Tulsa Law Review

Volume 44
Issue 4 *The Scholarship of Richard A. Epstein*

Summer 2009

A Simple Conveyance Rule for Complex Innovation

Adam Mossoff

A SIMPLE CONVEYANCE RULE FOR COMPLEX INNOVATION

Adam Mossoff*

I. INTRODUCTION

Richard Epstein's work in intellectual property reflects his long-held belief in the importance of crafting "a sound system of legal rules" on the basis of a utilitarian calculus that seeks "the maximization of social utility."[1] His refrain is consistent and clear: intellectual property rights are born of the same functionalist policy concerns as traditional property rights in land and chattels. As he has remarked, "a unified set of principles apply to both physical and intangible property," because both types of property share a "common aspiration" in securing to owners the "exclusive rights of possession, use and disposition."[2]

In this article for the Eighth Annual Legal Scholarship Symposium celebrating the work of Richard Epstein, I want to explore one aspect of Epstein's utilitarian defense of intellectual property rights: courts should secure to patentees their exclusive rights of use and disposition by applying to patent conveyances the same default rule used in real

* Associate Professor of Law, George Mason University School of Law; J.D., University of Chicago; M.A., Columbia University; B.A., University of Michigan. Thank you to the *Tulsa Law Review* for hosting this symposium celebrating the work of my teacher, mentor and friend, Richard Epstein. I also wish to thank Bruce Johnson, Bruce Kobayashi, Timothy Muris, Henry Smith and Joshua Wright, and the participants in a Robert A. Levy Fellows Workshop in Law & Liberty at George Mason University School of Law, for their invaluable comments.

1. Richard A. Epstein, *Simple Rules for a Complex World* 30 (Harv. U. Press 1995).

2. Richard A. Epstein, *The Disintegration of Intellectual Property*, 62 Stan. L. Rev. __ (forthcoming 2010) (ms. at 5-6, available at http://ssrn.com/abstract=1236273).

property conveyances. Accordingly, Epstein maintains that courts should enforce the rights of patentees to convey lesser interests in their property, such as the right to manufacture or sell a patented invention only within a designated territory, when these restrictions are expressly provided in conveyance instruments and the relevant downstream parties have notice of them. In the absence of express terms providing reasonable notice of restrictions, courts should follow the same approach they have adopted in real property: in an unconditional conveyance, a patentee alienates all of its interests and thus exhausts any property claims against subsequent downstream users. Such doctrines in real property have long provided stable legal mechanisms for landowners to engage in price discrimination and in other use-restricting strategies to maximize the commercial value in their property, and the same conveyance default rule in patent law would achieve similar efficiencies. It is my purpose to assess whether Epstein's endorsement of this property-based conveyance rule for patents makes sense within the patent system.

Given some unfortunate misunderstandings about Epstein's views on intellectual property, though, it is necessary to note at the outset that he has eschewed a formalistic application of real property doctrines to the realm of inventions. Although some critics have accused him of being "dogmatic" and "simplistic" in linking tangible property and intellectual property,[3] his work highlights what he considers to be the "plausible but not infallible assumptions" that underlie intellectual property entitlements.[4] He believes that intellectual property rights, like all legal doctrines, reveal that "everything is a matter of delicate tradeoff and accommodation,"[5] and he has explained in great detail how the "basic trade-off between administrative costs and improved incentives for private behavior is always with us."[6] Even for someone who does not share his commitment to utilitarianism or agree with all of his prescriptions, there is much to appreciate in his scholarly work on intellectual property, as he has sought to "sensitize [us] to the multiple issues of system design that arise with all forms of property."[7]

---

3. *See* Peter S. Menell, *The Property Rights Movement's Embrace of Intellectual Property: True Love or Doomed Relationship?*, 34 Ecol. L.Q. 713, 717, 753–54 (2007); *cf.* Eric R. Claeys, *Takings: An Appreciated Retrospective*, 15 Wm. & Mary Bill Rights J. 439, 439–40 (2006) (surveying similar criticisms of Epstein's earlier property scholarship).

4. Richard A. Epstein, *Liberty vs. Property? Cracks in the Foundations of Copyright Law*, 42 S.D. L. Rev. 1, 4 (2005).

5. Richard A. Epstein, *Intellectual Property: Old Boundaries and New Frontiers*, 76 Ind. L.J. 803, 806 (2001).

6. Epstein, *supra* n. 1, at 34. On the basis of his utilitarian metric, Epstein has described at length how the analysis of systemic costs and benefits both justifies and limits the scope of protections afforded to intellectual property. Belying claims that Epstein is dogmatically treating intellectual property as real property, he has described the rough, second-best justification for the durational term limits in copyrights and patents, as opposed to the unlimited duration in fee simples. *See* Epstein, *supra* n. 5, at 821–27. He also was an early critic of extending patent protection to DNA. *See* Richard A. Epstein, *Property Rights in cDNA Sequences: A New Resident for the Public Domain*, 3 U. Chi. L. Sch. Roundtable 575 (1996) [hereinafter Epstein, *Property Rights*]. When he returned to the issue years later and after more study of patent law, he reaffirmed his position that DNA patents are unjustified. *See* Richard A. Epstein, *Steady the Course: Property Rights in Genetic Material*, in *Perspectives on Properties in the Human Genome Project* 153, 188–93 (F. Scott Kieff ed., Elsevier Academic Press 2003). Lastly, he was a vocal opponent of the 1998 Copyright Term Extension Act, *see* Richard A. Epstein, *Congress's Copyright Giveaway*, 232Wall St. J. A19 (Dec. 21, 1998), which he deemed to be a "massive giveaway of public domain resources for private use." Richard A. Epstein, *The Dubious Constitutionality of the Copyright Term Extension Act*, 36 Loy. L.A. L. Rev. 123, 128 (2003).

7. Epstein, *supra* n. 5, at 827.

This article is limited to assessing his claim that the commercialization of patents should be secured with the same conveyance default rule that has long been applied to real property, and it does so from two perspectives: first, it explains how nineteenth-century patent doctrine supports his normative thesis that patentees should be secured in the use and disposition of their property, and, second, it discusses some possible complicating factors that arise from his utilitarian justification for antitrust review of conveyances of patent rights. There is no special reason for the history-theory split other than that these are the two hats that I wear in my own scholarship on patent law.[8] When I have applied this perspective to Epstein's analysis of the legal rules for patent conveyances, I am struck by the degree of convergence between his normative prescription and historical reality. Yet this same historical evidence also suggests reasons to doubt whether his support for rule-of-reason antitrust standards can function as a backstop to the default rule for patent conveyances.

This article proceeds in two parts. First, it will identify and explain the historical doctrine that correlates with Epstein's normative argument in favor of a conveyance default rule. This provides some important empirical verification for his normative prescription that simple conveyance default rules are essential to a successful legal regime securing property rights, whether in land or in inventions. The success of the nineteenth-century American patent system is some indication of this important insight.[9]

Understanding the historical conveyance default rule in patent law is also important because it underscores Epstein's critique of the Supreme Court's recent decision in *Quanta Computer v. LG Electronics*.[10] In *Quanta*, the Court reframed this conveyance default rule in patent law (known in patent law circles as "exhaustion doctrine") into a mandatory rule that all conveyances exhaust a patentee's property rights.[11] Epstein believes that the *Quanta* Court's new mandatory rule on exhaustion undermines the effective security of property rights in patented inventions,[12] but his critique was made without the benefit of an in-depth historical account of nineteenth-century case law on patent conveyance rights.[13] The historical case law confirms that the *Quanta* Court indeed shifted patent exhaustion doctrine from a default rule to a mandatory rule.[14] This also raises the question as to why this easily discernible case law

8. *See e.g.* Adam Mossoff, *Rethinking the Development of Patents: An Intellectual History, 1550–1800*, 52 Hastings L.J. 1255 (2001).

9. *See* B. Zorina Khan, *The Democratization of Invention: Patents and Copyrights in American Economic Development, 1790–1920* 9–10 (Cambridge U. Press 2005) ("The analysis [in this book] emphasizes the role that patents and copyrights played in the securitization of ideas through the creation of tradeable assets: intellectual property rights facilitated market exchange, a process that assigned value, helped to mobilize capital, and improved the allocation of resources. . . . Extensive markets in patent rights allowed inventors to extract returns from their activities through licensing and assigning or selling their rights.").

10. 128 S. Ct. 2109 (2008). For a brief exposition of the facts in this case, see *infra* n. 20.

11. *See id.* at 2115 (holding "that the initial authorized sale of a patented item terminates *all* patent rights to that item") (emphasis added).

12. Epstein, *supra* n. 2, at 40–44.

13. *See id.* (discussing only twentieth-century exhaustion and antitrust cases).

14. There is a substantial literature on the distinction between default rules and mandatory rules. *See e.g.* Ian Ayres & Robert Gertner, *Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules*, 99 Yale L.J. 87 (1989); Jeffrey N. Gordon, *The Mandatory Structure of Corporate Law*, 89 Colum. L. Rev. 1549 (1989); Stephen J. Ware, *Default Rules from Mandatory Rules: Privatizing Law through Arbitration*, 83 Minn. L. Rev. 703 (1999).

has been so widely misunderstood today. Thus, this part concludes with a brief discussion as to why the *Quanta* Court and many commentators are now confused about the nature of the historical legal rules that comprise patent exhaustion doctrine.

Second, the article will discuss some complicating factors deriving from Epstein's utilitarian commitment to rule-of-reason standards in antitrust and the impact that this may have on a patentee's decision to engage in the inventive activity that leads to innovative commercial practices within new markets.[15] Here, the concern is not with default rules versus mandatory rules, but rather with rules versus standards;[16] in sum, this part compares the conveyance default rule to standards-based antitrust review, both of which are embraced by Epstein. Although there is a substantial body of scholarship on the patent-antitrust nexus, the focus of this part is more delimited than in these many monographs and articles.[17] This part makes only the following observation: the virtue of the conveyance default rule, according to Epstein, is that it is a simple matter of administration, but the gains of these low administration costs may be lost in the inherent complexity in applying rule-of-reason antitrust analysis to pioneering inventions and commercial innovation. The practical and theoretical difficulties in intermingling a rule with a standard in adjudicating patent conveyances suggests that unforeseen and potentially very large costs may be lurking in the background in Epstein's invocation of a standards-based antitrust regime as a backstop to a conveyance default rule.[18]

A festschrift seems like a perfect opportunity to explore these two intertwined issues of default rules versus mandatory rules in patent exhaustion doctrine and of rules versus standards at the patent-antitrust nexus. The first issue confirms Epstein's policy claims with solid empirical verification and the second issue raises friendly questions to which he has the opportunity to respond. It bears emphasizing that it is not the goal here to resolve any deep policy disputes concerning either patent exhaustion doctrine or the antitrust-patent nexus. These are complex subjects each deserving of full-length treatment in stand-alone articles or books. Given time and space constraints, the purpose of this festschrift article is more limited in its scope. It first identifies historical doctrine that provides some empirical support for Epstein's normative claim that conveyances of patent rights should be governed by a default rule. It then highlights some concerns about Epstein's utilitarian defense of a "restrained," standards-based antitrust review of patent conveyances.[19] This raises the question whether such complicating factors

15. *See* Epstein, *supra* n. 2, at 41–42 (noting the recent adoption of a "rule-of-reason analysis" for tie-ins in antitrust law as an example of "the sensible approach to restraints on alienation in patents").

16. As with the distinction between default rules and mandatory rules, there is a substantial and longstanding literature on the distinction between rules and standards. *See e.g.* Pierre Schlag, *Rules and Standards*, 33 UCLA L. Rev. 379 (1985); Duncan Kennedy, *Form and Substance in Private Law Adjudication*, 89 Harv. L. Rev. 1685, 1687–1713 (1976); Isaac Ehrlich & Richard Posner, *An Economic Analysis of Legal Rulemaking*, 3 J. Leg. Stud. 257 (1974).

17. *See e.g. Regulating Innovation: Competition Policy and Patent Law under Uncertainty* (Geoffrey A. Manne & Joshua D. Wright eds., Cambridge U. Press forthcoming 2010); Michael A. Carrier, *Unraveling the Patent-Antitrust Paradox*, 150 U. Pa. L. Rev. 761, (2002); Louis Kaplow, *The Patent-Antitrust Intersection–A Reappraisal*, 97 Harv. L. Rev. 1815, 1817 (1984); Ward S. Bowman, *Patent and Antitrust Law: A Legal and Economic Appraisal* (U. Chi. Law Press 1973).

18. *See* Louis Kaplow, *Rules Versus Standards: An Economic Analysis*, 42 Duke L.J. 557, 577 (1992) ("Rules cost more to promulgate; standards cost more to enforce.").

19. *See* Epstein, *supra* n. 1, at 126 (observing that there are overall social "gains from a restrained and sensible antitrust policy").

undermine the social welfare benefits secured by the patent conveyance default rule. If so, then this perhaps counsels against its use even in Epstein's second-best world of simple rules for complex innovation.

