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PATENTS, PRIZES, AND PROPERTY

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I. INTRODUCTION

The standard conception of a patent is that of a property right that allows its holder to exclude potential competitors in order for the holder to price its patented goods above the competitive rate so as to generate above-market profits that ostensibly induce inventive activity.¹ On this view, society countenances the deadweight losses of exclusionary rights in return for the fruits of innovation.² In contrast to this view of patents is the traditional conception of prizes — namely, rewards provided by the State or a third party in return for a suitably completed invention.³ Unlike patents, once the inventor is paid via a prize, the invention is placed into the public domain and, on the traditional view, is

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1. See Ted Sichelman, *Commercializing Patents*, 62 STAN. L. REV. 341, 357–58 (2010); John F. Duffy, *Rethinking the Prospect Theory of Patents*, 71 U. CHI. L. REV. 439, 439 (2004); Mark A. Lemley, *Ex Ante Versus Ex Post Justifications for Intellectual Property*, 71 U. CHI. L. REV. 129, 129 (2004).

2. See *supra* note 1.

3. See Michael Abramowicz, *Perfecting Patent Prizes*, 56 VAND. L. REV. 115, 172–73 (2003) (discussing patent prize systems generally); Michael Abramowicz, *Prize and Reward Alternatives to Intellectual Property*, in 1 RESEARCH HANDBOOK ON THE LAW & ECONOMICS OF INTELLECTUAL PROPERTY RIGHTS (Peter S. Menell, David L. Schwartz & Ben Depoorter eds., forthcoming 2016) [hereinafter Abramowicz, *Prize and Reward Alternatives*]; Michael J. Burstein & Fiona E. Murray, *Innovation Prizes in Practice and Theory*, 29 HARV. J.L. & TECH. 401, 402 (2016).

available for all to consume absent deadweight losses.⁴ In simpler terms, patents sound in private law and the conceptions of tort, contract, and property.⁵ Prizes sound in public law and the conceptions of regulation and state subsidy.⁶

Several scholars have recently cast considerable doubt on the starkness of this dichotomy between patents and prizes.⁷ For example, in *Beyond the Patents-Prizes Debate*, Professors Daniel Hemel and Lisa Ouellette reconceive patents and prizes as *complementary* components of a larger selection of incentives for innovation, such as research grants and tax credits.⁸ In so doing, they provide a variety of examples of how prizes could be structured so as to perform the major functions of patents.⁹ For instance, noting the oft-stated view of economists that patents are inherently superior to prizes because they draw only on users of the patented invention, Hemel and Ouellette explain that government funding for a prize may derive from a sales tax imposed on consumers

4. See Lemley, *supra* note 1, at 129–30 & n.2; Amy Kapczynski, *The Cost of Price: Why and How to Get Beyond Intellectual Property Internalism*, 59 UCLA L. REV. 970, 976 n.19 (2012). See generally Michael Kremer, *Patent Buyouts: A Mechanism for Encouraging Innovation*, 113 Q.J. ECON. 1137 (1998); Fiona Murray et al., *Grand Innovation Prizes: A Theoretical, Normative, and Empirical Evaluation*, 41 RESEARCH POL'Y 1779 (2012); Steven Shavell & Tanguy van Ypersele, *Rewards versus Intellectual Property Rights*, 44 J.L. & ECON. 525 (2001); Joseph E. Stiglitz, *Economic Foundations of Intellectual Property Rights*, 57 DUKE L.J. 1693 (2008); Brian D. Wright, *The Economics of Invention Incentives: Patents, Prizes, and Research Contracts*, 83 AM. ECON. REV. 691 (1983).

5. See Orin Kerr, *Rethinking Patent Law in the Administrative State*, 42 WM. & MARY L. REV. 127 (2000) (offering a private law model of patent law).

6. See William W. Fisher & Talha Syed, *A Prize System as a Partial Solution to the Health Crisis in the Developing World*, in INCENTIVES FOR GLOBAL PUBLIC HEALTH: PATENT LAW AND ACCESS TO ESSENTIAL MEDICINES 181 (Thomas Pogge et al. eds., 2010) (presenting a public-law oriented prize system to incentivize the production and distribution of pharmaceutical drugs).

7. Although prizes have been used much less than patents to incentivize innovation, especially throughout the 20th century, as Michael Burstein and Fiona Murray note, the 2010 America COMPETES Authorization Act has empowered “all federal agencies to offer prizes for mission-critical technologies,” resulting in “thirty agencies” conducting “over one hundred prize competitions” in just the last five years, making prizes “real tools of government innovation policy.” Burstein & Murray, *supra* note 3, at 402. Burstein and Murray also describe several recent prominent non-governmental prizes, such as those offered by the X Prize Foundation. See *id.* at 419–22.

8. Daniel Jacob Hemel & Lisa Larrimore Ouellette, *Beyond the Patents-Prizes Debate*, 92 TEX. L. REV. 303, 310–25, 351–52 (2013). The following discussion largely ignores the important role grants play in the innovation process. See generally Brett Frischmann, *Innovation and Institutions: Rethinking the Economics of U.S. Science and Technology Policy*, 24 VT. L. REV. 347 (2000) (discussing the role of grants as well as other institutional mechanisms for innovation projects). However, to the extent grants are a form of “ex ante” prize, much of the discussion herein regarding prizes can be suitably applied to grants. Cf. Hemel & Ouellette, at 381 (“[G]rants — unlike patents and prizes — deliver ex ante transfers and thus reduce the social costs of capital market frictions.”). In order to simplify the analysis, this Article also generally ignores institutional concerns — other than that of competence — in the comparison of patents and prizes, but a more thorough analysis would certainly take this factor into account. See Frischmann, at 376–95 (undertaking comparative institutional analysis in the prize context); Burstein & Murray, *supra* note 3, at 402.

