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## Historical mutilation: How misuse of 'public utility and 'natural monopoly' misdirects US telecommunications policy development

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**Historical mutilation:  
How misuse of “public utility and “natural monopoly”  
misdirects U.S. telecommunications policy development**

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**I. Introduction**

In the U.S., the FCC has had recurrent problems establishing network neutrality rules. The FCC’s *legal* difficulty stems from its classification of broadband Internet access service as a Title I information service rather than as a Title II telecommunications service under the federal Communications Act of 1934. Under Title I authority, the FCC’s jurisdiction is markedly constrained. However, under Title II authority of statutory common carriage regulation, the FCC’s jurisdiction to impose network neutrality requirements is clear. To cure the jurisdictional deficient, the FCC could simply reclassify broadband Internet access service as a Title II service.

However, the FCC’s difficulty in pursuing such reclassification is primarily a *political* one. The political obstacle arises from rhetoric that conflates common carriers with public utilities, which are different legal statuses under separate bodies of law. Moreover, historical regulation of telecommunications is misrepresented as based on the existence of natural monopoly. As a result, opponents of network neutrality assert that reclassification under Title II would inappropriately apply a monopoly-era statute to broadband providers. Repetition of this legal conflation and monopoly assertion has contributed to a political environment of hostility, in large part by Republicans and broadband providers, against reclassification under Title II.

Relatedly, the FCC is also examining how to modify its policies as technology transitions occur within the public switched telecommunications network, which has historically been classified as Title II. The FCC describes the relevant technology transitions as: (1) movement from TDM to all-IP networks, with providers migrating to voice over Internet

Protocol interconnection; (2) migration of the nation's emergency calling system to Next Generation 9-1-1; and (3) migration from wireline to wireless service in certain geographic areas (Federal Communications Commission, 2013, p. 2). Large telecommunications providers are similarly conflating common carriage and public utility law and misusing the concept of natural monopoly to influence the FCC's policy consideration of technology transitions as well as related state law policy.

The FCC's legal difficulty with regard to jurisdiction over broadband is unique to the U.S.; however, the industry's pursuit of deregulatory policies through conflation of common carriage and public utility law as well as misuse of the natural monopoly concept are not. Canada is illustrative, where CRTC jurisdiction over broadband under a common carriage statutory framework remains, although incumbent broadband providers have attempted to eliminate or reduce their legal duties based on assertions that the existence of monopoly is required to impose such duties.

In prior research, Cherry (2013a, 2014) explains why a particular manifestation of the natural monopoly argument – based on the misattribution of the duty to serve to the existence of monopoly – is more difficult to correct in the U.S. than in Canada. One reason is the role of differing administrative procedures whereby the CRTC better enables direct confrontation of parties' views on the merits. Other reasons arise from the role of path dependence from some early differences in U.S. and Canadian policy choices made in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. They include the negation of Bell patents in Canada that triggered an earlier era of telephony competition and policy experimentation, leading to public ownership of telephony networks in several provinces, and AT&T's unique U.S. public relations campaign of regulated monopoly developed in response to the earlier policy experimentation in Canada. Importantly, AT&T's public relations campaign has induced a *false memory* in the U.S. as to the origins of regulated monopoly for telephony. This false memory contributes to the efficacy of a *false monopoly theory argument* – that the historical duties of telephone companies were based on the existence of monopoly and thus are not applicable in a competitive environment – which has and continues to distort telecommunications policy development in the U.S. In this regard, the large incumbent providers are continuing to misuse the public utility and natural monopoly concepts in order to improve the likelihood that policymakers will adopt regulatory policies favorable to their own corporate interests. In particular, AT&T is misrepresenting its early 20<sup>th</sup>

century public relations campaign of regulated monopoly in order to now, paradoxically, support deregulatory policies.

The present paper is part of an expanding body of research to further examine how the public utility and natural monopoly concepts are being misused and thereby misdirecting policy development in the U.S. as to both network neutrality and technology transitions. This paper focuses on how misuse of the natural monopoly concept is also being driven by gaps in knowledge within and among professions, undermining the validity of ostensibly academic analyses and misinforming development of policy recommendations. More specifically, it examines how economists are contributing to misuse of the natural monopoly concept through ahistorical analysis and misinterpretation of legal concepts, as “there is often a gap between the economic criteria justifying regulation on the one hand, and the legislative and legal concepts on the other” (Phillips, 1988, p. 43). In turn, such misuse can persist because most members of the legal profession lack sufficient understanding of developments in theoretical economic theory and their influence on the change in regulation, particularly for the common carriers and public utilities (Kearney and Merrill, 1998). The collective effect of these misuses of public utility and natural monopoly – by industry, scholars, and policymakers – is to mutilate the historical legacy of telecommunications policy evolution and misdirect future policy development.

The analysis is structured as follows. Section II discusses the relationship of the natural monopoly concept to regulation, and more recently how natural monopoly is being used to justify deregulatory policies. Section III examines how the natural monopoly concept has been misused to explain or justify public utility regulation. The natural monopoly explanation is historically inaccurate. Economists have, in some ways, recognized this historical inaccuracy through rudimentary recognition of early economic regulation of “businesses affected with a public interest”, attempts to improve technological explanations of natural monopoly, studies to demonstrate empirical invalidity, and recognition of natural monopoly as a political strategy to justify regulated monopoly. Section IV then examines how the natural monopoly concept has been misused to justify deregulatory policies. It incorporates prior research regarding Americans’ false memory of regulated monopoly engendered by AT&T’s early twentieth-century public relations campaign. It also explains economists’ unrecognized contribution to historical accuracy through Alfred Kahn’s misframed economic analysis of regulation. The

fundamental error in Kahn's framework of analysis arises from his misinterpretation of the landmark case of the U.S. Supreme Court, *Nebbia v. New York* (1934). Based on this misinterpretation, Kahn equates public utility with a specific type of direct government regulation – instead of recognizing public utility as a legal status conferred by grant of a franchise – leading to use of natural monopoly theory as a distorted frame of reference for economic analysis of regulation (generally, not just of public utilities) to inform public policymaking. Section IV then describes examples of how the historical inaccuracies embedded in Americans' false memory of regulated monopoly and Kahn's misframed economic analysis of regulation continue to be invoked to influence current telecommunications policy issues, such as the IP technology transition and network neutrality. The paper concludes, stressing that appreciation of the potential, adverse consequences of misdirected policy inquiry based on public utility and natural monopoly requires vigilance as to *the policy questions that are not being asked* as further deregulatory policies are being pursued.