II. A SIMPLE DEFAULT RULE FOR PATENT CONVEYANCES

The correlation between the conveyance default rule in nineteenth-century patent doctrine and Epstein's normative thesis that patent law should follow traditional common law property rules concerning use and disposition is striking. His most in-depth analysis of conveyance rules in patent law is found in his critique of the Supreme Court's patent exhaustion decision in *Quanta Computer v. LG Electronics*.[20] In sum, Epstein maintains that the *Quanta* Court failed to acknowledge the property-based default rule that was embedded within the doctrine concerning conveyances of property rights in inventions. Although Epstein only identifies twentieth-century case law in support of this claim,[21] nineteenth-century courts indeed crafted a conveyance default rule for patents that they imported from the concomitant treatment of conveyances of land, explicitly using concepts and cases from common law property doctrine. Thus, this part will first discuss this historical case law, and then it will discuss the *Quanta* decision and some reasons for why the historical case law is eclipsed in modern court decisions and scholarship.

At the outset, it is important to recognize that nineteenth-century courts' framing of patent conveyances in property terms should be unsurprising. As I have established in my previous scholarship, early American courts relied on the legal classification of patents as "property" to link patents with real property in both conceptual and rhetorical terms. For instance, courts identified patents as "titles,"[22] conveyance instruments as "deed[s],"[23] concurrent patent-owners as "tenants in common,"[24] and patent infringers as "pirates."[25] This was not just rhetoric, as nineteenth-century courts substantively

20. *See* Epstein, *supra* n. 2, at 42–44. Epstein was no stranger to *Quanta*, as he joined an amicus brief authored by Scott Kieff, Troy Paredes, and Polk Wagner, arguing that patent exhaustion doctrine should be construed as a conveyance default rule. *See* Br. of Various L. Profs. as Amici Curiae in Support of Respt., *Quanta Computer, Inc.*, 128 S. Ct. 2109. This case arose from a somewhat complicated license agreement between LG Electronics and Intel Corporation, in which LG licensed its computer patents to Intel but prohibited Intel from selling any memory chips covered by these patents to computer manufacturers who would combine these patented memory chips with non-Intel products. In exchange for LG's promise not to hold Intel liable for patent infringement if a computer manufacturer breached this restrictive condition, Intel agreed to provide notice of this limitation in its license to its customers (i.e., the computer manufacturers who produce personal computers using Intel chips). *Quanta Computer, Inc.*, 128 S. Ct. at 2114–15. The exact terms of the agreement between LG and Intel proved to be a nettlesome issue in this litigation, because the license was under seal and thus only portions of it were made available in the court decision. *See id* at 2114 n.1.

Quanta Computers was one of several computer manufacturers who received this notice, but nonetheless combined the LG-patented Intel chips with non-Intel products. LG sued Quanta and the other computer manufacturers for patent infringement. The Supreme Court granted cert on two questions, the most important of which was whether downstream third-parties could be held liable for patent infringement given their breach of a restrictive condition between a patentee and a licensee. The Court was clear that the answer was no, holding "that the initial authorized sale of a patented item terminates all patent rights to that item." *Id.* at 2115.

21. *See* Epstein, *supra* n. 2, at 40–44.

22. Adam Mossoff, *Who Cares What Thomas Jefferson Thought About Patents? Reevaluating the Patent "Privilege" in Historical Context*, 92 Cornell L. Rev. 953, 994 (2007).

23. *Tyler v. Tuel*, 10 U.S. 324, 326 (1810) (noting in a patent dispute that "whole [interest] passed at law by the deed of assignment").

24. Mossoff, *supra* n. 22, at 994–95.

25. *Id.* at 993.

relied on common law property cases to create early patent doctrines, such as applying to patents the interpretative canons used for construing title deeds[26] and extending constitutional protections to patentees under the Takings Clause.[27] One could thus safely predict that nineteenth-century courts would apply the same conveyance rules in common law property doctrine to secure to patentees their rights to use and dispose of their inventions, which is exactly what happened in early American patent law.

A. The Conveyance Default Rule in Nineteenth-Century Patent Doctrine

Although Congress has never codified exhaustion doctrine in the patent statutes,[28] this does not diminish its importance in securing to patentees their property rights in their inventions. In essence, exhaustion doctrine has long defined the methods by which a patentee may restrict the downstream commercial use or sale of his property. As first developed in nineteenth-century case law, exhaustion doctrine established a straightforward default rule: if a patentee conveys his property rights through unrestricted licenses or sales of his patented products, the patentee thereby exhausts his ability to enforce his property rights in his invention. After an outright sale of his property, the patentee can no longer sue for infringement because he no longer has any property right on which to assert a legal claim for infringement.

For real estate lawyers, exhaustion doctrine should sound familiar, and this is no accident. In the nineteenth century, American courts expressly patterned exhaustion doctrine after the same default rule that they had crafted in real property law.[29] Traditional property law provides that a landowner who conveys his legal rights in land without express restrictions, creating a lesser estate or imposing defeasible conditions, conveys his entire estate interest.[30] In other words, since an owner of real property controls the exclusive determination of its use and disposition, the property-owner may convey his estate with some restrictions on its future use. Absent any express use restrictions in a conveyance instrument, courts deem a property-owner to have conveyed his entire estate.[31] In the nineteenth century, courts were developing this conveyance default rule for real property,[32] and thus it made sense to them to apply it equally to patents, making the necessary adjustments for the fact that the "thing" in patent law is not a parcel of land but a novel and useful invention.

---

26. *Id.* at 998–1001.

27. *See* Adam Mossoff, *Patents as Constitutional Private Property: The Historical Protection of Patents Under the Takings Clause*, 87 B.U. L. Rev. 689, 718–19 (2007).

28. Interestingly, exhaustion doctrine in copyright law was also judge-made law. *See Bobbs-Merrill Co. v. Straus*, 210 U.S. 339 (1908). Congress has since codified it in the copyright statutes. *See* 17 U.S.C. § 109(a) (2006).

29. *See* Adam Mossoff, *Commercializing Property Rights in Inventions: Lessons for Modern Patent Theory from Classic Patent Doctrine*, in *Regulating Innovation*, *supra* n. 17, at __ (forthcoming). The material in this section presents some new historical material on patent exhaustion doctrine, but it is largely based on this earlier work.

30. *See* Joseph William Singer, *Introduction to Property* 294 (Aspen Law & Bus. 2001) ("Today, a conveyance is assumed to transfer all the rights that the owner possesses to the grantee unless the conveyance suggests otherwise.").

31. *See Thompson on Real Property* vol. 2, § 17.06(d) (David A. Thomas ed., Michie Co. 1994) ("Where language is ambiguous, it will be construed to confer on the grantee the highest estate permissible under the instrument.").

32. *See infra* nn. 58–59 and accompanying text.

It is important to recognize that courts secured to patentees their right to convey their legal interests in their inventions because patents were classified as property rights. In contrast with an English patent, which was legally defined as a grant of personal privilege and therefore "inalienable unless power to that effect is given by the crown,"[33] an American patent was "defined as an incorporeal chattel" that reflected "all the characteristics of personal estate."[34] This included the core rights to use and dispose of one's property; as the Pennsylvania Supreme Court observed in 1823, "property, without the power of use and disposition, is an empty sound."[35] One nineteenth-century court thus made the almost banal observation at the time that "the rights conferred by the patent law, being property, have the incidents of property, and are capable of being transmitted by descent or devise, or assigned by grant."[36] In a historical context in which courts distinguished between the legal treatment of special franchise grants and fundamental property rights, the classification of patents as fundamental civil rights in property directly determined how courts protected patentees in using and selling their property.[37]

On the basis of this conceptual delineation of patents as property, early American courts incorporated from property doctrine the same conceptual terms that the common law courts had long used to identify the quantum of interest conveyed by a property-owner to a third-party. This is best evidenced in a survey of patent conveyance concepts in 1858 in *Potter v. Holland*.[38] In this case, the defendants claimed that an extremely complicated set of back-and-forth conveyances between multiple parties resulted in the plaintiff lacking standing to sue for patent infringement, and thus the *Potter* court found it "necessary to determine what is meant by the terms assignee of the original patent, and assignment of the original patent, as they are used in the patent law."[39] In fact, the complexity of the conveyances underlying the dispute in *Potter* appears to be the primary factor in motivating the court to discuss these conveyance concepts,[40] because, prior to this case, the enforcement of assignments or licenses did not garner much comment or concern. In 1813, for instance, Justice Joseph Story summarized an earlier patent case in which a plaintiff's claim was dismissed for lack of standing on the grounds that the conveyance instrument was, "technically speaking, no assignment of the patent right" because it "operate[ed] as a covenant or license for the exclusive use of the patent right in certain local districts."[41]

Given the complexity of the conveyances underlying the dispute in *Potter*, the court thus reviewed the longstanding distinction in property law between an assignment and a license. On one hand, the court explained that "[a]n assignment, as understood by

33. *Belding v. Turner*, 3 F. Cas. 84, 85 (C.C. Conn. 1871) (the quotation is from an anonymous note following the case).

34. *Id.*

35. *In re Appeal of Flintham*, 11 Serg. & Rawle 16, 24 (Pa. 1823).

36. *Carew v. Boston Elastic Fabric Co.*, 5 F. Cas. 56, 57 (C.C. Mass. 1871).

37. *See* Mossoff, *supra* n. 22, at 989–1009.

38. 19 F. Cas. 1154 (C.C. Conn. 1858).

39. *Id.* at 1156.

40. *Id.* at 1154–1555 (describing the multiple conveyances between multiple parties).

41. *Whittemore v. Cutter*, 29 F. Cas. 1120, 1120–21 (C.C. Mass. 1813) (discussing *Tyler*, 10 U.S. 324).

the common law, is a parting with the whole property."[42] On the other hand, a "license," another well-known concept in real property doctrine,[43] created a lesser interest in a patent. As the court observed, a "licensee is one who has [had] transferred to him, in writing or orally, a less or different interest than either the interest in the whole patent, or less than an undivided part in the whole."[44] In short, licenses were limited conveyances of only some of the legal interests in property, whether land or an invention, and assignments were a conveyance of the entire estate.[45] (Notably, these concepts continue to be used by courts in patent law cases to this day.[46]) Later in its lengthy opinion, the *Potter* court explained that "certain exclusive rights are secured, or purported to be secured to the inventor" by a patent,[47] and its survey of the legal classification of patent conveyances made clear that this included the central property rights of use, enjoyment and disposition.

On the basis of this conceptual linkage between property in land and in inventions, nineteenth-century American courts developed the same default rule for patent conveyances as had been employed for real property. In sum, courts incorporated into patent law the right to impose restrictions that had been secured to landowners through the enforcement of restrictive covenants and defeasible estates.[48] Patentees were able to impose a whole litany of restrictions on the use of the property interest they conveyed to a licensee. For instance, a patentee could restrict a licensee in terms of the total quantity of patented products manufactured or sold,[49] the manner in which the patented product may be used,[50] the territorial scope in which the patented product may be used or sold,[51]

---

42. *Potter*, 19 F. Cas. at 1156 (citing William Blackstone, *Commentaries* vol. 2, *326).

43. *See* James Kent, *Commentaries on American Law* vol. 2, 452–53 (George Comstock ed., 11th ed., Little, Brown & Co. 1866) (explaining that "a license is an authority to do a particular act, or series of acts, upon another's land, without possessing any estate therein").

44. *Potter*, 19 F. Cas. at 1157.

45. *See Suydam v. Day*, 23 F. Cas. 473, 474 (C.C.N.Y. 1845) (distinguishing between "an assignee of a patent [who] must be regarded as acquiring his title to it, with a right of action in his own name," and "an interest in only a part of each patent, to wit, a license to use").

46. *See Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1551 (Fed. Cir. 1995) ("A conveyance of legal title by the patentee . . . is an assignment and vests the assignee with title in the patent, and a right to sue infringers."); *In re Cybernetic Services, Inc.*, 252 F.3d 1039, 1052 (9th Cir. 2001) (noting "that a security interest in a patent that does not involve a transfer of the rights of ownership is a 'mere license' . . . .").

47. *Potter*, 19 F. Cas. at 1158.

48. *See e.g. Mitchell v. Hawley*, 83 U.S. 544, 548 (1872) (noting proposition in patent law that "[p]urchasers of the exclusive privilege of making or vending the patented machine hold the whole or a portion of the franchise which the patent secures, depending upon the nature of the conveyance . . . ."); *Am. Cotton Tie Supply Co. v. Bullard*, 1 F. Cas. 625, 629 (C.C.N.Y. 1879) (recognizing that patented products may be sold in which "a restriction may easily be attached, or where a license to use only may be sold, unaccompanied with any title or accompanied with a restricted title"); *Washing Mach. Co. v. Earle*, 29 F. Cas. 332, 334 (C.C.E.D. Pa. 1861) ("Every person who pays the patentee for a license to use his process becomes the owner of the product, and may sell it to whom he pleases, or apply it to any purpose, *unless he bind himself by covenants to restrict his right of making and vending certain articles* that may interfere with the special business of some other licensees.") (emphasis added).

