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NETWORKS, ACCESS, AND "ESSENTIAL FACILITIES": FROM TERMINAL RAILROAD TO MICROSOFT

Marina Lao*

I. INTRODUCTION

MICROSOFT'S well-publicized legal troubles with antitrust authorities, both in the United States and in Europe,1 have focused attention on interoperability2 and access issues that often arise in high technology network industries. Because of the importance of these industries in the United States and global economies,3 antitrust problems arising from them have particular economic and social impact. This reality has re-ignited a simmering debate on "essential facilities," a doctrine that has had a long, if somewhat controversial, history in U.S. antitrust law.

Generally seen as originating in the Supreme Court's 1912 Terminal Railroad4 decision, the essential facilities doctrine holds that a dominant firm's refusal to grant access to a facility it controls, which is necessary for competition and infeasible to replicate, may give rise to antitrust liability.5 In the days of Terminal Railroad, the denial of access usually pertained to a physical asset, such as railroad bridges or pipelines. But the same legal and economic principles are equally applicable even if the "facility" is information or some other intangible asset. Thus, the doctrine can also be effective in redressing competitive problems caused by the

* Professor of Law, Seton Hall University School of Law. Email: Marina.Lao@shu.edu. I thank Professor Paul Rogers and the SMU Law Review for inviting me to participate in this symposium. I am also indebted to Charles Sullivan for his always thoughtful comments and insights and to Brandon Peene (Seton Hall '10) for his superb research assistance.


5. See infra notes 60-61 and accompanying text.
lack of access or interoperability in modern network industries.6

Access issues may arise in modern networks when monopolists controlling critical technical information refuse to license that information to competitors, usually in secondary (or complementary) markets.7 This deprives consumers of some of the positive "network effects," or demand-side economies of scale, often generated by networks.8 They also foreclose competition in the complements, leaving consumers with little choice but to use the monopolist's complement.9

Few would disagree that this outcome is harmful to consumers. The difficult issue, though, is whether there is a principled and theoretically sound basis for antitrust intervention. I suggest that there is—the essential facilities doctrine, cautiously applied. The doctrine has endured harsh criticism from commentators for years,10 though a handful of strong dissenting voices have recently been heard.11 The Supreme Court has also made a point of diminishing the legitimacy of the doctrine in dicta in 2004.12

Critics contend, in part, that the doctrine is not theoretically grounded and lacks a consistent rationale.13 An examination of the key essential facilities cases in U.S. antitrust jurisprudence suggests, however, that this critique is undeserved. Though these cases are somewhat undertheorized, they are in fact based on sound, if unarticulated, principles.14

6. See infra Part IV.
7. See infra Part II.
8. See infra notes 30-38 and accompanying text.
9. See infra notes 39-41 and accompanying text.
12. See Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398, 410-11 (2004) (referring to the essential facilities doctrine as having been "crafted by some lower courts," and claiming that the Supreme Court has "never recognized such a doctrine, and we find no need either to recognize it or to repudiate it").
13. See supra note 10; see also infra notes 84-86 and accompanying text.
14. See infra Parts III.A and III.B.
Their outcomes tend to show that where a facility has natural monopoly characteristics or strong network effects and access creates or facilitates competition in a necessity, courts have generally applied the doctrine.\textsuperscript{15} When those features are missing, they have rejected it. In other words, contrary to general perception, the decisions can be viewed as rooted in principles that are not only defensible, but eminently sensible.

These same principles can apply equally well to cases involving denial of access to information needed for interoperability, so as to distinguish between those cases for which application of the doctrine would be proper and those for which it would not.\textsuperscript{16} This method would be more effective than treating refusals to supply interoperability information as a separate category of conduct, as the European Commission seems to recommend,\textsuperscript{17} since incompatibility does not cause similar consumer or economic effects in \textit{all} markets. I will draw on the familiar stories of Microsoft's antitrust problems in Europe and Apple's iPod/iTunes controversy to illustrate this point.\textsuperscript{18}

In addition to the contention that the essential facilities doctrine is theoretically infirm, there are two other main criticisms of the doctrine that this Article will address: first, that compulsory access would not improve consumer welfare because the "harm" it seeks to remedy—monopoly leveraging—has no economic significance; and second, that application of the doctrine deters innovation which is considered particularly problematic in the intellectual property area.\textsuperscript{19}

Part II below reviews the importance of modern day network industries, their defining characteristics, and their antitrust implications with respect to interoperability and access issues. It suggests that the traditional essential facilities doctrine lends itself well to addressing these issues in limited circumstances. Parts III.A and III.B rebut the notion that the doctrine lacks theoretical grounding by revisiting the traditional U.S. essential facilities cases to identify their common, if unarticulated, underlying principles. Part III.C discusses the status of U.S. law on the applicability of the doctrine to intellectual property rights. In Part IV, lessons drawn from the traditional essential facilities cases are applied to interoperability issues found in modern day network industries, focusing on the E.U. case against Microsoft and the iPod/iTunes controversy as illustrations. Finally, Part V addresses some of the objections raised about the doctrine.

\textsuperscript{15} \textit{See infra} Part III.B.
\textsuperscript{16} \textit{See infra} Part IV.
\textsuperscript{17} \textit{See} \textit{European Comm'n, DG Competition Discussion Paper on the Application of Article 82 of the Treaty to Exclusionary Abuses} § 9.2.3 (2005), \textit{available at} \url{http://ec.europa.eu/competition/antitrust/art82/discpaper2005.pdf} [hereinafter EC Discussion Paper]; \textit{see also infra} note 185.
\textsuperscript{18} \textit{See infra} Parts IV.A and IV.B.
\textsuperscript{19} \textit{See infra} Part V.A and V.B.
II. NETWORK INDUSTRIES AND ANTITRUST

The central role of network industries in today's economy cannot be overstated. High technology industries are the engines of growth in the United States and the developed world,\(^ {20}\) and many such industries, such as telecommunications, computers, and the Internet, are based on networks or have network-like properties.\(^ {21}\) Other key industries based on networks also often provide the infrastructure or other necessities in our modern society.\(^ {22}\) A few obvious examples include transportation systems (for example, railroads, airlines, subways); banking and finance (for example, ATMs and credit/debit card systems); news and entertainment (for example, broadcasting and cable TV), basic public services (for example, electricity generation and distribution), and others.\(^ {23}\) Given the importance of networks to the fabric of society, competition problems arising in them can have extensive economic and social consequences.

The term "network" essentially describes a system made up of complementary "nodes" and "links," so that goods or services delivered by the system require the use of two or more network components.\(^ {24}\) The defining characteristic of network industries is the increasing value of their products to users as the number of users increases, a phenomenon called "network effects" or demand-side economies of scale.\(^ {25}\) Network effects can arise directly or indirectly.\(^ {26}\) Direct effects refer to the increased util-

\(^ {20}\) See supra note 3.


\(^ {22}\) I use the term "infrastructure" in its ordinary dictionary meaning, to refer to "the underlying foundation or basic framework" of a society, Merriam-Webster Online Dictionary, http://www.merriam-webster.com/dictionary/infrastructure (last visited Feb. 20, 2009), and not as it was used in Professors Brett Frischmann and Spencer Waller's pioneering work on "infrastructure theory." See Frischmann & Waller, supra note 11, at 11.

\(^ {23}\) See Economides, supra note 21, at 469.

\(^ {24}\) See Nicholas Economides, The Economics of Networks, 14 INT'L J. INDUS. ORG. 673, 673-74 (1996) ("Formally, networks are composed of links that connect nodes. It is inherent in the structure of a network that many components of a network are required for the provision of a typical service. Thus, network components are complementary to each other.").

\(^ {25}\) See Economides, supra note 21, at 472 ("A common and defining feature of network industries is the fact that they exhibit increasing returns to scale in consumption, commonly called network effects. ... A market exhibits network effects (or network externalities) when the value to a buyer of an extra unit is higher when more units are sold, everything else being equal."); Michael L. Katz & Carl Shapiro, Network Externalities, Competition, and Compatibility, 75 AM. ECON. REV. 424, 424 (1985) (providing, as an example, a telephone and explaining that the utility of a phone depends on the number of other houses and businesses that have become part of the telephone network); Mark A. Lemley & David McGowan, Legal Implications of Network Economic Effects, 86 CAL. L. REV. 479, 488-500 (1998) (viewing networks as falling on a continuum that can be divided into what the authors describe as actual networks, virtual networks, and simple positive feedback phenomena).

\(^ {26}\) See, e.g., Katz & Shapiro, supra note 25, at 424.
ity that comes directly from having a greater number of interconnections as a result of more users.\textsuperscript{27} The more people who own telephones or fax machines, for example, the more valuable my telephone or fax machine is to me as I can use it to reach more people. Indirect network effects describe the increased value derived from having more supporting complements developed for that product as the number of users increases.\textsuperscript{28} The Windows operating system that runs my computer, for example, has more value to me (independent of its intrinsic value) as more people use it, because more applications are then written for it, which attracts even more users and so on.\textsuperscript{29}

Network effects, then, can be efficient because they reflect economies of scale on the demand side—\textsuperscript{30}—the greater the number of users in a network, the greater the benefits every user receives. However, since the key reason for network effects is complementarity,\textsuperscript{31} it logically follows that these positive effects can be realized only to the extent that there is interoperability. For complex products, interoperability usually requires conformance to a standard that allows the various system components and complements to effectively work together.\textsuperscript{32}

All this has implications for antitrust law. Because of network effects, markets tend to “tip” toward a “winner-take-all” (or “winner-take-most”) scenario, where a single standard emerges to control the market,\textsuperscript{33} just as Windows became the de facto operating system standard for PCs.\textsuperscript{34} If this product or standard is a critical link for complements, then a monopolist controlling the link has the ability to foreclose competition

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\textsuperscript{27} See Economides, \textit{supra} note 21, at 472 (“In a traditional network, network externalities arise because a typical subscriber can reach more subscribers in a larger network.”); Lemley & McGowan, \textit{supra} note 25, at 488-89.

\textsuperscript{28} See \textit{Economides}, \textit{supra} note 21, at 475 (“An extra customer yields indirect externalities to other customers, by increasing the demand for components of types A and B.”); David J. Teece & Mary Coleman, \textit{The Meaning of Monopoly: Antitrust Analysis in High-Technology Industries}, 43 \textit{ANTITRUST BULL.} 801, 814 (1998) (“[T]he more users of a given [computer operating] platform, the more complementary goods that will likely be supplied to that platform. This will lower the cost or increase the value of the platform.”).

\textsuperscript{29} See United States v. Microsoft Corp., 84 F. Supp. 2d 9, 20 (D.D.C. 1999) (stating that Windows enjoys positive network effects because its large installed base encourages independent software vendors to write applications for Windows, making it even more attractive to consumers); see also Lemley & McGowan, \textit{supra} note 25, at 491-94 (discussing operating systems and other examples of indirect network effects, or virtual networks); Gregory J. Werden, \textit{Network Effects and Conditions of Entry: Lessons from the Microsoft Case}, 69 \textit{ANTITRUST L.J.} 87, 93-94 (2001).

\textsuperscript{30} Economists often describe network effects as exhibiting “increasing returns to scale in production.” See Economides, \textit{supra} note 21, at 471.

\textsuperscript{31} Id. at 474 (“The key reason for the appearance of network externalities is the complementarity among network components.”).

\textsuperscript{32} See id. at 480. A familiar example involves software application programs. Software applications must be written to the “application program interfaces” exposed by Windows to be able to communicate its function commands to the operating system (to work). See United States v. Microsoft Corp., 253 F.3d 34, 53 (D.C. Cir. 2001).

\textsuperscript{33} See CARL SHAPIRO & HAL R. VARIAN, \textit{INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY} 175-76 (1999) (explaining that when multiple firms compete in a market where there is strong positive feedback, “the strong get stronger and the weak get weaker,” and the market tends to “tip” in favor of one player).

