legal framework was subsequently misapplied to telephone carriers. Although the reasons underlying this development are impossible to reiterate here, the filed rate doctrine has been misapplied by the FCC to uphold the

86. See *Improving Network Reliability*, *supra* note 17, at 311–14; CRISIS IN TELECOMMUNICATIONS CARRIER LIABILITY, *supra* note 17, at 14–28.

87. *Union Pac. R.R. Co. v. Burke*, 255 U.S. 317, 322–23 (1921).

88. *W. Union Tel. Co. v. Esteve Bros. & Co.*, 256 U.S. 566, 574–75 (1921).

89. *Limitations of Liability in Connection with the Transmission of Telegraph Messages*, 61 I.C.C. 541, 550 (1921).

validity of limitations of liability tariff provisions for telephone companies (now called telecommunications carriers).⁹⁰ As a result, telecommunications carriers have been permitted to operate under a legal regime whereby services are rendered pursuant to tariffs containing an absolute (and relatively low) limit of liability with no choice for customers to pay a higher rate for which full liability is an option.⁹¹

The significance of this differential evolution of liability regimes for telecommunications (telephony) carriers relative to other common carriers is the corresponding differential effects of detariffing under deregulatory policies.⁹² Furthermore, given that liability rules affect carriers' economic incentives to invest in performance of their network systems, the differential effects of detariffing create differing implications for network performance of telecommunications carriers relative to other common carriers:

The liability regime for telecommunications carriers is shifting from one based on an absolute limit on liability in tariffs to a form of strict liability under the common law. By mandatorily detariffing interstate, interexchange telecommunications services, the FCC has contributed to the acceleration of this process but without adequate consideration of the likely impacts on the achievability of other public policy goals for the telecommunications industry, such as universal service, broadband deployment or homeland security. The federal government's inattention to the changing—potentially catastrophic levels of—liabilities of telecommunications carriers

90. See *Improving Network Reliability*, *supra* note 17, at 313–16; CRISIS IN TELECOMMUNICATIONS CARRIER LIABILITY, *supra* note 17, at 34–35, 39–42.

91. See *Improving Network Reliability*, *supra* note 17, at 310–316; CRISIS IN TELECOMMUNICATIONS CARRIER LIABILITY, *supra* note 17, at 29–44.

92. See *Improving Network Reliability*, *supra* note 17, at 310–17, 321–24; CRISIS IN TELECOMMUNICATIONS CARRIER LIABILITY, *supra* note 17, at 39–42.

under deregulatory policies stands in stark contrast to its treatment of other common carriers and public utilities.⁹³

By contrast, the economic ramifications of imposing detariffing on other common carriers were not as dramatic because an absolute limit on liability was never permitted for such carriers as had anomalously evolved for telephony carriers. In addition, notwithstanding the greater continuity in liability regimes for transportation than telecommunications carriers, Congress mandated the Department of Transportation (DOT)—but not the FCC—to study the impact of deregulatory legislation on liability rules. DOT has thus far released two such studies, in 1995 and 1998, exploring liability issues on an intermodal basis, both domestically and internationally.⁹⁴

The shift in the liability regime for telecommunications carriers is also of substantial concern because carriers now confront potential liability for catastrophic losses. As high risk, high reliability organizations:

[T]he telecommunications system is characterized by such high levels of interactive complexity and tight coupling [so] that accidents of catastrophic potential are inevitable, or normal. In economic terms, this means that it is impossible for a telecommunications system to achieve one hundred per cent reliability, regardless of how much the telecommunications carrier spends on precautions or system improvements.⁹⁵

Under these circumstances, it may be necessary to impose an absolute limit on liability for the aggregate level of damages for which a carrier would be liable to customers for a single event of service interruption or outage.⁹⁶ “A limit on aggregate liability would protect carriers from the uncertainty of catastrophic levels of liability

93. See *Improving Network Reliability*, *supra* note 17, at 309.

94. *Id.* at 323–24.

95. See CRISIS IN TELECOMMUNICATIONS CARRIER LIABILITY, *supra* note 17, at 88.

96. *Id.*

and thereby be more consistent with achievement of ubiquitous availability of service at reasonable rates.”⁹⁷

Although the need for unique liability rules for technologies of high-risk high-reliability organizations has been acknowledged in other contexts—such as nuclear power plants—it has thus far been inadequately considered by policy making bodies in the United States for application to communication networks under deregulatory policies.⁹⁸ For this reason, the shift in the liability regime for telecommunications carriers poses a unique threat to the financial viability of telecommunications carriers and to the long-term sustainability, reliability, and ubiquity of communications infrastructures.⁹⁹ Furthermore, as previously discussed, adverse consequences for telecommunications networks will likely also affect other critical infrastructures with which they interconnect.

CONCLUSION

Markets require an institutional framework, in which government plays a critical role, to sustain them. Analogously, an institutional framework is necessary for the sustainability of critical infrastructures in modern society. For utility infrastructures, legal principles embedded in common carriage and public utility law evolved to ensure that essential public utility services were widely available under reasonable rates, terms and conditions.

Advances in communications technologies and shifts in reliance from monopoly to competitive market structures have dramatically increased the complexity of designing sustainable telecommunications policies. The collective effect of deregulatory telecommunications policies—eliminating or eroding the sustainability of legal principles embedded in common carriage

97. See *Improving Network Reliability*, *supra* note 17, at 328.

98. See *Improving Network Reliability*, *supra* note 17, at 318–21; CRISIS IN TELECOMMUNICATIONS CARRIER LIABILITY, *supra* note 17, at 60–66.

99. See *Improving Network Reliability*, *supra* note 17, at 317–21; CRISIS IN TELECOMMUNICATIONS CARRIER LIABILITY, *supra* note 17, at 88–92.

obligations, increasing political instability of explicitly funded public utility programs, and shifting the liability regime for the telecommunications carriers from an absolute limit on liability to a form of strict liability under the common law—will adversely affect the sustainability of communications (narrowband and broadband) infrastructures with the emergent properties of widespread availability, affordability and reliability to which we have become accustomed. Notably, the direct effects of deregulatory policies implemented thus far for the telecommunications sector pose greater problems than those for the transportation sector. Unfortunately, the consequences of deregulatory telecommunications policies will not be contained to the telecommunications sector but will also likely cascade to other systems, institutions, and activities that the communications infrastructures underlie and to other critical infrastructures—including the transportation and electricity sectors—with which the communications (narrowband and broadband) infrastructures interconnect.

Unfortunately, the network neutrality debate in the United States—triggered by the FCC’s elimination of important common law principles for applicability to broadband—has mischaracterized the common carriage regime and its relationship to other bodies of law. The radical nature by which fundamental common law principles have been eliminated under deregulatory policies for telecommunications as compared to the transportation industries remains unrecognized. Furthermore, the distinctive means by which consumer sovereignty has been pursued under general business regimes as opposed to industry-specific regimes are also underappreciated. As a result, there has been a preoccupation with regulatory policies affecting the wholesale market and unsubstantiated reliance on antitrust principles to address problems in the retail market.

Further research is vital for improving our understanding of those critical legal rules necessary for the sustainability of communications network infrastructures with the desired emergent properties of widespread availability, affordability, and reliability. As research

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progresses, we may better understand how the U.S. common law principles of common carriers and public utilities were an important means of fulfilling this function. Furthermore, their elimination through deregulatory policies, but without replacement by some other legal rules to fulfill a similar function, may render unsustainable the development of critical communications infrastructures with the desired emergent properties.