49. *See e.g.* Charles Slack, *Noble Obsession: Charles Goodyear, Thomas Hancock, and The Race to Unlock the Greatest Industrial Secret of the Nineteenth Century* (Hyperion 2002) (describing quantity, territorial, and field-of-use restrictions that Goodyear imposed on licensees of his patent for vulcanized rubber); *Bloomer v. McQuewan*, 55 U.S. 539, 554 (1852) (Mclean, J., dissenting) (describing a license among the parties, which they were not disputing, to make and use a patented planning machine "within Pittsburgh and Alleghany county . . . [and] not to contruct or run more than fifty machines during the term").

50. *See e.g. Am. Cotton-Tie Co. v. Simmons*, 106 U.S. 89 (1882) (enforcing license restriction prohibiting re-use of a patented cotton-bale tie, on which the patented products were stamped "License to use once only");

and even the price that the licensee could charge in the marketplace.[52] By the end of the nineteenth century, it was well-settled doctrine that patentees could convey lesser interests in their patents to grantees, who took "title" to the underlying invention "subject to a reverter in case of violation of the conditions of the sale."[53]

In such cases, a patentee retained something tantamount to a reversionary interest arising from the creation of a lesser estate, a point underscored by courts using such terms as "reverter" in referring to a patentee's retained property interests.[54] Similar to real property doctrine, it was this reversionary interest that gave a patentee the right to sue a licensee for patent infringement to enforce his retained property rights. As a federal court explained in 1857:

> If such licensee uses the patented invention beyond the limits of the license or grant, or in a way not authorized by the license or grant, then there has been a violation of a right secured to the patentee under a law of the United States giving to him the exclusive right to use the thing patented, although such licensee performs, according to their terms, all the covenants entered into by him.[55]

If a licensee used a patented invention beyond the terms of the interest conveyed to him by the patentee, he was liable for the same reason that an owner of an easement who expands the right of way is liable for trespassing on the larger estate.[56] If a patentee expressly retained an interest in conveyances of his property, as evidenced by restrictions imposed on the licensee in the conveyance instrument, then the patentee could sue his licensee for infringement.

Although nineteenth-century courts did not explicitly frame their development of patent conveyance doctrine as a property-based default rule, they did make clear in *Potter* and in other cases that they were employing the same concepts they had long used in real estate conveyances.[57] On the basis of recognizing this conceptual symmetry between patents and real estate, it is possible to see that they were recreating in patent law the same conveyance default rule that they were developing in real property doctrine. In the nineteenth century, the common law presumption that favored conveyances of lesser estates in land was beginning to be replaced with a new default

---

Providence Rubber Co. v. Goodyear, 76 U.S. 788, 799–800 (1869) (enforcing against the defendants the express sale and use restrictions imposed in a license); *Chaffee v. Bos. Belting Co.*, 63 U.S. 217, 220 (1859) (recognizing by "the terms of the instrument" created by Goodyear in this case that "it was understood that the right and license so conveyed was to apply to any and all articles substituted for leather, metal, and other substances, in the use or manufacture of machines or machinery . . . .").

51. *See e.g. McQuewan*, 55 U.S. at 554 (describing a valid assignment of the patent "within several States, including Pennsylvania, except the city of Philadelphia"); *Farrington v. Gregory*, 8 F. Cas. 1088, 1089 (C.C.E.D. Mich. 1870) (noting that license contained geographic restriction that limited the licensee's "right to use and sell machines in Calhoun and Kalamazoo counties, in the state of Michigan . . . .").

52. *See e.g. E. Bement & Sons v. Natl. Harrow Co.*, 186 U.S. 70, 75 (1902).

53. *Heaton-Peninsular Button-Fastener Co. v. Eureka Specialty Co.*, 77 F. 288, 290 (6th Cir. 1896) (recognizing under the terms of the license that "[t]he buyer of the machine undoubtedly obtains the title to the materials embodying the invention, subject to a reverter in case of violation of the conditions of the sale").

54. *Id.*

55. *Goodyear v. Union India Rubber Co.*, 10 F. Cas. 726, 727 (C.C.S.D.N.Y. 1857).

56. *See Brown v. Voss*, 715 P.2d 514, 518 (Wash. 1986) (Dore, J., dissenting) (noting that "any extension of the use of an easement to benefit a nondominant estate constitutes misuse of the easement," and thereby "is a trespass").

57. *See supra* nn. 36–53 and accompanying text.

rule: if a fee simple owner transfers an interest outright without express limitations or fails to use the proper estate terminology, then it is deemed to be a conveyance of the entire estate in fee.[58] Today, in conveyances of real property, a fee simple owner has the right to transfer lesser estates or impose use restrictions, but he has to do so expressly and in writing (employing formal "words of limitation").[59] Without the use of express words of limitation indicating an intent to transfer a lesser estate or to impose defeasible conditions, the default presumption is that the grantee receives the estate in fee simple.[60]

Since the nineteenth century, the same has been true in conveyances of patent rights. A patentee may grant a license by imposing in writing limitations on the interest conveyed to the grantee, which creates as a matter of logical necessity a retained reversionary interest in the patentee.[61] However, if a patentee failed to do this, then the conveyance was deemed to be an outright transfer of the patentee's interests and he retained nothing under the law that permitted him to sue on his property right.[62] In fact, nineteenth-century courts repeatedly rebuffed attempts by patentees to sue either innocent end-users who lacked notice of use-restrictions or grantees who had received interests in a patent free and clear of any express words of limitation.[63] By 1874, a federal appeals court could state without controversy the well-established law governing patent licenses: "It is clear that the patentee may grant the right to use within any specified place, town, city or district, and he may make such right of use exclusive; and I deem it no less clear that he may limit the right to manufacture for such use."[64] In such declarations it is clear that nineteenth-century courts developed the same conveyance default rules for both land and patents—because both were secured as property within the American legal system.

---

58. *See Stevens v. Dewing*, 2 Vt. 411, 416–17 (1830) (holding that a deed conveyed a fee simple, despite express words indicating a conveyance of a lesser interest, given the tenor of the "whole deed" in favor of a fee). At common law, grantors were required to use precise words of limitation to convey a fee simple; otherwise, the default rule was that they conveyed only a life estate. *See e.g.* Wright v. Denn, 23 U.S. 204, 227–28 (1825) (noting that "where there are no words of limitation to a devise, the general rule of law is, that the devisee takes an estate for life only, unless, from the language there used, or from other parts of the will, there is a plain intention to give a larger estate"). In most jurisdictions, this common law default rule favoring life estates has been abrogated by statute and case law in favor of the modern default rule favoring fee simples. *See* Sheldon F. Kurtz, *Moynihan's Introduction to the Law of Real Property* 39 (4th ed., West 2005).

59. *Id.* at 36–37 ("Words of limitation are those words defining or denoting the quantum of interest given to the grantee.").

60. *See* William B. Stoebuck & Dale A. Whitman, *The Law of Real Property* 29 (3d ed., West 2000) ("Any language in a deed of conveyance or a will sufficient to create a fee simple will create a fee simple absolute in the absence of any legally effective provision for defeasance upon the happening of a stated event.").

61. *See e.g. McClurg v. Kingsland*, 42 U.S. 202, 206 (1843) (referring to a patent conveyance as "an express license or grant . . . giving the defendants a right to the continued use of the invention"); *Heaton-Peninsular*, 77 F. at 290 (recognizing that "[a]ll alienations of a mere right to use the invention operate only as licenses," and that in such cases, the interest conveyed to a licensee was "subject to a reverter in case of violation of the conditions of the sale"); *Gamewell Fire-Alarm Telegraph Co. v. City of Brooklyn*, 14 F. 255, 256 (C.C.N.Y. 1882) (dismissing a licensee's lawsuit as going beyond the scope of the limited rights of use and sale granted to it by the patentee).

62. *See e.g. Featherstone v. Ormonde Cycle Co.*, 53 F. 110, 111 (C.C.S.D.N.Y. 1892) ("It is well settled that the *unrestricted* sale of a patented article by the owner of the patent conveys to the purchaser the right of unrestricted ownership . . . .") (emphasis added); *Holiday v. Mattheson*, 24 F. 185, (C.C.S.D.N.Y. 1885) ("When the [patent] owner sells an article, *without any reservation* respecting its use . . . the purchaser acquires the whole right of the vendor in the thing sold . . . .") (emphasis added).

63. *See* Adam Mossoff, *Exclusion and Exclusive Use in Patent Law*, 22 Harv. J.L. & Tech. 321, 359 (2009) (identifying case law).

64. *Dorsey Revolving Harvester Rake Co. v. Bradley Mfg. Co.*, 7 F. Cas. 946, 947 (C.C.N.D.N.Y. 1874).

In the twentieth century, this conveyance default rule came to be known as exhaustion doctrine, emphasizing more the default aspect of the rule rather than the right of patentees to convey lesser interests through licenses. Despite this new label, though, the doctrinal content of the default rule remained the same: a patentee exhausted his property rights in his invention if he conveyed his property without "explicit and unequivocal restrictions as to the time, or place, or manner of using the [patented] article" that created some type of reversionary interest.[65] As summarized in an early twentieth-century patent case, "the right to vend is exhausted by a single, *unconditional* sale, the article sold being thereby carried outside the monopoly of the patent law and rendered free of every restriction which the vendor may attempt to put upon it."[66] Although the "exhaustion" language was different than that used by nineteenth-century courts, the substantive content of the doctrine remained the same. In fact, one early twentieth-century court observed that exhaustion doctrine simply reflected "truisms" concerning the right of conveyance.[67] It was and should have remained a simple conveyance default rule.

B. *The Confusion among Modern Courts and Commentators Concerning the Foundations of Exhaustion Doctrine*

Historical patent case law confirms Epstein's criticism that *Quanta* is "a pure exercise in idle formalism."[68] This critique has bite, because the *Quanta* Court redefines exhaustion doctrine from a default rule into a mandatory rule "that the initial authorized sale of a patented item terminates all patent rights to that item."[69] This statement of exhaustion doctrine is anything but a conditional rule: If *all* sales exhaust *all* patent rights, then imposing restrictive conditions in a license or sale would not change this fact. To dispel any doubts, the *Quanta* Court repeatedly restates exhaustion doctrine as a mandatory rule, not a default rule.[70] Although the Court cites nineteenth-century exhaustion cases in support of its mandatory rule,[71] it fails to recognize that its exhaustion rule conflicts with the actual default rule within the historical case law it claims to be relying on.

For the purpose of this section, I will briefly explore two possible explanations for the *Quanta* Court's confusion in redefining patent exhaustion doctrine into a mandatory rule, one based in historical case law and the other based in the modern patent statutes.

---

65. *Curtiss Aeroplane & Motor Corp. v. United Aircraft Engr. Corp.*, 266 F. 71, 77 (2d Cir. 1920).

66. *Motion Picture Pat. Co. v. Universal Film Mfg. Co.*, 243 U.S. 502, 516 (1917) (emphasis added).

67. *See Am. Graphophone Co. v. Bos. Store of Chi.*, 225 F. 785, 787 (N.D. Ill. 1915) (observing as "truisms" that "after a patentee has exhausted his right, he can no longer exercise it, or that, when he has once sold to an individual for a full price, the public cannot be barred from the full and unrestricted use and right of resale").

68. Epstein, *supra* n. 2, at 43.

69. *Quanta Computer, Inc.*, 128 S. Ct. at 2115.

70. *See id.* at 2121 ("Exhaustion is triggered only by a sale authorized by the patent holder."); *id.* at 2122 ("The authorized sale of an article that substantially embodies a patent exhausts the patent holder's rights and prevents the patent holder from invoking patent law to control postsale use of the article.").

71. *See Quanta Computer, Inc.*, 128 S. Ct. at 2115 (citing *Adams v. Burke*, 84 U.S. 453, 455 (1873)) ("The longstanding doctrine of patent exhaustion provides that the initial authorized sale of a patented item terminates all patent rights to that item."); *Bloomer v. Millinger*, 68 U.S. 340, 351 (1863); *Adams v. Burke*, 84 U.S. 453, 455–56 (1873)).

The point here is not reductionist, however, as the limitation to these two reasons is for purposes of time and scope only. There may be other possible reasons rooted in both policy and doctrine, as such explanations are not exclusive of each other, but this would require a more in-depth analysis in an article in its own right.