\textsuperscript{34} See Microsoft, 84 F. Supp. 2d at 13.
in the complements by denying access to the link. This can be done by a straightforward refusal to interconnect if actual interconnection is required, such as where a local telephone monopolist refuses to connect long distance competitors to its local "switch," thereby preventing the completion of long distance calls.\textsuperscript{35} More often, though, access is denied through the creation of a proprietary interface and the refusal by the monopolist to disclose technical information regarding that interface to rivals.\textsuperscript{36} Without that information, rivals are unable to ensure the interoperability of their complements with the monopolist's primary product or component.\textsuperscript{37} This, in turn, enables the monopolist to leverage its monopoly power in one market into secondary markets.\textsuperscript{38}

A decision by a monopolist to withhold interoperability information, then, can have significant anticompetitive effects. Because a larger network creates greater network effects, a monopolist's choice to exclude rivals and limit the network by preventing interoperability essentially reduces the demand-side economies of scale that consumers would otherwise enjoy.\textsuperscript{39} Such a decision to deny access can also impede innovation and competition in the complementary markets, as rivals lack the necessary input—interoperability information—to create a viable alternative complement.\textsuperscript{40} Combined with a closed network system, network effects can, therefore, effectively create or reinforce existing entry barriers, insulate the monopolist from competition, and lock consumers into the existing technology,\textsuperscript{41} at least until a far superior product is developed that can overcome these significant entry barriers.

From an economic perspective, this is clearly not an optimal outcome. Consumer welfare would seem to be better served by a system of open standards and full interoperability, assuming that reining in the dominant firm would not so chill innovation as to result in a net welfare loss, as some fear.\textsuperscript{42} Ideally, the law should intervene, cautiously and in limited

\begin{itemize}
  \item \textsuperscript{35} See, e.g., MCI Commc'ns Corp. v. AT&T, 708 F.2d 1081 (7th Cir. 1983); see also infra notes 55-59 and accompanying text.
  \item \textsuperscript{36} See, e.g., CFI Microsoft Judgment, supra note 1.
  \item \textsuperscript{37} See id. ¶ 58.
  \item \textsuperscript{38} See id. ¶ 67.
  \item \textsuperscript{39} See Economides, supra note 21, at 480 (explaining that "[d]ifferent firms conforming to the same technical standard can create a larger network effect," but a firm choosing incompatibility would keep all the network effects, which would be smaller, to itself); John E. Kwoka, Networks and Natural Monopoly, in NETWORK ACCESS, REGULATION AND ANTITRUST 19-20 (Diana Moss ed., 2005) (arguing that the division of consumers between two or more networks may reduce the total demand-side effects for consumers).
  \item \textsuperscript{41} See CFI Microsoft Judgment, supra note 1, ¶¶ 649-658; see also Carl Shapiro, Exclusivity in Network Industries, 7 GEO. MASON L. REV. 673, 675 (1999).
  \item \textsuperscript{42} See, e.g., AREEDA & HOVENKAMP, supra note 10, ¶ 773a (expressing the concern that decreasing the monopolist's profit by forced sharing may decrease the \textit{ex ante} incentive to invest and chill innovation); Mats A. Bergman, \textit{When Should an Incumbent Be Obliged to Share Its Infrastructure with an Entrant Under the General Competition Rules?}, 5 J. IND. COMP. & TRADE 5, 19-20 (2005).
\end{itemize}
cases, to prevent a monopolist from using its control over interoperability information to impair competition and hurt consumers in secondary markets by refusing to license or disclose that information. The question is whether there is a sound conceptual underpinning for an antitrust solution.

I believe there is. Despite the ridicule that has been heaped on it in recent years by the Supreme Court and many commentators, the essential facilities doctrine can be a useful tool in ensuring open access and interoperability. A core critique of the doctrine is that it lacks a sound theoretical basis. A re-examination of the historical cases reveals, however, that this criticism is unwarranted or, at least, exaggerated. Common themes do underlie and explain these seemingly ad hoc decisions, and can provide a principled basis for applying the doctrine to resolve access problems recurring in today's network industries.

III. THE ESSENTIAL FACILITIES DOCTRINE

A. KEY DECISIONS AND GENERAL STATUS OF DOCTRINE IN U.S. ANTITRUST LAW

The U.S. Supreme Court has never explicitly invoked the essential facilities doctrine by name, but three cases are generally cited as having applied it. In all three cases, the Court decided that a defendant's denial of access to a facility that it controlled and that was necessary for competition violated the antitrust laws. In the 1912 Terminal Railroad decision, the Court required a group of railroad companies that jointly owned the only railroad bridge across the Mississippi River leading into and out of St. Louis to grant competing railroads access to the bridge on equal and non-discriminatory terms. In 1945 in Associated Press, the Court directed a news network to open its membership on non-discriminatory terms to rival newspapers that competed with the organization's

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43. See Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398, 410-11 (2004) (dissmissively referring to the essential facilities doctrine as a creation of the lower courts and denying that the Supreme Court had ever recognized it).
44. See supra note 10.
45. See, e.g., Areeda, supra note 10, at 841 (criticizing the lack of consistent rationale for the doctrine and describing it as "less a doctrine than an epithet"); Lipsky & Sidak, supra note 10, at 1248 (complaining of the lack of coherent rationale for the doctrine); Daniel E. Troy, Note, Unclogging the Bottleneck: A New Essential Facilities Doctrine, 83 COLUM. L. REV. 441, 444 (1983) (contending that the doctrine lacks principled consistency).
46. See infra Part III-B.
47. See Trinko, 540 U.S. at 410-11. The fact that no Supreme Court case had invoked the doctrine by name probably gave the Court the opportunity to distance itself from the doctrine in Trinko.
48. See Areeda, supra note 10, at 841-53 (discussing the Supreme Court cases out of which the essential facilities doctrine is said to arise); Frischmann & Waller, supra note 11, at 6-8 (same); Waller, supra note 11, at 359-66 (same); see also infra notes 49-54 and accompanying text.
50. Id. at 411-13.
existing members.\textsuperscript{52} In \textit{Otter Tail},\textsuperscript{53} the Supreme Court condemned as an antitrust violation a regulated power company's refusal to "wheel" electrical power from its competitors through its transmission lines to municipalities that wanted to buy from the lower priced power companies.\textsuperscript{54}

The standard statement of the doctrine, however, was set forth, not in these three Supreme Court decisions, but in the Seventh Circuit's 1983 \textit{MCI}\textsuperscript{55} opinion. The case involved MCI's attempt to compete with AT&T in the long-distance telephone market prior to the 1984 divestiture of the old AT&T Bell System.\textsuperscript{56} At that time, AT&T had monopolies in both long-distance and local telephone service markets but, with the development of new technologies, competition in the long-distance market became possible.\textsuperscript{57} MCI had the requisite technology but, in order to successfully offer long distance service, it had to be able to interconnect with AT&T's "local loop" or "last mile" of wire to reach the millions of households and commercial establishments with telephones.\textsuperscript{58} MCI alleged that AT&T's unjustified refusal to provide the necessary interconnection for its long distance calls violated Section 2 of the Sherman Act.\textsuperscript{59}

In affirming liability based on the essential facilities doctrine, the Seventh Circuit set forth its conditions: a showing that 1) the monopolist controls access to an essential facility; 2) the facility cannot be reasonably duplicated; 3) the monopolist has denied access; and 4) it was feasible for the monopolist to share the facility.\textsuperscript{60} Implicit in the opinion was an additional condition that other cases later made explicit: that the monopolist lacked legitimate justification for its refusal to provide access.\textsuperscript{61}

Following \textit{MCI}, lower courts widely endorsed the doctrine\textsuperscript{62} but actual plaintiff verdicts were rare.\textsuperscript{63} Of the handful of lower court cases that actually found for the plaintiff based on the doctrine, the best known and most controversial is probably the 1984 Tenth Circuit \textit{Aspen Skiing} decision.\textsuperscript{64} In \textit{Aspen Skiing}, the defendant controlled three of four ski mountains in Aspen, Colorado, and the plaintiff controlled the fourth.\textsuperscript{65} The

\begin{itemize}
\item \textsuperscript{52} \textit{Id.} at 18-19.
\item \textsuperscript{53} \textit{See generally} Otter Tail Power Co. v. United States, 410 U.S. 366 (1973).
\item \textsuperscript{54} \textit{Id.} at 382.
\item \textsuperscript{55} \textit{See generally} MCI Commc'ns Corp. v. AT&T, 708 F.2d 1081 (7th Cir.), \textit{cert. denied}, 464 U.S. 891 (1983).
\item \textsuperscript{56} \textit{Id.} at 1093-97.
\item \textsuperscript{57} \textit{Id.} at 1092-94.
\item \textsuperscript{58} \textit{See id.} at 1132.
\item \textsuperscript{59} \textit{Id.}
\item \textsuperscript{60} \textit{Id.} at 1132-33.
\item \textsuperscript{61} \textit{See, e.g.,} Morris Commc'ns Corp. v. PGA Tour, Inc., 364 F.3d 1288, 1295 (11th Cir. 2004); \textit{United Asset Coverage, Inc. v. Avaya, Inc.}, 409 F. Supp. 2d 1008, 1047 (N.D. Ill. 2006).
\item \textsuperscript{62} \textit{See 1 ABA SECTION OF ANITTRUST LAW, ANITTRUST LAW DEVELOPMENTS 261-66} (6th ed. 2007).
\item \textsuperscript{63} \textit{See Waller, supra} note 11, at 371 (showing that case examples offered to criticize the doctrine were all won by the defendant except for \textit{Aspen Skiing}).
\item \textsuperscript{64} \textit{Aspen Skiing Co. v. Aspen Highlands Skiing Corp.}, 738 F.2d 1509, 1519-22 (10th Cir. 1984), \textit{aff'd on other grounds}, 472 U.S. 585, 611 (1985).
\item \textsuperscript{65} \textit{Aspen Skiing}, 738 F.2d at 1512.
\end{itemize}
two had previously offered a popular multi-day joint ticket for all four mountains, but the defendant withdrew its participation without a credible business justification. Applying the MCI test, the Tenth Circuit upheld a jury verdict against the defendant based on the essential facilities doctrine. It found that the plaintiff had established 1) control of an essential facility by the defendant, a monopolist; 2) the inability to duplicate the facility because of environmental restrictions on developing new ski slopes in Aspen; 3) denial of access, which was undisputed; and 4) feasibility of access, which was evidenced by the success of the previous joint ticket. Though the Supreme Court affirmed, it did so on other grounds, specifically declining to address the essential facilities doctrine. Lower courts have since construed the doctrine very narrowly.

In 2004, the Supreme Court expressed its deep skepticism of the doctrine in Trinko. The critical tone of the Court's comments, though arguably merely dicta, made abundantly clear that the current Supreme Court does not look favorably on the doctrine. Trinko involved a class action brought against a local telephone monopolist, Verizon, alleging an antitrust violation based on Verizon's failure to adequately share its network with rivals, as mandated by the Telecommunications Act of 1996. The Federal Communications Commission had already found Verizon in breach of its statutory obligations and had imposed a fine. The Court, however, held that noncompliance with the Telecommunications Act did not constitute a valid basis for antitrust liability and that the defendant had no general duty to deal with rivals with whom it did not have a prior course of dealing.

As to the essential facilities doctrine, the Court made a point of disclaiming any involvement in its development saying that it was merely a

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66. Id.
67. Id. at 1522.
68. Id. at 1519-22.
69. Id. at 1520-21. For unknown reasons, the defendant did not appeal the lower court finding that downhill skiing in Aspen constituted the relevant market. See Aspen Skiing, 472 U.S. at 596 n.20, 600 n.26. Under this narrow definition, ski resorts outside of Aspen were excluded from the geographic market, which allowed the defendant to be characterized as a monopolist because it controlled three of the four ski mountains in Aspen. If the relevant market is in fact broader than the Aspen area, then the defendant would most likely not have been considered a monopolist.
70. Aspen Skiing, 738 F.2d at 1521.
73. See id. at 410 (deciding the case on other grounds).
74. See Frischmann & Waller, supra note 11, at 9 (characterizing Trinko as representing "the near extinction of the doctrine in the Supreme Court"); HERBERT HOVENKAMP, THE ANTITRUST ENTERPRISE: PRINCIPLE AND EXECUTION 248 (2005) ("While not stating it in so many words, Trinko may effectively have brought the era of antitrust essential facilities claims to an end.").
75. Trinko, 540 U.S. at 402, 404.
76. Id. at 413.
77. Id. at 407.
78. Id. at 410.
creation of the lower courts.\textsuperscript{79} In essence, it denied that \textit{Terminal Railroad, Associated Press}, and \textit{Otter Tail} were essential facilities cases, presumably because the opinions neither evoked the doctrine by name nor expressed a clear standard of liability. The Court then declined to either recognize or repudiate the doctrine\textsuperscript{80} on the ground that, even assuming its validity, it would be applicable only when there is \textit{no} means of access.\textsuperscript{81} That was not the case in \textit{Trinko}, so said the Court, since the Telecommunications Act mandated access.\textsuperscript{82} The Court's dismissive comments suggest that the status of the doctrine is precarious even when intellectual property rights are not involved.