9. See generally Hemel & Ouellette, *supra* note 8.

of a particular innovative product — mimicking the “user-pays” feature of a patent system.¹⁰ Specifically, such a sales tax would raise the price on an otherwise non-patented product exactly to the level necessary to incentivize the innovator to produce the product.¹¹ If we assume the patent system is precisely calibrated — so that it awards neither too little nor too much to the innovator — then with a sales tax-driven prize, those consumers who could not purchase the product under the supra-competitive prices of the patent system are *precisely the same* consumers priced-out of the ostensibly “competitive” market under a prize system.¹²

In *Intellectual Property versus Prizes: Reframing the Debate*,¹³ Professor Benjamin Roin further explores the insightful analysis of Hemel and Ouellette.¹⁴ Specifically, he contends that the State may implement a host of measures alongside patents — such as subsidies, tax credits, and price controls — in order to effectively reduce the consumer deadweight losses imposed by patents.¹⁵ At the same time, like Hemel and Ouellette, he recognizes that because prizes — at least those offered by the State — must be funded by the taxpayers, they too impose deadweight losses.¹⁶ Moreover, when prizes are calculated based on sales figures of a completed invention, for a variety of complex reasons — particularly a seller’s incentive to price below marginal cost so as to increase sales — further deadweight losses may result.¹⁷

For these and other reasons, Roin persuasively concludes that the seemingly stark differences between patents and prizes may sometimes evaporate in practice. (Hemel and Ouellette implicitly make a similar point.) I term this the “patent-prize fungibility thesis.”¹⁸ In this regard,

10. *See id.*

11. *See id.*

12. *See id.* at 350–51. As Hemel and Ouellette explain, the only means to overcome so-called “deadweight loss” in a prize system is to require the public-at-large to fund the innovation and thereby subsidize those who could not afford it under a patent system. *See id.* at 351–52. Of course, this leads a society-wide deadweight loss, but one that may be more tolerable than a consumer-specific loss. *See id.*

13. Benjamin N. Roin, *Intellectual Property versus Prizes: Reframing the Debate*, 81 U. Chi. L. Rev. 999, 1045–61 (2014).

14. More recently, Burstein and Murray have also undertaken a thoughtful comparative analysis of prizes, patents, and grants. *See Burstein & Murray, supra* note 3, at 402.

15. Roin, *supra* note 13, at 1045–61.

16. *See id.* at 1026. This point is not original. John Duffy recognized as much in applying Ronald Coase’s critique of government-subsidized “marginal cost” pricing for utilities to intellectual goods, such as technological inventions and creative works. *See John F. Duffy, The Marginal Cost Controversy in Intellectual Property*, 71 U. CHI. L. REV. 37, 42 (2004). *See generally* Brett M. Frischmann & Christiaan Hogendorn, *The Marginal Cost Controversy*, 29 J. ECON. PERSP. 193 (2015) (surveying the “marginal cost controversy” literature); Abramowicz, *Prize and Reward Alternatives*, *supra* note 3 (surveying the literature on prizes and deadweight losses).

17. *See Roin, supra* note 13, at 1054.

18. *See id.* at 1072–73. To be certain, neither Roin nor Hemel and Ouellette view patents and prizes as always fungible. Rather, when properly supplemented by subsidies, taxes, or tax

as I explain below, the institutional choice between patents and prizes may ultimately be less one of deadweight losses than of minimizing transaction and error costs in implementation.¹⁹ In particular, because patents' deadweight losses may be tempered by subsidies, credits, and other supplements, the main issue becomes whether a patent or prize system is better at generating incentives for — and reducing the costs of — creating, propagating, and commercializing technological inventions.²⁰

According to Roin — and consistent with Hemel and Ouellette's "complements" view — governments implement patents and prizes alongside one another in order to promote innovation.²¹ Nonetheless, Roin identifies a residual function of patents — their ability to exclude competitors via a property rule (i.e., injunctive relief) from making and selling the invention — as providing innovation benefits beyond those of prizes.²² Specifically, Roin points to the use of patents by "big pharma" companies to renegotiate drug payment structures with governments that fully set drug prices — essentially providing prizes — as an example of how patents can play an important role even when they have no direct effect on pricing.²³ In Roin's view, because a big pharma company can wield a patent as a club to credibly threaten that neither it *nor any third party* will produce the drug, governments must sit at the bargaining table with the company and negotiate in good faith.²⁴ As such, Roin ultimately rejects the patent-prize fungibility thesis, but not on the usual ground that government and market-based mechanisms for "pricing" innovation diverge in accuracy.²⁵

This Article contributes to the literature in two main respects. First, I extend Roin's analysis to suggest that the property-rule aspect of patents provides benefits beyond those stemming from mere negotiation

credits, the two may practically converge in particular circumstances. *See* Roin, *supra* note 13, at 1074; Hemel & Ouellette, *supra* note 8, at 326–67.

19. *See infra* Section II.B and Part III. Additionally, prizes and patents may function as complements — namely, a prize may be awarded and the winner may still be allowed to seek a patent for the underlying invention. *See* Burstein & Murray, *supra* note 3, at 411. Indeed, it appears most prizes function as a complement of, rather than a substitute for, patents. *See id.* However, in order to respond directly to the prevailing literature, I assume herein that prizes and patents generally function as substitutes. *See id.*

20. *See infra* Section II.B and Part III.

21. *See* Roin, *supra* note 15, at 1074.

22. *See id.*

23. *See id.*

24. *See id.*

25. In this respect, Roin's analysis shares similarities with that of Hemel and Ouellette as well as Kapczynski and Syed, who analyze the patent-prize dichotomy on dimensions other than that of error costs. *See* Hemel & Ouellette, *supra* note 8, at 310–25; Amy Kapczynski & Talha Syed, *The Continuum of Excludability and the Limits of Patents*, 122 *YALE L.J.* 1900, 1944–45 (2013).

with governments-as-payers to more broadly engender greater commercialization incentives than under a prize system.²⁶ Second, although property rules may distinguish patents from prizes in practice, I contend that the fungibility thesis nonetheless helps to legitimate an important theoretical claim about patents: like prizes, patents — despite often being effectuated via private law means — aim to achieve essentially regulatory, public-oriented goals.²⁷

