Extra-Antitrust: Using the Takings Clause to Correct Anticompetitive Network Markets

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I. Abstract

Dear conference participants,

Thank you for the opportunity to present this work-in-progress. I do not yet have a proper introduction, but I sketched out the argument, before doing a deeper dive into it.

You'll notice a few placeholders throughout. The placeholders are for sections I either have not written yet or have removed because they were incomplete and frustrated readability.

I would love your comments on any and all of it, including (a) your reactions to using the Takings Clause is the manner I propose, (b) the organization of the discussion, and (c) mechanisms for assessing royalty rate.

Thank you! Jennifer

II. Introduction

[Markets that exhibit network effects can yield market power and that power can be more durable. In addition, U.S. antitrust law does not condemn the acquisition or possession of market power unless accompanied by exclusionary conduct—e.g., tying, exclusive dealing, predatory pricing. This article consequently proposes that, rather than relying on U.S. antitrust law to correct anticompetitive network markets, we instead rely on the eminent domain power under the Takings Clause. It specifically proposes that Congress exercise the federal eminent domain power to "take" a license to intellectual property—whether patents or copyrights—that are necessary to achieve interoperability with networks.]

III. Network Effects/Problem

A. Network and Positive Feedback Effects

"Network effects" generally describes the phenomenon by which the value of a product increases as does the number of other users of the product or compatible products.[2] As the name suggests, it is a characteristic of products that enable communication through a network. The classic example is a traditional telephone. The greater the number of consumers who own and use telephones, the more connections any one user can make to other users, and the greater the value of the telephone to that user. But a solitary telephone, on its own, has no value.

Some products exhibit characteristics of network effects insofar as they increase in value as does the number of other users of the same, compatible, or interoperable products. But unlike classic network products, they have some intrinsic value. For example, computer software, such as Microsoft Word, has

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[2] *Network Externalities*, *supra* note 2, at 424.

value, standing on its own, for its word-processing features. But it becomes more valuable if a user can share files with other users of Word, as well as with users of Google Docs or Apple Pages.[3]

Markets characterized by network effects may also exhibit "positive feedback effects"—i.e., the increasing availability of complementary products. As the demand for the network product increases, so too does the demand for complementary goods, such that it decreases the marginal and average cost of making such products, thereby increasing the availability of such products. For example, as the number of iPhones owners increases, so too does the demand for applications, or "apps", running on the pre-installed iPhone operating system, iOS, thereby increasing the availability of compatible apps.

[PLACEHOLDER: POSITIVE FEEDBACK EFFECTS WRT TWO-SIDED PLATFORMS]

B. Implications for Antitrust Analysis

Network effects and positive feedback effects, together, can give rise to competition concerns because these effects can ultimately yield market power and that power can be more durable. The possibility of sustained supracompetitive profits, in turn, can incentivize firms to engage in exclusionary conduct—e.g., tying, exclusive dealing, predatory pricing, or refusing to deal—that will position them to benefit from such effects.

Monopoly power is a plausible outcome in a market that exhibits network effects because such markets frequently are more likely to "tip" in favor of the initial market leader and yield a market "winner." Monopoly power is the power profitably to restrict output, degrade quality, and charge supracompetitive prices. A market "tips" when a firm with an initial edge in the market then catapults ahead. The frontrunner can obtain its initial edge by being the first to market and benefitting from what is commonly referred to as a "first-mover advantage,"[4] but that is not always the case.[5] Regardless, the initial frontrunner's lead can ultimately translate into the kind of market dominance that enables a firm to charge supracompetitive prices.

Network effects together with positive feedback effects make tipping more likely and more pronounced in two respects. First, because of network effects, a firm's initial edge in the market translates to greater value to consumers—an initial edge yields a larger network of consumers, which in turn yields greater value to consumers who are able to communicate with a larger number of users. This greater value, in turn, causes more consumers to adopt the frontrunner's product, which in turn yields an even greater lead to the initial frontrunner. Tipping thus becomes even more likely and the frontrunner's edge more exaggerated.

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[3] *Id.* (describing such goods as exhibiting "virtual network effects"). Similarly, virtual networks have been referred to as the hardware/software paradigm. *See* Michael L. Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 J. ECON. PERSP. 93, 94 (1994) [hereinafter *Systems Competition*].

[4] *See* Marvin B. Lieberman & David B. Montgomery, *First-Mover Advantages*, 9 STRATEGIC MGMT. J. 41 (1988) (defining first-mover advantage as "the ability of pioneering firms to earn positive economic profits").

[5] *See* Thierry Rayna & Ludmila Striukova, *The Curse of the First-Mover: When Incremental Innovation Leads to Radical Change*, 1 INT. J. COLLABORATIVE ENT. 4 (2009) (arguing that radical innovation and first-mover advantage does not always yield a competitive advantage in high-tech industries); *see also generally* Lieberman & Montgomery, *supra* note _, (reviewing theoretical models and empirical evidence regarding first-mover advantage, noting limitations on the advantage's applicability, and identifying first-mover *dis*advantages); *cf.* William Boulding & Markus Christen, *First-Mover Disadvantage*, HARV. BUS. REV. (2001), available at https://hbr.org/2001/10/first-mover-disadvantage (examining 365 business units over more than fifty-year period and finding that pioneers were substantially less profitable than followers over the long run). For example, the market for search has decidedly tipped in favor of Google. But Google was preceded by a number of other search engines, such as Archie, Yahoo!, and AltaVista.

Second, network effects yield lower switching costs, which in turn further encourage tipping. "Switching costs" are the costs consumers must incur to switch from one firm's product to a competitor's product. Once a firm edges out ahead in the market, the costs to switch from a competitor product to the frontrunner's product become less prohibitive. Consumers generally will not switch to a new product unless the efficiencies to be gained from switching outweigh the costs. These costs include the cost of the product itself—for example, a new telephone—the cost of learning how to use the new product, the cost of adapting to the new product, and the foregone benefits of the network the consumer will leave behind. As the frontrunner moves ahead in the market, the cost of hardware necessary to join the *winning* network decreases because the increase in demand is accompanied by economies of scale. At the same time, the cost of leaving the *losing* network behind becomes increasingly less; because of network effects, as the size of the losing network decreases, its value decreases more rapidly than does its size. Thus, as one firm becomes the frontrunner, switching costs tend to decrease, making it more likely consumers will switch to the frontrunner, only encouraging the market to tip further. And as one firm falls behind, the cost to switch to the loser's network tend to increase, make it less likely that consumers will join the loser's network.

In industries prone to tipping, competition is, at the least, for the lion's share of the market, but more often competition is "for the market."[6] If the market tips in favor of one network, that winner will almost certainly be the holder of a monopoly. For example, in the 1990s, the market for personal computer operating systems was dominated by Microsoft Windows,[7] and, today, the market for Global Messaging is dominated by Meta's WhatsApp.[8] If the market can accommodate multiple networks, the end-result may be an oligopoly. Whether the market can accommodate more than one network depends, in part, on whether competitors' networks are interoperable, such that they can communicate with each other—i.e., inter-network communication—or are instead "closed" ecosystems that enable communication only amongst those on the same network—i.e., intra-network communication. The U.S. market for wireless telecommunications is an illustrative example of an oligopolistic market characterized by interoperability among competitors; the market is dominated by AT&T, Verizon, and T-Mobile, and subscribers to any one of these networks is able to communicate with subscribers to a competitor network.[9] Regardless of whether the end-result is a monopoly or an oligopoly, the reward is supracompetitive profits.

Once the market has tipped, there are significant barriers to entry that can make it difficult for a would-be competitor to enter the market. These barriers include switching costs. Consumers who wish to adopt the new entrant's technology will almost certainly encounter switching costs that are *higher* than those they would face if they adopted the frontrunner's technology. The cost of hardware to join the new entrant's network (again, imagine a telephone) will likely be more expensive than the hardware to join the frontrunner's

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[6] *See* Joseph Farrell & Michael L. Katz, *The Effects of Antitrust and Intellectual Property Law on Compatibility and Innovation*, 43 ANTITRUST BULL. 609, 611 (1998).

[7] *See* Casey B. Mulligan, *What Happened to the Microsoft Monopoly?*, N.Y. TIMES (June 20, 2012, 6:00 AM), https://archive.nytimes.com/economix.blogs.nytimes.com/2012/06/20/what-happened-to-the-microsoft-monopoly/.

[8] *See* Will Oremus, *Betrayal or inevitability? Meta is putting ads in WhatsApp*, WASH. POST (June 17, 2025), https://www.washingtonpost.com/politics/2025/06/17/meta-whatsapp-ads-privacy-antitrust/?utm_source=chatgpt.com (noting that WhatsApp has more than three billion users and has grown into one of the world's largest social networks).

[9] *See* Kelcee Griffis, *Verizon Loses More Subscribers Than Expected in Tight Market*, BLOOMBERG (Apr. 22, 2025, 11:18 AM), https://www.bloomberg.com/news/articles/2025-04-22/verizon-loses-more-subscribers-than-expected-in-tight-market?utm_source=chatgpt.com; *see also* Leo Miller, *AT&T, Verizon & T-Mobile: Who Won the Big 3 Telecom Battle in Q1?*, NASDAQ (May 1, 2025, 8:45 AM), https://www.nasdaq.com/articles/att-verizon-t-mobile-who-won-big-3-telecom-battle-q1.

network because the new entrant will almost certainly not have an established network and consequently demand will not be sufficient to achieve economies of scale. In addition, the foregone benefits from leaving the winning network to join the new entrant's network will be greater than the reverse scenario where consumers leave a competitor network to join the winning network because of the relatively greater value of the winning network to consumers. Moreover, a new entrant will have to convince consumers that a sufficient number of other consumers will switch too, such that the new entrant's network will succeed.[10]

These barriers to entry endow the frontrunner with more durable market power—the ability profitably to raise prices, restrict output, or reduce quality to a greater extent or for a longer duration. The frontrunner may face little new competition. New entrants may be unable to overcome switching costs and consumer expectations, even if they offer better technology; consequently, they may be unable to attract sufficient demand and will ultimately fail. Other would-be competitors may decide not to enter the market at all. The frontrunner may consequently endure without challenge or persist longer. In addition, the frontrunner may be able to exert its market power more forcefully because consumers on its network may be "locked in."[11] The frontrunner's consumers can serve as an "installed base" over which the frontrunner can profitably raise prices even further above the competitive level.[12] Barriers to entry thus may enable the frontrunner to raise prices above the competitive level for a longer duration and to a greater extent. And because of the durability of the frontrunner's market power, a firm vying for the lead has a greater incentive (in the form of sustained supracompetitive profits) to engage in unlawful, exclusionary conduct to secure the position as the frontrunner.