## **II. The natural monopoly concept and (de)regulation**

In his own examination of the origins of the theory of natural monopoly, Mosca (2008, p. 321)) stresses “the fact that the concept of natural monopoly is composed of different elements.” He identifies various features that contribute to the notion of natural monopoly, such as “the expression itself; the singling out of the concrete situations to which it is applied; the inquiry into economies of scale; the consideration of their incompatibility with perfect competition; the drawing of the diagram; and the need for government intervention” (Mosca, 2008, p. 321), and shows that “every feature has its own history, and requires a separate analysis” (Mosca, 2008, p. 321).

Mosca also recognizes that “the concept of natural monopoly still contains many features it would be well worth while examining more closely” (2008, p. 347). A feature that Mosca does not discuss is how the concept has been used in political discourse to influence policymaking, which is the feature of relevance to the present paper.

As discussed in Section III, the concept of natural monopoly was used to explain or justify exclusive markets for public utilities, notwithstanding its historical inaccuracy (Philips, 1988, p. 45). The concept has been used to advance public policy that encourages or permits monopoly to be formed and also to support public ownership (Nelson, 1966, p. 3). AT&T's

public relations campaign of regulated monopoly is the most prominent example for monopoly remaining under private ownership (Cherry, 2014; Marchand, 1998)).

More recently, the concept of natural monopoly has been, and continues to be, used to justify deregulatory policies. Kearney and Merrill (1998) characterize the change in the regulatory paradigm as the great transformation of regulated industries law. They describe this transformation as having been driven by a combination of ahistorical perspective, changing assumptions, ideological consensus among policy elites, and activities of interest groups.<sup>1</sup> In particular, Kearney and Merrill stress the large role played by ideological consensus within the economic profession, particularly about natural monopoly (1998, pp. 1398-1407). The resultant regulatory paradigm is a shift in focus – from the providers’ duties to endusers to the duties among providers where natural monopoly characteristics are perceived to exist.

The original paradigm was based on the assumption that regulatory agencies had to exercise pervasive control over regulated industries in order to protect the end-user—the consumer (Kearney & Merrill, 1998, p. 1359).

Under the new paradigm, the regulator plays a far more limited role. Instead of comprehensively overseeing an industry in order to protect the end-user, its principal function is to maximize competition among rival providers, in the expectation that competition will provide all the protection necessary for end-users. Specifically, *the regulator is expected to intervene only* when there is some reason to conclude that a regime of market-based transactions will not suffice to advance competition, as *where one firm in the industry owns a bottleneck facility that has natural monopoly characteristics* (Kearney & Merrill, p. 1361, emphasis added).

Given the near-complete reliance on market transactions in industries and industry segments that can be made competitive, *the focus of the agencies necessarily turns to those market segments that have natural monopoly characteristics*. Here, the great concern is that incumbent providers that control bottleneck facilities will use their monopoly power to discriminate against competitors in the service segments that have been opened to competition. To prevent this from happening, a new set of regulatory obligations—including the duty to interconnect, to lease unbundled network elements, and to sell services for resale—is imposed on the owners of such bottleneck facilities and becomes the focal point of regulatory attention. *In effect, the owners of natural*

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<sup>1</sup> Kearney and Merrill (1998, pp. 1393-1397) describe the transformation in regulated industries from deregulatory policies as occurring in two waves. The first wave of deregulation appears to have run counter to the interest group theory of politics, as legislation was the result of concentrated interests (industry incumbents and unions) losing to diffuse interests (consumers and future rivals for market shares and jobs) in the airline, trucking and long-distance industries. “The second wave of reform legislation ... tended to conform much more closely to the picture of the political system painted by the interest group theory of politics” (Kearney and Merrill, 1998, p. 1394) of which they assert the Telecommunications Act of 1996 is an example. It is the transformation of the regulatory paradigm under the second wave that is most relevant here.

*monopoly facilities assume new common carrier duties toward their competitors, and these duties are regarded as more important than those they owe to their traditional customers.* The role of the agency correspondingly shifts from protecting the end-user to implementing a version of the essential facilities doctrine originally developed under the antitrust laws (Kearney & Merrill, p. 1364, emphasis added).

Unfortunately, legal scholarship has contributed to a gap in understanding the significance of the change in the regulatory paradigm. “There is a pronounced tendency in legal scholarship to concentrate on potential or impending *additions* to the corpus of legal regulation... However, there tends to be very little commentary on apparent *subtractions* from the corpus of regulation” (Kearney & Merrill, 1998, p. 1408, emphasis added). As a result, “[m]ost legal scholars and lawyers are only dimly aware of the monumental changes that have been taking place in common carrier and public utility law in recent years.... Only a handful have any sense of how the legal landscape has shifted overall” (Kearney and Merrill, 1998, p. 1408).

To help close this gap in legal scholarship, Section IV examines how economists have contributed to misuse of the natural monopoly concept to justify deregulatory policies. It explains how Alfred Kahn’s economic analysis of regulation, that has been so influential in the adoption of deregulatory policies, is fundamentally flawed based on his misinterpretation of the landmark case of the U.S. Supreme Court, *Nebbia v. New York* (1934) and his failure to recognize public utility as a special legal status conferred by grant of a government franchise.

### **III. Misuse of the natural monopoly concept to explain or justify public utility regulation**

With regard to the relationship of natural monopoly to regulation, economists perceive the importance of certain technological conditions. Described in the context of electric utilities, Primeaux states:

A summary statement of the natural monopoly idea is that because of structural conditions that exist in certain industries, competition between firms cannot endure, and whenever these prerequisites exist, it is inevitable that ultimately only one firm will survive. Electric utilities have been considered natural monopolies for many years, and this concept played an important role in early movements to grant them monopoly status and, in the absence of competition, to subject them to regulation (1986, p. 1).

Upon examining the theory of natural monopoly and actual structural conditions of electric utility companies, though, Primeaux concludes that these conditions are nonexistent and unimportant in electric utilities (1986, p. 1).

However, as a theoretical matter, “[i]t is evident from the ... general literature survey that the existence or nonexistence of economies of scale is of importance in determining whether any given industry is a natural monopoly. Although the test for economies of scale is an incomplete test of natural monopoly..., it [is] illuminating to examine the application of this test in a particular industry” (Sharkey, 1982, p. 21). Sharkey’s literature review includes notable economists, such as Richard T. Ely, Richard Posner, Alfred Kahn, and Carl Kaysen.

This section examines the historical inaccuracy of the natural monopoly concept to explain public utility regulation, as well as some ways in which economists recognize this historical inaccuracy. By contrast, section IV explains how economists have failed to recognize their contribution to historical inaccuracy through misframing of economic analysis of regulation, thereby facilitating misuse of the natural monopoly concept to justify deregulatory policies.