Part II critiques the patent-prize fungibility thesis on broader grounds than previous scholars. Although in static equilibrium patents and prizes may converge, I explain this is not so in dynamic equilibrium, even theoretically.²⁸ In particular, patents can impede downstream innovation, but unlike consumer deadweight losses,²⁹ governments typically cannot alleviate these dynamic deadweight losses without effectively eliminating property-rule enforcement of patent rights.³⁰ This inability, however, is not necessarily suboptimal, as it provides the patentholder greater control over its invention — and thus greater incentives to commercialize and perfect the invention — than in a pure prize system.³¹ Relatedly, greater patentee control over third-party uses can reduce transaction costs in transforming an invention into a fully commercialized product.³² Indeed, the reason governments allow inventors, particularly pharmaceutical firms, to retain their patents in the face of substantial price regulation may be more related to coordinating future innovation and commercialization than the ability of the patentholder to renegotiate payment.³³

In Part III, I situate the patent-prize fungibility thesis within the larger sphere of the property-regulation debate in intellectual property. Drawing upon my contention in a recent article that patents are primarily designed to promote public, regulatory aims,³⁴ I test this claim in the context of the fungibility thesis.³⁵ Specifically, Hemel and Ouellette's, and Roin's insight that patents can be complemented by a host

26. See *infra* Part II.

27. See *infra* Part III.

28. See *infra* Section II.A. Even in static equilibrium, important differences may arise in practice, even if the government can perfectly determine the social value of particular innovations. See Hemel & Ouellette, *supra* note 8, at 326–67 (describing distinctions between patents and prizes); Kapczynski & Syed, *supra* note 25, at 1944–45 (positing that some inventions are not practically excludable and suggesting that for “these highly nonexcludable innovations . . . we must pursue alternative innovation policies, such as prizes, public funding, or commons-based approaches”).

29. See Roin, *supra* note 13, at 1033.

30. See *infra* Section II.A.

31. See *infra* Section II.B.

32. See *infra* Section II.B. See generally Abramowicz, *Prize and Reward Alternatives*, *supra* note 3 (surveying the literature on prizes and transaction costs).

33. See *infra* Section II.B.

34. See Ted Sichelman, *Purging Patent Law of “Private Law” Remedies*, 92 TEX. L. REV. 517, 566–70 (2014).

35. See *infra* Part III.

of government practices that effect a convergence of patents and prizes — and their related finding that prizes may impose deadweight losses much in the manner of patents — is further evidence that patents, along with other government interventions to spur innovation, should generally be treated as regulatory tools, rather than a pure species of traditional property.³⁶ Nonetheless, the private-law features of patents may often in practice best serve the social aims of promoting innovation.³⁷

II. STATIC AND DYNAMIC INTERVENTIONS IN INTELLECTUAL PROPERTY

Patents lead to two fairly distinct types of inefficiencies: static and dynamic.³⁸ Static inefficiencies generally result when a patent confers market power sufficient for a seller of patented goods or services to set prices higher than that it could in an otherwise competitive market.³⁹ Specifically, these supernormal prices prevent some consumers who would have purchased the good in a competitive market to be priced out, leading to consumer deadweight losses.⁴⁰ The tradeoff for this static inefficiency is that patents often induce innovation by preventing others from making, using, or selling the same or similar invention.⁴¹

Dynamic inefficiencies occur when patentholders have the power to prevent or raise the costs of follow-on innovators and commercializers who would like to improve a patented invention or perfect it so as to transform it into a viable commercial product or service.⁴² Unlike static inefficiencies, which occur within the equilibrium of the traditional producer-consumer supply-demand curve of microeconomics, dynamic inefficiencies result because of transaction costs in the evolution of an invention throughout the course of its innovation life cycle.⁴³ Dynamic inefficiencies affect not merely the inducement patents provide to the patentee to improve and commercialize its invention, but also the patentee's control over the nature and scope of any third-party activity regarding the invention.⁴⁴

Although Roin convincingly dispels the seemingly stark choice between patents and prizes in the context of static inefficiencies, he does

36. *See infra* Part III.

37. *See infra* Part III.

38. *See* Sichelman, *supra* note 1, at 358.

39. *See id.*

40. Roin, *supra* note 13, at 1023.

41. *See id.* at 1023–24.

42. *See* Sichelman, *supra* note 1, at 358.

43. *See id.*; *see also id.* at 384–88.

44. *See id.* at 375–76. In this regard, diminishing a patentee's control over third-party uses may sometimes increase dynamic efficiency. *See infra* notes 78–80 and accompanying text.

not do so with respect to dynamic inefficiencies.⁴⁵ Specifically, I contend a government's ability to provide supplements, subsidies, taxes, or purchases would not generally relieve all of the dynamic inefficiencies imposed by patents, at least absent a radical transformation of patent rights.⁴⁶ I then use this insight to provide a broader explanation than Roin's of the role the property-rule aspect of patents plays relative to the liability-rule nature of prizes for patented pharmaceuticals in countries in which governments fully set drug prices.⁴⁷ Namely, aside from providing leverage to renegotiate, the power patentees enjoy to control downstream innovation and commercialization provides an additional, perhaps stronger, reason to retain patents in these circumstances.⁴⁸

A. The Static-Dynamic Divide in the Patent-Prizes Debate

Roin focuses much of his article on explaining how government policy tools such as subsidies and taxes may effectively work to eliminate the static inefficiencies of consumer deadweight losses otherwise caused by patents, thereby achieving the statically efficient distribution offered by prize systems.⁴⁹ To his credit, Roin takes the additional step of investigating whether these same policy tools can also be used to achieve the "superior [innovation] incentives" offered by a prize system.⁵⁰ In so doing, he concludes the answer is indubitably "yes":

If prize advocates are correct that the government can offer better incentives for innovation through a prize system, then . . . the government could implement these same changes without eliminating intellectual property. Unlike reductions in deadweight loss attributable to patents, any superior incentives that can be identified and implemented in a prize system can also be identified and implemented within the intellectual property system in almost exactly the same manner. Prize advocates have failed to show that switching to a prize system generates any new information or mechanism for setting superior incentives that cannot be achieved in an intellectual property system through supplements, subsidies, taxes, government purchases, and other tools available to the government. Consequently, the government's ability

45. *See infra* Section II.A.

46. *See infra* Section II.B.