[PLACEHOLDER: "MONOPOLY EXEMPTION" PROBLEM]

The effects of barriers to entry, however, should not be overstated. These barriers can be overcome by several overlapping strategies. A new entrant can adopt complex pricing schemes that aim to internalize the positive benefits of a larger network to its users[13] or price hardware below cost to stimulate demand and signal to consumers the anticipated growth of its network.[14] It can offer a sufficiently differentiated product, such that there is value to consumers in joining more than one network; video game consoles are a good example—consumers may, for example, own a Microsoft Xbox and a Nintendo Switch. A new entrant can offer a significantly better product that not only justifies switching costs, but also encourages others to follow

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[10] *See Systems Competition*, *supra* note __, at 96. Katz and Shapiro also note that the benefits not considered by adoption externalities are under-stated when positive feedback effects are considered: "because of the positive-feedback nature of networks, even adoption externalities that are small at the individual level can lead to large social welfare losses." *Id.*

[11] *Cf.* Daniel L. Rubinfeld, *Competition, Innovation, and Antitrust Enforcement in Dynamic Network Industries, Address to the Software Publishers Association*, *at* http://www.usdoj.gov/atr/public/speeches/1611.htm, 8 (Mar. 24, 1998) (acknowledging the possibility that a firm can exert market power over locked in consumers).

[12] *See* Eastman Kodak Co. v. Image Technical Services, Inc., 504 U.S. 451, 476, 477-78 (1992) (holding that summary judgment for Kodak was inappropriate because Kodak could have had market power in the after-market for service and replacement parts for its equipment because it could profitably raise prices above the competitive level for those customers "locked in" to Kodak equipment because of high switching costs).

[13] For example, the new entrant can employ a pricing scheme known as "metering." Metering enables a firm to extract revenue from consumers in accordance with their usage of a network good by using the sales of a complementary product as a "meter" for usage. *See* Jefferson Parish Hosp. Dist. Number 2 v. Hyde, 466 U.S. 2, 36 n.4 (1984) (O'Connor, J., concurring) (applying the term "metering" in the context of tying). A telephone network provider could, for example, charged a set price for access to the network and then an additional fee for each call; the number of calls a consumer places acts as a meter for the consumer's use of the network.

[14] This pricing scheme is known as "penetration pricing." *See* Michael L. Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 J. ECON. PERSP. 93, 104 (1994).

suit.[15] Indeed, if the new entrant offers a product that is a significant advancement over the prior technology, the new product can serve as a pioneer to create an entirely new market. For example, when Instagram came on the scene, it was not simply another social media platform that made modest improvements over Meta's dominant Facebook platform; it introduced a fundamentally new way of interacting, and in doing so, posed a competitive threat to Facebook.[16]

But perhaps the easiest way for a new entrant to overcome barriers to entry is to offer a product, service, or network that is interoperable with the existing network. Products, services, or networks are interoperable if they are able to communicate with each other, such that they can transfer, process, or otherwise make use of data amongst themselves.[17] One example is electronic mail (email); users can seamlessly communicate with each other without regard to the software or hardware on which they are composing, sending, or receiving email. [18] Email systems are interoperable because the technologists who created the system agreed upon, created, and implemented protocols or standards to ensure they were so.[19] Another example is cross-platform gaming; gamers playing a particular game on one platform can play with or against other gamers playing on a different platform. Cross-platform gaming is possible for many modern games.[20] Fortnite is one particular example—gamers playing on a personal computer,[21] PlayStation,[22]

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[15] Carl Shapiro, *Exclusivity in Network Industries*, 7 GEO. MASON L. REV. 673, 675 (1999).

[16] *See* Amended Complaint ¶¶ 83-88, Fed. Trade Comm'n v. Facebook, Inc., No. 1:20-cv-03590 (D.D.C Sept. 8, 2021) (explaining the competitive threat Instagram posed to Facebook which ultimately prompted Facebook to acquire, rather than compete with, Instagram).

[17] Steven C. Salop & R. Craig Romaine, *Preserving Monopoly: Economic Analysis, Legal Standards, and Microsoft*, 7 GEO. MASON L. REV. 617, 630 n.37 (1999); JOHN PALFREY & URS GASSER, INTEROP: THE PROMISE AND PERILS OF HIGHLY INTERCONNECTED SYSTEMS 5-7 (2012) (noting that "[t]here is no single, agreed-upon definition of interoperability" but that "[i]n the most general sense, in the context of information technologies, interoperability is the ability to transfer and render useful data and other information across systems, applications, or components"), *cited in* Herbert Hovenkamp, *Antitrust Interoperability Remedies*, 123 Colum. L. Rev. F. 1, 23 n.127 (2023).

[18] John Palfrey & Urs Gasser, *Interoperability in Information Systems in the Furtherance of Trade*, NCCR Trade Regul., Working Paper No 2012/26 (June 2012), https://www.wti.org/media/filer_public/db/18/db18c6c6-a79d-44c7-8cbf-47fe568a9ed4/palfrey_gasser_interop_of_information.pdf.

[19] *See id.* ("Information systems, such as mail servers and email clients, have been designed to make sure that the users of the email system do not need to worry about who made the email client or the email server being used by a business correspondent . . . .").

[20] Popular games that enable cross-platform play include Minecraft, *See* Emma Witman, *Yes, 'Minecraft' is cross-platform-here's how to play with your friends on any system*, BUSINESS INSIDER, (Mar. 29, 2021), https://www.businessinsider.com/guides/tech/is-minecraft-cross-platform, Call of Duty, *See* ACTIVISION, https://support.activision.com/modern-warfare/articles/crossplay-and-cross-progression-in-call-of-duty-modern-warfare (last visited July 9, 2025), Rocket League, *See* Jeremy Dunham, *Full-Cross Platform Play Now Live in Rocket League*, Epic Games, (Jan. 14, 2019) https://www.rocketleague.com/en/news/full-cross-platform-play-now-live-in-rocket-league and Apex Legends, *See* Electronic Arts, *Apex Legends™ cross-play: how to play with fiends*, (Mar. 12, 2025), https://help.ea.com/en/help/apex-legends/apex-legends/apex-legends-cross-play/.

[21] Users can engage in cross-platform play only on a personal computer running on the Windows operating system. *See* Microsoft, *Cross-network play on Windows devices and Xbox consoles*, XBOX, https://support.xbox.com/en-US/help/friends-social-activity/share-socialize/cross-play-windows-10-xbox-one (last visited Jun. 19, 2025).

[22] Sony's PlayStation enables cross-platform play only on its PS4 and PS5 consoles. *See Play PS4 games on PS5 with backwards compatibility*, PLAYSTATION, https://www.playstation.com/en-us/staying-connected-to-ps4-and-ps5/ (last visited July 9, 2025) ("Whether you're playing on PS4 or PS5, if your game is cross-gen, then so are the friends you can play and chat with.").

Xbox,[23] iPhone,[24] or Android[25] can all play together in the same match, and any one player can move between platforms and maintain their progress within the world of the game.[26]

Achieving interoperability can be beneficial to consumers. Interoperability enables the network to grow, which yields positive feedback effects. A larger network will attract more developers of complementary products and more partners to a multi-sided platform because both will be able to access more consumers. In addition, a larger network will very likely yield a reduction in the cost of hardware because manufacturers are more likely to achieve economies of scale. The availability of more complements and partners and the reduction in the cost of hardware, in turn, will attract more consumers to the network, thus growing the network even larger, thereby generating a self-reinforcing loop. Larger networks therefore generate more value to consumers and more consumers to network owners.

At the same time, interoperability facilitates competition among network owners and providers. Firms can compete at the network level by offering an alternative network that is less expensive, is higher quality, offers different service, or is characterized by different features, but that is nonetheless interoperable. But firms can also compete by offering different complements. All dimension of competition can yield benefits to consumers. Cellular phone service is a good example. In the United States, there are multiple cellular service providers—e.g., AT&T, T-Mobile, and Verizon Wireless. Each of the primary service providers develops and maintains its own infrastructure and network. But consumers of one network can communicate both with consumers of the same network, as well as with consumers of a competing network: AT&T consumers can communicate with other AT&T consumers, but also with T-Mobile and Verizon Wireless consumers. Cross-network communication is the end-result of collaboration among network providers that includes ensuring interoperability amongst network infrastructure and devices. But that does not mean there is not competition. Firms compete on service, price, and available complements (i.e., phones) for example. Such competition can thus dislodge an entrenched monopolist.

Whether the incumbent network owner will experience a net increase in revenue will depend on how it fares in the competition. While more consumers may be attracted to the incumbent's network because of the larger size of the ultimate network, the incumbent may lose consumers to its competitors. If achieving interoperability requires the use of intellectual property rights, the incumbent may additionally benefit from royalty payments due as a result of a licensing agreement.

Interoperability can be achieved by a few means—by private action, legislation, regulation, or adjudication. Private actors can achieve interoperability through collaboration. Such collaboration can be formal and centralized, as in the case of standard-setting organizations (SSOs) that adopt, develop, and implement protocols and standards relating to the design of networked technology. For example, the

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[23] Microsoft's Xbox enables cross-platform play on its Xbox One and Xbox Series X|S. Alexander Cope, *List of all Xbox cross-platform & cross-play games*, WINDOWS CENTRAL, https://www.windowscentral.com/xbox-cross-play-games (Feb. 12, 2024).

[24] Because of an ongoing dispute between the creators of Fortnite, Epic Games, and Apple, *see, e.g.*, Complaint Epic Games, Inc. v. Apple Inc., No. 20-cv-05640 (N.D. Cal. Aug. 24, 2020), Apple removed Fortnite from its app store, *see id.* ¶ 20. Therefore, the iPhone platform is only available to Fortnite gamers who installed the game before it was removed from Apple's app store.

[25] *71 Best Cross-Platform Gamed for Android,* CROSSPLAY GAMES, https://crossplaygames.com/(last visited July 19, 2025) (noting that 71 different Android games support cross-platform play).

[26] *See generally* Witman, *supra* note ___ ("Best of all, this multiplayer mode has cross-platform functionality, meaning that it doesn't matter what system you play 'Minecraft' on–-you can play with friends on any system . . . the biggest thing to remember is that you can play 'Minecraft' with anyone who owns the same version as you.").