#### *A. Historical inaccuracy of natural monopoly to explain public utility regulation*

“Regulation is an economic, legislative, and legal concept... [T]here is often a gap between the economic criteria justifying regulation on the one hand, and the legislative and legal concepts on the other” (Phillips, 1988, p. 43). Such a gap exists between the economists’ theory of natural monopoly and the legal concept of public utility. Natural monopoly is an economic concept developed to explain or justify regulation, but it *does not explain the basis for regulation of public utilities* because not all public utilities possess the same economic and noneconomic characteristics. On the other hand, the term *public utility is a legal status that arises from the government grant of a franchise* that conveys powers and privileges not otherwise inhering in individuals or enterprises. Moreover, these franchises may, but need not be, exclusive (Cherry, 2010a, pp. 6-7).

Unfortunately, “[p]ublic utilities are frequently referred to as ‘natural monopolies.’ The phrase is misleading” (Phillips, 1988, 45, footnotes omitted). As Phillips explains:

The classic *economic* case for extensive regulation of price, investment, service, and other managerial decisions of an industry is the inherently noncompetitive situation...



Economies of scale may allow one firm to serve a market at a lower average cost than can several competing firms. But in some cases, primarily in transportation utilities, competition was limited for many years by legislative policy rather than by technological conditions. In such cases, there was nothing natural or inherent about the resulting market structure. Similarly, interindustry or intermodal competition may be present. While this type of competition may lead to different results than does intraindustry or intramodal competition, it can still serve to limit discretionary control over price. Many utility industries, therefore, exhibit both monopolistic and competitive elements (1988, p. 45, emphasis in original).

Moreover, economic conditions constantly change, so that “[w]hat is ‘natural at one period of time, then, may become quite unnatural at another” (Phillips, 1988, p. 45).

Similarly, Nelson asserts “[o]ne of the most unfortunate phrases ever introduced into law or economics was the phrase ‘natural monopoly’. Every monopoly is a product of public policy. No present monopoly, public or private, can be traced back through history in a pure form” (1966, p. 3). In this regard, Nelson stresses the origins of the natural monopoly concept in the public policy context: “So ‘natural monopolies’ in fact originated in response to a belief that some goal, or goals, of public policy would be advanced by encouraging or permitting a monopoly to be formed, and discouraging or forbidding future competition with this monopoly” (1966, p. 3).

### *B. The limited scope of economists’ recognition of historical inaccuracy*

In some ways, economists do recognize that their traditional argument of natural monopoly to justify government regulation is problematic. This subsection identifies and briefly describes the manner in which such recognition has occurred. As will be seen, some explicitly recognize historical inaccuracies whereas others reflect a quest to refine the technological conditions under which natural monopoly is considered to economically occur.

#### *1. Rudimentary recognition of early legal evolution*

Scherer provides a concise statement of economists’ traditional case for regulation based on natural monopoly.

The most traditional economic case for regulation assumes the existence of natural monopoly—that is, where economies of scale are so persistent that a single firm can serve the market at lower unit cost than two or more firms. Reasonably clear examples include electric power and gas distribution, local telephone service, railroading between pairs of small- to medium-sized metropolitan areas, and the long-distance transportation of petroleum and gas in pipelines. Regulation is said to be necessary in such instances to

protect consumers from the monopoly pricing behavior that achieving all scale economies renders virtually inevitable (Scherer, 1980, p. 482).

After so quoting Scherer, Hazlett explains the historical inaccuracy associated with this explanation.

Professor Scherer's view would hardly startle contemporary economists. But economic history offers a least one surprise for this perspective: the modern regulation of U.S. industry did not begin in an industry naturally monopolistic by anyone's definition. Early on the key issue delimiting government's right to intervene in commerce was the public nature of the business involved. As Alfred Kahn notes, "There is no trace of the concept of natural monopoly in the landmark constitutional cases delineating the category of businesses 'affected with a public interest'" (Hazlett, 1985, p. 1, footnote omitted).

Hazlett then proceeds to discuss the historic U.S. Supreme Court decision, *Munn v. Illinois* (1877), in which the Court upheld an Illinois statute controlling the prices of grain elevators. He cites Nelson (1966) in support of the recognition that the natural monopoly rationale is found nowhere in the Court's decision.

In this respect, Hazlett and Nelson are correct. In terms of early legal principles, government's inherent police power to regulate economic activities was limited to "businesses affected with a public interest" based on the U.S. Supreme Court's interpretation of the due process clause of the Fourteenth Amendment of the U.S. Constitution (Cherry, 2012). Importantly, there was no requirement that such businesses be (natural) monopolies.

However, it is important to note that Hazlett also quotes from the 1971 edition of Kahn's book, *The Economic Analysis of Regulation*. As will be discussed in Section IV, another landmark U.S. Supreme Court case, *Nebbia v. New York* (1934) – that expanded the scope of constitutionally permissible economic regulation by no longer requiring a business be in a category "affected with a public interest" – has been misinterpreted by economists. In this regard, Kahn's misinterpretation of *Nebbia* has led to a misframing of the economic analysis of regulation. This analysis, in turn, has been widely misused to justify deregulatory policies.

## 2. *Quest for technological explanations to explain natural monopoly and regulation*

Natural monopoly is seen as arising for technological reasons (Mosca, 2008, p. 327). There has been considerable research to further develop economic analysis of technological conditions underlying natural monopoly, as exemplified by the theories of subadditivity,

contestable markets, wasteful duplication from too much entry, and monopoly to encourage entry.

“[I]n the pre-1977 view of natural monopoly, the fundamental characteristic of technology responsible for its emergence was considered to be economies of scale, due to the presence of high fixed costs and low [sic] marginal costs” (Mosca, 2008, p. 327). The resulting decline in average cost is also referred to as increasing returns. The theory of subadditivity further developed the increasing returns argument, where “[s]ubadditivity refers to the notion that a natural monopoly can exist with decreasing returns if any specified required rate of output can be supplied most economically by a single firm or single system” (Hazlett, 1985, p. 15, footnote omitted). However, “the technology explanation of scale economies is unsatisfactory. While a given technology of decreasing cost (or subadditivity) may be necessary for natural monopoly, it is far from sufficient” (Hazlett, 1985, p. 15).

Yet, “[t]he subadditivity criterion for natural monopoly has not led to a reexamination of the traditional core of natural monopoly theory concerning so-called public utilities (that is, those industries that do involve significant nonsalvageable investment). Kahn believes, for instance, that economies of scale remain a necessary and sufficient rationale for regulation” (Hazlett, 1985, p. 17). In this regard, Kahn’s emphasis on significant *nonsalvageable* investment represents a refinement to the subadditivity argument that developed based on the notion of the contestability of markets. Large, nonsalvageable costs – not merely large, fixed costs – are sunk costs that create a barrier to exit. “In other words, for a true natural monopoly to exist, there must be a barrier to exit, an impediment preventing an incumbent firm from easily (in the limit, costlessly), transferring its fixed investment to some alternative employment....This narrows the appropriateness of the traditional declining average cost explanation of natural monopoly by excluding so-called contestable markets” (Hazlett, 1985, p. 16). It is in the sense of contestability that trucking and airlines are seen as competitive because the substantial fixed costs are salvageable by virtue of their fungibility among markets (Hazlett, 1985, p. 16).