47. *See id.*

48. *See id.*

49. Roin, *supra* note 13, at 1044–62.

50. *See id.* at 1062–72.

to improve incentives for innovation is not an affirmative argument in favor of the prize system.⁵¹

Importantly, Roin's statement concerns three different putative superior incentives that prize systems offer. The first involves "motivat[ing] socially valuable innovations" that may not properly be priced into the patent reward via private markets.⁵² The second concerns "socially wasteful R&D and duplicative innovation" that results when multiple inventive entities "race" to win the fruits of the superior profits patents offer in the marketplace.⁵³ The third regards dynamic inefficiencies related to future innovation.⁵⁴

As to properly incentivizing socially valuable innovations, Roin cogently explains that governments have numerous options to adjust innovators' profits in the face of patents.⁵⁵ Specifically, "[g]overnments can directly tax or subsidize an innovator's profits, give supplement prizes, impose a sales tax or offer tax credits on the purchase of innovations, institute price controls, issue vouchers to consumers with low purchasing power, or even purchase innovations directly."⁵⁶ Although one might debate the likelihood any government would broadly implement these complementary options, Roin makes a clever and important theoretical point that pure prize systems enjoy no advantages in promoting social welfare, especially those innovations yielding benefits not fully priced in private markets.⁵⁷

As for wasteful R&D races, as Roin notes, scholars recognize that prize systems and patents alike create incentives for multiple firms to compete and potentially dissipate consumer surplus.⁵⁸ Critics assert that governments have more control to limit rewards for near substitute

51. *Id.* at 1066.

52. *Id.* at 1029–31, 1062–63.

53. *Id.*

54. *See id.* at 1033–34, 1063–66.

55. *See id.* at 1064–66.

56. *Id.* at 1065.

57. One area in which the government clearly does provide such subsidies is that of patented pharmaceutical drugs, spending more than \$50 billion per year in the United States. *See* Sichelman, *supra* note 1, at 386. Whether such subsidies roughly approximate the social value beyond that priced in by the market seems dubious for all pharmaceuticals, but a stronger case can be made for government subsidies for orphan drugs, essentially drugs for rare diseases. *See id.* at 387; Michael Abramowicz, *Orphan Business Models: Toward a New Form of Intellectual Property*, 124 HARV. L. REV. 1362, 1384–89 (describing and analyzing the Orphan Drug Act); *cf.* Sichelman, *supra* note 34, at 560 (suggesting that the government subsidize patent damages awards for socially valuable inventions such as technology for the disabled).

58. *See* Roin, *supra* note 13, at 1031–32.

products, such as “me too” drugs, diminishing the dissipation concern.⁵⁹ On the other hand, prizes would not eliminate racing for the exact same invention.⁶⁰ More importantly, Roin properly contends that the same tools the government can use to limit consumer deadweight losses can also be used to reduce duplicative costs from patent races.⁶¹ Although Roin does not spell out the mechanism for doing so, it is fairly clear that reducing rewards would in turn diminish the incentives to engage in rent-seeking.⁶² How to fine-tune these incentives turns out to be quite a complex problem, and in other work, I show that implementing a probabilistic patent right — whereby the patent is automatically held unenforceable in a small, but non-trivial percentage of the time — can maintain sufficient incentives to invent while reducing duplicated costs from overlapping R&D.⁶³

As Roin notes, prize systems also introduce dynamic inefficiencies. In particular, because “the government must divide profits among sequential innovators, an excessive incentive for an early innovation will subtract too much profit from the pool for later innovators.”⁶⁴ As such, Roin concludes that “[t]o the extent that subsequent innovators anticipate smaller prizes for this reason, an excessive prize could have the same effect on cumulative innovation as an excessive patent.”⁶⁵

59. Michael Kremer, *Patent Buyouts: A Mechanism for Encouraging Innovation*, 113 Q.J. ECON. 1137, 1162 (1998) (“Patent buyouts could potentially increase incentives for original invention closer to their social value [and] reduce incentives for wasteful ‘me too’ research.”).

60. See Roin, *supra* note 13, at 1031–32.

61. See *id.* at 1062–66.

62. See Ted Sichelman, *Quantum Game Theory and Coordination in Intellectual Property* (San Diego Legal Studies, Working Paper No. 10-035, 2010), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1656625 [<https://perma.cc/TDG3-GXLT>].

63. See *id.* For instance, in a hypothetical race to invent and patent a new microprocessor, using fairly reasonable assumptions, I show that randomly refusing to enforce the patent up to 60% of the time would increase social welfare gains while maintaining sufficient incentives to innovate. See *id.* Importantly, I note that “whether a probabilistic system leads to larger increases in social welfare than classical adjustments in patent scope or duration — for the same overall incentives to innovate — is an empirical question that depends on the values of relevant underlying variables, as well as the relative administrative costs of the government’s implementing a” probabilistic system. *Id.* My work extends that of Ian Ayres and Paul Klemperer, who showed that a similar probabilistic enforcement scheme could reduce deadweight losses while maintaining sufficient incentives to innovate. See Ian Ayres & Paul Klemperer, *Limiting Patentees’ Market Power Without Reducing Innovation Incentives: The Perverse Benefits of Uncertainty and Non-Injunctive Remedies*, 97 MICH. L. REV. 985 (1999). However, instead of using a basic neoclassical model with one innovator, as did Ayres and Klemperer, my approach uses a game-theoretical model involving multiple innovators to capture the effects of probabilistic patents on rent dissipation. See Sichelman, *supra* note 62.

64. Roin, *supra* note 13, at 1034.

65. *Id.*

However, Roin does not sufficiently demonstrate that supplements, subsidies, taxes, or government purchases can rectify dynamic inefficiencies.⁶⁶ Recall that patents can create these inefficiencies by increasing transaction costs in — indeed, even fully preventing — the improvement or commercialization of the invention.⁶⁷ As long as the patentholder has the ability to obtain injunctive relief and thereby preclude making, using, or selling the invention by any downstream user, then government supplements, subsidies, taxes, or purchases would often do little to nothing to stem these dynamic inefficiencies, at least without radically altering the nature of patent rights.⁶⁸

I agree that the government's ability to fine-tune innovation incentives in a prize system by reallocating awards to original and later innovators can often be implemented in a patent system through the use of subsidies and taxes.⁶⁹ Yet, there are several reasons prize systems may substantially differ from patent systems regarding future innovation. First, if a patentholder can enjoin future activity by third parties, this may fully prevent follow-on invention and commercialization, which is not the case in a prize system.⁷⁰ No amount of subsidies or supplements to a follow-on innovator can effectively solve this problem.