Institute of Electrical and Electronics Engineers Standards Association (IEEE SA) is a global standards development organization[27]; among the standards it has facilitated is the widely used Ethernet and Wi-Fi standards that ensure interoperability among network devices.[28] But collaboration can also arise informally and in a decentralized manner, arising from a series of somewhat stochastic decisions by various stakeholders. Cross-platform gaming, for example, emerged from a number of unilateral decisions—and even a mistake[29]—of game developers and technology firms occurring over more than two decades.[30]

Of course, an individual or firm can attempt to achieve interoperability with an existing network unilaterally by developing technology—e.g., an "adapter"—that enables its product or service to work with the existing network. A familiar example of a non-networked adapter is a three-prong to two-prong adapter, or "cheater" plug, which enables three-pronged grounded electronics to be used in two-pronged ungrounded outlets. But if the adapter requires the use of proprietary material, such as copyrighted works or patented inventions, then the individual's or firm's efforts to establish interoperability unilaterally will almost certainly end in litigation, initiated by the rights holder against the innovator of the adapter.

Interoperability can also be achieved through legislation. For example, the American Innovation and Choice Online Act (AICOA), introduced by the Senate but never passed,[31] would have required certain, designated digital platforms to enable other firms to interoperate with them. [PLACEHOLDER: AUGMENTING COMPATIBILITY AND COMPETITION BY ENABLING SERVICE SWITCHING ACT OF 2025—ACCESS ACT OF 2025]

Regulation is a related, yet distinct, means of achieving interoperability. A regulator can mandate that a network owner enable interoperability through rulemaking or adjudication. The 1968 *Carterfone*[32] decision by the Federal Communication Commission (FCC) is an illustrative example.[33] At the time of the decision, telephone service was primarily provided by AT&T or companies it owned and controlled,[34] which were regulated by the Communications Act of 1934 and the agency it created, the FCC.[35] That Act requires

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[27] *See* IEEE, https://www.ieee.org/ieee-standards (last visited July 19, 2025).
[28] *See generally Milestone In Recognition of IEEE 802 Standards Committee*, IEEE SA, https://standards.ieee.org/featured/ieee-802/ (last visited July 19, 2025).
[29] *See, e.g.*, Kyle Orland, *Fortnite devs inadvertently prove cross-platform play is possible*, ARS TECHNICA (Sept. 18, 2017, 3:58 PM), https://arstechnica.com/gaming/2017/09/fortnite-devs-inadvertently-prove-cross-console-play-is-possible/ (noting that Epic Games had inadvertently enabled cross-platform play of Fortnite).
[30] *See, e.g.*, Richard Devine, *The Sega Dreamcast: Microsoft on Consoles Before the Days of Xbox*, WINDOWS CENTRAL, https://www.windowscentral.com/sega-dreamcast (recounting collaboration between Microsoft and Sega in 1998 that aimed to facilitate cross-platform titles); *see also Capcom vs. SNK 2 Kicked Off Crossplay in Video Games 20 Years Before the Modern Trend*, EVENT HUBS, https://www.eventhubs.com/news/2024/jun/16/capcom-snk-crossplay-games/ (June 16, 2024) (noting that Capcom vs. SNK 2 was the first video game to "pull off the feat" of cross-platform play over 20 years ago).
[31] The AICOA was introduced in 2021 and again in 2023 but ultimately died. *See, e.g.,* American Innovation and Choice Online Act, S. 2992, 117th Cong. § 3(a)(4) (2021); American Innovation and Choice Online Act., S. 2033, 118th Cong., § 3(a)(4) (2023); *see also* Hovenkamp, *Antitrust Interoperability Remedies*, *supra* note _, at 28 (discussing the competitive shortcomings of the legislation).
[32] *In re* Use of Carterfone Device in Message Toll Tel. Serv., 13 F.C.C. 2d 420 (1968).
[33] Special thanks to Jon Sallet for this example.
[34]David Brodwin, *Carterfone Case Showed How Regulations Promote Competition*, U.S. NEWS & WORLD REP. (Jun. 28, 2012, 4:30 PM), https://www.usnews.com/opinion/blogs/economic-intelligence/2012/06/28/carterfone-case-showed-how-regulations-promote-competition*; see also* Carter v. AT&T, 365 F.2d 486, 490 (5th Cir. 1966) (describing Carter's antitrust suit as alleging a conspiracy that involved AT&T, General Telephone Company, and "26 other named, but nonparty, telephone companies, 19 of which were owned and controlled by A.T.&T.").
[35] 47 U.S.C. §§ 151-609 (1964).

common carriers to file "schedules," commonly referred to as "tariffs," that detail "all charges," and "the classifications, practices, and regulations affecting such charges."[36] Once a tariff is approved by the FCC, it has the force of law.[37] One such tariff filed by AT&T gave it the power to terminate a customer's service if a device "not furnished by the telephone company" was "attached to or connected with" the network provided by the telephone company.[38] The rationale was to preserve the integrity of the network.[39] AT&T, among others, sought to enforce this provision against customers using the Carterfone.[40] The Carterfone was a device invented by Thomas Carter that enabled users of private, mobile two-way radios to interconnect and communicate with users on the telephone network.[41] Carter brought suit against AT&T and other telephone providers, alleging AT&T's enforcement of its tariff provision violated the antitrust laws.[42] The federal district court stayed the federal action and referred it to the FCC so that it could pass judgment on the just, reasonableness, and validity of the tariff.[43] After its review of the matter, the FCC concluded that the tariff had "been unreasonable, discriminatory, and unlawful" and consequently held that provisions that prevented customers from using "customer-provided interconnecting devices should . . . be stricken."[44] The FCC's *Carterfone* decision thus mandated that the telephone service providers enable interoperability. In doing so, laid the foundation for innovations like modems and the internet.[45]

Finally, interoperability can be achieved through litigation. Any legal complaint to which interoperability is an appropriate remedy can yield a judicial decree requiring interoperability.[46] For example, [PLACEHOLDER/CHANGE EXAMPLE: at the time of this writing, Judge Mehta, who presided over the Department of Justice's 2020 suit against Google, is considering an appropriate remedy to ameliorate the competitive harm he found was caused by Google's anticompetitive conduct in the market for general search services and general search text ads. Among the remedies proposed by the DOJ is enabling interoperability

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[36] 47 U.S.C. § 203(a) (1964).
[37] *See Carter*, 365 F.2d at 496 ("[A] tariff, required by law to be filed, is not a mere contract. It is the law."); *see also* Evanns v. AT&T, 229 F.3d 837, 840 (9th Cir. 2000).
[38] *See Carterfone*, 13 F.C.C. 2d at 421 & n.* (quoting tariff FCC No. 132 and explaining that it had been superseded by tariff FCC No. 263, provided in appendix A to the opinion); *id.* at App. A, F.C.C. Tariff No. 263, § 2.6.1.
[39] *See* Carter v. AT&T, 250 F. Supp. 188, 190 (N.D. Tex. 1966) (explaining that a section of AT&T's tariff authorized customers to use devices provided by the customers, rather than AT&T "provided any such device so used would not endanger the safety of Telephone Company employees or the public; damage, require change in or alteration of, or involved direct electrical connection to, the equipment or other facilities of the Telephone Company; or interfere with the proper functioning of such equipment or facilities; or impair the operation of the telephone system or otherwise injury the public in its use of the Telephone Company's services"); *see also* Nicholas Johnson, *Carterfone: My Story*, 25 SANTA CLARA COMP. & HIGH TECH. L.J. 677, 684-85 (2009).
[40] *Carter*, 250 F. Supp. at 189.
[41] The district court that referred Thomas Carter's suit to the FCC explained, "The party receiving the incoming telephone call places the telephone receiver handset on a cradle which forms part of the Carterfone; and by process of induction . . . the two-way radio communication system is activated, and the telephone caller can communicate with another person who may be located several miles away from the telephone receiver." *Id.*; *see also Carter*, 365 F.2d at 490; *Carterfone*, 13 F.C.C. 2d at 420-21.
[42] *See Carter*, 250 F. Supp. 188.
[43] *Id.* at 191-92. The district court concluded that the FCC had "primary jurisdiction" over the action, which necessitated that it refer the matter to the FCC and stay the federal action. *See id.*
[44] *Carterfone*, 13 F.C.C. 2d at 423.
[45] *See* JONATHAN L. ZITTRAIN, THE FUTURE OF THE INTERNET AND HOW TO STOP IT 22 (2008).
[46] *See, e.g.*, Hovenkamp, Interoperability Remedies, *supra* note _, at 31 (noting that interoperability can be achieved by judicial decree if there has been a finding of an antitrust violation).

by requiring Google to "syndicate" features of its services, such that other firms can create services in competition with Google].[47]

Network effects have played a central role in many recent, high profile lawsuits alleging violations of the competition laws. They were critical in *United States v. Google* to Judge Mehta's finding that Google violated Section 2 of the Sherman Act. The court held that Google unlawfully maintained monopolies in the market for general search services and general search text ads by entering exclusive agreements with browser developers and device manufacturers, such as Apple.[48] These agreements established Google as the default general search engine in an array of technologies, including the integrated search bar in Apple's Safari browser and in the search widget on Android devices.[49] In reaching its decision, the court reasoned, in part, that general search engines are characterized by network effects, which made it difficult for competitor search engines to compete.[50] The court explained,

> The market for GSEs [general search engines] is thus characterized by a type of network effects. (1) More user data allows a GSE to improve search quality, (2) better search quality attracts more users and improves monetization, (3) more users and better monetization attract more advertisers, (4) more advertisers mean higher ad revenue, and (5) more ad revenue enables a GSE to expend more resources on traffic acquisition of scale.[51]

Network effects made it difficult for others, such as Microsoft, to compete; indeed, the court concluded, "Microsoft has no genuine hope of displacing Google as the default [general search engine]" on Apple's Safari web browser.[52]

Network effects were also important to the Federal Trade Commission's suit against Amazon. The government alleged, among other things, that Amazon unlawfully maintained a monopoly in the markets for "online superstores" and "online marketplace services."[53] Amazon carried out this unlawful conduct by engaging in a number of overlapping, exclusionary practices, including penalizing sellers who offered lower prices for their products on sites outside of Amazon, favoring its own products and services over those of third-parties, and coercing sellers to use Amazon's logistic services (Prime and Fulfillment by Amazon, "FBA") to gain access to Amazon's Prime customers and otherwise remain competitive.[54] Importantly, the FTC alleged that Amazon benefitted from network effects and positive feedback effects. The more

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[47] *See, e.g.*, United States v. Google LLC, No. 1:20-cv-03010-APM, Plaintiffs' Revised Proposed Final Judgment (Mar. 7, 2025) 18-23, https://www.justice.gov/atr/media/1392601/dl (proposing that Google be required to make available a "syndication license" that will make data, ranked organic search results, search features, and other content available "via real-time API(s)" to certain "Qualified Competitors" and additionally proposing that, if competition has not been improved in five years, Google make additional features of its business available by license).

[48] *See* United States v. Google LLC, 747 F.Supp.3d 1 29, 32 (D.D.C. 2024).