First, the *Quanta* Court might have been led astray by its purported reliance on nineteenth-century case law. Unfortunately, patent exhaustion doctrine is mistakenly identified today as having been born at the hands of Chief Justice Robert Taney in his 1852 decision in *Bloomer v. McQuewan*.[72] This is problematic if only because Chief Justice Taney was a fervent Jacksonian Democrat[73] who believed that patents were monopolies that impeded free competition.[74] Thus, he felt that patents should be strictly limited in the same way as other exclusive franchise grants, such as bridge monopolies.[75] As a result of his view of patents as state-granted monopolies, Chief Justice Taney spoke in *Bloomer* about how the patent secures only the right to exclude provided in any state-granted "franchise,"[76] which led him to use broad mandatory language that once the owner of this "exclusive privilege" or "franchise" sells it, the patented invention "is no longer within the limits of the monopoly."[77]

The myopic focus today on these portions of Chief Justice Taney's *Bloomer* opinion has misled courts and commentators as to the historical foundations of patent exhaustion doctrine. Many do not realize that, in 1852, these words were unbridled judicial activism, as Taney was rewriting the express terms of the patent statutes in force at that time. Contrary to his claim in *Bloomer* that the "franchise which the patent grants, consists altogether in the right to exclude," the 1836 Patent Act expressly secured the substantive property rights to use, enjoy, and dispose of a patented invention.[78] Even more important, Chief Justice Taney had an idiosyncratic view of patents because most other antebellum justices, judges, and commentators maintained that patents were fundamental civil rights securing important property rights, not special monopoly franchise grants issued by the state.[79]

Before and after *Bloomer*, patent exhaustion doctrine evolved at the hands of the Supreme Court and lower federal courts as a traditional property conveyance default rule.[80] As such, follow-on patent exhaustion decisions rightly treated Taney's mandatory language as dicta, citing *Bloomer* only for the proposition that a conveyance can extinguish property rights in certain circumstances. They then proceeded to apply

72. 55 U.S. 539. Justice Thomas's opinion in *Quanta* provides the latest example of this historical myopia. *See e.g. Quanta Computer, Inc.*, 128 S. Ct. at 2115 ("This Court first applied the [exhaustion] doctrine in 19th-century cases addressing patent extensions on the Woodworth planing machine.") (citing *McQuewan*, 55 U.S. 539).

73. *See* Mossoff, *supra* n. 22, at 966 (noting Taney's commitment to Jacksonian Democracy).

74. *See id.* at 1000 (discussing Taney's judicial treatment of patents within the context of his inherent suspicion of all government grants of exclusive rights, such as corporate charters, franchises, and patents).

75. *See Charles River Bridge v. Warren Bridge*, 36 U.S. 420, 536–53 (1837).

76. *McQuewan*, 55 U.S. at 549.

77. *Id.*

78. *See* Mossoff, *supra* n. 63, at 340–42 (discussing definition of patents as property rights in 1836 Patent Act and situating this definition within its relevant historical context).

79. *See generally* Mossoff, *supra* n. 22 (discussing the dominant conception of patents in the early American Republic as property rights justified as "privileges" (civil rights) by natural rights philosophy).

80. *See supra* Part II, A.

the concepts from real property law concerning lesser estates or defeasible conditions.

The *Bloomer* dicta, though, continues to mislead modern courts and scholars, who rely on it too much and to the exclusion of the rest of the nineteenth-century case law. This is perhaps a result of the new "exhaustion" language in modern case law, which emphasizes more the *limits* on rather than the *rights* of patentees in using or disposing of their property.[81] Again, the briefing and decision in *Quanta* exemplifies this confusion. Solicitor General Paul Clement's amicus brief in the case relied heavily on *Bloomer* to argue in favor of a mandatory rule that all sales exhausted a patentee's property rights regardless of any express conditions set forth in the license agreement.[82] Similarly, Justice Thomas's opinion in *Quanta* cited *Bloomer* to justify his own embrace of a mandatory rule on exhaustion.[83]

Second, the *Quanta* Court may have been misled by the modern redefinition of patents as personal property,[84] as opposed to the earlier treatment of patents as sharing attributes of both real estate and chattels.[85] This has led some scholars to the anachronistic view that patent exhaustion doctrine reflects traditional judicial hostility to use restrictions on chattels,[86] imposing on historical case law the concerns about limits captured in the modern "exhaustion" label. There is perhaps a selection bias at work here as well, as the historical Supreme Court cases highlighted by modern scholars are those in which patentees overreached in their infringement claims against downstream users of their inventions given conveyance instruments that lacked restrictive conditions supporting the infringement claims or where there was failure to provide reasonable notice.[87] As such, modern commentators have not recognized the omnipresent conceptual, normative, and doctrinal correlations between patents and real property within the relevant nineteenth-century case law. At that time, courts drew explicit fundamental connections between property rights in land and inventions—each type of property served the function of securing the exclusive rights of use, enjoyment and

81. *See* Shubha Ghosh, Antitrust & Competition Policy Blog, *The Quandry of* Quanta*: Thoughts on the Supreme Court Decision One Week Later*, http://lawprofessors.typepad.com/antitrustprof_blog (June 17, 2008) (observing that *Quanta* "goes a long way in limiting a patent owner's ability to reach past the initial transaction and control downstream users and purchasers of patented products").

82. *See* Br. for the U.S. as Amicus Curiae Supporting Petrs. 5–11, *Quanta Computer, Inc.*, 128 S. Ct. 2109 (repeatedly citing *McQuewan*, 55 U.S. 539 in arguing for a *per se* rule that "a patentee who sells an article embodying the invention (either directly or through an authorized licensee) cannot bring a patent-infringement suit against the purchasers for using the article for its only reasonable use or for reselling the article to others").

83. *See Quanta Computer, Inc.*, 128 S. Ct. at 2115 ("The longstanding doctrine of patent exhaustion provides that the initial authorized sale of a patented item terminates all patent rights to that item.").

84. *See* 35 U.S.C. § 261 (2006) ("patents shall have the attributes of personal property").

85. As noted above, it was commonplace for early American courts to use real property concepts and doctrines in patent law cases. *See supra* nn. 36–72 and accompanying text. Some antebellum courts went even further in their comparisons between inventions and land. One federal court observed that "[a]n inventor holds a property in his invention by as good a title as the farmer holds his farm and flock." *Hovey v. Henry*, 12 F. Cas. 603, 604 (C.C.D. Mass. 1846); *see also Davoll v. Brown*, 7 F. Cas. 197, 199 (C.C.D. Mass. 1845) (observing that patents "protect intellectual property, the labors of the mind, productions and interests as much a man's own, and as much the fruit of his honest industry, as the wheat he cultivates, or the flocks he rears").

86. *See* Molly Shaffer Van Houweling, *The New Servitudes*, 96 Geo. L.J. 885, 911–14 (2008) (discussing courts' alleged reluctance in historical patent cases in enforcing restrictive covenants).

87. *See id. See also* Shubha Ghosh, *Carte Blanche,* Quanta*, and Competition Policy*, 34 J. Corp. L. 1209, 1229–34 (2009) (providing broadly framed summary of nineteenth-century cases in support of claim that "exhaustion is a mandatory rule").

disposition.[88]

In employing his rough rule-utilitarian metric in assessing legal rules, Epstein sidesteps this historical and doctrinal confusion and endorses on normative grounds a conveyance default rule for patents. Yet the historical case law provides substantial descriptive support for his normative thesis, although nineteenth-century courts may not have embraced his utilitarianism and instead preferred the more traditional natural rights justification for their legal rules.[89] This normative foundation for the conveyance default rule ensured that courts secured to those inventors who created new and valuable products the fruits of their labors,[90] as well as ensuring the maximum liberty possible in using and disposing of these valuable products.[91] Epstein prefers instead his rough, second-best utilitarian justification for this simple default rule, but that does not change the fact that he is correct in his (descriptive) claim that the *Quanta* Court has fundamentally changed patent conveyance doctrine.

III. ANTITRUST AS A COMPLICATING FACTOR IN A SECOND-BEST WORLD

As noted in the introduction, Epstein does not base his advocacy for a conveyance default rule on historical or doctrinal grounds. Rather, he grounds such a legal rule in his overall utilitarian theory of legal entitlements. According to Epstein, the best that we can hope for are legal rules that "have the virtue of offering solutions for 90 to 95 percent of all possible situations. Never ask more from a legal system."[92] In this second-best world, a conveyance default rule best maximizes overall social utility. Yet there is potential tension between his rough utilitarian defense of this simple rule in patent law and his belief that there are overall social "gains from a restrained and sensible antitrust policy."[93] The purpose of this part is to highlight this tension between the social gains achieved through a simple conveyance default rule and the potential social losses in the use of antitrust in policing some aspects of patent conveyances.

At the outset, though, it is necessary to acknowledge that the patent-antitrust nexus has long been fraught with theoretical and doctrinal tension. Courts and scholars initially struggled to find a harmonious balance between what they saw as an inherent conflict between the "monopolies" secured by the Patent Act and the "monopolies" sanctioned by the federal antitrust statutes.[94] More recently, many courts and commentators have

88. *See generally* Mossoff, *supra* n. 22, at 1000 (discussing how patents were justified as property rights in the early American Republic, identified at that time as "privileges" (civil rights) within natural rights philosophy); Mossoff, *supra* n. 27, at 715–19 (discussing how the natural rights justification for patents led courts to extend to them constitutional protection as "private property" under the Takings Clause).

89. For my analysis of the strong historical influence of natural rights philosophy in American patent doctrine, see *id.*

90. *See* Adam Mossoff, *Locke's Labor Lost*, 9 U. Chi. L. Sch. Roundtable 155 (2002).

91. *Cf.* Eric R. Claeys, *Virtue and Rights in American Property Law*, 94 Cornell L. Rev. 889, 910 (2009) ("Individual humans need not only such basic external goods as food and the raw materials for clothes and shelter but also a domain of discretion in which they may be left alone to use those external assets productively for their own self-preservation.").

92. Epstein, *supra* n. 1, at 42.

93. *Id.* at 126.

94. *See* Louis Altman, *Callmann on Unfair Competition, Trademarks & Monopolies* § 4:55 (4th ed., West 2008) (recognizing "a basic policy conflict between the two statutes—the one that creates, and the other that forbids, monopolies"); Lawrence A. Sullivan, *Antitrust* 505–06 (West 1977) (noting that "there [can] be no pretense that the patent system is not in potential collision with antitrust"); *U.S. v. Studiengesellschaft Kohle,*

come to recognize that both legal doctrines seek to advance social welfare by safeguarding innovation and competition.[95] It would be impossible within the scope of this festschrift article, let alone only one part of this article, to weigh in on this important theoretical dispute, and that is certainly not the goal here. Thus, what follows is a more limited claim: the virtue of the conveyance default rule, according to Epstein, is that it is a simple matter of administration, but the gains of these low administration costs may be lost in the inherent complexity in applying rule-of-reason antitrust analysis to pioneering inventions and commercial innovation. This may be a problem for Epstein given his grounding of a simple conveyance default rule on his overall commitment to utilitarianism, which also leads him to embrace at the margins the "sensible" use of antitrust as a legal mechanism for ensuring efficiency-maximization.[96]

Consistent with his underlying commitment to cost-benefit analysis, Epstein generally rejects *per se* illegality rules in antitrust,[97] and instead advances rule-of-reason standards, especially at the interface between patent and antitrust law.[98] But a rule-of-reason standard mandates that courts engage in highly granular assessments of extremely novel business models and commercial practices. This inherently *ex post* antitrust review potentially threatens to undermine the *ex ante* advantages of certainty provided by the simple conveyance default rule governing the disposition of one's patented invention in the marketplace. This may be the case for two reasons, one having to do with the interplay between rules and standards in litigation and the other having to do with the seemingly unpredictable nature of innovation.

A. The Effect of Intermingling Conveyance Rules and Antitrust Standards

The first concern about directing courts to look to antitrust to squelch specific cases of collusion or monopolization is that, in practice, litigants always assert antitrust claims against patentees or their assignees. This suggests that the conveyance default rule will become swamped by standards-based adjudication of antitrust claims. This is not mere conjecture, as there are many instances in the law in which a doctrine that originally contained both standards and rules evolved through adjudication to the point

m.b.H., 670 F.2d 1122, 1127 (D.C. Cir. 1981) (noting that a patent "grant is in inevitable tension with the general hostility against monopoly expressed in the antitrust laws").

95. *See* Bowman, *supra* n. 17, at 1 (claiming that antitrust and patent law both seek "to maximize wealth by producing what consumers want at the lowest cost"); Willard K. Tom & Joshua A. Newberg, *Antitrust and Intellectual Property: From Separate Spheres to Unified Field*, 66 Antitrust L.J. 167 (1997); *Atari Games Corp. v. Nintendo of Am., Inc.*, 897 F.2d 1572, 1576 (Fed. Cir. 1990) (recognizing a complementary relationship between patent law and antitrust because "both are aimed at encouraging innovation, industry and competition").

96. Epstein, *supra* n. 1, at 126.

97. *See* Richard A. Epstein, *Monopolization Follies: The Dangers of Structural Remedies under Section 2 of the Sherman Act*, 76 Antitrust L.J. 205, 223 (2009) ("The most destructive trope in *Alcoa* was Learned Hand's soaring rhetoric on the necessity of per se illegality even when all the direct evidence suggests that the particular scheme might make economic sense."); Richard A. Epstein, *Let "The Fundamental Things Apply": Necessary and Contingent Truths in Legal Scholarship*, 115 Harv. L. Rev. 1288, 1296 (2002) ("[I]n antitrust law, it is possible to regard certain offenses as per se illegal (at least as a first approximation, usually done with price fixing and market division), and others as subject to a rule of reason (often the approach applied to tie-ins and other vertical arrangements).").