To be certain, the government could tax the patentee so heavily as to force it to license its invention, but one could in theory proscribe or induce most behaviors and, hence, replicate most non-criminal laws by a suitable "Pigouvian" tax.⁷¹ Replacing traditional regulation and tort law entirely with a system of tax-based incentives is infeasible, not only politically, but institutionally.⁷² As such, resorting to the fungibility of taxes and traditional legal sanctions as a goad to action (or inaction) *for any behavior whatsoever* is not much of a practical argument in favor

66. *See id.* at 1062–66. Additionally, prizes may offer distributive benefits beyond those available from patents combined with various supplements. *See* Kapczynski, *supra* note 4, at 1005 (noting the distributive benefits of certain prize system approaches). *See generally* Abramowicz, *Prize and Reward Alternatives*, *supra* note 3 (surveying the literature on prizes and redistribution). Because I am mainly concerned with efficiency rationales in this Article, I generally ignore this potential benefit of prizes in the following discussion, but by doing so do not intend to dismiss its importance.

67. *See supra* notes 42–44 and accompanying text.

68. *See infra* Section II.B.

69. *See* Roin, *supra* note 13, at 1065–66.

70. *See generally* Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 *SCI.* 698, 698–700 (1998).

71. David Hasen, *Liberalism and Ability Taxation*, 85 *TEX. L. REV.* 1057, 1108 (2007) ("A cost-internalizing tax, sometimes referred to as a 'Pigouvian tax' (named for the economist A.C. Pigou), is designed to make the person who engages in an activity bear all and only the costs associated with the activity." (citation omitted)).

72. *See generally* Sichelman, *supra* note 34, at 563–66. And, in this regard, I do not mean to dismiss tax-based solutions as mere complements to other mechanisms of incentivizing innovation, particularly as proposed by Hemel and Ouellette. *See* Hemel & Ouellette, *supra* note 8.

the fungibility of patents and prizes.⁷³ More importantly, such a tax would be tantamount to the elimination of the patent in favor of judicially set royalty rates in every case, which would radically alter the nature of patent rights.⁷⁴ And while I have argued that there are strong reasons for moving to a pure liability rule regime in patent remedies in limited circumstances,⁷⁵ as I explain below,⁷⁶ there is little justification to do so across-the-board, and Roin certainly does not suggest as much.⁷⁷

Second, because patent systems require licenses for follow-on innovation and prize systems do not, prize systems may avoid large transaction costs in bargaining that may stem from patents.⁷⁸ In particular, the uncertainty inherent in patent litigation can exacerbate the difficulties in transacting for license rights.⁷⁹ Specifically, the lack of relative certainty as to whether a given patent is infringed, valid, and enforceable increases overall information costs and risk for the transacting parties, which can stymie deals that otherwise would promote innovation.⁸⁰

Third, and related to the previous point, sometimes transaction costs in licensing are so high that the value of the deal is less than the cost of bargaining.⁸¹ In these situations, typically no deal will transpire, and otherwise efficient licenses will be prevented, which is tantamount to a refusal to license.⁸² These problems are especially acute in the context of the information technology (“IT”) industry, in which innovations often contain many separate patented components, held by many different owners.⁸³ The IT industry’s multi-component products stand in stark contrast to the often discrete innovations in the pharmaceutical industry (Roin’s paradigmatic example), in which one or just a few entities typically hold the relevant patents.⁸⁴

73. See generally Victor Fleischer, *Curb Your Enthusiasm for Pigovian Taxes*, 68 VAND. L. REV. 1673 (2015). Thus, although one could imagine a prize system supplemented by a massive “negative prize” (i.e., a Pigovian tax) on third parties that attempt to undertake and commercialize follow-on inventions — thereby replicating a property rule in favor of the initial innovator — the same infeasibility concern holds. See *supra* notes 71–72.

74. See generally Sichelman, *supra* note 34.

75. See *id.* I do recommend that shifts in institutional competence and makeup may eventually allow for a pure regulatory scheme in the provision of patent remedies, moving the patent system ever closer to a prize system. See *id.* at 569–71. But such a day is certainly well past our lifetimes. See *id.* at 563–65.

76. See *infra* Section II.B.

77. See Roin, *supra* note 13, at 1062–66.

78. See Sichelman, *supra* note 1, at 358–59.

79. See *id.* at 368, 384.

80. See *id.* at n.219; Ted Sichelman, *Myths of (Un)certainty at the Federal Circuit*, 43 LOY. L.A. L. REV. 1161, 1188 (2010) (finding that “a huge portion of the relatively high reversal rate [in patent litigation] appears to be driven by uncertainty in claim construction”).

81. See Sichelman, *supra* note 34, at 557–58.

82. See *id.*

83. See *id.* at 543–46.

84. See Roin, *supra* note 13, at 1005, 1011–12, 1030, 1040–47, 1051.

In sum, although straightforward government complements to the patent system may reduce consumer deadweight losses, diminish duplicated R&D costs, and incentivize socially valuable innovation, they cannot easily reduce transaction costs in licensing that may lead to inefficient follow-on innovation and commercialization. In the next Section, I consider whether more radical intervention might solve these problems.

B. The Power of Property Rules in Patent Law

One possibility to reduce transaction costs in licensing is to eliminate property-rule protection for patents.⁸⁵ To a large extent, following the Supreme Court's decision in *eBay v. MercExchange*,⁸⁶ non-practicing entities ("NPEs")⁸⁷ have been unable — at least at the district court level — to secure injunctive relief in the event of infringement.⁸⁸ As I have argued elsewhere in the context of multi-component inventions, one could entirely eliminate injunctive relief in favor of monetary damages for NPEs and practicing entities alike.⁸⁹ Doing so would reduce the possibility of patent holdup and — assuming judges and juries were sufficiently competent in awarding ongoing royalties or the government suitably supplemented any damages awards — such an approach would not unduly diminish incentives to innovate.⁹⁰

On the other hand, eliminating property-rule remedies across the board — either through judicially imposed damage awards or via agency-style prize systems — could have detrimental consequences for at least three reasons.⁹¹ First, as Roin notes, the ability of a patentee to

85. See generally Sichelman, *supra* note 34.

86. *eBay, Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006).