But, Hazlett further adds, “Kahn, unlike others, is careful to specify this ‘decreasing unit cost’ property as appropriately belonging not necessarily to the quality of output dimension but *to the quantity of suppliers dimension*” (1985, p. 17, emphasis added). Even in an increasing cost industry such as telephony, “monopoly is still natural because one company can

serve any *given* number of subscribers (for example, all in a community) at lower cost than two” (Hazlett, 1985, pp. 17-18, emphasis in original, footnote omitted) (quoting Kahn, 1971, p. 123). However, Kahn explains that “this example is not necessarily an exception to the general principle that long-run decreasing costs are an indispensable condition for natural monopoly. The rise in the [telephony] exchange cost *per subscriber* as their number increases is the counterpart of an improvement in the quality of service rendered: each telephone is thereby enabled to reach more and more customers” (Kahn, 1988, Vol. II pp. 12-124, emphasis in original). In other words, the network externality inherently increases the value of the network, and “[i]ncreasing or decreasing returns can be measured only by the behavior of costs when there is an increased *quantity* of service of an *unchanging* quality. By that test local exchange service, too, is subject to increasing returns” (Kahn, 1988, Vol. II, p. 124, emphasis in original).

As so understood and explained by Kahn, natural monopoly is also related to the waste from duplication of certain facilities in the presence of competition (1988, Vol. II, p. 121-126). “[T]he critical factor in the naturalness of monopoly is the presence or absence of economies of scale *internal* to the firm” (Kahn, 1988, Vol. II, p. 124, emphasis in original). From this perspective, “[t]he first task of public policy, then, is to ascertain for each of these industries the proper scope of natural monopoly, that is, to define the parts of the business where internal economies of scale constitute a strong case on efficiency grounds for permitting only a single supplier. The decision need not be an all-or-nothing one for the entire industry” (Kahn, 1988, Vol. II, p. 124).

Victor Goldberg (1976) advocates an alternative theory, “argue[ing] just the reverse of the historical position endorsing regulation and entry barriers, which criticized a regime of *laissez-faire* as inviting overinvestment” (Hazlett, 1985, p. 21).

Goldberg builds on Demsetz’s “debunking of the standard natural monopoly justification for regulation—namely the allegation there might be room for only one efficient producer.” Hence, the traditional natural monopoly theory seems to have been eclipsed by a more modern view, which lists scale economies as a necessary but insufficient condition for the existence of monopoly power. This current approach does not equate market structure with monopoly power. Moreover, it focuses much of its analysis on the sorts of institutions and transactions that a market may creatively employ to discipline firms toward the goals of a consumer welfare maximization.

...

Whereas the economic analysis once suggested monopoly franchising and public regulation as an antidote to overinvestment and wasteful duplication, it now recommends it as beneficial in guaranteeing specific capital investment where laissez-faire would lead to too little entry. The model may have entirely reversed its rationale, yet the policy recommendation lives on: political agency is the solution to the natural monopoly problem (Hazlett, 1985, pp. 21- 22).

As Hazlett observes, Goldberg shifts economic analysis of monopoly franchising from the need to avoid overinvestment and wasteful duplication under competition to guaranteeing specific capital investment where competition would lead to too little entry.

### *3. Economic analysis of public utility monopolies is not empirically valid*

Primeaux (1986) observes that “[t]he natural monopoly concept has been embraced by many economists as the justification for granting public utility firms special treatment. ... It is important to note, however, that the early support for the natural monopoly concept was based on a priori reasoning, without the benefit of data or statistical analyses” (1986, p. 16). He refers to the work of Gray (1940), a highly respected public utility economist, who “argues very convincingly that institutional factors were extremely important in generating the monopoly outcome observed in public utility markets. Monopoly, according to Gray, was fostered not because it was the natural state of affairs or because of inherent conditions of the business; instead, it was forged from institutional factors such as franchises, way-leaves, contracts, charters, patents, secret agreements, injunctions, dummy corporations, cutthroat competition, newspaper and banking influence, and political corruption. ‘Skillful and unscrupulous manipulators’ were the forgers of these monopolies, according to Gray” (Primeaux, 1986, p. 16, footnote omitted).

Primeaux concludes “that the natural monopoly theory is not a very useful concept to employ to conclude that firms should not face competition. Moreover, whenever the theory has been used for that purpose in the past, it represented a misapplication of economic analysis” (Primeaux, 1986, p. 18). He also describes the troubling longevity of this misapplication of economic analysis to affect public policy.

The theory of natural monopoly ... has been accepted as the truth and is now embraced by a very large number of economists. The theory asserts that public utility regulation competition is doomed to fail – it will make customers suffer – it will ruin electric

utility firms. ...[T]he natural monopoly theory was developed without the benefit of data and statistical analyses. Yet, public policy decisions have been made as if the theory were correct. Moreover, our educational system is such that ideas, once in the mainstream, are very slow to die. *There have probably been few cases in history where a theory of microeconomics has been so powerful in affecting public policy without the benefit of some meaningful empirical analyses.*

The natural monopoly theory has been adopted by textbook writers and perpetuated from one generation of students to the next” (Primeaux, 1986, p. 109, emphasis added, footnote omitted).

Based on analysis of the electric utility industry, Primeaux finds that “[t]he natural monopoly concept is not valid...After careful examination, one must conclude that it is the institutional structure, and not the unique or unusual nature of the business, which creates the basis for ‘natural monopoly’” (Primeaux, 1986, p. 281).

Similarly, in light of the historical record of regulation in the industries of railroads, electric power, and telephony, Hazlett finds “that regulation came to many of the public utility industries not due to some economic efficiency being thereby nourished, but due to outstanding survival characteristics of cartelistic combinations between political agents (regulators) and the industry’s [sic] themselves” (1984, p. 362). Hazlett’s explanation is that “[t]he economists’ analysis of the inefficiency of unregulated natural monopoly markets did not spring from a scientific or particularly scholarly research program but in response to ‘a growing clamor for more government.’ Indeed many of the early natural monopoly writers had attacked the problem because of personal ideological agendas; their politics preceded their studies” (1985, p. 21, footnote omitted).

#### *4. Natural monopoly concept as a political strategy to justify regulated monopoly*

The analyses of Primeaux and Hazlett reflect a recognition that regulated monopolies in public utility industries were political outcomes, and not the result of technological conditions. DiLorenzo is even more explicit that regulated monopolies were the result of corporate public relations efforts, later supported by economists’ ex post rationalization:

The theory of natural monopoly is an economic fiction. No such thing as a “natural” monopoly has ever existed. The history of the so-called public utility concept is that the late-nineteenth- and early-twentieth century “utilities” competed vigorously and, like all other industries, they did not like competition. They first secured government-sanctioned monopolies, and *then*, with the help of a few influential economists, constructed an *ex post* rationalization for their monopoly power.