98. *See* Epstein, *supra* n. 2, at ms. 41–42 (noting the recent adoption of a "rule-of-reason analysis" for tie-ins in antitrust law as an example of "the sensible approach to restraints on alienation in patents").

that the standards eventually trumped the rules as the defining content of the doctrine. Property law is replete with such examples, especially in our post-legal-realist world in which formalistic common law rules have been slowly replaced with context-sensitive standards.

One prominent example of this interplay between rules and standards is regulatory takings doctrine, which is also a legal field that is near and dear to Epstein's scholarship.[99] In fact, Epstein's work in this area helped spark a "takings revolution" that reached its apex in 1992 when the Supreme Court announced a new *per se* rule in *Lucas v. South Carolina Coastal Commission*: a taking occurs "where [a] regulation denies all economically beneficial or productive use of land."[100] In dissent, Justice Stevens observed that the *per se* rule would lead to one of two results: either it would replace the standards-based regulatory takings test (known as the *Penn Central* inquiry)[101] or it would be relegated to serving as a rare exception to the primary application of the *Penn Central* inquiry.[102] By the turn of the century, it was clear that the *Lucas* rule had in fact become only an "extraordinarily limited exception to the multi-factor balancing test first enunciated in *Penn Central*," applying in those "exceedingly rare circumstances in which every conceivable productive use of private property has been wiped out in both space and time."[103] As an unanimous Court declared in 2005. "[t]he *Penn Central* factors—though each has given rise to vexing subsidiary questions—have served as the principal guidelines for resolving regulatory takings claims that do not fall within the physical takings or *Lucas* rules."[104]

Constitutional law is admittedly a complex example, raising a host of non-property policy concerns, but there are many similar instances of this tension between rules and standards in more run-of-the-mill property doctrines. In easements, for example, the law governing whether an owner of a dominant tenement has improperly expanded the scope of an easement is directly on point. Here, the longstanding rule was that any expansion in the scope of an easement was a *per se* trespass of the servient tenement's estate.[105] There is also a standards-based exception to this rule, providing that "[t]he manner, frequency, and intensity of the use may change over time to take advantage of developments in technology and to accommodate normal development of the dominant estate."[106] Of course, in litigation, owners of dominant tenements always argue that an expansion in scope is necessary to accommodate normal development or, as one hornbook puts it, that the change is "reasonably foreseeable."[107] The practical result is

99. *See* Richard A. Epstein, *Supreme Neglect: How to Revive Constitutional Protection for Private Property* (Oxford U. Press 2008); Richard A. Epstein, *Takings: Private Property and the Power of Eminent Domain* (Harv. U. Press 1985).

100. *Lucas v. S.C. Coastal Council*, 505 U.S. 1003, 1015 (1992).

101. *See Penn Central Transp. Co. v. City of N. Y.*, 438 U.S. 104 (1978).

102. *Lucas*, 505 U.S. at 1066 (Stevens, J., dissenting).

103. Adam Mossoff, *Foreword: The Death of* Poletown*: The Future of Eminent Domain and Urban Development after* County of Wayne v. Hathcock, 2004 Mich. St. L. Rev. 837, 838–39.

104. *Lingle v. Chevron U.S.A., Inc.*, 544 U.S. 528, 539 (2005).

105. *See Brown v. Voss*, 715 P.2d 514, 518 (Wash. 1986) (Dore, J., dissenting) ("[A]ny extension of the use of an easement to benefit a nondominant estate constitutes a misuse of the easement. Misuse of an easement is a trespass.").

106. *Restatement (Third) of Property: Servitudes* § 4.10 (2000).

107. Richard R. Powell, *Powell on Real Property* vol. 3, § 34.12[2] (Michael Allan Wolf ed., Matthew

that after a perfunctory statement of the *per se* rule, courts now discuss at great length the detailed circumstances surrounding the creation of the easement, the nature of the new use, and the development of the surrounding area to determine if the dominant tenement's owner's actions are acceptable under the standard of reasonableness.[108] The standards-based exception, given its nature as a fact-sensitive, contextualized legal test, has come to dominate the case law governing the scope of an easement. In effect, this is a doctrine in which a standards-based exception has replaced the central governing rule.

With these and other doctrines in mind,[109] the concern here is that a conveyance default rule will ultimately be sidelined in practice by standards-based rule-of-reason antitrust analysis. Admittedly, Epstein embraces antitrust for only a minimal number of cases in which patentees act strategically in exploiting the conveyance default rule, leading to cartels or monopolization. But in practice, the parties opposing the patentee will invariably raise the antitrust claims in every relevant case—whether this opposing party is a licensee charged with breach, an alleged infringer, a competitor, or the government, there are more than enough opportunities for this to occur in innumerable court cases. The pragmatic litigator always knows that he just might succeed in convincing the court to find an antitrust violation in the patentee's complex and novel commercial practices. Even if the antitrust claims fall short of success in a favorable court judgment, the claims give the opposing party greater leverage against the patentee, as such claims (or counter-claims) are simply one more way to impose additional transaction costs on the patentee in defending his property rights. The patentee now has to deal with the additional discovery demands arising from the antitrust claims, as well as assess the probabilities of success at trial as part of the overall cost-benefit analysis in determining whether to settle or not.

This omnipresent pragmatic justification for asserting antitrust claims against patentees portends badly for the long-term survival of the conveyance default rule in Epstein's second-best world in which rule-of-reason antitrust analysis should merely police the boundaries of the doctrine. Instead, the conveyance default rule, which is intended to address the majority of cases with some ease, will eventually become replaced with case-sensitive standards that were originally intended to provide only minor corrections at the periphery of the doctrine. As Epstein has written in the context of antitrust review of commercial uses of pharmaceutical patents, "[i]f the public believes that all innovation is a subterfuge [for anti-competitive behaviors], pharmaceutical companies will constantly litigate into a head wind."[110] This is true not just for drug patents; patentees are always going to litigate into an antitrust head wind, especially when the federal government ramps up its antitrust enforcement efforts, as it has done under the Obama Administration.[111] The inevitable increase in administrative

Bender & Co. 2009).

108. *See e.g. Preseault v. U. S.*, 100 F.3d 1525, 1542–44 (Fed. Cir. 1996).

109. *See e.g. Sommer v. Kridel*, 378 A.2d 767, 772–73 (N.J. 1977) (holding in leasehold abandonment cases that "antiquated real property concepts which served as the basis for the pre-existing rule, shall no longer be controlling," and that "claims must be governed by more modern notions of fairness and equity").

110. Richard Epstein, *The Intersection of Antitrust, Patents, and FDA Law: The TriCor Litigation*, GCP: The Online Magazine for Global Competition Policy 1, 11 (Mar. 2009) (available at http://www.globalcompetitionpolicy.org/index.php?id=1617&action=907).

111. The Department of Justice, for example, recently changed its position on reverse settlements, arguing

costs would drastically alter the original assessment of the trade-offs in permitting this seemingly minor antitrust exception to remain as a backstop to the application of the simple default rule governing patent conveyances.

In fact, there is some evidence that patent exhaustion doctrine, even if framed properly as a conveyance default rule, cannot survive even in Epstein's second-best world without becoming inextricably intertwined with antitrust law. This is arguably what happened to patent exhaustion doctrine after the enactment of the antitrust laws in the late nineteenth and early twentieth centuries. Epstein understands this point, at least implicitly, given his criticism that the Court adopted its formalistic mandatory rule in *Quanta* because it was misled by the intermingling of patent exhaustion doctrine and antitrust doctrine in the mid-twentieth century.[112]

Before *Quanta*, the principal modern patent exhaustion case was the Supreme Court's 1942 decision in *United States v. Univis Lens Co.*[113] This was not a simple exhaustion case, however, as it arose from the Department of Justice's antitrust complaint against Univis for illegal price maintenance provisions in its contracts. The *Univis* Court applied the then-enforced *per se* rule in antitrust that prohibited all resale price maintenance provisions in contracts between wholesalers and retailers.[114] Understandably, there was some confusion in *Univis* as to the scope of exhaustion doctrine vis-à-vis antitrust law, and the result was a decision that mixed the two legal regimes and framed them both in terms of the antitrust *per se* rule, since abrogated,[115] that prohibited resale price restrictions in commercial licenses.

Quanta relied heavily on the *Univis* decision, which is understandable since this was the most recent decision in which the Supreme Court addressed patent exhaustion doctrine.[116] As Epstein rightly points out, however, its reliance on *Univis* arguably led the *Quanta* Court astray in its understanding of patent exhaustion doctrine.[117] This explains why the *Quanta* Court developed a new mandatory rule in patent exhaustion doctrine; it derived this rule from the *per se* antitrust treatment of the licensing provisions in *Univis*, a case where the Court had intermingled confusingly its antitrust analysis with its patent exhaustion analysis.

Such confusion between antitrust and patent exhaustion doctrine has substantially muddied the doctrinal waters, leaving courts and lawyers with little certainty as to the exact nature of exhaustion doctrine in a post-*Quanta* world.[118] This state of affairs led

---

now that these agreements between drug patentees and their generic competitors are presumptively anticompetitive and therefore subject to antitrust review. *See e.g.* Br. for the U.S. in Response to the Court's Invitation, *In re Ciproflaxin Hydrochloride Antitrust Litigation*, No. 05-2851-cv(L) (2d Cir.) (available at http://www.usdoj.gov/atr/cases/f247700/247708.htm#3).

112. *See* Epstein, *supra* n. 2, at ms. 43 (observing that "many of the earlier cases that involved the patent exhaustion doctrine were rife with antitrust concerns.").

113. 316 U.S. 241 (1942).

114. This *per se* rule, which was first formulated in *Dr. Miles Med. Co. v. John D. Park & Sons Co.*, 220 U.S. 373 (1911), was overruled recently in *Leegin Creative Leather Prod., Inc. v. PSKS, Inc.*, 551 U.S. 877 (2007) (establishing rule of reason analysis for price maintenance agreements).

115. *See id.*

116. *Quanta Computer, Inc.*, 128 S. Ct. at 2116–17 ("This Court most recently discussed patent exhaustion in *Univis*, on which the District Court relied.").

117. *See* Epstein, *supra* n. 2, at 43.

118. *Compare* Herbert Hovencamp, *Innovation and the Domain of Competition Policy*, 60 Ala. L. Rev. 103, 111 n. 35 (2008) (claiming that the *Quanta* decision overruled the Federal Circuit's case law on patent

some commentators to argue that exhaustion doctrine should be eliminated altogether on the grounds that its policy function is better achieved through antitrust law.[119] But this throws out the baby with the bathwater—eliminating a valuable conveyance default rule for property rights in inventions given its unfortunate and inappropriate entanglement with antitrust doctrine. More important for our purposes here, this is empirical confirmation that it may be impossible in practice to maintain the integrity of a conveyance default rule in the shadow of a standards-based antitrust doctrine lurking on its periphery.

To be fair, Epstein believes that antitrust is problematic only when it is used to police so-called monopolization by single firms,[120] and that this doctrine actually works best when it focuses solely on strategic market behavior by multiple firms that undermine overall social utility.[121] Accordingly, he believes that the "best cases for monopolization cases often rest on common law wrongs"[122] and, as such, the rule-of-reason standard employed in these antitrust claims would be no more indeterminate than traditional common law claims against fraud, duress, and other traditional torts. Moreover, he believes that antitrust should operate in practice as an evidentiary presumption in favor of the firm or patentee, which the government or private plaintiff must rebut with evidence of cartelization in order to proceed with its antitrust claims. Such evidence would then shift the evidentiary burden back to the firm or patentee to establish that its business practices are indeed achieving overall efficiencies.[123]

This might work as Epstein predicts, but if historical practice is any guide, there is some legitimate concern about whether courts would be able to apply the conveyance default rule in exhaustion doctrine without ultimately engaging at length with complex economic arguments by those seeking to invoke the antitrust exception to this default rule. As Epstein rightly points out, the *Quanta* Court was confused about exhaustion doctrine because of a now discredited *per se* rule in antitrust case law.[124] This does not bode well for a future Supreme Court's ability to finesse the application of a standards-

exhaustion) *with* Shubha Ghosh, *supra* n. 81 (arguing that the Federal Circuit's case law on patent exhaustion "is still good law" because *Quanta* and these cases "can be read together consistently"). *See also Control Components, Inc. v. Lexmark Intl., Inc.*, 615 F.Supp.2d 575, 577 (E.D. Ky. 2009) (stating "that *Quanta* compels reconsideration and reversal" of the court's prior decision).