B. \textbf{Revisiting the Cases: Identifying Common Principles}

The Court's reaction in \textit{Trinko} is consistent with the withering criticism to which the doctrine has been subjected in recent years.\textsuperscript{83} It has been said that no sound theoretical basis exists for the doctrine—"anything one has that another wants may be called an 'essential facility.'"\textsuperscript{84} The late Phillip Areeda famously described essential facilities as "less a doctrine than an epithet, indicating some exception to the right to keep one's creations to oneself, but not telling us what those exceptions are."\textsuperscript{85} Herbert Hovenkamp said that the doctrine is "harmful" and "unnecessary" and "should be abandoned"\textsuperscript{86} or at least very narrowly circumscribed.\textsuperscript{87}

This scathing assessment is overstated. While essential facilities cases may indeed be undertheorized, even critics of the doctrine generally do not disagree with their outcomes.\textsuperscript{88} It is true that plaintiffs have occasionally made absurd essential facility claims,\textsuperscript{89} but courts have usually quickly rejected them.\textsuperscript{90} On the rare occasions where lower courts have

\begin{itemize}
  \item \textsuperscript{79} \textit{Id.} (referring to the doctrine as having been "crafted by some lower courts").
  \item \textsuperscript{80} \textit{Id.} at 411 ("We have never recognized such a doctrine . . . and we find no need either to recognize it or to repudiate it here.").
  \item \textsuperscript{81} \textit{Id.}
  \item \textsuperscript{82} \textit{Id.}
  \item \textsuperscript{83} See supra note 10.
  \item \textsuperscript{84} Areeda, supra note 10, at 844.
  \item \textsuperscript{85} \textit{Id.} at 841.
  \item \textsuperscript{86} AREEDA \& HOVENKAMP, supra note 10, \S\ 771c.
  \item \textsuperscript{87} \textit{Id.} A few scholars, however, disagree. Frischmann \& Waller, supra note 11, at 4. See generally Waller, supra note 11 (rebutting Areeda's famous critique of the essential facilities doctrine). In a recent seminal article, Professors Brett Frischmann and Spencer Waller persuasively argued for a revitalization of the doctrine based on an "infrastructural theory." Frischmann \& Waller, supra note 11, at 4. They would apply the theory, assuming other antitrust requirements are met, in cases where a monopolist refuses access to "infrastructure," which they define as including not only traditional infrastructure such as "bridges, highways, ports, electric power grids, and telephone networks," but also "ideas, the Internet, and other assets which are vital inputs to the production of wealth at later stages of production on a basis disproportionate for their actual use." \textit{Id.}
  \item \textsuperscript{88} See, \textit{e.g.}, Areeda, supra note 10, at 842-43 (approving of the Court's decision in \textit{Terminal Railroad} and finding the \textit{Associated Press} decision defensible); \textit{id.} at 847-48 (endorse the outcome of \textit{Otter Tail}).
  \item \textsuperscript{89} See \textit{id.} at 843-44 (describing several such cases).
  \item \textsuperscript{90} See Waller, supra note 11, at 371 (responding to Areeda's critique by showing that, in all the cases Areeda cited, only one case, \textit{Aspen Skiing}, resulted in a plaintiff verdict).
\end{itemize}
found liability based on the doctrine in questionable cases, those decisions were almost always overturned or affirmed on other grounds.91 Courts, then, seem to have generally gotten the cases right.

A close look at the cases suggests that a few common principles, in fact, underlie the seemingly ad hoc rulings and explain their essence. A common feature in the key essential facilities cases is that they all involved networks and/or natural monopolies that provide necessities or form part of society's infrastructure.92 As will be discussed in more detail, this suggests that courts have tended to apply the doctrine only when denial of access would likely be socially wasteful, would severely inhibit innovation and competition and would likely have effects that extend beyond harm to competition in the immediate affected market.

1. Natural Monopolies and Networks

Except for Aspen Skiing,93 the "essential facilities" in all the key cases previously discussed had natural monopoly characteristics or were a critical part of a network, or both.94 By definition, a facility with natural monopoly properties means that it entails high fixed costs and low marginal costs making duplication of the facility infeasible, inefficient or socially wasteful.95 However, where the natural monopoly facility is part of a network system, the entire system may not be a natural monopoly,96 which means that competition may be possible and desirable in other parts of the enterprise. For example, while railroad bridges or railroad tracks may be natural monopolies, railroad service in some markets is not—we can have more than one railroad providing train service through a state (for example, New Jersey Transit trains and Amtrak in New Jersey; Metro North trains and Amtrak in Connecticut).97 At the same time, it would be socially wasteful for them not to share the same railroad tracks.98 It is in these circumstances that courts could most reasonably apply the essential facilities doctrine.99 A review of the relevant case law confirms that is precisely what courts have done, though they may not have explained their decisions in that fashion.

91. See infra notes 139-142 and accompanying text.
92. See infra notes 93-152 and accompanying text.
94. See supra note 21 (definition of network).
96. See id. at 124 (explaining that "certain portions of an industry—those subject to decreasing costs—may be natural monopolies while other portions may not").
97. Id. at 125.
98. Id. at 122.
99. Historically, firms with a "virtual monopoly" were required under English common law and U.S. courts to deal with everyone on reasonable and non-discriminatory terms. See Bruce Wyman, The Law of Public Callings as a Solution of the Trust Problem, 17 HARV. L. REV. 156, 166 (1904).
For example, the railroad bridge over the Mississippi River in *Terminal Railroad* was a natural monopoly in that it enjoyed large economies of scale—very high fixed costs and minimal marginal costs.\(^{100}\) Duplicating it, even if feasible, would have been economically inefficient and socially wasteful.\(^{101}\) Yet, every train that hoped to pass through St. Louis to and from different parts of the country had to cross the Mississippi River.\(^{102}\) There was no evidence that the entire rail system was a natural monopoly and that railway traffic was insufficient to support competition.\(^{103}\) Denial of access to the bridge, however, prevented that competition.\(^{104}\) Therefore, it was unsurprising that the Court in *Terminal Railroad* directed the defendant to grant competing railroads equal and non-discriminatory access to the railroad bridge and related facilities.\(^{105}\)

*Otter Tail*\(^{106}\) and *MCI*,\(^{107}\) likewise, involved facilities with natural monopoly characteristics that were part of networks providing infrastructural elements of our economy. For *Otter Tail*, the network of transmission lines carrying electricity from the generation source to homes, businesses, and other establishments was a natural monopoly because building and maintaining these lines obviously entailed high fixed costs, while the marginal cost of transmission, once the lines were installed, was low.\(^{108}\) And duplicating transmission lines simply made no economic sense.\(^{109}\) Electric power *generation*, however, was not a natural monopoly, and could support competition.\(^{110}\) To be viable, though, a competing electric power company had to be able to distribute the power it generated to the ultimate customers, and it can only be done via transmission lines.\(^{111}\) If duplicating the lines is economically infeasible or socially wasteful, but competition in the provision of power is beneficial, it follows that compulsory sharing of the lines with rivals on non-discriminatory terms is economically efficient and socially desirable.\(^{112}\) Again, in this context, it was unsurprising that the Supreme Court ordered the regulated monopolist power company to allow its rival to transmit power through the monopolist's transmission lines.\(^{113}\)

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100. United States v. Terminal R.R. Ass'n of St. Louis, 224 U.S. 383, 395-97 (1912). In fact, bridges are usually considered the classic example of a natural monopoly.
101. *Id.* at 397.
102. *Id.*
103. *Id.* at 401-02.
104. *Id.*
109. *Id.*
111. *Id.* at 74.
112. *Id.* at 87.
The same analysis applies to MCI. The "local loop" or "last mile" of telephone wires leading to the millions of homes and businesses with telephone service is a natural monopoly. It is not cost-effective to duplicate them because of the high fixed costs of installation and the low marginal costs of transmitting the last additional call. However, these local loops are part of a larger telecommunications system, and competition became possible in other parts of the network—specifically, in long-distance telephone service—in the early 1980s because of the development of new technologies. In order for competition to emerge, however, potential long-distance providers such as MCI had to be able to connect to the switch linking to the local loop, which was controlled by the then-monopolist, AT&T. The Seventh Circuit's decision to require AT&T to provide interconnection to MCI, given these facts, seemed to be economically efficient and good for consumers.

Although Associated Press initially may not seem to fit the Terminal Railroad, Otter Tail, and MCI mode, there are basic similarities. The Associated Press was essentially a network of over a thousand newspapers that pooled their efforts to produce and distribute news. Each newspaper contributed its local stories to the Associated Press which then culled, aggregated, and distributed them to all members, along with the international news it gathered from other sources. The organization showed significant network effects in that membership became more valuable as more newspapers joined the network. News would be forthcoming from more sources in more communities, and Associated Press news would reach additional communities, which could attract more advertisers.

Though the Associated Press was not a traditional natural monopoly, the presence of network effects meant that the market tended toward winner-take-most, which made effective competition from a competing news network less likely at least in that era. This, in turn, meant that membership in the Associated Press was essential to competition in newspaper markets. Where network effects are important, as in Associated Press, access would provide social benefits in excess of private benefits and, therefore, is socially desirable. Viewed from this perspective, the

114. See generally MCI, 708 F.2d 1081.
115. See Verizon Commc'ns, Inc. v. FCC, 535 U.S. 467, 489-90 (2002) (noting, in another telecommunications case, the difficulty of duplicating the local telephone network, i.e., the "local loop" or "last mile" of wire to homes and other establishments, and the "almost insurmountable competitive advantage" it gives to the incumbent monopolist).
116. See MCI, 708 F.2d at 1132-33.
120. MCI, 708 F.2d 1081.
122. See id. at 4.
123. See supra notes 25-39 and accompanying text.
125. See id. at 1.
Supreme Court’s decision in Associated Press fits in nicely with Terminal Railroad, Otter Tail, and MCI.

Of the well-known essential facilities cases, only the Tenth Circuit’s decision in Aspen Skiing, subsequently affirmed by the Supreme Court on other grounds, is truly controversial. It is instructive that it is also the only important case that did not involve a network or have natural monopoly characteristics. With a natural monopoly or a network, there is a theoretically sound rationale for requiring access. Compelling a dominant firm to share a facility with natural monopoly characteristics with rivals gives us the benefit of competition, usually in a downstream or adjacent market, without the attendant social waste and inefficiency involved in the rival’s duplicating the facility, assuming that duplication is even feasible. Granting access in a network generally produces social benefits that are disproportionately greater than the private benefits, because of positive network externalities.

Aspen Skiing is controversial largely because the case lacked these characteristics and, consequently, application of the doctrine seemed unmoored to theory. With Aspen Skiing, compelling the defendant to share its “facility” with its smaller competitor would undoubtedly benefit Aspen skiers who prefer the convenience of, and the choice made possible by, a single multi-day joint ticket. But a coherent principle for invoking the doctrine was noticeably missing. True, the defendant controlled three of the four ski mountains in Aspen; regulatory restrictions prohibited the development of a new ski mountain there; the plaintiff needed access to the “facility” to be a viable competitor; and access was feasible as evidenced by the previous, immensely successful multi-mountain, multi-day ticket. Thus, under the MCI test, the Tenth Circuit’s reliance on the doctrine was probably defensible. But one does not get a sense of what fundamentally made the facility essential, or even what constituted the essential facility—the ski mountains or the joint ticket? Criticism of the doctrine as it was applied by the Tenth Circuit thus seems justified. And, the Supreme Court was probably wise to sidestep the doctrine and affirm on other grounds.