[49] *See id.* at 44-47.

[50] *See id.* at 161 ("The sheer magnitude of Google's query volume, or scale, compared to rivals is startling: Users enter nine times more queries on Google than on all rivals combined.").

[51] *Id.*

[52] *Id.* at 162.

[53] Second Amended Complaint ¶ 123, Fed. Trade Comm'n v. Amazon.com, Inc.., No. 2:23-cv-01495 (W.D. Wash. Oct. 31, 2024) (alleging Amazon has "durable monopoly power in the online superstore market").

[54] *See Id.* ¶¶ 271-87 (explaining that Amazon uses its sophisticated surveillance network to detect lower prices on other online stores, and "punishes" sellers when they detect lower prices, by eliminating their offers from Amazon's Buy Box or threatening to ban them from Amazon's Marketplace); *see also* Second Am. Compl. ¶¶ 353-65 (explaining that many sellers would prefer to use an alternative fulfillment method, but they use Amazon's fulfillment services to remain Prime eligible and "buy increased sales", because without Prime eligibility seller's offers will receive fewer impressions in search queries, be filtered out of searches by Prime subscribers, and have lower sales conversion rates).

consumers who use Amazon's platform, the more sellers offering a greater variety of wares are attracted to the platform, which in turn attracts even more consumers.[55] And these network effects erected a high barrier to entry for rival marketplaces.[56] Amazon's exclusionary tactics strategically exploited the network and positive feedback effects from which it benefitted.

IV. Takings Clause as a Solution

There is no shortage of proposed solutions to monopolistic conditions in markets characterized by network effects. Many recent proposals focus on achieving interoperability. [PLACEHOLDER: EXAMPLES, KADES/SCOTT MARTIN, AICOA, ACCESS ACT, ETC.] Achieving interoperability is indeed a promising approach. But rather than contemplate the competition problem in isolation, I consider a problem from real property that has striking similarities [EXPLAIN SIMILARITIES BELOW] to industries that exhibit network effects and propose adapting the legal tool used to address it and applying it to the digital context. I consider one Supreme Court case in particular, *Hawaii Housing Authority v. Midkiff*, which formally tells the story of the concentration of real property in the hands of a few, the resulting scarcity of property experienced by others, and the use of eminent domain to correct Hawaii's concentrated real property market. Borrowing from this example, I propose exercise of the federal eminent domain power to correct concentrated network markets. I specifically propose that the federal eminent domain power be used to compel owners of intellectual property that are necessary to achieve interoperability to license such intellectual property to would-be competitors.

But, as other scholars have noted, the story of *Midkiff* is more complicated.[57] *Midkiff* did not simply aim to correct the market for real property in Hawai'i; it also effectuated and sanctioned the taking of indigenous land. I therefore additionally grapple with the challenge of pursuing contemporary policy goals through legal doctrines and precedents that are encumbered by problematic legacies.

[PLACEHOLDER: ADDITIONAL ROADMAP?]

A. Hawaii Housing Authority v. Midkiff

Although not part of the cultural lexicon, *Hawaii Housing Authority v. Midkiff* is a pivotal eminent domain case. In an opinion authored by Justice O'Connor, the Supreme Court articulated what would become the modern standard for determining whether an exercise of eminent domain is constitutionally permissible. I discuss the standard further below. But *Midkiff* is also noteworthy because of the underlying social problem—what the Supreme Court described as an "oligopoly" in land—and how Hawaii sought to address it by redistributing private property through use of its eminent domain power.

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[55] *See id.* ¶ 9 ("By providing sellers access to significant shopper traffic, Amazon is able to attract more sellers on its platform. Those sellers' selection and variety of products, in turn, attract additional shoppers. More shoppers yield more customer-generated product ratings, reviews, and valuable consumer data for Amazon to use.").

[56] *Id.*; *see also* Second Am. Compl. ¶ 10 ("All of this enables Amazon to benefit from the accelerated growth and momentum that network effects and scale economies can fuel . . . The biggest threat to Amazon's monopoly power would be for a rival to attract its own critical mass of dedicated customers."). In other words, small or medium sized companies are unlikely to overcome the network effects and high barriers to entry Amazon has established in the online marketplace, unless they too attract a large consumer population and are willing to expend a significant amount of money in scaling their company. *Id.*

[57] *See generally* Ezra Rosser, *Progress and the Taking of Indigenous Land*, 85 OHIO ST. L.J. 623, 624 (2024) ("The story about Hawaii Housing Authority v. Midkiff—that it was a progressive victory in the battle against oligarchy—is wrong.").

Hawaii's history[58] and geography as an archipelago make its real property market complicated. The *Midkiff* opinion explains that Hawaii was initially settled by "Polynesian immigrants."[59] These settlers ultimately adopted what the Supreme Court and others described as a "feudal land tenure system."[60] In an *amicus curiae* brief upon which the Supreme Court relied, the Office of Hawaiian Affairs explained,

> Under the land tenure system, the main islands were divided into several separate kingdoms, with a high chief or king . . . controlling an island or part of an island. . . . Private ownership of land in the western sense had no place in pre-[Western] contact Hawaiian culture. Although the chief was said to control the use of certain lands he did not own them. Rather, he held them in trust for all of the people. The chief's tenancy was at will and, when conquest or death brought someone new into the picture, land would be redistributed according to the preference of the new chief.[61]

The separate island kingdoms were eventually united into one kingdom under King Kamehameha. And, in the early 1800s, under the influence of Westerners, Kamehameha's kingly successors and the chiefly leaders undertook to change the way property was divided among the crown, the chiefs, and the Native Hawaiian citizens.[62] But, the Court explained, "the land remained in the hands of the few."[63] This concentration of landownership "was responsible for skewing the State's residential fee simple market, inflating land prices, and injuring the public tranquility and welfare."[64]

To address the problem, the Hawaii legislature enacted the Hawaii Land Reform Act (HLRA) of 1967, which enabled residential tracts of land to be condemned and transferred to the existing lessees.[65] Under the Act, tenants living on certain qualifying tracts of land could request the Hawaii Housing Authority (HHA) to condemn the property on which they were living, and if a critical mass of tenants as defined by the statute made such a request, the HHA would hold a hearing to determine whether condemnation and acquisition by the State would serve the Act's purpose.[66] Landowners were ultimately compensated for the takings from funds provided entirely by the new owners.[67] Thus, the State provided the legal mechanism to break up the land oligopoly and redistribute the property, but the State did not provide the funds; those who would directly benefit from the legislation provided the funds.

In 1977, the trustees of the Kamehameha Schools and Bishop Estate, which held properties including thosecondemned in trust for the Hawaiian people, challenged the HLRA, claiming it was unconstitutional.[68] But, as discussed further below, the Supreme Court disagreed.[69]

B. The Takings Clause's Public Use Requirement

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[58] For a longer discussion of Hawaii's history, *see id.* at 632-39.
[59] *See* Hawaii Housing Authority v. Midkiff, 467 U.S. 229, 232 (1984).
[60] *Id.*
[61] Brief for Office of Hawaiian Affairs as Amicus Curiae Supporting Appellees at 5, Hawaii Hous. Auth. v. Midkiff, 467 U.S. 229 (1984) (No. 83-141).
[62] *Midkiff*, U.S. at 232; *see also* Act 307, § 1(c), 307 Haw. Sess. Laws 489 (1967).
[63] *Midkiff*, 467 U.S. at 232.
[64] *Id.*; *see generally* Act 307 § 1.
[65] *See Midkiff*, 467 U.S. at 233.
[66] *See id.* at 233-34.
[67] *See id.* at 234.
[68] *See id.* at 241-42.
[69] *Id.* at 241.

The *Midkiff* plaintiffs challenged HLRA on the grounds that it effectuated a taking of private property that was not for "public use." Under the Takings Clause of the Fifth and Fourteenth Amendments to the United States Constitution, neither the federal nor state governments, respectively, may take private property unless the taking is for "public use" and the property owner is justly compensated.[70] The *Midkiff* plaintiffs argued that the HLRA was constitutionally defective because it effectuated a taking that transferred private property from one private party to another and the transferred property was for the exclusive use and benefit of the transferee, not the public; thus the taking was not for "public use," but rather for private use.[71]

But the Supreme Court rejected this argument and ultimately concluded the HLRA served a public purpose. It explained,

> The people of Hawaii have attempted . . . to reduce the perceived social and economic evils of a land oligopoly traceable to their monarchs. The land oligopoly has, according to the Hawaii Legislature, created artificial deterrents to the normal functioning of the State's residential land market and forced thousands of individual homeowners to lease, rather than buy, the land underneath their homes. Regulating oligopoly and the evils associated with it is a classic exercise of a State's police powers. We cannot disapprove of Hawaii's exercise of this power.[72]

Midkiff's outcome was largely dictated by an earlier case, *Berman v. Parker*,[73] which had given an expansive interpretation to the "public use" requirement of the Takings Clause. *Berman* involved a suit by owners of a department store in Washington, DC, who sought to enjoin the condemnation of their property pursuant to a federal law because, they argued, the federal law unconstitutionally effected a taking that was not for "public use." That federal law, the District of Columbia Redevelopment Act of 1945, made a "legislative determination" that "substandard housing and blighted areas" in the District of Columbia were "injurious to the public health, safety, morals, and welfare."[74] The Act sought to eliminate these conditions by acquiring real property by eminent domain, and then leasing or selling that property for redevelopment by private owners.[75] The property owners challenged the Act, in part, because their property was to be "redeveloped for private, not public, use."[76]

But the Supreme Court rejected this challenge. It equated the power of Congress and the states to take private property for public use with those sovereigns' respective police powers.[77] And the police power, the Court's opinion made clear, is expansive.[78] It includes such things as providing for "[p]ublic safety, public health, morality, peace and quiet, law and order."[79] But "[i]t is also within the power of the legislature to determine that the community should be beautiful as well as healthy, spacious as well as clean, well-balanced as well as carefully patrolled."[80] These examples, however, seem to be beside the point because the Court

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[70] U.S. Const., amend. V (" . . . nor shall private property be taken for public use, without just compensation"); U.S. Const., amend. XIV (making the Fifth Amendment applicable to the States ("nor shall any State deprive any person of life, liberty, or property, without due process of law")).
[71] [PLACEHOLDER: CITATION TO APPELLEES BRIEF]
[72] *Midkiff*, 467 U.S. at 241-42.
[73] 348 U.S. 26 (1954).
[74] *Id.* at 28.
[75] *See id.* at 30.
[76] *Id.* at 31.
[77] *See Berman*, 348 U.S. at 32.
[78] *See, e.g.*, *id.* at 32 ("The concept of the public welfare is broad and inclusive.").
[79] *Id.*
[80] *Id.* at 33.