This has to be one of the greatest corporate public relations coups of all time (1996, p. 58, italics in original, underlining added).

DiLorenzo's conclusion is supported by Marchand's (1998) extensive research into the history of corporate public relations history in the U.S. With regard to telephony Marchand explains that, fearing the political movement for public ownership in some Canadian provinces would contaminate opinion in the U.S., AT&T conducted an institutional advertising campaign for political purposes in order to influence the development of regulated monopoly in the U.S.

In 1908 ... began the first, most persistent, and most celebrated of the large-scale institutional advertising campaigns of the early twentieth century. *Its primary purpose was political—to protect a corporation with an odious public reputation against threats of public ownership or hostile regulation.* Among the methods deployed to publicize Vail's new emphasis on quality and service were measured argument, emotional appeal, and transformed corporate behavior. Certainly AT&T was not the first major American business corporation to recognize, for good or for ill, that it had an image, and that its image could affect its long-term welfare. But never had a major corporation so systematically and decisively set out to create a new corporate image for itself as did AT&T in 1908 (1998, p. 48, emphasis added).

To protect its long-run interests, AT&T's corporate strategy was to accept public regulation rather than competition; and, in so doing, AT&T sought to quell public fears of monopoly by cloaking it “in more palatable language, with phrases like ‘a single system and ‘universal service’” (Marchand, 1998, p. 50). This corporate strategy also under laid AT&T's acceptance of the Kingsbury Commitment of 1913 to settle a federal antitrust case, agreeing among other things to interconnect with independent telephone companies (Marchand, 1998, p. 57).

Cherry (2014) discusses how AT&T's early twentieth-century public relations campaign has contributed to a false memory of monopoly regulation in the U.S., distorting subsequent policy development. In particular, Americans appear to suffer not simply from memory decay but a false memory, whereby telephony is associated with monopoly but with no (or only dim) awareness of the early competitive era or that regulated monopoly was a policy choice. An important consequence is that many important policy developments preceding enactment of the Communications Act of 1934, as well as their underlying reasons, are no longer of common knowledge. For example, the historical fact that common law obligations of common carriers and public utilities are *not* based on the requirement of monopoly is ignored. In addition, the

fundamental reason for creating a federal statutory regime of based on independent agency oversight in the Interstate Commerce of 1887 (later extended to the Communications Act of 1934) – to address the rise of corporate power in a common carriage industry – is unacknowledged. Cherry (2014) further explains how this false memory of monopoly regulation now infects the policy debate on the TDM-to-IP transition, encouraged by rhetoric employed by AT&T in its petition to the FCC, and also underlies the assertions of numerous economists and large incumbent local exchange companies in filings before the FCC related to network neutrality. Paradoxically, bolstered by a false memory of regulated monopoly, AT&T's prior investment in a corporate image of monopoly is now being leveraged for the opposite political purpose – to tout the benefits of competition and to free itself of regulatory obligations.

#### **IV. Misuse of the natural monopoly concept to justify deregulation**

What has been discussed thus far in Section III are historical inaccuracies of the natural monopoly concept to explain public utility regulation that have already been recognized by economists. However, to influence *deregulatory* policies, economists have contributed to historical inaccuracy in a manner that they have *not* recognized. More specifically, for decades Alfred Kahn's economic analysis of regulation has provided the theoretical foundation for adoption of deregulatory policies in industries such as airlines, railroads, electricity and telecommunications. But, as discussed in the present section, a fundamental error in Kahn's framework of analysis arises from his misinterpretation of an important U.S. Supreme Court case, *Nebbia v. New York*. Based on this misinterpretation, Kahn equates public utility with a specific type of direct government regulation – instead of recognizing public utility as a legal status conferred by grant of a franchise – leading to use of natural monopoly theory as a distorted frame of reference for economic analysis of regulation. Kahn's legal misinterpretation has remained undetected by economists, and, until now, apparently by lawyers as well. The historical inaccuracies associated with Americans' false memory of regulated monopoly and the natural monopoly concept of regulation continues to influence policy debates today, most recently related to network neutrality and the IP technology transition.



*A. Economists' unrecognized contribution to historical inaccuracy – Kahn's misframed economic analysis of regulation*

As discussed in Section II, Kearney and Merrill (1998) describe a great transformation of regulated industries law. This transformation is a change in regulatory paradigm, resulting from deregulatory policies, that shifts focus from providers' duties to endusers to the duties among providers where natural monopoly characteristics are perceived to exist. Kearney and Merrill assert that “[c]hanging ideas about market failure and regulatory failure within the economics profession ... have almost certainly played a critical role in the great transformation” (1998, p. 1402). In this regard, an “ideological consensus ... emerged about the virtues of markets as a dominant mode of industrial organization for delivering public utility services” (Kearney & Merrill, 1998, p. 1398, footnote omitted); and underlying this consensus “about economic regulation of common carriers and public utilities, there can be no doubt that the perceptions of regulatory failure are in the ascendancy, while perceptions of market failure are in decline. Nowhere is this clearer than within the economics profession” (Kearney & Merrill, 1998, p. 1399).

Kearney and Merrill describe three important ways in which beliefs changed within the economic profession as to the proper treatment of regulated industries.

First, economists today tend to be less apprehensive about the phenomenon of natural monopoly as a type of market failure than they were in the past. Second, economists tend to regard public regulation more skeptically than was true in earlier generations. Third, a new theory—generally known as the theory of contestable markets—has emerged which is widely viewed as justifying a much more minimalist form of regulation of natural monopolies than the pervasive oversight associated with the original paradigm (1998, pp. 1399-1400).

As examples, they refer to various areas of research, and renowned economists associated with them, such as regulatory capture, the theory of contestable markets, and the Averch-Johnson hypothesis (Kearney & Merrill, 1998, pp. 1400-1402).

Among economists, Alfred Kahn has played a particularly critical role in the transformation of the regulatory paradigm. As a regulatory economist, including as Chair of the Economics Department at Cornell University, Kahn greatly influenced the economics profession. “Much of the early regulation literature, up to 1970, has as its focus the regulation of public utilities. The major comprehensive work is the classic text of Kahn” (Spulber, 1989, p.

23). Kahn also influenced adoption of deregulatory policies in the telecommunications, electricity, and airline industries, stemming from his positions and reputation as chair of the New York Public Service Commission and later as chair of the Civil Aeronautics Board (CAB) (Kearney & Merrill, 1998, pp. 1366-1367, 1399, 1401).