119. *See* F. Scott Kieff & Troy A. Paredes, *The Basics Matter: At The Periphery of Intellectual Property Law*, 73 Geo. Wash. L. Rev. 174, 198 (2004) (noting that "patents only give a right to exclude" and that any "right to use is derived from sources external to IP law," such as antitrust). It is unclear if Epstein endorses this position, but he has implied that he does. *See* Epstein, *supra* n. 2. at ms. 43 (noting that "patent exhaustion doctrine should be treated as a default rule of contract, subject to variation by contrary agreement except when it flouts the antitrust laws").

120. *See* Richard A. Epstein, *Monopoly Dominance or Level Playing Field? The New Antitrust Paradox*, 72 U. Chi. L. Rev. 49, 49 (2005) (observing that "the wisest course of action is to confine the operation of antitrust law to cartels and mergers that have the consequence of raising prices and restricting output").

121. *See* Epstein, *supra* n. 97, at 19 (noting that "the object of social policy is to identify and enforce those contracts which show a positive correlation between the private gains of the parties to the transaction and those of the rest of the social order" and "[i]t is only the cartels, territorial divisions, and similar horizontal arrangements" that undermine this positive correlation).

122. Epstein, *supra* n. 110 at 8.

123. Epstein, *supra* n. 97, at 217 ("In the presence of radical uncertainty, the burden of proof should lie on the government.").

124. *See* Epstein, *supra* n. 2, at ms. 44 ("[T]he Court in *Quanta* did not show the slightest awareness that its dubious use of the patent exhaustion doctrine went a long way to reinstitute the discredited per se rule against tie-ins of *International Salt*.").

based antitrust exception to a conveyance default rule, even in Epstein's second-best world in which 90-95% success rates count as perfection.[125] According to Epstein, the Court is not even close to hitting the mark in 95% of its modern patent exhaustion cases—in its two modern exhaustion cases, its success rate is 0%. If the goal is to have a viable and determinate default rule for the commercialization of patented inventions, it may be too much to ask of the courts to engage in the complex economic cost-benefit analyses that would be necessitated by a standards-based antitrust exception to a conveyance default rule.

B. Antitrust and Innovation

Beyond the practical difficulties in maintaining the integrity of a conveyance default rule in the face of a standards-based exception, there is some further concern that standards-based antitrust review may even be infeasible when dealing with unpredictable commercial innovation following an equally unpredictable inventive "flash of genius."[126] Consistent with Epstein's rejection of *per se* illegality rules, courts would have to assess the empirical intricacies of complex commercial contracts involving the commercialization of property rights in patented inventions. The concern is that these efficiency calculations may be too complex or indeterminate to provide guidance to patentees, undermining Epstein's core utilitarian principle that the point of legal rules is to provide "stability in expectations."[127]

It bears emphasizing again the limited scope of this section. The questions raised here are no more than questions about the role of standards-based antitrust analysis within Epstein's second-best world of utilitarian social gains achieved through simple rules that reduce administrative costs arising from complex social interactions.[128] It would be impossible to provide definitive answers to questions concerning the interplay between antitrust and patent law within a short section of an article. The purpose here is simply to raise questions about how Epstein's utilitarian model might handle the incredibly complex issues that are inherent in the "creative destruction" of new inventions and innovative commercial practices that upend pre-existing business models and expectations.[129]

Within the context of Epstein's utilitarian defense of rule-of-reason antitrust analysis, there are two reasons for concern, although they are interrelated. First, an

125. Epstein, *supra* n. 1, at 42.

126. *See* Harold Evans, *They Made America: From the Steam Engine to the Search Engine: Two Centuries of Innovators* 71 (Little, Brown & Co. 2004) (discussing Samuel Morse's self-described "flash of genius" in conceiving of the telegraph machine in 1832); Grace Rogers Cooper, *The Sewing Machine: Its Invention and Development* 30 (2d ed., Smithsonian Instn. Press 1976) (quoting from Isaac M. Singer's description of his inventive contribution to the development of the sewing machine in 1850, in which he claimed that "it flashed upon me").

127. Epstein, *supra* n. 2, at ms. 36.

128. One important issue that is not addressed here is an alternative to both *per se* illegality rules and rule-of-reason standards: *per se* legality rules. A *per se* legality rule might address the problems of *ex ante* uncertainty and increased administrative costs in navigating the patent-antitrust nexus. A full assessment of this subject, however, is beyond the purview of this article, as it requires its own full-scale analysis. *See e.g.* Geoffrey A. Manne & Joshua D. Wright, *Innovation and the Limits of Antitrust*, J. Comp. L. & Econ. (forthcoming) (available at http://ssrn.com/abstract=1490849).

129. Joseph A. Schumpeter, *Capitalism, Socialism and Democracy* 87 (5th ed., Harper Perennial 2008).

antitrust analysis of a business practice within a relevant market is necessarily *ex post*. Second, *ex post* legal analysis often fails to explain or predict the dynamic commercial innovation that is promoted and secured to patentees (via such private-ordering mechanisms as the conveyance default rule).

First, as George Priest pointed out in an oft-cited 1988 article, empirical analysis is seemingly stymied in providing predictive assessments about the subject matter of patents—innovation in science and technology.[130] The basic problem is that, even if economists and lawyers can make the relevant efficiency calculations in assessing dynamic technological and commercial practices, these assessments are always *ex post*. Efficiency analysis is driven by economic models that comprise data concerning activities that have already occurred in the past. This is what makes it possible to collect, quantify, and analyze the information in a model that provides robust insights into economic behavior. In assessing static efficiency in the use of pre-existing property entitlements, *ex post* data can be powerfully explanatory and predictive. In dealing with dynamic efficiency—a core economic concern of intellectual property[131]—such *ex post* analysis becomes more difficult and, as a policy matter, more troublesome.

There are numerous instances of the difficulties with predictive assessments based on *ex post* data in a world of innovative creative destruction, but a quick survey of a few examples will suffice here. First and foremost, there are the well-known, unforeseen developments in the computer industry in the last half of the twentieth century. In fact, the birth of the digital revolution is found in one of these unforeseen innovative leaps. In 1958, Jack Kilby was forced to work during his vacation time on his radical idea concerning silicon-based integrated circuits because his employer, Texas Instruments, was pursuing other ineffectual projects to address the problems in the existing transistor-based technology.[132] The evolution of personal computers was another innovative storm that took the commercial world by surprise; the founder and president of Digital Equipment Corporation (DEC), Ken Olson, famously declared in 1977 that "[t]here is no reason anyone would want a computer in their home."[133] The evolution of the Internet has proven even more difficult to predict, as Microsoft discovered in the mid-1990s with the rise of upstart Netscape.[134]

David Adelman and Kathryn DeAngelis also highlight this concern about the difficulties in predicting the evolution of new innovation in the context of biotechnology.[135] In their recent study of biotech patenting patterns, Adelman and DeAngelis found that Michael Heller and Rebecca Eisenberg's predictions in the mid-

130. *See* George L. Priest, *What Economists Can Tell Lawyers about Intellectual Property*, 8 Res. L. & Econs. 19, 21–22 (1986).

131. *See* William M. Landes & Richard A. Posner, *The Economic Structure of Intellectual Property Law* 19–21 (Belknap Press 2003).

132. *See* T.R. Reid, *The Chip: How Two Americans Invented the Microchip and Launched a Revolution* 75–76 (Simon & Schuster 2001).

133. Jamie Frater, *Top 30 Failed Technology Predictions*, http://listverse.com/history/top-30-failed-technology-predictions (last accessed Oct. 16, 2009).

134. *See U.S. v. Microsoft Corp.*, 87 F. Supp. 2d 30, 45 (D.D.C. 2000) (finding that by 1995, Netscape's "share of browser usage stood well above seventy percent, and no other browser enjoyed more than a fraction of the remainder"), *rev'd in part and aff'd in part, U.S. v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001).

135. David E. Adelman & Kathryn L. DeAngelis, *Patent Metrics: The Mismeasure of Innovation in the Biotech Patent Debate*, 85 Tex. L. Rev. 1677, 1687–89 (2007).

1990s that patents would stifle innovation in the nascent biotech industry failed to pan out.[136] These predictions, they concluded, resulted from a "misuse of patent metrics," which "fostered dire predictions and created unrealistic expectations about the capacity of patent data to guide policy."[137] Contrary to Heller and Eisenberg's predictions of an imminent anti-commons in the biotech industry, Adelman and DeAngelis's survey revealed a healthy and viable industry in which ownership of patents is diffuse, patent applications are rising, and new firms continue to enter the market unabated.[138]

There are lots of reasons for this "divergence between data and theory" in biotech patents,[139] but one explanation is that the problem is not with the empirical studies or their methodologies but rather with the nature of scientific or technological innovation. Adelman and DeAngelis, for instance, emphasize in their survey that empirical studies face tremendous "analytical barriers [that] stem from the phenomena being studied,"[140] such as "the open-ended nature of biotechnology science"[141] and the "enigmatic nature of invention."[142] In sum, they conclude that "[i]nventive success is simply a hard phenomenon to study given our current level of knowledge and the subject matter's inherent complexity."[143]

Mark Lemley, a noted patent scholar, has also acknowledged "that we don't have a clue how innovation works" and that "we may never be able to know exactly what sparks a thought or a creative idea in somebody's mind."[144] In the 1960s, the economist F.M. Scherer came to similar conclusions in assessing some of the early attempts at modeling both patenting behavior and the commercial use of patented inventions in the marketplace.[145] Although economic modeling certainly has become more sophisticated in the ensuing decades, the basic problem remains. Joshua Wright recently observed, after surveying the economic literature on the issue of competition analysis and innovation, that "[o]ur economic knowledge regarding innovation itself, conduct affecting innovation, and how to assess competitive outcomes involving tradeoffs between product market competition and innovation are far less impressive than our knowledge in a purely static setting."[146] In essence, the socio-economic effects of

136. *See* Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 Science 698, 699 (1998) (arguing that an anticommons in biotech patents would occur as a result of a large increase in patent applications in the 1990s); Rebecca S. Eisenberg, *A Technology Policy Perspective on the NIH Gene Patenting Controversy*, 55 U. Pitt. L. Rev. 633, 634–35 (1994).

137. Adelman & DeAngelis, *supra* n. 135, at 1680.

138. *See generally id.*

139. *Id.* at 1681. Adelman and DeAngelis suggest that one reason is Heller's and Eisenberg's reliance on mere patent counts, which they claim "prove[s] to be a very weak metric." *Id.*

140. *Id.* at 1727.

141. Adelman & DeAngelis, *supra* n. 135, at 1700.

142. *Id.* at 1727.

143. *Id.*

144. Mark A. Lemley, *Reconceiving Patents in the Age of Venture Capital*, 4 J. Small & Emerging Bus. L. 137, 139 (2000).

145. *See* Frederick M. Scherer, *Firm Size, Market Structure, Opportunity, and the Output of Patented Inventions*, 55 Am. Econ. Rev. 1098 (1965).

146. Joshua D. Wright, *Antitrust, Multi-Dimensional Competition, and Innovation: Do We Have an Antitrust-Relevant Theory of Competition Now?*, in *Regulating Innovation*, *supra* n. 17, __ (ms. 4, available at http://ssrn.com/abstract=1463732). *See also* David S. Evans & Keith N. Hyton, *The Lawful Acquisition and Exercise of Monopoly Power and the Implications for the Objectives of Antitrust*, 4 Competition Policy Intl. 203 (2008) (suggesting that current antitrust analysis is biased against dynamic competition because this

innovation in science and technology seem unpredictable,[147] at least given the current state of our knowledge concerning both innovation and how to model the relevant economic behavior.

Interestingly, the Supreme Court acknowledged this point in its 1980 decision in *Diamond v. Chakrabarty*, in which it observed that "Congress employed broad general language" in the statutory provision defining what counts as patentable subject matter "precisely because such inventions are often unforeseeable."[148] In saying this, the *Chakrabarty* Court affirmed that innovative, cutting-edge biotech products should be patentable.[149] Coincidentally, although perhaps not, *Chakrabarty* spawned the biotech revolution in the United States,[150] the subject of Adelman and DeAngelis's study that further confirms the vital point that innovation in science and technology is often unforeseeable.

Of course, it is not only modern inventions, such as in computers and biotech, which lead to unforeseeable transformations in the commercial exploitation of new patented products. This is an omnipresent theme throughout the history of innovation. The invention and commercial development of the steam engine in the eighteenth century, for example, was an achievement not of formally trained scientists but of simple mechanics, James Watt and Matthew Boulton.[151] Boulton and Watt's technological innovation helped spur the Industrial Revolution (and follow-on development of scientific theories, such as classical thermodynamics).[152]

One such follow-on invention in the first half of the nineteenth century was the railroad, which replaced the extensive canal system as the primary means of commercial and personal transportation. Contemporary estimates of total public and private investment in the canal system built in the antebellum period range between approximately $188 million and $300 million.[153] Despite this massive capital investment, the canals were supplanted within a few scant years by the railroad system, a more efficient means of transportation.[154]

---

analysis is based on models of static competition).

147. *See e.g.* Tom Maddox & Paul Wallich, *The Cultural Consequences of the Information Superhighway*, 18 Wilson Q. 29, 29 (Summer 1994) (noting that, "[a]s technophobes are fond of pointing out, technology's effects are generally unpredictable").