87. Although there is no common definition of a non-practicing entity, two key traits typically characterize NPEs — “that they do not commercialize their patents and perform little to no R&D.” Ted Sichelman, *The Vonage Trilogy: A Case Study in “Patent Bullying”* 90 NOTRE DAME L. REV. 543, 547 (2014). Some courts and commentators focus merely on the commercialization factor. See, e.g., Colleen V. Chien, *Of Trolls, Davids, Goliaths, and Kings: Narratives and Evidence in the Litigation of High-Tech Patents*, 87 N.C. L. REV. 1571, 1578 (2009) (“[T]he term NPE in this Article refers to a corporate patent enforcement entity that neither practices nor seeks to commercialize its inventions.”).

88. See Christopher B. Seaman, *Permanent Injunctions After eBay: An Empirical Study*, 101 IOWA L. REV. 1949, 1987–89 (2016).

89. See Sichelman, *supra* note 34, at 541–54.

90. See *id.* at 554–66.

91. See *id.* at 560–66; see also Mark P. Gergen, John M. Golden & Henry E. Smith, *The Supreme Court's Accidental Revolution? The Test for Permanent Injunctions*, 112 COLUM. L. REV. 203 (2012); F. Scott Kieff & Henry E. Smith, *How Not to Invent a Patent Crisis, in REACTING TO THE SPENDING SPREE: POLICY CHANGES WE CAN AFFORD* 67–69 (Terry L. Anderson & Richard Sousa eds., 2009); F. Scott Kieff, *Removing Property from Intellectual Property and (Intended?) Pernicious Impacts on Innovation and Competition*, 19 SUP. CT. ECON. REV. 25, 41 (2011); Robert P. Merges, *Of Property Rules, Coase, and Intellectual Property*, 94 COLUM. L. REV. 2655, 2664 (1994).

withhold its innovation altogether from the marketplace generally provides it the power to renegotiate with the government in the event it otherwise sets the price for the patented product, as in the case of government-purchased drugs in some countries.⁹² One might counter Roin's argument, however, that in the case of a bilateral, monopolistic negotiation between a rational pharmaceutical company and government-payor, the pharmaceutical company would always take some amount more than zero (which is what it would earn if it refused to sell its innovation altogether).⁹³ Yet, such a view ignores the fact that it may be sensible for the pharmaceutical company to say "no" to a single country on a single drug in order to develop a reputation for toughness in negotiating with many countries in the long run.⁹⁴ In this case, there is a credible threat that the pharmaceutical company can wield when it enjoys a property right backing its patent.

Second, as Professor Edmund Kitch has recognized, property rules provide the patentee the ability to coordinate follow-on invention and commercialization.⁹⁵ Like government renegotiation, such a power stems from a patentee's ability to unilaterally choose between licensing its invention or refusing to do so — in the latter case, the patentee can either commercialize the invention itself or simply shelve it.⁹⁶ Placing

92. See Roin, *supra* note 13, at 1068–71. Again, note that the government could eliminate this ability through a tax triggered by refusals to license a patent. See *supra* note 71 and accompanying text. Setting aside the constitutionality of such a tax in the United States and other countries, it would most likely be politically infeasible in most if not all countries. See *supra* note 71 and accompanying text.

93. See Tom Campbell, *Bilateral Monopoly: Further Comment*, 75 ANTITRUST L.J. 647, 651 (2008) (“[T]he situation of a patent-holder-licensor and each of its licensees can be analogized to bilateral monopoly.”).

94. Cf. Ian Ayres, *Playing Games with the Law*, 42 STAN. L. REV. 1291, 1311 (1990) (“In a repeated game, incumbents should benefit from establishing a tough reputation to deter entry.”).

95. Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 276–78 (1977); see also SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF S. COMM. ON THE JUDICIARY, 85TH CONG., AN ECONOMIC REVIEW OF THE PATENT SYSTEM 12 n.60 (Comm. Print 1958) (Fritz Machlup) (surmising that the risks involved in “experimentation in production and experimentation in marketing . . . may be too great to be undertaken except under the shelter of a monopoly grant” of a patent). Although Roin mentions coordination-related benefits to patenting, he does so briefly and does not tie that discussion into reasons why patents may yield benefits beyond pure prize systems. See Roin, *supra* note 13, at 1028–29 & n.130.

96. See *Special Equip. Co. v. Coe*, 324 U.S. 370, 377–78 (1945) (stating that a patentee is free not to use, and to suppress, its patent). In this regard, I view the property rights afforded by patents as more central to commercialization than follow-on invention, because follow-on invention could potentially be incentivized through a system of prizes, subsidies, tax credits, and the like. See *supra* Section II.A. Although the government could theoretically coordinate commercialization via similar mechanisms, I find this prospect essentially implausible, at least in a capitalist economy across a wide range of inventions. See *infra* notes 100, 106. Of course, one may not believe that market intervention is typically necessary for commercialization, see, e.g., Lemley, *supra* note 1, at 129–30 & n.2, but I do not hold such priors for a variety of reasons spelled out by at length in other work. See Sichelman, *supra* note 1, at 366–

the invention in the dustbin may be an optimal strategy when the patented invention might “cannibalize” the profits of other, similar products of the patentee.⁹⁷ Contrary to the patent holdup and anticommons models, Kitch argues persuasively that this power to coordinate may be more efficient than a purely open market.⁹⁸ On some accounts, patents precisely lead to “open innovation” models in which innovation relies on multiple R&D inputs from multiple firms, in contrast to large, vertically integrated operations.⁹⁹

Indeed, the power to coordinate follow-on research and commercialization may be an even stronger reason for retaining pharmaceutical patent protection in those countries that fully set drug prices.¹⁰⁰ In this fashion, a patent held by a pharmaceutical pioneer ensures not only that the pioneer can better renegotiate pricing with government payors, but also that it can preemptively divert the stream of revenues from follow-on innovation from third parties to itself.¹⁰¹ This ability to potentially foreclose any third party from practicing the patented invention via a property rule (i.e., injunction) may in turn reduce overall transaction costs in coordinating commercialization and follow-on innovation

76; Ted M. Sichelman, *Markets for Patent Scope*, 1 IP THEORY 42 (2010) (positing that diverse views about how well “free” markets promote R&D and commercialization largely explain diverse views of what ends the patent system should achieve); see also F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697 (2001).