As was the situation in Aspen Skiing, lower court cases that have rejected the essential facilities doctrine usually had no natural monopoly

126. Id.
129. Otter Tail Power Co. v. United States, 708 F.2d 1081 (7th Cir. 1983).
130. MCI Comm’ns Corp. v. AT & T, Aspen Highlands Skiing Corp. v. Aspen Skiing Co., 738 F.2d 1509 (10th Cir. 1984).
131. See supra notes 95-116 and accompanying text.
132. See infra Part II.B.2.
133. Aspen Skiing, 738 F.2d 1509.
134. Id.
135. Id. at 1520-21.
136. MCI Comm’ns Corp. v. AT & T, 708 F.2d 1081, 1132-33 (7th Cir. 1983).
138. Aspen Skiing, 738 F.2d 1509.
Essential Facilities characteristics. Nor were they part of any network. For example, *Flip Side Products, Inc. v. Jam Products, Ltd.* involved a promotion company that argued a large auditorium (controlled by the defendant) in which it wished to book concerts was an essential facility. 139 *Olympia Equipment Leasing Co. v. Western Union Telegraph Co.* involved a teletype machine marketer who invoked the doctrine when a dominant competitor ceased to show potential customers a vendor list, the alleged essential facility, listing other major teletype machine marketers (which included the plaintiff) from whom customers may make their purchases. 140 In *Twin Laboratories, Inc. v. Weider Health & Fitness*, the essential facilities claim was based on the refusal of the dominant bodybuilding food supplement producer to advertise a competitor's products in its body building magazine (the alleged essential facility). 141 In *Florida Fuels, Inc. v. Belcher Oil Co.*, the essential facility claim involved the dominant oil seller's refusal to share usage of its storage tanks with its rival, which had no such tanks of its own. 142

In all of these cases the essential facilities claims, bordering on the absurd, were dismissed on grounds that at least one of the elements of the *MCI*143 test was not satisfied. It is perhaps the undefined, seemingly ad hoc, nature of these inquiries that has drawn criticism. However, these decisions could easily be analyzed more theoretically to reach the same results if we simply reframe the question to ask whether the facility had the economic characteristics of a natural monopoly or a network, such that open access would be efficient and socially beneficial. In each case, the answer would be "no," and the legal resolution, though unchanged, would be more rooted in principle.

2. Providing Necessities and Other Infrastructure

Again, except for *Aspen Skiing*, 144 the key U.S. essential facilities cases share another common feature—the end product or service provided were necessities, or part of society's infrastructure. Therefore, denial of access would have adversely affected the public interest and not merely the competitive process in the immediate market. That transportation systems (*Terminal Railroad*), 145 public utilities (*Otter Tail*), 146 and telecommunications (*MCI*) 147 provide necessities is self-evident. Because we

139. 843 F.2d 1024, 1028-34 (7th Cir. 1988) (affirming summary judgment in favor of the defendant on the essential facility claim).
140. 797 F.2d 370, 373-80, 383 (7th Cir. 1986) (reversing a judgment for the plaintiff, stating that the defendant had no duty to affirmatively assist a competitor).
141. 900 F.2d 566, 568-70 (2d Cir. 1990) (rejecting the essential facilities claim and affirming summary judgment for the defendant).
143. MCI Commc'ns Corp. v. AT & T, 708 F.2d 1081, 1132-33 (7th Cir. 1983).
147. *MCI*, 708 F.2d 1081.
are a democracy and the functioning of a democratic government requires the free flow of information and public opinion, the generation and dissemination of news can also be viewed as a necessity. Justice Frankfurter recognized this point in his concurrence in Associated Press when he described the news network as a business imbued with the public interest and likened it to a public utility.

In Aspen Skiing, this necessity or public interest factor did not exist. While the dominant ski company’s refusal to continue offering a joint ticket with its rival may have adversely affected the competitor and Aspen skiers, skiing facilities are not public utilities or necessities. Nor is skiing an activity infused with the public interest. While compelling the dominant ski company to share its “facility” with its competitor may enhance the enjoyment of Aspen skiers who like the freedom to move around all four mountains on a single ticket, there is no significant societal impact beyond that.

Requiring a public interest attribute by showing that the good or service is a necessity or an infrastructure would provide a sound limiting principle to the doctrine. Though they have not explained their essential facilities decisions this way, courts have in fact consistently invoked the doctrine to compel access only when it impacted the public interest, contradicting the critique that the doctrine lacks principled limits.

C. Applicability of the Doctrine to Intellectual Property Rights in the United States

Although none of the discussed cases involved intellectual property, and U.S. courts have never actually applied essential facilities to condemn refusals to license intellectual property, several cases have recognized, in principle, the appropriateness of such application given the right set of facts. For example, in Data General, a district court acknowledged that the doctrine could apply to a computer systems manufac-

148. See Associated Press v. United States, 326 U.S. 1, 29 (1945) (Frankfurter, J., concurring) (discussing the importance of the access to news and “the relation of such access to the function of a free press in our democratic society”).
149. Id. at 28-29 (Frankfurter, J., concurring).
151. See Aspen Skiing Co. v. Aspen Highlands Skiing Corp., 472 U.S. 585, 605-07 (1985) (observing the popularity of the multi-day, multi-mountain joint ticket before it was terminated).
152. Various other cases in which lower courts have rejected essential facilities claims similarly lack public interest implications. See supra notes 139-142 and accompanying text.
153. See, e.g., Rural Tel. Serv. Co. v. Feist Publ’ns, Inc., 737 F. Supp. 610, 617-20 (D. Kan. 1990) (discussing the essential facilities doctrine where the alleged essential facility is copyrighted telephone listings), rev’d on other grounds, 957 F.2d 765 (10th Cir. 1992); Bell-south Adver. & Publ’g Corp. v. Donnelley Info. Publ’g, Inc., 719 F. Supp. 1551, 1566 (S.D. Fla. 1988) (discussing the possible application of essential facilities doctrine to copyrighted directory databases), rev’d on other grounds, 999 F.2d 1436 (11th Cir. 1993); see also infra notes 154-179 and accompanying text.
turer’s refusal to license its copyrighted diagnostic software to rival repair service providers, though it found the specific facts insufficient to support the doctrine.\textsuperscript{155} The repair service providers had claimed that use of the software was needed for their effective competition with the manufacturer in the service market.\textsuperscript{156}

In \textit{Intergraph Corp. v. Intel Corp.},\textsuperscript{157} a district court applied the essential facilities doctrine to intellectual property rights. Intel had ceased to supply certain computer manufacturers with its patented sample chips and related proprietary information—information that they needed to continue building Intel-based computers.\textsuperscript{158} Intel’s motivation was to force concessions from these manufacturers in connection with their unrelated patent disputes with Intel.\textsuperscript{159} After concluding that Intel was a monopolist in the computer microprocessor market,\textsuperscript{160} the district court treated Intel’s refusal-to-deal as the denial of an essential facility because the chips and technical information were not available elsewhere,\textsuperscript{161} could not be feasibly duplicated, and access to them was essential for effective competition.\textsuperscript{162} Although the Federal Circuit later reversed, it was on the ground that Intel and the plaintiff were not competitors (but merely had a supplier/customer relationship),\textsuperscript{163} and not because it found the essential facilities doctrine inapplicable to intellectual property rights.

In two other general refusal-to-deal claims involving intellectual property, \textit{Kodak}\textsuperscript{164} and \textit{Xerox},\textsuperscript{165} the Circuit Courts reached opposite results. Though these decisions were not based on, and did not address, the essential facilities doctrine, their holdings and rationales should apply equally well to the issue of the doctrine’s applicability to refusals to license intellectual property rights.

In \textit{Kodak}, on remand from the Supreme Court, the Ninth Circuit affirmed a jury verdict against Kodak on a claim that it had violated antitrust laws by refusing to sell its replacement parts, some of which were patented, to its competitors in the repair service market.\textsuperscript{166} In its earlier opinion remanding the case, the Supreme Court had remarked in dicta in a footnote that “power gained through ... patent [and] copyright ... can give rise to liability if ‘a seller exploits his dominant position in one mar-

\begin{itemize}
\item \textsuperscript{155} \textit{Id.} at 191-92.
\item \textsuperscript{156} \textit{Id.} at 192.
\item \textsuperscript{157} 3 F. Supp. 2d 1255 (N.D. Ala. 1998), \textit{vacated}, 195 F.3d 1346, 1367 (Fed. Cir. 1999).
\item \textsuperscript{158} \textit{Id.} at 1267.
\item \textsuperscript{159} \textit{Id.} at 1261-63.
\item \textsuperscript{160} \textit{Id.} at 1267.
\item \textsuperscript{161} \textit{Id.} at 1275.
\item \textsuperscript{162} \textit{Id.} at 1278.
\item \textsuperscript{163} \textit{Id.}
\item \textsuperscript{164} \textit{Intergraph Corp. v. Intel Corp.}, 195 F.3d 1346, 1357-59 (Fed. Cir. 1999); \textit{see also id.} at 1358 (“The district court erred in holding that Intel’s superior microprocessor product and Intergraph’s dependency thereon converted Intel’s special customer benefits into an ‘essential facility’ under the Sherman Act.”).
\item \textsuperscript{165} \textit{Image Technical Servs. v. Eastman Kodak Co.}, 125 F.3d 1195 (9th Cir. 1997).
\item \textsuperscript{166} \textit{In re Indep. Serv. Orgs. Antitrust Litig.}, 203 F.3d 1322 (Fed. Cir. 2000).
\item \textsuperscript{167} \textit{Kodak}, 125 F.3d at 1200, 1228.
\end{itemize}
Citing this footnote, the Ninth Circuit rejected Kodak’s assertion that, as a patent holder, it had the right to not sell its patented parts to the plaintiffs and, therefore, its refusal to do so could not give rise to antitrust liability. Recognizing that patent and copyright laws do grant exclusivity rights to intellectual property owners, the Ninth Court reconciled the tension between those rights and the antitrust duty to deal by concluding that the desire to protect one’s intellectual property rights gives rise to a rebuttable presumption of valid business justification.

In Xerox, however, the Federal Circuit reached a different result in a remarkably similar case. Xerox manufactured copiers and replacement parts and also provided repair service for those copiers. It refused to sell its patented replacement parts or to license its copyrighted diagnostic software to its rivals in the copier repair service market. Declining to follow the Ninth Circuit in Kodak, the Federal Circuit stressed the importance of exclusivity under patent law and effectively held that a patent holder has an absolute right to exclude others from the invention except in the limited case of “illegal tying, fraud in the Patent and Trademark Office, or sham litigation.”

Finally and interestingly, in United States v. Microsoft Corp., probably the most important U.S. monopolization case tried in the last few decades, an important remedial provision in the ultimate settlement of the case (after remand from the court of appeals) required Microsoft to license certain interoperability information to producers of non-Microsoft servers. This provision was designed to ensure the compatibility of non-Microsoft work-group server operating systems with Windows, the dominant PC operating system found on most PCs linked to office workgroup servers. Without interoperability, these non-Microsoft servers would be unable to compete effectively with Microsoft’s own servers, which are obviously fully compatible with Windows.

The inclusion of this compulsory licensing provision in the settlement was surprising since the issue of refusals to license interoperability information or other intellectual property rights was neither litigated at trial nor addressed in the lower court opinions in the United States. With-
out access to all the facts, it is of course impossible to know why no such claim was asserted at trial, if U.S. antitrust authorities were concerned enough to insist on the compulsory licensing provision.178 Whatever the reason, their negotiation for that remedial order must reflect a belief that lack of access to interoperability information in computer network industries is a serious issue with potential anticompetitive consequences that must be addressed.179

IV. APPLYING LESSONS DRAWN FROM TRADITIONAL ESSENTIAL FACILITIES CASES TO MODERN ACCESS CONCERNS

As discussed in Part II, interoperability and access are central issues in modern-day network industries, which form the core of today's economy. The essential facilities doctrine seems well-suited, in proper cases, to address anticompetitive problems that may arise when a monopolist's denial of access to information impedes interoperability, thereby hindering competition in adjacent markets. Yet U.S. courts have rarely, if ever, applied the doctrine in this context.180 Critics contend that the doctrine reduces incentives for innovation and conflicts with intellectual property law and policy181—arguments that will be addressed in Part V.