ultimately conflated a determination as to whether a taking is for "public use" with a determination as to whether deference is due to the relevant legislature, here Congress, and it almost always is. *Public use is whatever Congress says it is*. Consequently, Congress's decision to take private property for redevelopment by a private, rather than a public, party raises a question of whether Congress is owed deference, not whether such use is one we would define as a public one:

> Once the object is within the authority of Congress, the means by which it will be attained is also for Congress to determine. Here one of the means chosen is the use of private enterprise for redevelopment of the area. Appellants argue that this makes the project a taking from one businessman for the benefit of another businessman. But the means of executing the project are for Congress and Congress alone to determine, once the public purpose has been established.[81]

The Supreme Court's eminent domain decisions since *Midkiff* have given a similarly expansive reading to the "public use" requirement. The same term *Midkiff* was decided, the Supreme Court considered and upheld another taking where the public purpose was to correct an anticompetitive market. In *Ruckelshaus v. Monsanto*,[82] pesticide manufacturer Monsanto challenged an Environmental Protection Agency (EPA) rule that enabled the EPA to use data submitted by one applicant for registration when evaluating another, subsequent registrant's application. Monsanto claimed, among other things, that the EPA's use of its trade-secret protected data amounted to an unlawful taking because the use was ultimately for private, rather than public use.[83] Relying on *Berman*, the Supreme Court noted that a taking satisfied the public use requirement as long as it "has a conceivable public character," in which case, the means for carrying out that purpose is for Congress to determine.[84] And in this particular case, the public purpose, as evidenced by the legislative history, was the elimination of "costly duplication of research" and the elimination of "a significant barrier to entry into the pesticide market," which enabled products to be available to consumers quicker and created competition.[85] The Court explained,

> Allowing applicants for registration, upon payment of compensation, to use data already accumulated by others, rather than forcing them to go through the time-consuming process of repeating the research, would eliminate a significant barrier to entry into the pesticide market, thereby allowing greater competition among producers of end-products. Such a procompetitive purpose is well within the police power of Congress.[86]

Finally, the Court's most recent public use decision, *Kelo v. City of New London*,[87] decided in 2005, likewise holds that the Takings Clause's public use requirement is satisfied even if the condemned property will ultimately be used by private parties.[88]

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[81] *Id.*
[82] 467 U.S. 986 (1984).
[83] *Id.* at 999.
[84] *Id.* at 1014 ("So long as the taking has a conceivable public character, 'the means by which it is attained . . . is for Congress to determine.'").
[85] *Id.* at 1015.
[86] *Id.*
[87] 545 U.S. 469.
[88] *Kelo* specifically involved the taking of a number of private residences in furtherance of a city and state economic revitalization plan; the Court concluded this taking was for a public purpose even though the condemned property was

C. Deference to Legislative Determinations

Although the *Berman* court conflated consideration of the "public use" requirement and the deference to be accorded the legislature, it is worth probing the latter in isolation to appreciate fully its breadth. It is specifically worth considering the Court's deference in the context of *Midkiff* and *Ruckelshaus* because, in both instances, the stated public use of the taking was to address competitive conditions of the relevant market.[89]

As noted above, the *Berman* court concluded that the sovereign's power to take private property for public use was an exercise in its police powers.[90] The *Midkiff* court would later directly address the relationship between the two: "The 'public use' requirement is . . . coterminous with the scope of a sovereign's police powers."[91] The boundaries of those powers, in the first instance, are left to the legislature to define in carrying out the purposes of government.[92] There is a constitutional limit to that power. But the *Berman* court refrained from explicating the contours of that limit; instead, it suggested that such limit was very unlikely to be exceeded: "Subject to specific constitutional limitations, when the legislature has spoken, the public interest has been declared in terms well-nigh conclusive. . . . The role of the judiciary in determining whether that power is being exercised for a public purpose is an extremely narrow one."[93]

In subsequent decisions, the Court clarified the scope of judicial review. Although the Court's formulations have varied slightly, in all instances it amounts, or is at least strikingly similar, to the highly deferential rational-basis review.[94] The *Midkiff* court, for example, explained, "where the exercise of the eminent domain power is rationally related to a conceivable public purpose, the Court has never held a compensated taking to be proscribed by the Public Use Clause."[95] *Midkiff* further clarified, "whether in fact the [law under review] will accomplish its objectives is not the question: the constitutional requirement is

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to be used by private enterprises, including the pharmaceutical company Pfizer, which planned to build a $300 million research facility. *See id.* at 473, 483-84.

[89] Arguments that similarly attacked the judgment of the legislature were likewise ineffective in other public use cases. For example, in *Berman*, the owners of the department store that was condemned argued that their property was not the type of property the law arguably sought to address— the relevant law was aimed at "substandard housing" and "blighted areas," but their property was commercial, rather than residential, and it was not "slum housing." *Berman*, 348 U.S. at 31; *see also id.* at 34 ("They maintain that since their building does not imperil health or safety or contribute to the making of a slum or a blighted area, it cannot be swept into a redevelopment plan by the mere dictum of the Planning Commission or the Commissioners."). But the Court concluded that, in carrying out its plan, Congress can effectively be overinclusive. *See id.* at 34-35 ("Property may of course be taken for this redevelopment which, standing by itself, is innocuous and unoffending. But we have said enough to indicate that it is the need of the area as a whole which Congress and its agencies are evaluating.").

[90] *Id.* at 32 ("We deal, in other words, with what traditionally has been known as the police power.").

[91] *Midkiff*, 467 U.S. at 240.

[92] *See Berman*, 348 U.S. at 32.

[93] *Id.*

[94] *See* Kelo v. City of New London, 545 U.S. 469, _ (2005) (Kennedy, J., concurring) ("This Court has declared that a taking should be upheld as consistent with the Public Use Clause as long as it is 'rationally related to a conceivable public purpose.' This deferential standard of review echoes the rational-basis test used to review economic regulation under the Due Process and Equal Protection Clause." (cleaned up)).

[95] *Midkiff*, 467 U.S. at 241; *see also* Ruckelshaus v. Monsanto, 467 U.S. 986, 1014 (1984) ("So long as the taking has a conceivable public character, the means by which it will be attained is for Congress to determine." (cleaned up)).

satisfied if the [ ] Legislature rationally could have believed that the [relevant law] would promote its objectives."[96]

The legislature can consequently be incorrect in its judgment, but nonetheless worthy of deference. Arguments that speak to the accuracy of the legislature's judgment are consequently given no weight. Thus, in *Midkiff*, the Court did not test the Hawaii legislature's judgment against principles of economics. For example, the Office of Hawaii (OHA) attacked the legislative claim that the HLRA would reduce housing prices. It described the justification for the HLRA "spurious"[97] and pointed out that all the HLRA did was transfer property from one private party to another private party; the HLRA did not, however, increase the supply of available, residential property and therefore could not reduce housing costs.[98] The OHA contended, "Under the most basic economic principle, so long as the supply of a commodity remains the same while the demand for it increases, it is likely that one result will be an increase in the price of the commodity."[99] But the Court did not engage with this or any other economic argument.

Nor did the Court question the legislature's choice to use eminent domain, rather than the competition laws, to correct the competitive issue it perceived in the real property market. Amici in support of the property owners specifically took issue with the legislature's choice to solve "the alleged problems of concentration of ownership and high cost" by transferring title from landowners to lessees, when there existed other "statutes that could bring about the desired results."[100] Amici suggested that the reason the legislature relied on eminent domain, rather than the antitrust laws, was because it would not have been able to satisfy the latter's exacting requirements. They wrote,

> As a matter of substantive law, a general legislative pronouncement of concentrated ownership is insufficient to create an anti-trust violation, much less warrant the drastic remedy of divestiture. In a civil anti-trust action, the government is required to carry its burden by a preponderance of evidence and a court may not rely upon ex parte administrative findings to order divestiture as it violates the fundamental rules of evidence entitling the parties to a trial of issues of fact, not upon hearsay, but upon the testimony of persons having first hand knowledge of the facts, who are produced as witnesses and are subject to the test of cross-examination.
>
> Even assuming the alleged concentration can be proved and requires governmental corrective measures, certainly this statute is not a permissible means to that end. The statute provokes indiscriminate divestiture of all residential leasehold lands by large and small landowners. No anti-trust decision has required such a drastic remedy.[101]

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[96] Hawaii Housing Authority v. Midkiff, 467 U.S. 229, 242 (1984) (cleaned up); *see also* Ruckelshaus v. Monsanto, 467 U.S. 986, 1014 (1984) (The Court's role in "second-guessing the legislature's judgment of what constitutes a public use is extremely narrow.").

[97] Brief for Office of Hawaiian Affairs as Amicus Curiae Supporting Appellees at 27, Hawaii Hous. Auth. v. Midkiff, 467 U.S. 229 (1984) (No. 83-141).

[98] *See id.* at 28 ("The scarcity of supply spoken of in the preamble appears to be the scarcity of developed residential lots. The statute by its own terms is not designed to effect or even encourage an increase in the supply of residential lots so as to meet and reduce prices.").

[99] *Id.*

[100] Brief for Queen Liliuokalani Tr. & King Lunalilo Tr. et al. as Amici Curiae Supporting Respondents at 13, Hawaii Hous. Auth. v. Midkiff, 467 U.S. 229 (1984) (No. 83-141).

[101] *Id.* at 23-24.

But these arguments were beside the point. Because, given the deference the Court concluded was due to the legislature, all that mattered was whether there was a rational relationship between the exercise of eminent domain and the public purpose the legislature sought to serve. And the Court concluded there was.

It should not be surprising, then, that later the same term, in *Ruckelshaus*, the Court did not take up Monsanto's economic arguments in its Takings Clause challenge to a federal law that enabled the EPA to use data submitted by one registrant when evaluating the application of a later registrant. The public use described by the Court was to lower the barriers to entry in the pesticide market. Monsanto challenged the legislative judgment about this public use and argued that the "EPA and, by implication, Congress misapprehended the true 'barriers to entry' in the pesticide industry and that the challenged provisions of the law create, rather than reduce, barriers to entry."[102] But the Court did not evaluate this argument. Instead, it simply noted that "[s]uch economic arguments are better directed to Congress."[103] It further explained, "The property inquiry before this Court is not whether the provisions in fact will accomplish their stated objectives. Our review is limited to determining that the purpose is legitimate and that Congress rationally could have believed that the provisions would promote that objective."[104] Thus, in *Ruckelshaus*, as in *Midkiff*, the Court did not test the legislature's claims—not against basic economic principles, not against modern antitrust jurisprudence, *not at all*.