97. See Kurt M. Saunders, *Patent Nonuse and the Role of Public Interest as a Deterrent to Technology Suppression*, 15 HARV. J.L. & TECH. 389, 391 (2002) (describing the suppression of patented inventions by firms in order to prevent “cannibalizing” their own profits). The “cannibalization” of profits typically refers to the erosion of profits of a firm’s existing product by its introduction of a new product. See generally Richard J. Gilbert & Steven C. Sunshine, *Incorporating Dynamic Efficiency Concerns in Merger Analysis: The Use of Innovation Markets*, 63 ANTITRUST L.J. 569, 575 (1995) (“What deters the monopolist from innovating then is the prospect that the innovation will ‘cannibalize’ the profits from its present monopoly or induce the obsolescence of its existing products.”).

98. See generally Kitch, *supra* note 95.

99. See generally OPEN INNOVATION: RESEARCHING A NEW PARADIGM (Henry Chesbrough et al. eds., 2006).

100. Camilla Hrdy suggests that awards states and localities provide for innovative efforts are a form of commercialization prize. Camilla A. Hrdy, *Commercialization Awards*, 2015 WIS. L. REV. 13 (2015). In this sense, the government could theoretically coordinate both the invention and commercialization functions present in the patent system. See Abramowicz, *Prize and Reward Alternatives*, *supra* note 3, at 23–24. However, as Michael Abramowicz properly recognizes, “[t]he question becomes whether reward judges can effectively determine the magnitude of such rewards and whether inaccurate rewards or insufficient attention to the commercialization function might lead to inferior performance relative to a patent system.” *Id.* at 24. There is strong reason to believe that determining rewards — at least based on current institutional structures — would, in most cases, be less accurate than the result of injunctive relief imposed by courts. See *supra* note 91. Nonetheless, the answer to Abramowicz’s question is vigorously debated. See *supra* notes 5–6.

101. Similar reasons may help explain why governments that fund R&D via grants allow their grantees to acquire patents on their inventions. See generally Hemel & Ouellette, *supra* note 8, at 333–35.

among multiple actors.¹⁰² These effects are particularly important with pharmaceuticals, for which follow-on patents can often extend the life of a base patent by a considerable time period, substantially increasing overall returns to R&D and related investments.¹⁰³

Third, and implicit in the previous two reasons, in situations in which the transaction costs of licensing are not particularly large, eliminating injunctive relief may yield substantial error costs on the part of adjudicators (or administrative agencies, if we allow for supplements) in awarding relief without sufficiently countervailing benefits.¹⁰⁴ As Professor Thomas Cotter has aptly explained, “because the parties (patentee and infringer/user) are likely to have better information than a court concerning the patent’s economic value,” a settlement in the face of an injunction is likely to more accurately reflect the underlying value of the patent than a court’s determination.¹⁰⁵ Thus, absent a transaction-cost or similar rationale that justifies denying injunctive relief, the property-right nature of patents can help to diminish overall error costs relative to a prize system, which more resembles court-based awards of on-going royalties.¹⁰⁶

In sum — and supplementing Roin’s perspicuous treatment of patents and prizes — property-rule protection for patents can serve important roles in incentivizing downstream innovation and commercialization that would be difficult for prizes to achieve. At the

102. See Kitch, *supra* note 95, at 276; Mark F. Grady & Jay I. Alexander, *Patent Law and Rent Dissipation*, 78 VA. L. REV. 305, 316–18 (1992); F. Scott Kieff, *Coordination, Property, and Intellectual Property: An Unconventional Approach to Anticompetitive Effects and Downstream Access*, 56 EMORY L.J. 327, 345–48 (2006); Ted Sichelman, *Commercializing Information with Intellectual Property*, 92 TEX. L. REV. 35, 40–41 (2014).

103. See Alfred B. Engelberg, *Special Patent Provisions for Pharmaceuticals: Have They Outlived Their Usefulness?*, 39 IDEA 389, 401 n.44 (1999) (describing how pharmaceutical companies can “us[e] a series of related patents (divisionals, continuations) covering different aspects of the same basic product invention in combination with patent term extensions to . . . prolong the exclusive market period”). Many view such extensions and increased returns as unnecessary to optimally spur pharmaceutical innovation, resulting in needless deadweight losses, but that point is hotly contested. See *id.*; Gerald J. Mossinghoff, *Research-Based Pharmaceutical Companies: The Need for Improved Patent Protection Worldwide*, 2 J.L. & TECH. 307, 317–18 (1987) (arguing that long patent terms are important for pharmaceutical products).

104. See Sichelman, *supra* note 34, at 560–66.

105. Thomas F. Cotter, *Make No Little Plans: Response to Ted Sichelman, Purging Patent Law of “Private Law” Remedies*, 92 TEX. L. REV. 25, 27 (2014).

106. This rationale also applies to government-based prizes merely for the commercialization of invention. In this regard, even if the government has very good information as to the economic value of an underlying invention, it is unlikely to have good information as to the various inputs and actors needed to commercialize the invention, which tend to be highly domain-specific and known with sufficient detail only by market actors, at least in a predominantly capitalist economy. Cf. Sichelman, *supra* note 1, at 348–54 (explaining the complexities involved in the commercialization of invention). To the extent commercialization theory is correct in that the market will not alone optimally promote the commercialization of invention, then a residual function for patents would remain even if prizes could optimally incentivize invention. Cf. *id.* at 397–413 (suggesting a separate “commercialization patent” in order to spur the commercialization of inventions).

same time, patent protection can sometimes result in overly high transaction costs that stifle transactions. Achieving the proper balance ultimately should be addressed as a regulatory concern, which I turn to next.