Misgivings about the doctrine are also grounded on exaggerated concerns that it is ill-defined and lacks theoretical consistency. But, as earlier discussed, the traditional U.S. essential facilities cases are in fact rooted in sound, though often unexpressed, principles.182 Where the economic and social case for compulsory sharing is strong—such as when the facility has natural monopoly characteristics or has network effects, and the end-product involves a necessity or infrastructure—courts have applied the doctrine.183 When those features are absent and, therefore, the case

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178. One possible reason may be that success on such a claim would require reliance on the monopoly leveraging theory, which has fallen out of favor in the United States as a result of criticism from the Chicago School. See Steven C. Salop, Vertical Mergers and Monopoly Leverage, in THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 669, 669 (Peter Newman ed., 1999).

179. This interoperability issue was front and center in the European case brought against Microsoft, which will be discussed in more detail below. See infra Part IV.A.

180. See supra Part III.C.

181. See, e.g., Areeda, supra note 10, at 844-45 (referring to the importance of not chilling "desirable activities"); AREEDA & HOVENKAMP, supra note 10, ¶ 771b; Paul D. Marquardt & Mark Leddy, The Essential Facilities Doctrine and Intellectual Property Rights: A Response to Pitofsky, Patterson, and Hooks, 70 ANTITRUST L.J. 847, 856 (2003) ("Allowing those rivals to have access to the innovator's intellectual property simply by declaring themselves beaten runs a serious risk of short-circuiting that dynamic [of innovation by one company spurring innovation by rivals]."); id. ("The promise of protection for intellectual property encourages companies to innovate in order to gain whatever economic benefits can be gained from the exclusive right to exploit the innovation."); see also infra Part V.B.

182. See infra Part V.B.

183. See supra Part III.B.
for access is weak, courts have tended to reject it.\textsuperscript{184}

We can rely on these same principles to sort through cases involving the failure to disclose interoperability information in order to identify which ones warrant invoking the doctrine and which ones do not. This method is preferable to treating refusals to supply interoperability information as a separate \textit{class} of conduct to which special rules should presumably apply, as the European Commission seems to propose.\textsuperscript{185} That is because markets that lack interoperability do not all bear similar economic or consumer effects. I will use, below, two familiar narratives involving interoperability and access issues—the European Commission case against Microsoft and the controversy surrounding Apple’s iPod/iTunes formerly closed-system—to show how principles distilled from the historical essential facilities cases should apply to reach different results.

\section{The EU Case Against Microsoft\textsuperscript{186}}

\subsection{Interoperability Issue}

Unlike the U.S. case, the European case against Microsoft was, at its heart, about interoperability and access.\textsuperscript{187} Microsoft, whose product, Windows, dominates the PC (or client) operating systems market, competed with Sun Microsystems and other rivals in the server operating systems market.\textsuperscript{188} A server is basically a powerful computer that provides applications and other functions to multiple PCs linked together in a network.\textsuperscript{189} Microsoft was charged with refusing to license certain interoperability information, known as "communications protocols," to its competitors in the server operating systems market that would facilitate the full interoperability of their servers with Windows.\textsuperscript{190} Unless there is interoperability, businesses needing servers for their networks of desktop computers (mostly running on Windows because Windows is the domi-
nant PC operating system) would most likely choose Microsoft servers over non-Microsoft servers, even if they actually prefer the latter.  This would allow Microsoft to leverage its dominant position in the PC operating systems market (through Windows) into the work-group server market.

2. Court of First Instance (CFI) Holding on the Issue

a. Background: European case precedents pre-Microsoft

Though the term is not used, the European community recognizes the essential facilities principle under the rubric of abuse of dominant position, which constitutes a violation of Article 82 of the EC Treaty. In Commercial Solvents, the first EU case to apply the doctrine, the European Court of Justice ("ECJ") held that a dominant supplier of an input abused its dominant position when it refused to supply the input to a customer, the supplier's competitor in the downstream derivative market, "with the object of reserving such raw materials for manufacturing its own derivatives, and therefore risks eliminating all competition" from that competitor. The courts subsequently articulated an indispensability requirement for the doctrine.

The standard of liability evolved further in cases in which the alleged essential facility consisted of intellectual property rights. In Volvo v. Veng, the ECJ held that a dominant firm's refusal to grant a license to its "protected design" for car body panels, standing alone, could not constitute abuse of dominant position, since the right to exclude "constitutes the very subject-matter of [the IP holder's] exclusive right" under IP law. However, such a refusal could be considered abusive in three limited situations, including an "arbitrary refusal to supply spare parts to independent repairers."

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191. Id. ¶ 619.
192. Id. ¶ 1291, 1350.
193. Article 82 states: "Any abuse by one or more undertakings of a dominant position within the common market or in a substantial part of it shall be prohibited as incompatible with the common market in so far as it may affect trade between Member States." Treaty Establishing the European Community, art. 82, Nov. 10, 1997, 1997 O.J. (C 340) 3 [hereinafter EC Treaty].
195. Id. ¶ 25.
196. See Case C-7/97, Oscar Bronner GmbH & Co. v. Mediaprint, 1998 E.C.R. I-7791; Case T-504/93, Ladbroke v. Commission, 1997 E.C.R. II-923. In Oscar Bronner, the ECJ refused to require a dominant Austrian newspaper, which had a home distribution network, to include a small competitor's newspaper in its home delivery service, on the ground that the dominant firm's distribution system was not indispensable. Bronner, 1998 E.C.R. I-7791, ¶¶ 41-47. In Ladbroke, the CFI upheld an EC finding that a broadcaster of French horse races did not abuse its dominant position in the relevant market when it refused to license those broadcasts to a Belgian betting parlor. The CFI reasoned that broadcasts of the races were not indispensable to the complainant's wagering business, though they would have provided an additional service to the bettors. Ladbroke, 1997 ECR II-923, ¶ 131.
198. Id. ¶ 8
199. Id. ¶ 9.
The notion that a higher standard must be met before a dominant firm can be compelled to license its intellectual property rights was more clearly expressed in *Magill* and *IMS Health*. In these two cases, the courts held that “exceptional circumstances” must exist for any refusal to license intellectual property rights to be condemned. The exceptional circumstances requirement was translated into a three-part test: 1) the refusal prevented the emergence of a “new product,” which the dominant firm did not offer and for which there was potential consumer demand; 2) the refusal allowed the dominant firm to reserve for itself “the secondary market . . . by excluding all competition on that market;” and 3) the refusal was unjustified. *IMS Health* further clarified that the conditions must be cumulative for “exceptional circumstances” to be found.

b. *Microsoft*

In *Microsoft*, the CFI upheld the European Commission’s findings against the company. On the claim of denial of access to interoperability information, the court acknowledged that, in the absence of “exceptional circumstances,” a dominant firm’s refusal to license an intellectual property right cannot constitute abusive conduct within the meaning of Article 82. However, it then interpreted “exceptional circumstances” so loosely that critics contend it rendered the limitation meaningless. For example, with respect to the condition that the refusal to license must relate to an input indispensable for the development of a new product in a secondary market, the CFI said that information is “indispensable” for

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202. In *Magill*, three dominant broadcasters in the UK refused to license their copyrighted program listings to a firm wishing to publish the first ever comprehensive weekly TV program guide. In upholding the CFI and EC determination that the defendants’ refusal to license their protected program listings constituted an abuse of dominance, the ECJ said that a dominant firm’s exercise of its exclusivity right under IP law may constitute abuse of dominance in “exceptional circumstances.” *Magill*, 1995 E.C.R. I-743, ¶ 2. In *IMS Health*, the dominant firm had devised a “brick structure” for compiling pharmaceutical sales data in a way that complied with German privacy law and was also useful to pharmaceutical companies for marketing; it sold the compiled data to the pharmaceutical companies. Two new firms attempted to compete with IMS but found that the pharmaceutical companies would only accept data organized according to IMS’s “brick structure” format, which was copyrighted. When the case reached the ECJ through a convoluted procedural process, the Court reiterated the “exceptional circumstances” limitation on a dominant firm’s right to refuse to license intellectual property rights. And, it affirmed and clarified the three conditions that must be satisfied for “exceptional circumstances” to be found. *IMS Health*, 2004 E.C.R. I-5039, ¶ 52.


206. *Id.*, ¶ 327.

207. See, e.g., Renata B. Hesse, *Counseling Clients on Refusal to Supply Issues in the Wake of the EC Microsoft Case*, 22 ANTITRUST 32, 34 (2008) (“Where the interoperability information is of any competitive significance, it is difficult to imagine a set of circumstances where this standard of ‘indispensability’ would not be satisfied.”).
interoperability if it is necessary for rivals to achieve the same level of interoperability that can be achieved by the dominant firm’s own product.\textsuperscript{208} And, to satisfy the condition of foreclosure of a “new product” in a secondary market, the court held that it was sufficient to show the refusal to license impeded the “technical development” (presumably some form of improvement) of an existing product.\textsuperscript{209}

Perhaps not without justification, commentators have criticized the CFI Microsoft opinion for its shaky analysis of the exceptional circumstances standard and of EU case precedents,\textsuperscript{210} but it is outside the scope of this Article to enter this debate. The limited purpose of the EU Microsoft discussion here is merely to argue that even if the CFI analysis was somewhat forced, based on tests established in European case law, the case has all the important attributes found in the key U.S. essential facilities cases such as \textit{Terminal Railroad, Otter Tail, Associated Press,} and \textit{MCI,} as discussed below. As such, the decision is economically reasonable.

3. Microsoft: \textit{Network Effects, Natural Monopoly, and Provision of a Necessity}

Like the facilities in the key U.S. cases, Microsoft’s Windows, the dominant PC operating system, exhibits network effects and natural monopoly characteristics. Strong network effects arise from the fact that the more popular Windows becomes, the more valuable it is to users because more software applications would be written for it, which further increases Windows’ popularity, leading to even more supporting applications being developed.\textsuperscript{211} Windows also has strong natural monopoly characteristics in that it enjoys significant economies of scale on the supply side: fixed costs for research and development are high, while marginal costs of distribution are minimal. Though Windows is an intellectual property and not a physical facility, there is no reason why information and other intangibles cannot be considered an essential facility if they have all the economic properties associated with physical “essential facilities.”

To the extent that Windows has significant network effects and is a modern-day natural monopoly, the CFI’s decision on interoperability should not be considered an outlier as it is entirely consistent with the principles that underlie and explain the historical, relatively non-controversial, U.S. essential facilities cases. Because Windows is the de facto standard for operating systems for client PCs, those building servers must ensure the servers’ ability to communicate effectively with Windows. To do that, they must have the program’s communications protocols, or its

\textsuperscript{208} CFI Microsoft Judgment, \textit{supra} note 1, ¶¶ 141, 369.

\textsuperscript{209} Id. ¶ 647.

\textsuperscript{210} See, e.g., Hesse, \textit{supra} note 207, at 33-35 (suggesting that the CFI interpretation of the “new product” requirement is inconsistent with case precedents which “had been understood to require a showing of foreclosure of an entirely new product”).

\textsuperscript{211} The strong network effects of Windows were discussed in detail in the U.S. case against Microsoft. See United States v. Microsoft Corp., 253 F.3d 34, 49-50 (D.C. Cir. 2001).
interface information. Without that information, as the European Commission and the CFI correctly noted, non-Microsoft servers cannot be fully interoperable with Windows, the operating system found on client PCs in most establishments. This, in turn, means that non-Microsoft servers cannot provide the level of network functionality provided by Microsoft’s own work-group servers, which obviously have no interoperability issues. And those seeking servers for their computer networks would be driven to Microsoft’s product, though they might have preferred an alternative server had it been fully compatible with Windows.

Because of substantial network effects, full interoperability (or an open standard) is particularly beneficial to consumers. Every user would enjoy the large, collective, network externalities that are created as more users are added on. Limiting access would reduce these positive externalities that would otherwise accrue to consumers. The combination of strong network effects and natural monopoly characteristics also makes an inter-system challenge extremely difficult, thus making access to interoperability information all the more critical for competition and consumer choice. Absent access, Microsoft would be able to leverage its existing dominance in the PC operating systems market (through Windows) into the work-group server operating systems and other complementary markets and prevent competition in those markets to the detriment of consumers.