Indeed, the Court's deference is such that it does not critically contemplate factual narratives that run contrary to the legislature's findings, even where those narratives undermine a conclusion that there is a rational relationship between the legislature's exercise of eminent domain and the public purpose that is supposedly being served.[105] For example, [Berman].

Likewise, in *Midkiff*, the trustees of the Bishop Trust and amici offered a rich narrative that described the evolving control of Hawaii's property through the state's geo-political history. It is impossible to reproduce that history here, so this summary is necessarily an over-simplification. But that history suggests the HLRA was not simply about redistributing property to correct an oligopoly in land; it was also about distributing property away from Hawaiians and to Westerners. Amici explain that, prior to contact from "outsiders," Hawaii had no sense of private ownership of property; property was controlled by a local chief but "he held them in trust for all of the people."[106] The arrival of Westerners brought gradual changes to how property was distributed,[107] among both native Hawaiians and foreigners, and included the general demise of the land tenure system that had historically served to support the lives and customs of native Hawaiians.[108] As the Office of Hawaiian Affairs explained in its brief, "[a]s the rights of the Hawaiian People in land diminished, the rights of Westerners increased."[109] The property that constituted the Bishop Trust was an aggregation of the last remaining royal and chiefly land, which was inherited by the last royal

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[102] 467 U.S. 986, 1015 n.18.
[103] *Id.*
[104] *Id.*
[105] *See, e.g.*, Brief for Pacific Legal Foundation as Amicus Curiae Supporting Appellees, Hawaii Hous. Auth. v. Midkiff, 467 U.S. 229 (1984) (No. 83-141) (noting that the district court "refus[ed] to hear evidence offered to refute the factual findings of HLRA").
[106] Brief for Office of Hawaiian Affairs as Amicus Curiae Supporting Appellees at 5, Hawaii Hous. Auth. v. Midkiff, 467 U.S. 229 (1984) (No. 83-141).
[107] *See id.* at 6; *see also* Brief for Hou Hawaiians & Maui Loa et al. as Amici Curiae, Hawaii Hous. Auth. v. Midkiff, 467 U.S. 229 (1984) (No. 83-141), at 8.
[108] *See* Brief for Queen Liliuokalani Tr. & King Lunalilo Tr., as Amici Curiae, *supra* note ___, at 11; *see also* Brief for Appellees at 4 n.8., Hawaii Hous. Auth. v. Midkiff, No. 83-141 (1984).
[109] *See* Brief for Office of Hawaiian Affairs as Amicus Curiae, *supra* note ___, at 9.

descendent.[110] The property was placed in perpetual trust for the education of native Hawaiians and the care of orphans so as to maintain the virtues of the vanishing tenure system.[111] One amici accused the legislature of specifically "target[ing]" the Bishop Trust property through the HLRA because the statute's terms did not apply to any other private property owners.[112] In addition, the Bishop Trust noted in its brief to the Supreme Court that support for the legislature's findings was lacking in the legislative history.[113] Considered in light of this history, the passage of the HLRA appears to be an instrument to transfer not only land, but also power, to non-Hawaiians. *Midkiff* is thus just as much a story about dissipating the power of indigenous people—a familiar U.S. property-law narrative[114]—as it is a story about dissipating an oligopoly in land. And the dispossession of indigenous people hardly seems to be a legitimate purpose.[115]

Scholars and commentators have highlighted these counter narratives.[116] In doing so, they have cast a critical light on the Supreme Court's eminent domain jurisprudence, particularly its rational basis standard of review.[117] But rational basis review applies to a wide range of circumstances and is accordingly the subject of a substantial, critical literature, a full exploration of which is beyond the scope of this article.[118] What these critiques do make clear is that the Takings Clause's public use requirement serves a very poor shield for property owners and a far more effective sword for lawmakers. Thus, although cases such as *Berman* and *Midkiff* have problematic legacies, in the next section I propose leveraging them to achieve a different public purpose—to dissipate market power in network markets.

D. The Taking of Non-Possessory Interests

Finally, before applying the eminent domain jurisprudence to intellectual property covering network markets, it is worth noting that the exercise of eminent domain has not been limited to the taking of a

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[110] *See id.* at 2-3; *see also* Brief for Queen Liliuokalani Tr. & King Lunalilo Tr. as Amici Curiae, *supra* note ___, at 11-12.
[111] *See* Brief for Office of Hawaiian Affairs as Amicus Curiae, *supra* note ___, at 2-3; *see also* Brief for Queen Liliuokalani Tr. & King Lunalilo Tr., *supra* note ___, at 11-12.
[112] Brief for Queen Liliuokalani Tr. & King Lunalilo Tr. as Amici Curiae, *supra* note __, at 12 n.21.
[113] Brief for Appellees, *supra* note ___, at 7-8 n.22.
[114] *See* Johnson v. M'Intosh, 21U.S. 543 (1823) (holding, in reliance on the rule of discovery and the law of conquest, that individual who acquired land from U.S. government had superior title to individuals who acq[uired property through purchase from indigenous tribe); *see also* Eric Kades, *History and Interpretation of the Great Case of* Johnson v. M'Intosh, 19 L. & His. Rev. 67 (2001) (arguing that *Johnson v. M'Intosh* legitimized the United States' claim to the land of indigenous people); Ezra Rosser, *Progress and the Taking of Indigenous Land*, 85 Ohio St. L.J. 623, 668 (2024) (discussing the Supreme Court's precedent that address the property of indigenous people).
[115] It is worth noting that other cases involving the dispossession of indigenous people have relied on the law of discovery and the law of conquest. *See* Johnson v. M'Intosh, 21 U.S. 543 (1823): Tee-Hit-Ton Indians v. United States, 348 U.S. 272 (1955). Neither of these doctrines require a court to assess whether the dispossession bares a rational relationship to a conceivable public purpose. Such an inquiry would, arising under eminent domain, would therefore present a question of first impression.
[116] *See, e.g.*, Ezra Rosser, *Progress and the Taking of Indigenous Land*, 85 OHIO ST. L.J. 623 (2024) ("The story told about *Hawaii Housing Authority v. Midkiff*—that it was a progressive victory in the battle against oligarchy—is wrong. Instead, it's about a state power grab of Indigenous land, blessed by the U.S. Supreme Court . . . ."); [PLACEHOLDER: MORE ARTICLES THAT CRITICALLY DISCUSS HISTORY OF MIDKIFF; ARTICLES THAT CRITICALLY DISCUSS HISTORY OF BERMAN].
[117] *See* Rosser, *supra* note _, at 649 ("The Court's adoption of the rational basis standard of review determined the result, even for a taking with a questionable public use that transferred property from one private party to another."); CITE TO MORE ARTICLES THAT CRITICIZE RATIONAL BASIS REVIEW, PARTICULARLY IN CONTEXT OF EMINENT DOMAIN.
[118] See, e.g.,

possessory interest in property. It has been applied to the taking of an easement.[119] And it has been applied to burdens on property imposed by regulations that, in their effect, are analogous to an equitable servitude or a real covenant.[120]

E. Taking Intellectual Property Rights for Public Use

When the Supreme Court's Takings Clause jurisprudence is considered together with the characteristics of U.S. antitrust law, exercise of the federal eminent domain power is a promising means of addressing monopolistic network markets. In Part [i], I suggest using the federal eminent domain power to condemn IP necessary to enable interoperability in network markets and compelling the IP holders to license their IP. In Part [ii], I explain how this exercise of the eminent domain power satisfies the public use requirement of the Fifth Amendment. Use of the eminent domain power avoids limitations of the federal antitrust laws and is consequently a comparatively more effective legal tool for addressing anticompetitive markets when the firm with market power has not engaged in exclusionary conduct. I describe the comparative advantages of exercising the eminent domain power in Part [iii]. The Fifth Amendment requires that the United States cannot take property owners' property without providing them with just compensation; in Part [iv] I consider how we might arrive at a compensation that is fair. One critique this proposal is certain to provoke is that intellectual property rights are not "private property" as that phrase is used in the Fifth Amendment and are therefore not subject to it. In Part [v] I consider the arguments constituting this critique and the responses.

i. Proposal

To correct anticompetitive network markets that are outside the reach of existing U.S. antitrust laws, Congress should enact legislation that exercises the federal eminent domain power. Such legislation would provide for the condemnation of IP necessary to achieve interoperability and compel the owners of that IP to offer would-be competitors a non-exclusive license to use or practice that IP. A non-exclusive license is a license that grants a party, the licensee, the ability to use the underlying IP while enabling the IP owner the ability to license the IP to other licensees or to use the IP itself. In this regard, a non-exclusive license is analogous to an affirmative real property easement.[121] Such a license thus enables the licensees, the would-be competitors, to use or practice the IP needed to achieve interoperability while not diminishing the IP owner's ability to operate the network in competition with the licensees.

Congress can delegate responsibility for enforcing such legislation to an agency with appropriate expertise. The FCC, which regulates interstate and international communications by radio, television, wire,

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[119] *See, e.g.*, Penneast Pipeline Co. v. New Jersey, 594 U.S. 482 (2021) (upholding the condemnation of forty parcels of property in which the state of New Jersey held non-possessory conservation easements); *see also* United States v. Causby, 328 IU.S. 256 (1946) (holding that the non-possessory intrusion of the U.S. military's low-flying aircrafts over private property constituted a compensable taking under the Fifth Amendment).

[120] *See* Pennsylvania Coal Co. v. Mahon, 260 U.S. 393 (1922) (holding, where surface rights and mining rights were held by different parties, that a regulation that forbade the mining of coal that could cause subsidence was a compensable taking); *cf.* Lucas v. South Carolina Coastal Council, 505 U.S. 1003 (1992) (holding that an environmental regulation that prevented the building a permanent habitable structure, thereby depriving the property of all economically beneficial use, amounted to a compensable taking).

[121] *See* Robin Feldman, *Patents As Property For The Takings*, 12 N.Y.U. J. INTELL. PROP. & ENT. L. 198, 245 (2023) (analogizing the taking of a license to an easement).

satellite, and cable,[122] is a likely candidate. Another is the FTC, which protects competition.[123] But whether through legislation or regulation, lawmakers would need to resolve at least a few foundational questions: how to identify anticompetitive network markets that should be corrected, and relatedly how to define the class of would-be competitors that would be eligible for a compelled license; how to determine the IP that is considered "necessary," and how to determine the licensing fee. Both Congress and the relevant agencies have the benefit of being able to conduct hearings that can yield useful insight to these questions. I nonetheless offer the following refinements to guide lawmakers' consideration of these issues.