Kahn's book, *The Economics of Regulation*, is the classic text to which Spulber refers.<sup>2</sup> Key components of Kahn's analysis in this text are reviewed here. When viewed from a legal perspective, several errors become apparent; and the cumulative effect of these errors is the (mis)use of natural monopoly theory as a distorted frame of reference for economic analysis of regulation – generally, not just for public utilities – to inform public policymaking.

Kahn opens Volume I as follows: “Economics emerged in the eighteenth and nineteenth centuries as an attempt to *explain* and to *justify* a market system. This is an oversimplification, but it is a broadly accurate characterization of the mainstream of Western economic thought. The purpose had been to describe how an essentially uncontrolled economy, in which the critical economic decisions are made by individuals, each separately pursuing his own interest, can nonetheless orderly and efficiently do society's work” (1988, Vol. I, p. 1, emphasis in original). Kahn then explains that there are two large chunks of the economy that the competitive market model does not, or even purport to, describe: the public sector and “public utilities, in which the organization and management is for the most part (in the United States—not in most other countries) private but the central decisions are subject to direct governmental regulation” (1988, Vol. I, p. 2, footnote omitted).

Kahn describes ways in government does influence the functioning of private, competitive sectors by “maintaining the institutions *within* whose framework the free market continue to function, of enforcing, supplementing, and removing the imperfections of competition—not supplanting it” (1988, Vol. I, p. 2, emphasis in original, footnote omitted).<sup>3</sup> He then distinguishes the government's role in supporting competitive sectors from its regulation of public utilities.

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<sup>2</sup> Kahn's text was first published in two volumes in 1970-1971; it was reprinted, with addition of an introductory postscript, in 1988.

<sup>3</sup> These government functions include: “regulating the supply and availability of money, enforcing contracts, protecting property, providing subsidies or tariff protection, prohibiting unfair competition, providing market information, imposing standards for packaging and product content, and insisting on the right of employees to join unions and bargain collectively” (Kahn, 1988, Vol. I, p. 2).

There are four principal components of this regulation that in combination distinguish the public utility from other sectors of the economy: control of entry, price fixing, prescription of quality and conditions of service, and the imposition of an obligation to serve all applicants under reasonable conditions. *This book is an analysis of the economics of that regulation—its characteristics and consequences, the principles that govern it, and the principles that ought to govern it* (Kahn, 1988, Vol. I, p. 3, emphasis added).

However, Kahn does not define what a public utility is. As his analysis proceeds, it becomes clear that Kahn is *equating public utility with a specific type of direct government regulation* and is *not* referring to public utility as a *legal status conferred by grant of a franchise*, although he considers franchises to have been a justification for government regulation. In this way, we will find that Kahn's use of the term public utility is misleading, embodies several analytical errors, and has led to use of natural monopoly theory as a distorted frame of reference for economic analysis of regulation (generally, not just of public utilities) to inform public policymaking.

The fundamental error in Kahn's framework of analysis arises from his misinterpretation of the landmark case of the U.S. Supreme Court, *Nebbia v. New York* (1934). Kahn first recounts the period of 1877-1934 during which the U.S. Supreme Court applied the concept of "businesses affected with a public interest" as a constitutional basis for regulation – as briefly discussed in Section III.B.1. He then discusses the Court's decision in *Nebbia v. New York*, which "held, in effect, that there was no longer any constitutional barrier to legislatures imposing any type of economic regulation on any industries within their jurisdictions, where in their judgment it would serve the public interest, provided only that they did not do so in an utterly capricious or discriminatory manner" (Kahn, 1988, Vol. I, p. 7). After quoting a portion of the Court's opinion, Kahn then states: "*As far as the United States Constitution is concerned, there is no longer any distinction between the public utilities and other industries*" (1988, Vol. I, p. 8, emphasis added).

Kahn's statements reflect a fundamental misunderstanding of the Court's holding in *Nebbia*. In *Nebbia*, the Court holds that the permissible scope of economic regulation consistent with the due process clause of the Fourteenth Amendment of the U.S. Constitution is no longer restricted to "businesses affected with a public interest". However, the Court also found that

permissible regulation as to a *given* business depends on the specific circumstances in each case, which includes its historical legal status as a business affected with a public interest.

In *Nebbia v. New York* (1934), the Supreme Court effectively broadened the scope of permissible regulation under the police power *for any business*, so that the need to prove that a business did or did not fall into the historical classes of businesses affected with a public interest fell into disuse. However, the traditional definition of businesses affected with a public interest is not irrelevant. This is because, even though the Court found that the police power was coextensive with regulation in the public interest, it still maintained that permissible regulation as to a *given business* depends on the specific circumstances in each case. *Nebbia v. New York* is significant in that the court held even though a wider range of businesses can now be subject to some government regulation, what is deemed a reasonable assertion of that governmental authority is still likely to be greater for a business in which the circumstances are similar to those of the traditional justifications for regulating “businesses affected with a public interest” (Cherry, 2003, p. 260, emphasis in original).

Kahn’s misunderstanding of *Nebbia* underlies the further assertion that, based on his equation of public utilities with certain components of regulation, there has been a blurring of the boundaries between public utilities and other industries (1988, Vol. I, pp. 8-11). As a result, Kahn’s ignores public utility as a separate *legal status*, which provides the legal basis for greater economic regulation consistent with *Nebbia*.

Having defined public utility as a form of direct government regulation rather than competition – as opposed to a legal status conferred by grant of a government franchise – Kahn then provides a list of economic justifications for regulated monopoly, including supplier of an essential input, economies of scale, natural monopoly, and other possible reasons for why competition simply does not work well (1988, Vol. I, pp. 11-12). In this way, Kahn incorporates the natural monopoly theory argument developed to explain regulation of public utilities – even though such theory is empirically invalid, historically inaccurate, and the result of a political strategy, as discussed in Section III<sup>4</sup> – to examine economic regulation in other industries. He asserts that other industries also have monopoly elements, suggesting that direct regulation might be required to protect consumers. In this way, Kahn’s analysis extends the

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<sup>4</sup> Again, it bears emphasizing that Kahn’s analysis is also historically inaccurate given that the legal status of public utility does not require the existence of an *exclusive* franchise (Cherry, 2010a).

erroneous natural monopoly theory of regulation to other industries, and also creates a basis for arguing that if there are no monopoly elements then regulation is not needed.

*B. Coupling Americans' false memory of regulated monopoly with Kahn's misframed economic analysis of regulation in telecommunications policy debate*

The historical inaccuracies embedded in Americans' false memory of regulated monopoly and Kahn's misframed economic analysis of regulation continue to be invoked to influence current telecommunications policy issues. Illustrative is a letter dated December 11, 2013, from fourteen economists to FCC Chairman Wheeler, stating "The economic evidence on this point is clear: in all but a few areas, communications networks no longer have the characteristics of natural monopolies, and should no longer be regulated as public utilities" (Atkinson, et al, 2013). They then summarize economic evidence as to the overall competitiveness and performance of the communications sector for purposes of discussing implications for policy related to regulation of IP networks and interconnection, network neutrality, and spectrum policy.