Additionally, in all the key historical U.S. cases that have applied the essential facilities doctrine to find liability, the product or service for which competition was introduced (through compulsory access) was a necessity or an infrastructure: for example, electricity in Otter Tail; transportation in Terminal Railroad; telecommunications in MCI; and news in Associated Press. While necessity of the end product is not an element of the essential facilities doctrine under the MCI test, it is a good counterweight against arguments that compulsory licensing of intellectual property would wrongly deprive intellectual property holders of their legitimate rewards. Few people would dispute the notion that personal computers and the Internet are modern day necessities and are an integral part of the social fabric of society. The refusal to license interoperability information in the European Microsoft case, just as the blocking of

212. CFI Microsoft Judgment, supra note 1, ¶ 220.
213. Id. ¶¶ 188-89.
214. Id. ¶ 558.
215. See supra notes 25-30 and accompanying text.
216. See CFI Microsoft Judgment, supra note 1, ¶ 306.
217. See supra Part III-B-2.
218. See supra note 60 and accompanying text.
219. See, e.g., AREEDA & HOVENKAMP, supra note 10, ¶ 773e ("The first caveat is that no essential facilities rule should be used to deprive an otherwise lawful monopolist of its 'legitimate' reward."); Harry First, Microsoft and the Evolution of the Intellectual Property Concept, 2006 Wis. L. REV. 1369, 1410 (describing Microsoft's intellectual property argument as "maximalist" and made "on the basis of the concept of intellectual property as an entitlement").
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access in connection with transportation, public utilities, telecommunications, and the news, impacts public interest, which makes the application of essential facilities to grant access entirely appropriate.

B. THE iPOD/iTUNES INTEROPERABILITY DEBATE

Not all refusals to provide interoperability information, however, are equally important from an antitrust perspective, and common themes drawn from the traditional essential facilities cases may provide a principled basis for distinguishing between different interoperability scenarios. As discussed above, these themes explain why application of the doctrine was appropriate in the European Microsoft case. However, in the iPod/iTunes context, had Apple not voluntarily changed to an effectively open system in January 2009, application of the doctrine to compel access would have been difficult to rationalize, assuming that the MCI test can be satisfied.

As is commonly known, Apple’s iPod is the dominant portable digital music player sold in the United States, with over seventy-five percent of the relevant market share. The iTunes music store ("iTMS"), which licenses music, videos, podcasts, audio books, and movies for downloading to a user’s computer and transferring onto their iPods, is so successful that it not only dominates the online digital music business, but recently surpassed Wal-Mart to become the top music retailer in the United States. Until recently, all the major music labels required iTMS to sell their music files with digital rights management ("DRM"), which en-

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220. See Press Release, Apple, Inc., Changes Coming to the iTunes Store (Jan. 6, 2009), http://www.apple.com/pr/library/2009/01/06itunes.html (announcing that, beginning immediately, the iTunes store will sell music in DRM-free format, after reaching agreement with all four major music labels); Brad Stone, Copy an iTunes Song? Go Ahead, Apple Says, N.Y. TIMES, Jan. 7, 2009, at B1 (reporting that Apple will begin to sell music without DRM, which means that consumers will be able to play downloaded songs on other digital devices).


223. See Press Release, Apple, Inc., iTunes Store Top Music Retailer in the US (April 3, 2008), http://www.apple.com/pr/library/2008/04/03iTunes.html. Apple reports that it surpassed Wal-Mart as the top music retailer in April 2008, has over fifty million customers, sold over four billion songs, and has the world’s largest music catalog of over six million songs. Id.
crypts digital content and is designed to prevent unauthorized use.\footnote{224}{See Stone, \textit{supra} note 220, at B1 (reporting that Apple had sought to remove DRM from music it sold but was unable to reach agreement with the major music labels until very recently).}

Apple developed and adopted a proprietary DRM technology, known as FairPlay, so that music and other content purchased and downloaded from iTMS worked only on iPods but not on other portable digital music players.\footnote{225}{While iTunes was required to use DRM technology to encrypt digital music that it sold to limit access to the content to authorized users, it did not have to each create its own incompatible DRM format but could have collaborated in developing a common standard. Or Apple could have opened up its DRM, known as FairPlay, to others through licensing.} Users of non-iPod players, therefore, could not purchase music from iTMS for use on their devices, and iPod users could not purchase music from online music stores other than iTMS.

This restriction led to class actions filed against Apple in the United States,\footnote{226}{See Sommers \textit{v.} Apple, Inc., No. 5:07-cv-06507 (N.D. Cal. Dec. 31, 2007); Slattery \textit{v.} Apple, Inc., No. C 05-00037 JW, 2005 WL 2204981, at *1 (N.D. Cal. Sept. 9, 2005); \textit{MEALEY'S LITIG. REP. CLASS ACTIONS} 8 (2008); see also \textit{Antitrust Class Action Accuses Apple of Monopolizing Music Market}, 7-21.} and to legal\footnote{227}{See Giuseppe Mazziotti, \textit{Did Apple's Refusal to License Proprietary Information Enabling Interoperability with its iPod Music Player Constitute an Abuse under Article 82 of the EC Treaty?}, 28 \textit{WORLD COMPETITION} 253, 264 (2005). VirginMega, an online music store in France, filed a legal challenge against Apple with the French Competition Council alleging that Apple had abused its dominant position by refusing to license its FairPlay technology, and asking the Competition Council to compel Apple to license it. \textit{Id.} at 255. The French Council held that the refusal to license did not give rise to liability under competition law in that case because FairPlay was not essential for competition, as evidenced by the existence of competitors in the market. \textit{Id.} at 270.} and legislative efforts in France and other European countries aimed at compelling Apple to license FairPlay to its competitors.\footnote{228}{Kevin J. Harrang, \textit{Challenges in the Global IT Market: Technology, Creative Content, and Intellectual Property Rights}, 49 \textit{ARIZ. L. REV.} 29, 37-39 (2007) (discussing a French bill and actions in other European countries aimed at forcing Apple to disclose interoperability information to competitors); see also \textit{French Law Seeks Interoperability}, \textit{WIRED} (Mar. 17, 2006), available at http://www.wired.com/print/politics/law/news/2006/03/70436.} The gist of their argument, and that of some commentators, was that Apple’s refusal to license FairPlay, and its refusal to use any encryption technology other than FairPlay, unfairly limited interoperability between its dominant products (iPod and iTunes) and that of its competitors’, and was anticompetitive.\footnote{229}{See, e.g., Nicola F. Sharpe \& Olufunmilaya B. Arewa, \textit{Is Apple Playing Fair? Navigating the iPod FairPlay DRM Controversy}, 5 \textit{NW. J. TECH. \& INTELL. PROP.} 332 (2007).} They also maintained that disclosure of its FairPlay technology would enable competitors to produce products that are compatible with Apple’s, thus allowing consumers to mix and match portable digital music devices and content providers.\footnote{230}{See \textit{id.}}

In January 2009, Apple announced that it had reached agreement with the four major music labels and other independent labels permitting iTMS to sell their music without DRM restriction.\footnote{231}{See \textit{supra} note 220} This effectively makes iTunes music playable on competing devices, and should moot the debate on whether Apple should be compelled to license FairPlay or per-
haps adopt a non-proprietary DRM format. Nonetheless, the issue remains alive as there are still pending class action antitrust suits against Apple based on its past conduct. The issue is also interesting from a theoretical perspective.

If interoperability were determinative, then analogies to the European case against Microsoft would seem apt. That is, assuming that Apple is a true monopolist in the portable digital music player market, and non-iTMS content providers have no feasible means of transferring music from their online sites to iPods absent access to FairPlay (the interoperability information), the essential facilities doctrine should apply to require Apple to license FairPlay to these non-iTunes providers, whose music can then be downloaded to iPods, giving iPod users a choice of content providers. Similarly, assuming that iTMS is a monopolist in the online digital music market, and iPod's competitors must have the technical information regarding FairPlay to conform their devices to work with iTunes, application of the essential facilities doctrine would seem appropriate.

Many people, however, will intuitively sense a qualitative difference in the situations presented by Microsoft and Apple, even though both involved refusals to share interoperability information.232 Apple's failure to license FairPlay, somehow, does not seem as potentially harmful to consumer welfare as Microsoft's conduct. The system may be "closed" in the sense that, to play iTunes music or video on a portable digital music player, consumers must purchase an iPod. But owners of other digital music players have other non-iTMS online music stores to turn to, such as the online retail giant Amazon.233 And, users of iPods have other important sources of music. Studies show, for example, that most music found on iPods today comes, not from iTMS, but from non-encrypted sources—mostly compact discs.234 And, music "ripped" from CDs onto consumers' computers can be easily transferred onto any portable digital music player, not only the iPod.

Furthermore, it is questionable how durable Apple's monopoly in the iPod/iTunes system really is. While the iPod and iTMS are clearly dominant in their respective markets today, their monopolies seem more fragile than Microsoft's monopoly in PC operating systems. To some extent, Apple's music monopoly has been aided by, and depended on, the music labels' previous insistence on DRM protection. Once content providers are willing to sell their music or videos without DRM, as they now are, there is really no longer any substantial impediment (other than quality)

232. See, e.g., J. Thomas Rosch, Keynote Address: A Different Perspective on DRM, 22 BERKELEY TECH. L.J. 971, 976-77 (2007) (expressing doubt that "antitrust should be brought to bear . . . to force [Apple] to make their products [iPod/iTunes] interoperable with their competitors").


234. See Rosch, supra note 232, at 977.
standing in the way of iTMS's competitors selling content to iPod owners or of the iPod's competitors selling digital music devices to those who prefer to buy their content from iTMS.

Even if the recent DRM-free development had not occurred and iPod/iTunes was still a closed system, it is highly doubtful that the iPod/iTMS monopoly would have been very enduring. The markets for digital music players and online music are still far from mature, in contrast to the market for personal computers. An immature market means that there are still numerous consumers not yet "locked in" to Apple's iPod/iTunes system. Even in a closed system, if an iPod competitor produces an innovative and superior digital music player, success is not improbable since the competitor may compete without much handicap for the untapped market, especially for those users who want the device primarily to listen to their own CD collection "on the go," rather than to purchase songs digitally. If an alternative digital music player catches on, one would expect other online music services to emerge to provide content, either using an open encryption standard or developing its own proprietary one. Either way, inter-system competition would have been more feasible with the iPod/iTMS than with Microsoft's operating systems, undermining a major rationale for the essential facilities doctrine. Thus, factual distinctions support different perspectives of the doctrine as it relates to Microsoft and the iPod/iTunes situation.

Additionally, lessons drawn from traditional U.S. essential facilities cases provide a theoretical basis for different treatment. First, in contrast to Microsoft, it is very difficult to argue that the iPod, iTMS, or FairPlay are natural monopolies. While there are always costs involved in research and development, economies of scale on the supply side are simply not so large that the market cannot support competitors for these Apple products. There are, in fact, a number of alternative digital music devices on the market—for example, Microsoft's "Zune," and devices from Toshiba, Sony, and SanDisk—though consumers apparently have not found them as attractive as iPods, at least not yet. Other encryption technologies, both proprietary and open, also exist. As for iTMS, it relies on licensing agreements with music labels for its "products," something that other firms can just as easily do without incurring significant fixed costs. In short, the iPod/iTunes system has no discernable natural monopoly characteristics.

Second, while the iPod, iTunes, and various iPod accessories—such as speakers, and docking stations—can be described as a network that generates network effects, the effects are not sufficiently substantial to create

235. See id. (noting that the market for portable digital music players is still in its infancy and that many consumers have not yet purchased such a device).
236. See Harrang, supra note 228, at 43.
237. See Rosch, supra note 232, at 977.
238. Microsoft's Zune is a closed-system device which uses proprietary encryption, just as the iPod/iTunes system. However, Microsoft has also created an open encryption technology, called "PlaysForSure." See Harrang, supra note 228, at 34, 43.
durable entry barriers that should be of antitrust concern. It is true that, as the iPod grew in popularity, more and more gadgets were developed for it, but by far the most important "complement" for any digital music player is content. Since music labels can easily sign licensing agreements with additional online digital music stores without incurring much costs (other than the usual transaction costs), and they have done so, the popularity of the iPod does not create a "content" barrier to entry. This is in contrast to the large network effects observed in Microsoft, where porting applications from Windows to other operating systems is so expensive that software developers are generally willing to write applications only for Windows, and not for other operating systems with fewer users.\(^2\)

There is no similar impediment in the online digital music market—there are no apparent reasons why music labels would be reluctant to enter into licensing agreements with other online music stores. Therefore, any negative network effects attributable to the iPod system should be relatively mild.