1. Anticompetitive Network Markets that Need Correcting

Anticompetitive network markets can be identified in a few ways. One mechanism is for any agency with responsibility for enforcing the legislation to use its investigatory powers to gather and compile information, either sua sponte or in response to complaints or comments from market participants. Based on its findings, the agency could initiate an adversarial proceeding against the firm or individual that the agency believes is a monopolist in the anticompetitive network market and seek a declaration about both the adversary and the market.

Another possibility is for Congress to create a procedure that enables third parties to initiate a similar adversarial proceeding. The third party need not be a would-be competitor. It could, for example, be a customer of the adversary. Either way, the third party would be able to seek not only a declaration, but also a license as relief.

Importantly, the adversarial proceeding need not mirror an antitrust suit in federal court, either substantively or procedurally. For example, the agency should not be bound by federal antitrust precedent regarding monopolization (whether under Section 2 of the Sherman Act or Section 5 of the FTC Act). After all, the objective of the proposed legislation would be to avoid the limitations of these already-existing laws and their interpretation by the federal courts. Nor would the agency be bound by precedent relating to how to define a market, ascertain market shares, or assess whether the market is monopolistic. Nor would the agency be bound by the Federal Rules of Civil Procedure; indeed, it could adopt procedural rules that substantially abbreviate the timeline for responding to pleadings to ensure a prompt resolution of the matter.

The *inter partes* review (IPR) procedure before the Patent Trial and Appeal Board (PTAB) could serve as a model for any such adversarial proceeding. That procedure enables third party petitioners to initiate a proceeding before the PTAB and challenge the patentability of one or more claims of a patent.[124] Substantively, the PTAB applies a standard for reviewing patent claims that is meaningfully different than the standard used in federal court; the effect of this difference is that it is more likely that a patent claim will be found invalid.[125] Procedurally, the legislation that created the IPR procedure and the rules promulgated by

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[122] *What We Do*, FEDERAL COMMUNICATIONS COMMISSION, https://www.fcc.gov/about-fcc/what-we-do (last visited July 25, 2025).
[123] *What the FTC Does*, FEDERAL TRADE COMMISSION, https://www.ftc.gov/news-events/media-resources/what-ftc-does (last visited July 27, 2025).
[124] *See* 35 U.S.C. §§ 6, 311; *see also* Jennifer E. Sturiale, *Hatch-Waxman Patent Litigation and* Inter Partes *Review: A New Sort of Competition*, 69 Ala. L. Rev. 59, 85-93 (2017) [hereinafter *A New Sort of Competition*] (discussing the IPR procedure).
[125] *Compare* Laryngeal Mask Co. v. Ambu, 618 F.3d 1367, 1369 (Fed. Cir. 2010) (interpreting claims by giving them "their ordinary and customary meaning"), *with* Cuozzo Speed Techs., LLC v. Lee, 136 S. Ct. 2131 (2016) (discussing PTAB's "broadest reasonable construction standard); *see also* Rochelle Cooper Dreyfuss, *Giving the Federal Circuit a Run for Its Money: Challenging Patents in the PTAB*, 91 Notre Dame L. Rev. 235, 254-55 (2015) (comparing the standard applied by a

the PTAB specify a timeline that provides for a resolution of an IPR that is faster than comparable procedures in the federal courts.[126]

2. Would-Be Competitors

Would-be competitors can likewise be identified in several ways. The mechanism chosen should reflect the competitive landscape that lawmakers seek to create. For example, the objective of the legislation at issue in *Midkiff* was to encourage fee-simple ownership, specifically by individuals who had been lessees.[127] Consequently, the statute provided for lessees on qualifying properties to apply to purchase the very property they were leasing.[128]

The objective of creating a competitive network market can be pursued in at least a couple of ways, and there are accordingly at least a couple of approaches to identifying would-be competitors. One option is for lawmakers to adopt an "all-takers" rule that compels the IP owner to offer a license to any and all parties that wanted one—a rule that, in effect, is similar to the *Carterfone* decision or to what is known as an "open standard." Such a rule would encourage third parties to adopt the relevant IP and create networks in competition with the IP owner. In addition, it would encourage third parties to innovate complements that are interoperable with the network. Adoption by both would-be competitors and innovators of complements will encourage the growth of the underlying network, which in turn will likely yield more value to consumers on the network.

But the proposed all-takers rule is different from the world created by *Carterfone* and open standards in a few important respects. The *Carterfone* decision enables third parties to achieve interoperability without paying a licensing fee to any IP owner. The proposed all-takers rule, however, would require such payment. The requirement that a third party pay a licensing fee may yield fewer takers than in the royalty-free *Carterfone* world, as the cost of the licensing fee may deter some potential adopters. And the network size may accordingly be smaller than if lawmakers had simply adopted regulation that yielded the same effects as the *Carterfone* decision. At the same time, the network will almost certainly be bigger than if IP owners were not compelled to license their IP—if the market has been identified as one that needs correcting, then it is almost certainly the case that the IP owners have chosen to exclude third parties from interoperating with their network and thus competing with them and, left to their own devices, would continue to do so. In addition, requiring payment of a royalty will enable the IP owner to profit from its innovation. Accordingly, the IP owner will be better off under a compelled, royalty-bearing license than in the royalty-free *Carterfone* world. Moreover, to the extent the risk of being compelled to enable interoperability deters creators and innovators, that disincentive should be offset, at least in part, by the prospect of future royalty payments if creators and innovators are so compelled.

Some open standards similarly enable third parties to achieve interoperability without paying a licensing fee. The proposed all-takers rule accordingly differs from an open standard in exactly the same way that it

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federal court and the standard applied by the PTAB); Sturiale, *A New Sort of Competition*, *supra* note _, at 92-93 (discussing the difference between the federal court and PTAB standard).
ordinary skill in the art in question at the time of the invention when read in the context of the specification and prosecution history."); Sturi

[126] *See* 37 C.F.R. § 42.107(b) (timing for patentholder to file a preliminary response); 35 U.S.C. § 314(b) (timing for Director to institute an IPR); 37 C.F.R. § 42.100(c), 35 U.S.C. § 316(a)(11) (timing for resolution of IPR); *see also* Sturiale, *A New Sort of Competition*, *supra* note _, at 87 (outlining the timing of an IPR).

[127] *See, e.g.*, Act 307, § 1(c), (e), 307 Haw. Sess. Laws 489 (1967); Act 184, § 1(a), 1975 Haw. Sess. Laws 408 (1975).

[128] *See id.* § 2 (amending Sec. 516-23).

differs from the *Carterfone* world. But open standards differ in an additional key manner. What standards are "open" is the product of a multiplicity of decisions by private actors—private actors who have decided it is in their self-interest to come together and collaborate on establishing and implementing a standard. This process can be unpredictable and, indeed, can fail.[129] In contrast, the proposed all-takers rule would the product of the adversarial proceeding before the agency empowered by Congress and thus be a product of the political process.

Alternatively, lawmakers could identify would-be competitors based on their likeliness of dissipating the monopolist's hold on the market and creating competition. Unlike the all-takers rule, only some third parties would be able to receive a license. Procedurally, the agency could identify would-be competitors as a part of the same adversarial proceeding that identifies network markets that should be corrected. Substantively, the agency could assess would-be competitors for their potential to discipline the incumbent. The agency could, for example, measure candidates against the criteria that the FTC and Department of Justice (DOJ) Antitrust Division have historically used to evaluate the buyers of assets to be divested from one or more merging firms to remedy an anticompetitive merger.[130]

These two mechanisms for identifying would-be competitors are not mutually exclusive. The agency could, for example, use whichever mechanism was most appropriate for the conditions of the market. If, in the agency's judgment, the market could tolerate atomistic competition, then the all-takers rule would be well-suited to achieving those ends. But if the agency determined that a market dominated by a monopolist could only tolerate oligopolistic competition, then a process that identified a select group of would-be competitors that could discipline the incumbent would be better-suited for those ends.

3. Necessary Intellectual Property

Necessary IP would be any and all IP that a would-be competitor must use or practice to interoperate with the dominant network or networks. That IP would very likely include patents, such as those essential to practice a technical standard or those relating to the network's interface. It might also include copyrights covering software code and visual elements of a user interface.

4. Licensing Fee

Finally, lawmakers would have to wrestle with how to assess the royalty rate that should be paid to the IP owner. [PLACEHOLDER: TAKINGS CLAUSE REQUIRES JUST COMPENSATION, WHICH IS GENERALLY UNDERSTOOD TO BE FAIR MARKET VALUE. WHAT IS FAIR MARKET VALUE OF PATENT LICENSE?]

One ready-made mechanism is the multi-factor test for assessing a reasonable patent royalty articulated in *Georgia-Pacific Corp. v. U.S. Plywood Corp.*[131] *Georgia-Pacific* involved a claim of patent infringement and presented the district court with the issue of how much the infringer should pay in damages.[132] The district

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[129] Examples of standard setting that failed.

[130] *See generally* Federal Trade Commission, *The FTC's Merger Remedies 2006-2012: A Report of the Bureaus of Competition and Economics* (Jan. 2017), https://www.ftc.gov/system/files/documents/reports/ftcs-merger-remedies-2006-2012-report-bureaus-competition-economics/p143100_ftc_merger_remedies_2006-2012.pdf.

[131] 318 F. Supp. 1116 (S.D.N.Y. 1970).

[132] *See id.* at 1117. The plaintiff, Georgia-Pacific, sought a declaratory judgment that the patents of defendant, United States Plywood Corporation, were invalid and not infringed by plaintiff. *See id.* Defendant counterclaimed, alleging, among other things, that plaintiff had infringed its patents. *See id.* The district court found the patents invalid and not infringed, but the Court of Appeals reversed. The case was remanded to the district court. *See id.*

court conducted hearings to determine "the amount of a reasonable royalty" and ultimately identified fifteen factors,[133] which include the historical royalty rates received by the patentholder for the patent at issue historical royalty rates paid by the licensee for the use of comparable patents.[134]

[PLACEHOLDER: OTHER MECHANISMS FOR ASSESSING ROYALTY—procedurally, (a) adversarial hearing, (b) compelled negotiation, (c) rate-setting body. Substantively, (a) use Georgia-Pacific factors, either in their totality, or focusing on a few, salient ones, such as similar licensing deals (comparable market transactions); (b) compensate monopolist for lost monopoly profits (monopoly profits minus competitive profits, divide difference over estimated number of licensees); industry standard]

i. Public Use

Compelling a network owner to license its IP can correct market power in the relevant market and satisfy the Takings Clause's public use requirement. As discussed above, all that is required for a taking to satisfy the public use requirement of the Takings Clause is that the taking serve a public purpose. And *Midkiff*, buttressed by *Ruckelshaus*, make clear that correcting the competitive conditions of a market are just such a public purpose.