148. *Chakrabarty v. Chakrabarty*, 447 U.S. 303, 316 (1980).

149. *Id.*

150. *See* Robert P. Merges & John F. Duffy, *Patent Law and Policy* 77 (4th ed., Lexis 2007) (noting how *Chakrabarty* was "extremely important for the then nascent biotechnology industry because it established that the fruits of the industry's research . . . would be eligible for patenting"); John Edward Schneider, *Microorganims and the Patent Office: To Deposit or Not to Deposit, That is the Question*, 52 Fordham L. Rev. 592, 592, 594 (1984) (noting that the "revolution in biotechnology is one of the most important developments affecting industry in the twentieth century" and that *Chakrabarty* "spurred the increased commercial interest in biotechnology" (footnotes omitted)).

151. *See* Matthew B. Crawford, *Shop Class as Soulcraft*, The New Atlantis 12 (Summer 2006). They had to enforce their patent rights, too. *See Boulton & Watt v. Bull*, 126 E. R. 651 (C.P. 1795).

152. *See* Crawford, *supra* n. 151, at 12.

153. Carter Goodrich et al., *Canals and American Economic Development* 209 (Columbia U. Press 1961) (estimating investment made in developing canal system between 1829 and 1860 at $188.17 million); Robert W. Harrison, *The Great Era of American Canal Building: 1825-1850*, in *The United States Waterways and Ports: A Chronology*, vol. 1, 10 (1980) (estimating total investment in "navigation canals" by 1850 to be "over $300 million").

154. *See* Harold G. Moulton, *Waterways Versus Railways* 79 (Cambridge U. Press 1912) (noting that "the waterways are unable to compete for freight which is of considerable value or which requires a speedy

Of course, the canal system was not a foolhardy venture. The canals were central to the early economic development of the country, providing the most extensive and cost-efficient means of national transportation of goods and people at the time.[155] More important, during the heyday of canal development in the 1820s and 1830s, railroads "were considered an extremely risky technology and were the focal point of vigorous debate in engineering and commercial circles."[156] In other words, the technology that made railroads feasible, such as the patented Westinghouse airbrake,[157] had not yet been invented at the time the canal system was put into place. Locomotive trains were unproven and risky in both technological and commercial terms. The full-scale use and commercial development of the railways as a national transportation system was unforeseeable in the antebellum period, and thus the canal system was the best transportation technology at that time.

In the antebellum era, the radical inventions that further revolutionized both industrial and commercial practices were often the result of the efforts of people who would now be identified as hobbyists; that is, individuals working outside of their professional training or full-time employment. The invention of the telegraph,[158] vulcanized rubber,[159] and the sewing machine[160] are just a few examples of how "outsiders" revolutionized an industry in often unexpected ways. And the commercial progress that followed these pioneering inventions was equally innovative. Isaac Singer, one of the inventors of the sewing machine, also conceived of tremendously innovative commercial practices in thinking of ways to profit from his new invention; he and his business partner invented many firsts in American enterprise, including the first rent-to-own program and the first trade-in program.[161]

Later in the nineteenth century, Thomas Edison became famous for his invention of the first practicable incandescent light bulb, but he also had to invent the first electrical grid, conceiving of the network of generators, electrical wires, transformers, etc. to make it possible for people to purchase and use his new invention.[162] Of course, Edison's invention and commercial development of electrical grids made it possible for

---

delivery," and that the "superiority of the railways in handling high-class freight is universally admitted").

155. *See* Spiro G. Patton, *Canals in American Business and Economic History: A Review of the Issues*, 6 Canal History and Tech. Procs. 3, 17 (March 28, 1987) (noting that the canals promoted extensive commercial development in the U.S., and thus the canals were a successful economic investment in transportation infrastructure).

156. *Id.* at 10.

157. George Westinghouse patented the "straight air brake" in 1869 (U.S. Patent No. 88,929) and later patented the automatic "quick action" brake in 1887 (U.S. Patent No. 360,070). Given that the ability to stop a moving train is fundamental to its feasible use as a means of transportation, Westinghouse's inventions were central to the development of the railroads. *See Westinghouse v. Boyden Power Brake Co.*, 170 U.S. 537, 545–47 (1898) (discussing evolution of the air brake as central technology in development of the railways).

158. *See* Evans, *supra* n. 126, *at* 71–77. Samuel Morse was a painter when he conceived of the technology that would become the telegraph. *Id.*

159. . Charles Slack, *Noble Obsession: Charles Goodyear, Thomas Hancock, and The Race to Unlock the Greatest Industrial Secret of the Nineteenth Century* (Hyperion 2002).

160. *See* Adam Mossoff, *A Stitch in Time: The Rise and Fall of the Sewing Machine Patent Thicket* 13–21(Geo. Mason L. & Econ. Working Paper No. 09-19, Mar. 6, 2009) (available at http://ssrn.com/abstract=1354849).

161. *See id.* at 43–46. Singe also pioneered the hiring of women in operating the sewing machine, which was something quite controversial in the socially conservative antebellum era. *Id.*

162. Evans, *supra* n. 126, at 165.

even more tremendous follow-on inventions that exploited this easy access to electricity, such as the early twentieth-century invention of the radio.[163] Yet, even though Edison was a widely successful, full-time, professional inventor, he failed to foresee this next great inventive leap forward, proclaiming that "as far as he could tell, the radio had 'no commercial future.'"[164]

Given that professional inventors and businesspersons often fail to predict the next wave of innovation, one may legitimately wonder whether judges have any better institutional competence. Unfortunately, the courts' difficulties in handling the inherent unpredictability in the evolution of science and technology are not a mere prediction. One prominent example is the rarely remembered 1984 decision in *Digidyne Corp. v. Data General Corp.*,[165] in which Chief Judge Browning of the Ninth Circuit confidently concluded that Data General Corp. possessed monopoly-like power in the personal computer operating system (OS) market with its product, R-DOS. On the basis of its conclusion that Data General Corp. wielded such power in the OS market, the Ninth Circuit held that Data General Corp. violated the antitrust laws by illegally tying sales of R-DOS to sales of its proprietary computer system, called NOVA.[166]

Today, in a computer industry dominated by Microsoft, Apple Computer, eBay, Google, Amazon.com, and Facebook, few people if any have even heard of R-DOS, let alone Data General Corp. But in 1984, Apple Computer and Microsoft were the new kids on the block, developing the personal computers and software that the established giants in the computer industry, such as Data General Corp. and DEC, were predicting would be a complete failure.[167] Moreover, no one foresaw in 1984 the rise of the Internet a decade later, either as a medium of mass communication or commerce. But the *Digidyne* court was not basing—and, in fact, it could not base—its antitrust decision on a prediction of such imminent developments in the computer industry; the only evidence for the jury verdict affirmed by the Ninth Circuit was what had happened in the past.

In light of the evidence submitted in the antitrust litigation in *Digidyne*, Data General Corp. was painted at trial as the proverbial 900-lbs. gorilla that held fast in its grip the entire computer operating system market. At that time, Data General Corp. had over $1 billion in sales following its meteoric rise in the early computer industry in the 1960s and 1970s.[168] Such sales numbers were an order of magnitude larger than the sales of then-fledging Microsoft Corp.[169] But Data General Corp. was soon supplanted by Microsoft, Apple, and other new upstart firms who were innovators in the cutting-

163. *See id.* at 216–33.

164. Donald A. Norman, *The Invisible Computer: Why Good Products Can Fail, the Personal Computer Is So Complex, and Information Appliances Are the Solution* 239 (MIT Press 1999).

165. 734 F.2d 1336 (9th Cir. 1984).

166. *Id.* at 1344 ("The jury found as a fact that defendant possessed and used [its] power [in its RDOS product] by means of the tying arrangement to appreciably restrain competition in the market for NOVA instruction set CPUs. The evidence outlined above fully supported the jury's verdict.").

167. *See supra* n. 131 and accompanying text.

168. *See Data General*, http://en.wikipedia.org/wiki/Data_General (last modified Oct. 16, 2009) (noting that Data General Corporation had 20% annual sales growth in the 1970s as a result of its NOVA OS and, by 1984, it had $1 billion in sales).

169. *See History of Microsoft*, http://www.thocp.net/companies/microsoft/microsoft_company.htm (last updated July 10, 2008) (noting that Microsoft generated approximately $97.5 million in sales in 1984).

edge personal computer and software markets that soon swept the computer industry and revolutionized the market (again).

It is perhaps unsurprising that, soon after the *Digidyne* decision, Data General Corp. and DEC began sliding into oblivion, as their server-based workstations were replaced with personal computers running third-party software. By the end of the 1990s, the few remaining assets of both companies were purchased by other computer companies. After briefly reviewing this story at a conference addressing the role of antitrust in the new high-tech age, Judge Easterbrook noted how the *Digidyne* court's self-assured antitrust analysis was misplaced:

> Confident conclusions about who is a monopolist, and what is a bottleneck in operating systems, were converted to a source of humor in a few years. As Santayana observed, those who fail to learn from the past are condemned to repeat it. We need to learn from IBM and [Data General] just how acute are the legal system's senses in detecting technological monopolies.[170]

Of course, it is important to acknowledge that the *Digidyne* decision was reached on the basis of a *per se* rule that an owner of a patent or copyright presumptively possessed market power, and this rule has now been abrogated in favor of a rule-of-reason analysis.[171] It thus appears that Epstein might be able to chalk up this decision to the dangerous error costs that are inevitably incurred under an antitrust regime of *per se* rules of illegality. The *Digidyne* court, however, did not simply rest on its laurels with the then-enforced *per se* rule. It engaged in a brief analysis of Data General Corp.'s market power with its R-DOS product in the operating system market, identifying the same issues raised in the Microsoft antitrust litigation years later concerning market share, the "lock in" effect for pre-existing consumers, and the barriers of entry to new market entrants given the positive network effects of a dominant operating system.[172]

As Judge Easterbrook notes, *Digidyne* may seem quaint today,[173] but it is a stark warning of the perils of antitrust analysis as applied to the innovative commercial markets that arise from intellectual property rights.[174] In fact, the *Digidyne* court observed that a central reason for Data General Corp.'s market success—and thus its corresponding market power under antitrust law—was that it "vigorously" enforced its intellectual property rights in its proprietary R-DOS operating system.[175] To paraphrase Epstein, if courts consider innovation to be a subterfuge for anti-competitive behavior, then firms dedicated to the commercial exploitation of their intellectual property rights may find themselves working under the constant threat of being dragged into court by either competitors or the government to answer to antitrust charges.[176]

Of course, Epstein could still account for *Digidyne* within his conception of an

---

170. Frank H. Easterbook, *Information and Antitrust*, 2000 U. Chi. Leg. Forum 1, 10–11 (2000).

171. *See Ill. Tool Works Inc. v. Independent Ink, Inc.*, 547 U.S. 28 (2006).

172. *Digidyne Corp.*, 734 F.2d at 1341–44.

173. *Easterbrook, supra* n. 170, at 10.

174. The *Digidyne* decision seems to exemplify the concern that "[t]here is a danger that our incomplete understanding of competition and innovation might lead to a tendency to condemn conduct because it is difficult to understand or might appear to potentially harm innovation without also finding an anticompetitive effect." Wright, *supra* n. 146, at ms. 31.

175. *Digidyne Corp.*, 734 F.2d at 1342.