It is true that, were it not for the recent DRM-free development, and as iPod users accumulate content downloaded from iTMS, switching costs could be a consideration when consumers choose their replacement digital music player.\(^3\) Theoretically, to avoid losing their investment in the content already purchased from iTMS, consumers could possibly become "locked in" to iPods, even if they prefer a superior alternative. And, path dependency could result, leading to an entrenchment of the iPod and iTMS that is unrelated to the inherent quality of these products.

The evolution of various consumer products, however, suggests that this concern should not be overstated. Common experience informs us that markets for many consumer goods tend to be highly competitive and their network effects not very durable. There is a history of users switching to new, superior, consumer good "systems" as they become available, despite having invested in an established system. For example, despite the millions of record albums that music lovers around the world had accumulated for use with record players over the years, compact discs and compact disc players had little trouble entering the audio market in the 1980s, ultimately displacing albums and turntables. DVD players and DVDs, likewise, succeeded in replacing VHS players in the last decade, despite the large number of VHS videotapes consumers had already purchased or recorded and that video rental stores had on inventory. Other examples abound.\(^4\)

\(^{239}\) See United States v. Microsoft Corp., 253 F.3d 34, 52 (D.C. Cir. 2001).

\(^{240}\) See Harrang, supra note 228, at 40 (noting that opponents of DRM formatted downloads argue that they restrict consumers' ability to buy a different brand of digital music player as replacement because they would not then be able to use their existing music library).

\(^{241}\) For example, the eight-track tapes replaced the old tape recorders in the early 1970s. The eight-track tapes were then subsequently replaced by cassette players. Today, cassette players are disappearing from the market as well, being replaced by compact disc players.
Where network effects are weak, there should be less concern about the economic impact of refusals to supply interoperability information. That is because weak network effects do not create or maintain strong entry barriers that preserve the monopolist's dominance in the relevant market. With weak network effects, it is easier for a new entrant to erode a monopolist's market power through the normal competitive process—for example, by introducing innovative products at attractive prices. To the extent that normal competition is possible, the case for applying essential facilities to impose a duty to license one's intellectual property rights to rivals is much weaker. Recent market changes in the music industry leading to voluntary changes in the iPod/iTMS business model, in fact, prove this point.

Finally, unlike Windows, which is the gateway to personal computers and, hence, a modern-day necessity, the iPod/iTunes system is primarily a portable personal entertainment device for consumers. Most consumers would undoubtedly prefer an open system where iPod users could conveniently purchase and download content from any online music store, and owners of other digital music devices could purchase and download content from iTMS. But, even monopolists generally have the right to choose their own business model and to keep their own assets to themselves, especially if they are protected by patent, copyright, or trade secret laws. Antitrust law must take into account these rights and make exceptions only in unusual circumstances, such as when denying access is socially wasteful and impacts the public interest. Apple's iPod/iTunes situation does not seem to fit within these parameters—it bears more resemblance to Aspen Skiing with its lack of any significant public interest attribute than to Microsoft, or to Terminal Railroad, Otter Tail, MCI, and Associated Press for that matter. Though the iPod/iTunes business model before January 2009 also involved a refusal to supply interoperability information, any parallels drawn to Microsoft Windows seem superficial. The closed music model may well be an unwise business decision on the part of Apple, but that is a non-antitrust issue that cannot, on its own, call for an antitrust solution.

V. ADDRESSING CRITICISMS

Returning to a broader issue concerning essential facilities, many commentators have severely criticized the doctrine on several fronts. The critique that it lacks sound theoretical grounding has already been addressed. Another line of argument often heard is that refusals to deal have no real adverse economic impact and, therefore, application of the doctrine would not improve consumer welfare. The most complex ob-

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243. See supra Parts III.A & B.
244. See, e.g., Areeda & Hovenkamp, supra note 10, ¶ 771b (using an example to argue that forcing a monopolist to share a facility does not make consumers better off absent judicial oversight of prices); Hylton, supra note 10, at 1252 (using an example to
jection focuses on incentives—critics argue that the doctrine could have a disincentive effect on innovation, particularly when intellectual property is involved.\textsuperscript{245} This Part will address these last two criticisms.

A. The "No Adverse Economic Effect" Claim

An important rationale for the essential facilities doctrine is that it is bad policy to allow monopolists in control of a critical asset to leverage their monopoly power in one market into adjacent markets by denying rivals in adjacent markets access to that critical asset.\textsuperscript{246} Some commentators, however, claim that increasing competition through access cannot improve consumer welfare and, therefore, the rationale is flawed.\textsuperscript{247} This argument is based on the so-called "single monopoly profit theory" advanced by the Chicago School.\textsuperscript{248} The theory posits that only a single monopoly profit can be made in the sale of a product and its complement.\textsuperscript{249} If a monopolist in one market cannot hope to gain additional monopoly profits by dominating the complement as well, any attempt by the monopolist in the first market to control the complementary market must have been undertaken for efficiency reasons.\textsuperscript{250} In any event, the argument continues, there is no cause for antitrust intervention since consumers are no worse off.

\textsuperscript{245} See, e.g., Areeda & Hovenkamp, supra note 10, §§ 773e; Mats A. Bergman, The Role of the Essential Facilities Doctrine, 46 Antitrust Bull. 403, 421-22 (2001); Lipsky & Sidak, supra note 10, at 1219; Marquardt & Leddy, supra note 181, at 863; McGowan, supra note 10, at 804-06 (1996); Werden, supra note 10, at 473.

\textsuperscript{246} See, e.g., Nicholas Economides & William N. Hebert, Patents and Antitrust: Application to Adjacent Markets 462-63 (NYU Law and Economics Research Paper No. 07-33, 2008), available at http://www.stern.nyu.edu/networks/Economides_Hebert_Patents_and_Antitrust.pdf (last visited Feb. 14, 2009) (arguing, based on economic theory, that it is inappropriate to shield patent holders from antitrust liability when they extend their patent monopolies into adjacent markets that depend on the interface with the patented product).

\textsuperscript{247} See supra note 246.

\textsuperscript{248} See Robert H. Bork, The Antitrust Paradox: A Policy At War with Itself 372-75 (1978) (arguing that the leverage theory should not be a basis for antitrust liability because the extension of monopoly power to complementary markets cannot possibly be harmful to competition); Ward S. Bowman, Jr., Tying Arrangements and the Leverage Problem, 67 Yale L.J. 19, 20, 25-27 (1957) (asserting that if, as assumed, a monopolist is already maximizing his profits on the sale of the primary (tying) product, a tying arrangement forcing the buyer to purchase a secondary (tied) product would not produce additional monopoly effect); Aaron Director & Edward H. Levi, Law and the Future: Trade Regulation, 51 Nw. U. L. Rev. 281, 290 (1956) (first introducing the theory).

\textsuperscript{249} The explanation for this theory goes like this: Suppose firm A has a monopoly in the bolt market but not in the nut market. The user of nuts and bolts has no use for one without the other, and therefore values the product as a "package" (e.g., $1 per bolt-nut set), but is indifferent as to the price of each component. Suppose further that the competitive price of nuts is $0.10. We would then expect the monopolist in the bolt market, A, to charge the profit maximizing price of $0.90 per bolt. Even if A successfully leverages its dominance in the bolt market into the nut market, it would still be able to charge only $1 for the nut-bolt "package." A, then, cannot raise the price of nuts without lowering the price of bolts.

\textsuperscript{250} See Bowman, supra note 248, at 20, 25-27.
Economists now generally agree that the single monopoly profit theory holds only in very limited circumstances. For the theory to be correct, buyers must need the two related products in fixed proportions, which is a rare occurrence. Consequently, in most cases involving monopoly leveraging claims, there is no validity to the assumption that consumers are unaffected, regardless of whether the monopolist in one market manages to exclude competition in secondary markets.

A further related contention is that application of the doctrine cannot possibly improve consumer welfare because antitrust law does not bar a monopolist from charging rivals supracompetitive prices for access. Because rivals are likely to pass on their higher costs (due to having to pay monopoly fees for access), consumers would ultimately pay as much for the complement, with or without competition from rivals. Since access will not result in lower prices, the argument continues, output of the complement will remain the same. The only difference is that, with access, sales and profits will be shared among the monopolist and its rivals, instead of accruing only to the monopolist. How sales and profits are divided is not considered an economic concern and, therefore, the essential facilities doctrine, in granting access, serves no economic purpose.

The problem with this seemingly elegant argument is that it assumes that markets are static and that price and output are the only measures of consumer welfare. But, with complex goods and services, the assumption that markets are static is highly questionable. Moreover, there is more to consumer benefit than reduced prices and increased output. Even assuming that price competition is infeasible, due to the monopolist’s control over price of the essential “facility,” competition based on quality and innovation remains possible. And quality improvement is a consumer benefit in its own right, even if total output does not increase. Competition in train service that results in cleaner railcars and better customer service, for example, enhances consumer welfare, regardless of whether it also reduces fares and increases total ridership.

Moreover, the assumption that total output will not increase so long as prices remain the same is dubious. Innovation and quality improvement as a result of competition can increase total output, even if prices remain

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251. See Economides & Hebert, supra note 246, at 465 n.39 (explaining the limited circumstance when the single monopoly profit would be correct); Louis Kaplow, Extension of Monopoly Power Through Leverage, 85 COLUM. L. REV. 515, 525-38 (1985) (contending that leveraging can be anticompetitive); Thomas G. Krattenmaker & Steven C. Salop, Anticompetitive Exclusion: Raising Rivals’ Costs to Achieve Power over Price, 96 YALE L.J. 209, 289-93 (1986) (same).

252. See supra note 251.


254. See supra note 244.

255. See, e.g., E. THOMAS SULLIVAN & HERBERT HOVENKAMP, ANTITRUST LAW, POLICY AND PROCEDURE: CASES, MATERIALS, PROBLEMS 703 (5th ed. 2003) ("[F]orced sharing does not improve the welfare of consumers, it only makes room for another firm in the market."); supra note 244.
at the same level, because an improved and more innovative product or service may attract more buyers into the market. By providing a more pleasant ride or on-time service, for example, a commuter railroad granted access to the tracks by an incumbent might attract new commuters who would otherwise not ride the train at all, even without reduction in fares. The argument that the essential facilities doctrine would not make any difference to consumers is, therefore, unpersuasive, even from a purely economic perspective.

Access also has the potential of increasing the variety of available complements, as rivals attempt to differentiate their offerings from those of the monopolist. It may spur more innovation and improvement on the part of the monopolist as well, as the monopolist responds to competition made possible by open access. In short, unless the market is static, and most markets are not, consumers often do gain from application of the essential facilities doctrine.

B. INCENTIVE ISSUES AND INTELLECTUAL PROPERTY LAWS

Some critics also contend that the essential facilities doctrine reduces incentives to innovate on the part of both monopolists required to share their facilities and rivals who benefit from them.\(^{256}\) Where the “facility” is intellectual property, they argue, application of the doctrine is particularly problematic because it undermines the very objectives of the intellectual property laws—to promote and reward innovation by granting exclusivity to innovators.\(^{257}\) Some go so far as to argue that “essential facilities principles are inherently inconsistent with intellectual property protection,”\(^{258}\) since they compel sharing when the whole point of intellectual property laws is to confer exclusive rights. Some of these concerns, though valid, are exaggerated, especially when sound limiting principles are in place, as this Article proposes.

1. TENSIONS WITH INTELLECTUAL PROPERTY LAWS

No one would disagree that intellectual property is central to the new economy.\(^{259}\) Google’s and Microsoft’s successes, for example, are based almost entirely on the information they create and not on physical assets. It is also generally understood that intellectual property laws are de-

\(^{256}\) See supra note 245.

\(^{257}\) See, e.g., Lipsky & Sidak, supra note 10, at 1193, 1219; Marquardt & Leddy, supra note 181, at 856 (“The search for a competitive advantage is a healthy dynamic driving the process of innovation and the development of intellectual property. Ideally, innovation by one company spurs innovation (or other pro-competitive reactions) by rivals in an attempt to maintain their competitive position. Allowing those rivals to have access to the innovator’s intellectual property simply by declaring themselves beaten runs a serious risk of short-circuiting that dynamic.”).

\(^{258}\) Lipsky & Sidak, supra note 10, at 1219.