The public use requirement is no less met simply because the compelled license will ultimately be used by a condemned intellectual-property-rights holder's would-be competitor. *Berman*, *Midkiff*, and *Ruckelshaus* make clear that the property need not be used by the public, in general, but may instead be used by other private parties, as long as the use is in furtherance of the objectives identified by the legislator.[135]

ii. *Extra*-Antitrust Law

The virtue of exercising the federal eminent domain power, rather than relying on the federal antitrust laws, is that doing so avoids the limitations of the antitrust laws and is consequently *extra*-antitrust, operating outside of, but complementarily to, federal antitrust law. As discussed above, under section 2 of the Sherman Act, the mere possession of monopoly power is not unlawful. Liability only arises when a monopolist both possesses monopoly power and engages in exclusionary conduct. And without liability, there is no remedy—no damages, to be sure, but also no structural or behavioral relief such as divestiture or compulsory licensing of intellectual property rights. Use of the federal eminent domain power, however, would allow for the condemnation of intellectual property rights[136] without a predicate finding of exclusionary conduct. In addition, the property can be condemned and a license secured by a procedure established by Congress. That procedure need not mirror a lawsuit in a federal court and can consequently be faster and otherwise more

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[133] It is noteworthy that the district court judge to whom the case was initially assigned the case died after having conducted the hearings and drafted, but not issued, an opinion. *See id.* at 1118. The judge to whom the case was subsequently referred "accepted and adopted, with minor amendment, the reasoned opinion" of the initial judge. *See id.* This fact has always struck me as funny because it seems at least plausible that at least one reason the initial judge had not yet issued the opinion was because he had not finished trimming the fifteen factors down to something more manageable.

[134] *See id.* at 1120.

[135] See Berman (use of condemned property by private enterprise in furtherance of city and state economic revitalization plan); Midkiff (use of condemned property by lessees in furtherance of "[r]egulating oligopoly and the evils associated with it"); Ruckelshaus (use of registrant's data by subsequent registrant, consistent with EPA rule, in furtherance of reducing barriers to entry in pesticide market).

[136] Those rights could be a single patent or copyrighted work or a series of such rights—whatever is necessary for a would-be competitor to achieve interoperability.

efficient.[137] Thus, both the substantive requirements and the procedural design of a law that operationalizes the federal eminent domain power can make it easier to correct anticompetitive markets.

At the same time, exercise of the federal eminent domain power may minimize deleterious effects on innovation. A longstanding debate and topic of scholarly investigation is whether innovation is better incentivized by market power or by competition.[138] Recent research suggests a nuanced relationship between the competitive conditions of the market and innovation—a relationship that varies by industry, type of innovation, and the general regulatory environment.[139] In general, however, markets related to digital technologies and platforms tend to thrive under competitive conditions rather than monopolistic ones.[140] A compulsory license to intellectual property rights has the potential to yield optimal innovation or, at least, minimize the disincentives.[141] Pioneering firms that establish themselves as the frontrunner can secure monopoly profits in the short run, while they are out ahead, and licensing royalties in the long run, once they have been compelled to license their technologies and thus compete. At the same time, the pioneers will have an ongoing incentive to innovate as they continue to compete with their licensees on price, quality, service, features, and complements. To the extent such competition spurs further innovation and opportunities for interoperability, it can also offer more opportunities for licensing fees from competitors. To be sure, the net effect on innovation is ultimately uncertain. But the effect is not so obviously negative that congressional exercise of the eminent domain power should be summarily disregarded.

Moreover, an income-generating compulsory license is almost certainly a better outcome for a network owner than is liability under alternative doctrines and proposals. One alternative is a seemingly similar and ready-made antitrust doctrine known as the "essential facilities doctrine." That doctrine provides that, where a monopolist controls a facility that is deemed "essential," it can be held liable for monopolizing or attempting to monopolize for refusing access to a competitor. The doctrine can arguably be traced to a few Supreme Court cases that concluded a firm's refusal to give a competitor access to a resource the defendant controlled—e.g., electrical power transmission lines, a mountain in Aspen—amounted to an unlawful restraint of trade. As a remedy, the Court required the defendants to give their competitors access. At least some of these cases could be understood as enabling a competitor to have an *easement* to its competitor's essential property as a remedy for anticompetitive conduct. In this regard, the essential facilities doctrine appears strikingly similar to a proposal that would require a party to give a would-be competitor access to intellectual property rights that are "essential" to achieve interoperability and thus competition. Importantly, however, the Supreme Court has never explicitly adopted the essential facilities doctrine.[142] But even if it were to do so, the doctrine only applies when the defendant-monopolist has engaged in exclusionary conduct.

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[137] The inter partes review (IPR) procedure before the Patent Trial and Appeal Board (PTAB) is an example of an administrative procedure that is similar to, but not the same as, a trial in federal court; one notable difference is that it can deliver a determination faster than can a federal court. *See* Jennifer E. Sturiale, *Hatch-Waxman Patent Litigation and* Inter Partes *Review: A New Sort of Competition*, 69 Ala. L. Rev. 59, 85-93 (2017) (discussing the IPR procedure).

[138] FN RE SCHUMPETER ARROW DEBATE

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[141] RE COMPULSORY LICENSES

[142] *See, e.g.*, Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398, 411 (2003) ("We have never recognized such a doctrine, and we find no need either to recognize or repudiate it here." (cleaned up)); *see also* Aspen Skiing Co. v. Aspen Highlands Skiing Corp., 472 U.S. 585, 611 n.44 (1985) (noting that it was unnecessary for the Court to consider the essential facility doctrine).

Moreover, if the doctrine does apply, it can require the network owner to *pay treble damages*; a compulsory license, in contrast, *will generate income* for the network owner in the form of royalties.[143]

However, whether the differences between the exercise of the eminent domain power and the federal antitrust laws are virtues, as such, is a matter of debate. My proposal, after all, has an objective that overlaps with the objectives of the antitrust laws, and yet is purposely and obviously designed to circumvent the constraints of such laws. It may consequently appear to be a sleight of hand. Moreover, the characteristics of the antitrust laws that my proposal seeks to evade could be characterized as beneficial features, not bugs.[144]

It should be remembered, however, that such a proposal could only be given effect if Congress legislated to do so. Any law that operationalized such a proposal would consequently be the end-product of a legitimate, democratic process. Indeed, it is the presumptive legitimacy of the lawmaking process that justifies the Supreme Court's deference to the legislature when exercising the eminent domain power.[145]

Moreover, as an exercise of its lawmaking power, Congress can revisit the objectives of already-passed laws and supplement, amend, or otherwise modify those objectives and the laws that give effect to them through additional legislation. Indeed, there are examples,[146] including those from within antitrust law, of Congress doing exactly such a thing. One rich example is the passage of the Telecommunications Act of 1996.[147] That Act sought to promote competition in the telecommunications industry by requiring incumbent local network providers to give new entrants access to the incumbents' infrastructure.[148] In *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP*,[149] plaintiff-would-be-entrants brought suit and alleged, among other things, that the incumbents gave the entrants inferior access to the incumbents' infrastructure and thus violated both the Telecommunications Act and the antitrust laws.[150] But the Supreme Court held that violation of the Telecommunications Act does not automatically constitute a violation of the federal antitrust laws.[151] *Trink*o thus necessarily suggests that laws, such as the antitrust laws and the Telecommunications Act, may legitimately have overlapping, but not coextensive, objectives.

Finally, antitrust law may seem to be above such political wrangling because it relies in large part on neoclassical economics, thereby suggesting an almost-scientific rigor that is not open to reevaluation.[152] *Trinko* suggests that is not so. But putting *Trinko* aside, as many scholars and commentators have argued, what appears scientific actually reflects normative judgments[153]—judgments, for example, about the virtue of

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[143] Another alternative is to adopt a no-fault monopoly rule, which has been proposed by at least one scholar. *See generally* Robert H. Lande & Richard O. Zerbe, *The Sherman Act Is a No-Fault Monopolization Statute: A Textualist Demonstration*, 70 AM. UNIV. L. REV. 497 (2020) (arguing that a textualist interpretation of the Sherman Act indicates Section 2 of the Sherman Act imposes liability for the mere possession of monopoly power).

[144] SEE HOVENKAMP AND DANIEL FRANCIS ON CRITIQUE OF AMERICAN ONLINE ACT WHERE THEY CRITICIZE IT

[145] *See supra* notes _-_ and accompanying text.

[146] *Compare, e.g.*, 14 Stat. 27-30 (1866) (Civil Rights Act of 1866, granting African Americans citizenship and equal rights after the Civil War), *with* Pub. L. No. 88-352, 78 Stat. 241 (1964) (Civil Rights Act of 1964, granting equality in public accommodations, employment, and education).

[147] Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (codified as amended is scattered sections of 47 U.S.C).

[148] 540 U.S. 398 (2004).

[149] *Id.* at 404.

[150] *Id.*

[151] *Id.* at 415.

[152] CITE TO ARTICLES/BOOKS RE SCIENTIFIC RIGOR

[153] CITE TO CRITIQUE

monopoly as an incentive for innovation. And Congress is free to revisit those judgments and legislate accordingly.

iii. Patents As Private Property

Thus far, I have taken for granted that patents are "private property" subject to the Takings Clause. And for good reason—in *Ruckelshaus v. Monsanto*, the Supreme Court explicitly considered and extended the Takings Clauses's application to intangible property, specifically, trade-secret protected information.[154] But *Ruckelshaus* was decided in 1984. And a number of events in the intervening years have caused scholars, commentators, and courts to consider whether intellectual property rights are private property for purposes of the Takings Clause. For example, in 2011, Congress passed the America Invents Act (AIA), which, among other things, created a procedure—the *inter partes* review procedure, discussed above—that enables third-parties to initiate a proceeding that challenges the validity of already-issued patents.[155] If the challenger is successful, the patent claims are invalidated and the patentholder ultimately loses title to its patents.[156] This consequence prompted some patentholders to challenge the new procedure on the grounds that it effectuated a "taking" of the challenged patented under the Takings Clause.[157] These lawsuits, in turn, gave birth to a number of scholarly examinations of whether patents are private property for purposes of the Takings Clause. An examination of the arguments both in favor and against recognizing intellectual property as "private property" subject to the Takings Clause reveals that the answer is far from clear. I therefore do not take up the task of trying to resolve this debate. But I briefly consider these arguments to demonstrate the difficulty in resolving it.

Scholars and commentators generally advance historical, textual, and doctrinal arguments.

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[154] 467 U.S. 986, 1001, 1003 (1984) (holding that, to the extent a property interest was created in trade-secret protected information under state law, "that property right is protected by the Taking Clause of the Fifth Amendment").
[155] *See* 35 U.S.C. § 311(c)(1).
[156] CITE
[157]