AT&T makes a similar argument in its petition to the FCC seeking a proceeding to consider regulatory experimentation with regard to the TDM-to-IP transition (*In the Matter of AT&T Petition*, 2012), as evidenced by assertions such as:

AT&T believes that this regulatory experiment will show that conventional public-utility-style regulation is no longer necessary or appropriate in the emerging all-IP ecosystem (pp. 6 & 22).

It makes no sense to treat ILECs as dominant providers in an all-IP broadband marketplace that other providers currently lead (p.6).

ILEC's remain subject to an array of monopoly-era regulatory obligations (p. 10).

...And by frequent use of the adjective "legacy" to describe historical rules, regulation, network, facilities, and services.

The historical inaccuracies are also influencing policymakers' perceptions of existing FCC authority. For example, in a letter to FCC Chairman Wheeler dated October 3, 2014, Representative Henry Waxman strongly supports a hybrid approach in the *Open Internet NPRM* (2014). Under a hybrid approach, the FCC would use a "combination of section 706 and Title II authority [to] establish a truly robust framework for open Internet protections that

will withstand judicial scrutiny.” In the context of describing a hybrid approach, Rep. Waxman recommends how the FCC should exercise its forbearance power under section 10.

If the FCC adopts a hybrid approach, I recommend that the agency simultaneously forbear from applying most of the provisions of Title II to broadband providers, including sections 201 and 202. Forbearing from these provisions will assure broadband providers that the FCC does not plan to regulate the rates of broadband Internet access service. It also allows the FCC to avoid the Title II precedents that were initially developed for regulation of telephone services. *One of the most common criticisms lodged against broadband reclassification is that the Title II provisions were developed to protect the public interest during monopoly-era regulation of phone services.* This criticism does not apply to the hybrid approach because this approach uses the modern regulatory authority of section 706, not Title II, as the basis for open Internet rules (p. 12, emphasis added).

The following discussion explains the significance of the italicized language. Rep. Waxman’s claim as to the permissible scope of forbearance contains a fundamental error, and the source of the error appears to arise from the continuing influence of the historical inaccuracies associated with monopoly regulation in the U.S.

Rep. Waxman’s fundamental error is his assertion that the FCC can forbear from sections 201 and 202. Sections 201 and 202 codify basic duties of common carriers (such as no unjust or unreasonable discrimination in charges, terms and conditions of service), and these common law obligations arose independent of market structure or the existence of monopoly (Cherry, 2010 & 2012). These obligations were codified by Congress in the Interstate Commerce Act of 1887 (ICA), initially applicable to railroads, based on the findings in the Cullom Report of (1886):<sup>5</sup> that the common law remedies were deemed inadequate; that competitive forces were insufficient to protect customers from abusive and discriminatory charges and practices; that the states lacked jurisdiction over interstate commerce; and that federal legislation was necessary to provide a uniform system of regulation (Cherry, 2012, pp. 12-14). Importantly, there was no finding of monopoly, but rather the finding that competitive forces and existing legal remedies were insufficient to protect customers from carriers’ abusive and discriminatory

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<sup>5</sup> In 1885, Congress created a special Senate Select Committee on Interstate Commerce to review the economic abuses of large corporations, particularly railroads. This Committee is known as the Cullom Committee, named after Sen. Cullom, and its report released in 1886 is known as the Cullom Report. The Cullom Report provides a comprehensive record of its investigation, and its recommendation for federal legislation was enacted as the Interstate Commerce Act of 1887.

charges and practices. In response, Congress created a statutory framework of common carriage, retaining the obligations that evolved under the common law but establishing a new system of legal enforcement. The ICA was amended in 1910 to apply to telegraphy and telephony in 1910; and the same obligations were then codified in sections 201 and 202 of the Communications Act of 1934, when jurisdiction over telegraphy and telephony was transferred from the ICC to the newly created FCC.

The forbearance power contained in section 10 of the Telecommunications Act of 1996 is an example of telecommunications regulation modified by deregulatory policy. The statutory criteria for granting forbearance under section 10(a) are restated below.

[T]he Commission shall forbear ... if the Commission determines that—

(1) enforcement of such regulation or provision is not necessary to ensure that the charges, practices, classifications, or regulations by, for, or in conjunction with that telecommunications carrier or telecommunications service are just and reasonable and are not unjustly or unreasonably discriminatory;

(2) enforcement of such regulation or provision is not necessary for the protection of consumers; and

(3) forbearance from applying such provision or regulation is consistent with the public interest.

Importantly, section 10(a)(1) and (2) state that the Commission must determine that *enforcement of such regulation or provision is not necessary* to ensure that charges, practices, classification or regulations related to telecommunications carriers or services are just and reasonable and not unjustly or unreasonably discriminatory, or to protect consumers. In other words, basic obligations found in sections 201 and 202 must still be met: the charges, practices, classification or regulations related to telecommunications carriers or services must still be just and reasonable and not unjustly or unreasonably discriminatory; and the customers are still to be protected. *It is the enforcement mechanism for ensuring that such obligations are met that changes* — refraining from the direct agency enforcement of regulations or provisions of the Communications Act.<sup>6</sup>

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<sup>6</sup> Moreover, the enforcement mechanism that may, upon FCC determination, be sufficient to replace direct agency enforcement is competition — reflecting a deregulatory policy perspective. This is clear from the language of section 10(a)(3) and 10(b). Section 10(a)(3) states that forbearance must be determined to be consistent with the public interest; and section 10(b) states that determination that forbearance will promote competition among telecommunications providers is a sufficient basis for finding that section 10(a)(3) is met.

Therefore, under forbearance the fundamental obligations of common carriers still must be met, but the enforcement mechanism is changed from direct agency regulation to competition only when competition is deemed sufficient for that purpose. Thus, properly understood, forbearance does not eliminate the fundamental obligations of common carriers reflected in sections 201 and 202 of the Communications Act, contrary to Rep. Waxman's assertion.

Rep. Waxman's own statements suggest the source of his fundamental error in interpreting forbearance under section 10. He frames his recommendation of a hybrid approach, which relies on Title II reclassification and an expansive scope of forbearance applicable to sections 201 and 202, as a response to the criticisms "that the Title II provisions were developed to protect the public interest during monopoly-era regulation of phone services". As stated, Waxman mistakenly associates even the basic common carrier obligations in sections 201 and 202 as Title II provisions that developed to protect the public interest during the monopoly-era regulation of phone services — and through forbearance, Waxman (erroneously) claims that such Title II obligations can be avoided. Yet, as previously discussed, the basic common carrier obligations reflected in sections 201 and 202 evolved independent of market structure; and section 10 by its own terms still requires these obligations to be met albeit through the enforcement mechanism of competition rather than direct agency regulation.