\(^{259}\) Technology driven innovations clearly drive today’s economy and intellectual property is the core of these innovations. See generally, Hill & Rausch, supra note 3 (providing economic data on high technology industries).
signed to address the "public good" problem of intellectual property.\textsuperscript{260} Public goods are characterized by nonexcludability\textsuperscript{261} and nonrivalrousness:\textsuperscript{262} that is, absent some form of legal protection, the owner cannot easily exclude others from "sharing" the property.\textsuperscript{263} If others can, at will, "take" information that the owner has spent time and money developing, the owner would have difficulty profiting from her innovation, which would greatly diminish her incentives to innovate. By granting owners of intellectual property a limited right of exclusivity, the intellectual property laws aim to remedy this problem and provide sufficient incentives for innovation.\textsuperscript{264}

But while some level of intellectual property protection is essential to encourage innovation, protection also imposes certain social costs. Commentators have observed that "to be intellectually productive, we necessarily borrow and share."\textsuperscript{265} Construing too liberally the right of exclusivity under the intellectual property laws will block the borrowing and sharing that is part and parcel of the process of creation, invention, and innovation to a far greater extent than is necessary or desirable.

If the system overcompensates the innovator, the protection may actually impede innovation by denying competitors (and users) access to needed information that could serve as building blocks for further progress. It would also decrease the economic opportunities for potential follow-on innovators or potential innovators in adjacent markets, which may lead to less innovation.\textsuperscript{266} In short, because competition also plays a role in fostering innovation, overprotection of an intellectual property holder from competition may perversely result in less, rather than more, innovation.\textsuperscript{267}

Ideally, the intellectual property system should offer innovators no more incentives than are necessary to stimulate innovation.\textsuperscript{268} Unfortu-
nately, there is no reliable method to assess how much exclusivity and protection from competition is optimal for innovation.\textsuperscript{269} Nor is there any reasonably accurate method to determine how much competition, as opposed to intellectual property laws, contributes to innovation.\textsuperscript{270} But there is certainly no evidence to suggest that the greater the scope of intellectual property protection, the higher the rate of innovation.

Today, many commentators believe that "[i]ntellectual property law is out of control,"\textsuperscript{271} with the boundaries of the law being stretched to expand the rights for intellectual property holders, leading to higher costs for users.\textsuperscript{272} Of course, it is not the prerogative of antitrust law to directly challenge the explicit statutory protections of the federal intellectual property system, even if we deem the protection unwise in a specific context.\textsuperscript{273} For example, even a monopolist could not be compelled under antitrust law to allow others to duplicate its copyrighted source code in order to introduce a clone (unless it has misused its copyright), no matter how beneficial that might be to consumer welfare, because to do so would directly conflict with a specific right granted in the Copyright Act.\textsuperscript{274}

Though antitrust law obviously cannot and should not be applied in a manner that actually conflicts with intellectual property laws, it does not follow that intellectual property rights holders have near-absolute antitrust immunity. It is well-established, for example, that antitrust law prohibits illegal tying arrangements involving patents and copyrights to the same extent that it prohibits ordinary tying arrangements.\textsuperscript{275} Several courts have also recognized that refusals by a monopolist intellectual

\begin{itemize}
\item \textsuperscript{269} See Lao, supra note 264, at 214-15 (discussing theoretical tests designed to find the proper balance and arguing that they are indeterminate).
\item \textsuperscript{270} See id. at 215-16 (arguing that competition itself is a strong impetus for innovation).
\item \textsuperscript{271} Harry First, Controlling the Intellectual Property Grab: Protect Innovation, Not Innovators, 38 Rutgers L.J. 365, 365 (2007).
\item \textsuperscript{272} See id.; Lao, supra note 264, at 213-21 (questioning the wisdom of overlooking potential drawbacks of overly expansive intellectual property protection, and of undervaluing both the role of competition in stimulating innovation and the importance of competition in its own right); see generally Mark A. Lemley, Property, Intellectual Property, and Free Riding, 83 Tex. L. Rev. 1031 (2005) (criticizing the trend toward broad interpretation of intellectual property rights).
\item \textsuperscript{273} The patent and copyright laws were passed pursuant to Article I, § 8 of the U.S. Constitution, which grants Congress the power "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. Const. art. I, § 8, cl. 8.
\end{itemize}
property holder to license or sell its intellectual property to rivals in derivative markets (in order to leverage its monopoly power from one market into another) can give rise to antitrust liability.

More recently, the Court of Appeals for the D.C. Circuit also made abundantly clear in *Microsoft* that the Copyright Act does not give copyright owners, such as Microsoft, the right to control all aspects of their protected works. Microsoft had asserted that its copyright of Windows gave it the right to license the product on terms it saw fit, and that "if intellectual property rights have been lawfully acquired . . . , their subsequent exercise cannot give rise to antitrust liability." The court dismissed this argument out of hand as "border[ing] upon the frivolous."

Case law and policy reasons, then, both support a position that minimizes the finding of true conflict between antitrust and intellectual property laws, which would require immunity from antitrust. True, Microsoft cannot be directed to license its Windows source code to potential rivals to make possible a duplicate product, since that would constitute a direct conflict with the Copyright Act. However, the intellectual property laws do not *entitle* Microsoft to control all aspects of Windows, such as refusing to disclose the software’s interface information, in order to leverage its power in Windows into adjacent markets. And, applying the essential facilities doctrine to compel the licensing of interoperability information in this context would not conflict with the specific protections of intellectual property laws.

2. Incentives to Innovate and Reward for Innovation

Even without a direct conflict with intellectual property laws, some critics object to the essential facilities doctrine on grounds that it generally reduces the incentives for, and hence chills, innovation, which is particularly troubling when intellectual property rights are implicated. The thrust of their argument is that the purpose of intellectual property law is to offer incentives for innovation by granting exclusivity to intellectual property rights owners. This argument also applies outside the intel-

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276. See *supra* Part III-C.
279. *Microsoft*, 253 F.3d at 63.
280. See First, *supra* note 219, at 1419 (proposing that "courts should minimize the conflict between intellectual property and antitrust by carefully examining the intellectual property rights being asserted").
281. See id. (arguing that antitrust immunity should go no further than and should extend only to the scope of the intellectual property right).
282. See, e.g., Areeda & Hovenkamp, *supra* note 10, ¶ 772c2 (contending that imposing "any duty to share [intellectual property] would reduce the incentives for it and therefore tend to chill that desirable activity").
283. See, e.g., Lipsky & Sidak, *supra* note 10, at 1219 (arguing that the essential facilities doctrine is inconsistent with "the policies of patent, copyright, and other kindred legal systems"); Marquardt & Ledy, *supra* note 181, at 864 ("At a minimum, application of the essential facilities doctrine to compel the sharing of intellectual property must be done, if at all, in a way that does not undermine the core goals of intellectual property rights.").
lectual property area: building a bridge across the Mississippi would be the kind of innovation (whether or not technological in nature) that arguably would be retarded by the fear that the benefits reaped could be taken away by a court under the antitrust laws. By imposing a duty to share, the doctrine is said to undermine the objective of encouraging innovation because it prevents the monopolist from fully appropriating the rewards.

Critics express concern that dominant firms, knowing that they might be forced to share their advantage with rivals, would be less inclined to invest in creating the "facility" in the first place. Rivals who stand to benefit from application of the doctrine may also have less incentive to innovate—to find a way around the obstacle of the bottleneck—because they no longer have the need to do so.

The issue of incentives is, in fact, much more complex than is suggested by critics. Their arguments focus primarily on the interests of intellectual property holders and their desire to extract maximum reward for their efforts. There appears to be an assumption that any legal rule having some disincentive effect on innovation on the part of a monopolist intellectual property holder would necessarily be harmful to the economy and, therefore, unacceptable. That assumption, however, is unsubstantiated. In any calculus of the effects on innovation of compulsory access, it is not enough to consider only the possible disincentive effect on the monopolist forced to share its facility. The stimulus to innovation brought about by mandatory disclosure or sharing, especially in complementary markets, must also be taken into account. By giving rivals that which is needed to compete in complementary markets, essential facilities may unleash innovation and competition in the complementary markets.

The essential facilities doctrine, as limited by the principles proposed here, is more likely to have a net positive effect on innovation than a net negative effect, at least in network industries with strong network effects. That is because strong network effects usually reflect a winner-take-all or winner-take-most market. In such markets, the essential facilities doctrine should increase, not decrease, net innovation because opening access would encourage innovation from smaller rivals in the secondary markets. At the same time, the reduction in total reward to the innovator is unlikely to unduly deter monopolists required to share

285. Id. at 407.
286. Id.
287. See Lao, supra note 227, at 215-18 (arguing that competition itself is a strong stimulus to innovation and that expansive intellectual property protection may diminish, rather than enhance, innovation in complementary markets).
288. See Jonathan B. Baker, Promoting Innovation Competition Through the Aspen/Kodak Rule, 7 GEO. MASON L. REV. 495, 511-15 (1999) (persuasively arguing that in winner-take-all markets, a policy preventing dominant firm exclusion of fringe firms should increase net innovation, by encouraging fringe firm innovation while not deterring too much dominant firm innovation efforts).
the essential facility because of the attraction of the potential large winner-take-all prize. 289

The suggestion that any limitation of a monopolist’s reward would discourage development of the facility in the first place 290 is unsupported by economic studies or other evidence. It also seems to ignore the common sense reality that, while firms would always like maximum profits, even monopolists could be content with less, provided that the returns are sufficient to justify the investment and risk taking. Since, by definition, the doctrine is applicable only when the alleged essential facility is in the hands of a monopolist in a relevant market, the monopolist may well have already reaped sufficient profits in that market to justify the innovation. While control of a secondary market would add to the reward and would certainly be welcomed, the absence of that control would likely not have changed the monopolist’s action ex ante. It would be absurd, for example, to speculate that Microsoft would have been discouraged from investing in Windows had it known that it would not be permitted to corner the server market as well by refusing to license interoperability information to Sun Microsystems and others.

Moreover, it bears noting that the essential facilities doctrine does not call for uncompensated sharing. 291 In fact, dominant firms are usually allowed to charge monopoly prices, so long as they are non-discriminatory, unless the court orders otherwise. 292 Given all these considerations, the argument that the essential facilities doctrine, applied cautiously in accordance with the principles discussed here, would somehow over-deter innovation and undermine the policies of intellectual property protection is unpersuasive.

Equally unpersuasive is the contention that the doctrine would also discourage innovation on the part of competitors given access to the facility. The MCI test itself already ensures that the essential facilities argument would fail unless the facility is shown to be truly essential. Furthermore, the natural monopoly characteristics of the “essential facilities” suggest that recreating the facility would be socially wasteful, undesirable, and should not be undertaken. The presence of significant network effects in the affected network industry also means that inter-system competition is unlikely to be successful, which cuts against the argument that, but for open access, rivals could have developed an alternative network to engage in inter-system competition.

289. See id. at 514-15.
290. See Marquardt & Leddy, supra note 181, at 856 (contending that allowing rivals to have access to the innovator’s creation would upset the dynamic built into the intellectual property system for “innovation by one company [to] spur[ ] innovation”).
291. In none of the essential facilities cases was the defendant ordered to grant uncompensated access to its facility.
292. If liability is proven, courts may require the monopolist to sell or grant access at the competitive price. However, this would place courts in the position of being a central planner, which courts generally disfavor. See Verizon Commc’ns, Inc., 540 U.S. at 415.
VI. CONCLUSION

With sound limiting principles, the essential facilities doctrine can be an effective tool for courts and antitrust institutions to remedy interoperability and access problems so often seen in modern day networks. A common refrain in the criticism of the doctrine has been that it lacks theoretical grounding or even a consistent rationale. A reexamination of the important U.S. essential facilities cases shows that that is not true. There are in fact sound, though perhaps unarticulated, principles underlying each of those cases.

U.S. courts have, by and large, decided the essential facilities cases sensibly: they have tended to condemn a monopolist’s refusal to share its “essential facility” when the facility had natural monopoly characteristics or strong network effects, and the good or service involved was a necessity, and they have declined to do so when these features were absent. That is, they have usually approved of the doctrine only when the denial of access was, or would have been, socially wasteful, impeded innovation and competition, and adversely impacted the public interest. These same principles can be applied equally well to refusals to license information needed for interoperability in networks to help identify when compulsory disclosure might be an appropriate solution and when it might not.