176. *See supra* n. 120 and accompanying text.

antitrust policy that functions in an "explicitly utilitarian framework whose central tenet is that in the general case, social welfare is greater in competitive than monopoly industries."[177] First, he could claim that *Digidyne* confirms that single-firm monopolization claims under the Sherman Act, such as those asserted against Data General Corp., are extremely problematic and "subject to incisive criticism."[178] He would thus agree with Judge Easterbrook's assessment of *Digidyne*, adding that this case presents "the perils of over-ambition under Section 2 of the Sherman Act."[179] Although *Digidyne* involved a § 1 tying claim, it still exemplifies Epstein's concern that, in dealing with single-firm monopolization claims (typically asserted under § 2), "false positives [are] high, the harms that these actions are meant to combat are difficult to identify with confidence, the benefits that these practices create for consumers in the short run are ignored, and the administrative costs of the system are great."[180] Thus, *Digidyne* is not a counter-example to Epstein's endorsement of using antitrust doctrine to police the boundaries of the commercialization of patented inventions; rather, he would maintain that it confirms his position that antitrust will succeed as a simple rule in a complex world only if this doctrine is "restrained" to the "sensible" goal of maximizing overall social utility.[181]

Second, Epstein acknowledges the inherent difficulties in navigating the intersection of the intellectual property laws and antitrust law in the context of innovative commercial products and practices. Accordingly, even if *Digidyne* is not limited to only error-cost problems associated with single-firm tying claims, it could still serve as a confirmation of the complexities of these issues. In fact, Epstein has suggested that sanctioning tying practices under the antitrust laws is not *per se* wrong, but that it should follow a rule of reason analysis that gives sufficient weight to the efficiency justification for a tying arrangement.[182] As he has remarked in the context of pharmaceutical patents, another area involving the complex interplay between differing legal regimes, "it has often [been] noted how difficult it is to apply the antitrust law to new product designs—think of the integrated products in the Microsoft litigation."[183] This is why Epstein believes that antitrust ideally should be restrained to only those cases in which it is possible to generate clear evidence of market practices that undermine social utility. Otherwise, the "uncertainties that [monopolization cases] impose are sure to adversely impact innovation and technological progress."[184]

This point about the negative impact on dynamic efficiency in science and technology arising from the inherently complex protection and regulation of these fields within multiple legal regimes brings us back to the overarching question of this part of the article: is it possible to achieve Epstein's goal of higher overall social utility with

177. Epstein, *supra* n. 120, at 49.
178. *Id.* at 71.
179. Epstein, *supra* n. 97, at 237.
180. Epstein, *supra* n. 120, at 72.
181. Epstein, *supra* n. 1, at 126.
182. *See* Richard A. Epstein, *Intellectual Property for the Technological Age* 15–16, www.nam.org/~/media/Files/s_nam/docs/236800/236749.pdf.ashx (May 2006).
183. Epstein, *supra* n. 110, at 11–12.
184. Epstein, *supra* n. 97121, at 237.

antitrust serving as a doctrinal backstop to the conveyance default rule for the commercialization of patented inventions? In the previous section, this question was asked in the context of whether standards-based antitrust review would ultimately trump the application of the conveyance default rule. Given the experiences in other legal doctrines in which standards have *de facto* replaced rules, it may be asking too much of the courts to maintain the doctrinal integrity (and thus the social benefits) of a conveyance default rule in cases in which standards-based antitrust claims would also be asserted as a matter of course.

In this section, the question about antitrust and dynamic efficiency in innovation dovetails with this earlier concern, but it is slightly different. Here, the question is whether the courts have the institutional competence necessary to account for the impact of their antitrust decisions on future technological and commercial innovation. Given that innovation is fundamental to higher social utility, which is the guiding tenet in Epstein's jurisprudence of simple rules for a complex world, this is as serious a concern as the potential deleterious impact of a default rule becoming swamped by an indeterminate, context-sensitive standard.

This is particularly salient in the context of an antitrust regime comprising rule-of-reason standards, as this requires courts to engage in sophisticated economic analysis in determining whether a particular commercial practice has undermined overall social utility. As Michael Baye and Joshua Wright have recently observed, the "shift towards a modern antitrust landscape favoring a case-by-case, rule of reason approach to evaluating business conduct" now requires "judicial evaluation of complex economic and econometric analysis."[185] They find that cases increasingly rely on a "battle of the experts," as it is "difficult to imagine how a judge untrained in economics might evaluate the competitive effects of a defendant's complex pricing scheme solely by relying on precedent, statutory interpretation, causal empiricism, and untrained intuition."[186] Ultimately, their empirical study of antitrust cases and appeal and reversal rates confirms that "increasing levels of economic sophistication and complexity in modern antitrust litigation are now generating negative marginal returns."[187]

Moreover, as discussed above, even if courts could flawlessly evaluate this complex economic analysis, such econometric models by necessity comprise only *ex post* data, which has historically proven to be a very poor predictor of future innovation in science and technology.[188] Wright has observed that "the current state of economic theory and empirical knowledge regarding the relationship between innovation and competition does not yet provide a general and reliable basis for antitrust intervention."[189] In the patent law context, Gregory Mandel has also observed that

185. Michael R. Baye & Joshua D. Wright, *Is Antitrust Too Complicated for Generalist Judges? The Impact of Economic Complexity and Judicial Training on Appeals* 1, (George Mason L. & Econ. Research Paper No. 09-07, Jan. 27, 2009) (available at http://ssrn.com/abstract=1319888).

186. *Id.* at 4.

187. *Id.* at 29. Moreover, in a large portion of the complex cases in their sample, Baye and Wright found that a judge's economic training had no statistically significant impact on appeal and reversal rates, which suggests that these cases involve questions that are too complex to get right consistently even for judges who are properly trained in economic analysis. *Id.* at 29–31.

188. *See supra* nn. 132–170 and accompanying text.

189. Wright, *supra* n. 146, at ms. 29.

"decision-makers must remain cognizant of the limits of their knowledge and ability to foresee new technology issues."[190]

Again, to his credit, Epstein has acknowledged in his far-ranging scholarship these institutional and empirical constraints, as he often expresses concerns about the institutional competence of courts to get it right in antitrust cases.[191] He is not alone in these concerns, especially in the context of applying antitrust to complex commercial practices arising from patented inventions.[192] Yet Epstein mostly limits his concerns in the context of his criticism of the single-firm monopolization cases, such as the 1982 breakup of AT&T, which created the two-tiered system of AT&T and the regional baby bells. Epstein recently noted that, in imposing this structural remedy, Judge Greene "guessed wrong as to the future shape of the industry and, thus, created a structure that could not survive."[193] Today, Epstein observes, the "once impregnable local exchange monopolies have yielded to cell phone and VOIP transmission."[194] In other words, an imminent technological innovation made moot a prior technological and market structure imposed by judicial fiat. Even more important, in 1982, few people foresaw the rise of cell phones in the 1990s or of VOIP in the early twenty-first century, except perhaps for the few inventors and innovators working to make these amazing new products and services possible.

All of this confirms that institutional competence concerns exist in the allegedly more easy antitrust cases involving horizontal market divisions, in which courts would be required to evaluate innovative commercial practices with only 20-20 hindsight to guide them. The problem is that such cases arise from innovative market structures that recently came into existence or may be just around the corner and yet to realize their full practical commercial effect. In such contexts, the litigation costs imposed on patentees in defending against the inevitable antitrust claims and the error costs inherent in judicial decision-making concerning new innovation, especially in our new high-tech world, are very real administrative costs.[195] This raises the question of whether Epstein can maintain on his utilitarian standard a restrained antitrust exception as a backstop to the efficiencies achieved by the conveyance default rule.

Epstein acknowledges in the context of single-firm monopolization cases that the "uncertainties that they impose are sure to adversely impact innovation and technological

190. Gregory N. Mandel, *History Lessons for a General Theory of Law and Technology*, 8 Minn. J. L., Sci. & Tech. 551, 563 (2007).

191. *See e.g.* Richard Epstein, *supra* n. 110, at 12 (noting the "institutional shortcomings of courts [in the Microsoft case] show once again that antitrust law offers no cure-all"); *id.* at 16 (observing that "antitrust law is a poor vehicle for rate setting, given the absence of any coherent institutional capacity to do so in the courts").

192. *See* Bruce H. Kobayashi & Joshua D. Wright, *Federalism, Substantive Preemption, and Limits on Antitrust: An Application to Patent Holdup*, 5 J. Comp. L. & Econ. 469 (2009) (maintaining that the high social costs in false negatives in antitrust enforcement in patent cases counsels courts to employ when possible other enforcement mechanisms in traditional legal regimes, such as contract and tort); *cf.* Timothy J. Muris, *Improving the Economic Foundations of Competition Policy*, 12 Geo. Mason L. Rev. 1, 2 (2003) (observing that antitrust needs to embrace "a careful, fact-based economic analysis grounded in a thorough understanding of the relevant institutions").

193. Epstein, *supra* n. 97121, at 228.

194. *Id.*

195. *See* Wright, *supra* n. 146, at ms. 31 ("There is a danger that our incomplete understanding of competition and innovation might lead to a tendency to condemn conduct because it is difficult to understand or might appear to potentially harm innovation without also finding an anticompetitive effect.").

progress."[196] It is worth considering whether the same observation holds true for applying antitrust generally to the commercialization of patented inventions. As one commentator has observed, "economists often take decades to understand certain business practices."[197] Such concerns are particularly pressing in the context of the *ex ante* uncertainties inherent both in the evolution of science and technology and in its commercial application in the marketplace.

In fact, the conveyance default rule crafted by nineteenth-century courts secured freedom to patent-owners to innovate in circumstances in which it was often impossible to predict new commercial uses of their patented inventions. In this way, the conveyance default rule best secured dynamic efficiency in the American patent system—it left owners free to make the most productive use of their property. As Justice Joseph Story wrote in 1824 on behalf of a unanimous Supreme Court, "[t]he inventor has . . . a property in his inventions; a property which is often of very great value, and of which the law intended to give him the absolute enjoyment and possession."[198] Thus, it is important to ask if the inherent complexity and indeterminacy arising from the use of antitrust in patent law counsels against its use in Epstein's second-best world of simple rules for complex innovation.

IV. CONCLUSION

In 1996, in one of his earliest forays into intellectual property scholarship, Epstein conceded that he could "make no strong claim to expertise on patent law,"[199] but within a few scant years it was clear that he could no longer credibly say this. In the ensuing years, Epstein has emerged as an indefatigable exponent of the virtues of intellectual property, identifying the importance of legally enforcing both its substantive protections and its limitations. Although Epstein's early work focused on the functionalist justification for the legal rules concerning the rights of acquisition and exclusion, as well as the rough second-best justification for durational term limits,[200] he has more recently engaged the debate over the importance of securing to patentees their rights of use and disposition in their inventions.

In so doing, he has applied his utilitarian framework to conveyances of patent rights and concluded that courts should enforce the same conveyance default rule in patents as they have long enforced in property law. Although Epstein does not survey historical patent doctrine in advancing this proposition, it is perhaps unsurprising to discover that nineteenth-century courts crafted exactly the type of doctrinal rule that he argues for entirely on normative grounds. This provides important empirical support for Epstein's thesis that the *Quanta* Court has seriously undermined the efficient operation

196. Epstein, *supra* n. 97121, at 237.

197. Dennis W. Carlton, *A General Analysis of Exclusionary Conduct and Refusal to Deal—Why* Aspen *and* Kodak *are Misguided*, 68 Antitrust L.J. 659, 680 (2001).

198. *Ex parte Wood*, 22 U.S. 603, 608 (1824).

199. Epstein, *Property Rights*, *supra* n. 6, at 575.

200. *See supra* n. 6 and accompanying text. *See also* Richard A. Epstein, *Why Libertarians Shouldn't Be (Too) Skeptical About Intellectual Property* 7–10 (Progress & Freedom Found. Progress on Point Working Paper No. 13.4, Feb. 13, 2006) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=981779) (discussing acquisition, exclusion, and duration issues in intellectual property).

of patent conveyances with its new mandatory rule that any conveyance operates to extinguish all property rights in a patented invention.

Epstein's utilitarian defense of the conveyance default rule, however, has within it the potential seeds of its own demise. He endorses rule-of-reason antitrust analysis to police the boundaries of the conveyance default rule on the basis of his utilitarian theory that legal rules should operate to maximize overall social utility. A standards-based antitrust regime, however, threatens the integrity of the *ex ante* security in interests served by the conveyance default rule. In practice, standards-based legal regimes tend to swamp rules, leading to highly granular and indeterminate adjudication in each case. Moreover, there is an open question as to whether the courts have the institutional competence to evaluate *ex ante* the innovative market structures that result from unpredictable inventions in science and technology. The result may be that the error costs, both real *ex post* and imagined *ex ante*, undermine the overall social utility achieved by the conveyance default rule, even in Epstein's second-best world.

With that said, there is still much to appreciate in Epstein's work on intellectual property, and such remarks should be understood to be concerns expressed among friends. In fact, in his property-based defense of intellectual property, Epstein has found himself staking out his typically unique positions in modern policy debates,[201] but this time he has found himself opposed to fellow libertarians who are highly critical of intellectual property.[202] In speaking against his libertarian friends in defense of intellectual property, in particular, Aristotle would likely commend Epstein's commitment to truth.[203]

201. *See e.g.* Mark A. Lemley, *Ignoring Patents*, 2008 Mich. St. L. Rev. 19, 23–24 n. 22 (2008) (acknowledging Epstein's work as "the most thoughtful" of the property approach, but still criticizing his "baseline assumption"); Menell, *supra* n. 3 (critiquing Epstein generally as a proponent of the "property rights movement" in intellectual property).

202. *See e.g.* Tom W. Bell, *Indelicate Imbalancing in Copyright and Patent Law*, in *Copy Fights: The Future of Intellectual Property in the Information Age* 1, 4 (Adam Thierer & Clyde Wayne Crews Jr. eds., Cato Inst. 2002) (arguing that "copyright and patent protection contradicts Locke's justification of property"); Timothy B. Lee, *Copyright and Patent*, in *Cato Handbook for Policymakers* 393, 393–94 (7th ed., Cato Inst. 2008) (arguing that copyright and patent "legal regimes are very different from traditional property rights," although acknowledging that "the analogy to property rights provides a useful guide for improving these legal regimes").

203. *See* Aristotle, *Nicomachean Ethics* 6 (Joe Sachs trans., Focus Publishing 2002) (observing that "while both [the truth and one's friends] are loved, it is a sacred thing to give the higher honor to the truth").