## **V. Conclusion**

The collective effect of the misuses of public utility and natural monopoly – by industry, scholars, and policymakers – is to mutilate the historical legacy of telecommunications policy evolution and misdirect future policy development. Under deregulatory policies, the policymakers' focus is diverted from the original policy goals underlying the duties and obligations of common carriers – including their statutory codification subject to commission oversight in response to the inadequacy of common law remedies given the rise of corporate (not monopoly) power. Instead, policymakers are encouraged to believe that competition among corporate broadband providers will sufficiently protect consumers' interests – a conclusion expressly rejected by Congress when the original federal statutory framework of common carriage was established in the Interstate Commerce Act of 1887.



To appreciate the potential, adverse consequences of misdirected policy inquiry based on public utility and natural monopoly, we need to consider *the policy questions that are not being asked* as further deregulatory policies are being pursued. Old policy problems are reemerging with the dismantling of regulatory governance that previously enabled the sustainability of critical infrastructures and protections for consumers (Cherry, 2008). New policy problems emerge by deregulatory policies that shift the boundaries between industry-specific regimes and general business regulatory regimes such as antitrust and consumer protection (Cherry, 2010b). We need to be vigilant to new problems that are created as bodies of law continue to develop.

## References

- Atkinson, Robert D., Caves, Kevin W., Crandall, Robert W., Crews, Wayne, Ehrlich, Everett, Eisenach, Jeffrey, Faulhaber, Gerald, Hahn, Robert W., Hassett, Kevin A., Pociask, Steve, Singer, Hal, Tardiff, Timothy J., Waverman, Leonard, and Weisman, Dennis L. (December 11, 2013). *Economic evidence on competition in communications markets and implications for key policy issues*. Letter to FCC Chairman Tom Wheeler.
- AT&T v. Concepcion*, 563 U.S. 321 (2011).
- Cherry, Barbara A. (2014). "Technology transitions within telecommunications networks: Lessons from U.S. v. Canadian policy experimentation under federalism." Manuscript under review, *Telecommunications Policy*.
- Cherry, Barbara A. (2013a). "Policymaking for the PSTN-to-IP transition within federalism: Lessons from U.S. v. Canadian experimentation." Paper presented at the ITS 24<sup>th</sup> European Regional Conference, Florence, Italy.
- Cherry, Barbara A. (2012). "Challenges of institutional governance for network infrastructures: Reinstitution and expansion of legal innovations." In *Regulation and Performance of Communication and Information Networks* (Gerald R. Faulhaber, Gary Madden, & Jeffrey Petchey, eds.). Northampton, MA: Edward Elgar Publishing.
- Cherry, Barbara A. (2010a). Legal opinion of Barbara A. Cherry, J.D., Ph.D in CRTC Telecom Notice 2010-43 – Obligation to Serve. Consumer Groups Response to Interrogatory, June 15, 2010 (Attachment file 20 July 2010), Telecom Notice of Consultation 2010-43, PIAC(TELUS)20May10-3 TNC 2010-43 (Attachment).
- Cherry, Barbara A. (2010b). "Consumer sovereignty: New boundaries for telecommunications and broadband access." *Telecommunications Policy*, 34, 11-22.
- Cherry, Barbara A. (2008). "Maintaining critical rules to enable sustainable communications infrastructures." *Georgia State U. L. Rev.*, 24(4), 947-975.
- Cherry, Barbara A. (2003). "Utilizing 'essentiality of access' analyses to mitigate risky, costly, and untimely government interventions in converging telecommunications technologies and markets." *CommLaw Conspectus*, 11, 251-275.
- DiLorenzo, Thomas J. (1996). "The myth of natural monopoly." *The Review of Austrian Economics*, 9, 43-58.

- Federal Communications Commission, *Technology Transitions Policy Task Force Seeks Comment on Potential Trials*, GN Docket No. 13-5 (released May 20, 2013).
- Goldberg, Victor (1976). "Regulation and administered contracts." *Bell Journal of Economics*, 7, 434-435.
- Gray, Horace M. (1940). "The passing of the public utility concept." *The Journal of Land and Public Utility Economics*, 16(1), 8-20.
- Hazlett, Thomas (1985). "The curious evolution of natural monopoly theory." In *Unnatural Monopolies: The Case for Deregulating Public Utilities* (Robert W. Poole, Ed.), pp. 1-25. Lexington, MA: Lexington Books.
- Hazlett, Thomas (1984). "Three essays on monopoly." PhD dissertation, University of California, Los Angeles.
- In the Matter of AT&T Petition to Launch a Proceeding Concerning the TDM-to-IP Transition, GN Docket No. 12-353, Federal Communications Commission (2012).
- In the Matter of Protecting and Promoting the Open Internet, GN Dkt. No. 14-28, Notice of Proposed Rulemaking, 29 FCC Rcd. 5561 (2014) ("*Open Internet NPRM*").
- Kahn, Alfred E. (1988). *The Economics of Regulation: Principles and Institutions*. Cambridge, MA: The MIT Press.
- Kearney, Joseph D., & Merrill, Thomas W. (1998). "The great transformation of regulated industries law," 98 *Columbia Law Review* 1323-1409.
- Mosca, Manuela (2008). "On the origins of the concept of natural monopoly: Economies of scale and competition." *European J. History of Economic Thought*, 15(2), 217-353.
- Marchand, Roland (1998). *Creating the corporate soul: The rise of public relations and corporate imagery in American big business*. Berkeley and Los Angeles, CA: University of California Press.
- Munn v. Illinois*, 94 U.S. 113 (1877).
- Nebbia v. New York*, 291 U.S. 502 (1934).
- Nelson, James R. (1966). "The role of competition in the regulated industries." *Antitrust Bulletin*, 11, 1-36.
- Phillips, Charles F. (1988). *The Regulation of Public Utilities: Theory and Practice*. Arlington, VA: Public Utilities Reports, Inc.
- Primeaux, Walter J. (1986). *Direct Electric Utility Competition: The Natural Monopoly Myth*. New York, NY: Praeger Publishers.
- Scherer, F.M. (1980). *Industrial Market Structure and Economic Performance*. Chicago, IL: Rand McNally.
- Sharkey, William W. (1982). *The Theory of Natural Monopoly*. New York, NY: Cambridge University Press.
- Spulber, Daniel F. (1989). *Regulation and Markets*. Cambridge, MA: The MIT Press.
- Waxman, Representative Henry (October 3, 2014). Letter to FCC Chairman Tom Wheeler.