III. FROM REGULATION TO “PROPERTY” IN PATENT LAW

The patent-prize fungibility thesis — namely, that patents and prizes may function similarly when combined with suitable taxes, subsidies, and similar supplements — and scholarly discussion concerning it ties into a broader debate about whether the patent system should be rooted in common law notions of real property or tort, or whether a regulatory framework is more appropriate.¹⁰⁷ In earlier work, I have argued that a regulatory model provides the flexibility needed to fine-tune innovation incentives and that real property and tort approaches to patents are historical vestiges that serve no essential theoretical role in constructing exclusionary rights to promote innovation.¹⁰⁸

Roin’s, as well as Hemel and Ouellette’s, findings expand the policy tools available to further fine-tune incentives, because they show that suitably enhancing patents can achieve public-welfare goals via private causes of action instead of government-mandated payments through administrative agencies (and vice-versa).¹⁰⁹ More specifically, these scholars underscore how the seemingly stark differences between the supposed property-centered nature of patents and the regulatory nature of prizes often break down both in theory and practice.¹¹⁰ Highlighting the importance of a range of options to incentivize innovation, this scholarship in my view underscores a broader point — that the patent system is merely one public law-oriented policy lever among many that regulators can use to structure markets to yield more and higher quality innovation.¹¹¹

With that said, it is important not to overlook suggestions by Professor Henry Smith and others that even in a system with strong governance features, property and tort concepts may nonetheless play a useful role in practice, particularly when reasoning with those concepts

107. See Sichelman, *supra* note 34, at 529–36 (describing this debate).

108. See *id.* at 566–71.

109. See Roin, *supra* note 13, at 1044–71; Hemel & Ouellette, *supra* note 8, at 310–25.

110. See Roin, *supra* note 13, at 1044–71; Hemel & Ouellette, *supra* note 8, at 310–25.

111. See Burstein & Murray, *supra* note 3, at 402 (undertaking a comparative institutional analysis of patents, prizes, and grants).

reduces the information costs in adjudicating patent disputes and structuring patent doctrine.¹¹² My earlier arguments against jettisoning property rules underscore the importance of using private law mechanisms to achieve primarily public goals.¹¹³

In this regard, it is important to unpack what I mean by the “primarily public goals” of patent law. Professor Eric Claeys has argued that the analysis in my earlier work suffers from “bad conceptual priors” because patent law and traditional private law can serve “dual aims” — namely, aims sounding in social and private interests.¹¹⁴ I do not doubt as much. Nonetheless, patent law — at least in the United States — is premised on a utilitarian foundation. Even in other countries, the aims are essentially the same: to promote innovation.¹¹⁵ Although there are cogent arguments that patent law should sometimes be informed by individual interests — for instance, when deciding whether an inventor who has previously assigned all rights to her inventions to an employer is nonetheless deserving of compensation¹¹⁶ — the desirability of such individualized policy inquiries in patent law tends to be quite limited.¹¹⁷ On this basis, the theoretical frame for patent law, particularly remedies, should be etched in economic analysis.¹¹⁸ Although private law approaches may best solve these utilitarian concerns, as an analytical matter, it is critical to maintain the distinction between theory and practice so as not to lose sight of the end goal of promoting innovation.¹¹⁹ This is particularly so because in certain situ-

112. See Henry E. Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 *YALE L.J.* 1742, 1799–818 (2007); Sichelman, *supra* note 34, at 562–63; cf. Michael A. Carrier, *Cabining Intellectual Property Through a Property Paradigm*, 54 *DUKE L.J.* 1 (2004) (examining the “proptertization” of intellectual property and contending that the “property paradigm” suggests limits to the scope of IP rights). To be certain, as I have argued elsewhere, in some circumstances property and tort concepts in patent law may not be particularly useful and should be replaced by governance-centered approaches. See Sichelman, *supra* note 34, at 554–59.

113. See generally Smith, *supra* note 112.

114. Eric R. Claeys, *The Conceptual Relation Between IP Rights and Infringement Remedies*, 22 *GEO. MASON L. REV.* 825, 837 (2015) (“The purging criticism starts with two conceptual priors — non-IP private law is formalistic, while patent law is policy-driven. However inadvertently, the conceptual framing slants the normative argument. . . . If both sides of the comparison start from bad conceptual priors, however, none of the normative consequences that seem to follow really do.”).

115. See Sichelman, *supra* note 34, at 530–31; Alan Devlin & Neel Sukhatme, *Self-Realizing Inventions and the Utilitarian Foundations of Patent Law*, 51 *WM. & MARY L. REV.* 897, 901 (2009) (“Almost all commentators and judges agree that utilitarian considerations enjoy hegemonic status in patent jurisprudence, such that the purpose of the patent system is to induce the creation and commercialization of technology that otherwise could be easily appropriated.”).

116. See Henrik D. Parker, *Reform for Rights of Employed Inventors*, 57 *S. CAL. L. REV.* 603, 615 (1984).

117. See Sichelman, *supra* note 34, at 530–31.

118. See *id.* at 529–36.

119. See *id.*

ations — for instance, remedies for multi-component, patented products with high switching costs — traditional private law approaches may yield inferior results.¹²⁰

On the other hand, private law — torts, real property, contracts, and the like — regularly serve individual interests.¹²¹ Contrary to Claeys's assertion, such a view does not imply "non-IP private law is formalistic [such that] the framing makes non-IP private law seem undesirable."¹²² Rather, using tort law as an example — as Professors John Goldberg and Benjamin Zipursky astutely recognize — individual torts can be conceptualized as "private wrongs" beyond the law-and-economics view of mere "failure to use scarce resources efficiently."¹²³ The "private wrongs" view means that "[t]ortious wrongdoing always involves an interference with one of a set of individual interests that are significant enough aspects of a person's well-being to warrant the imposition of a duty on others not to interfere with the interest in certain ways. . . ."¹²⁴

Such a view can be extended to the individual interests involved in the obligations imposed by real property, contract, and other areas of private law, treating violations of these obligations as "intrapersonal wrongs."¹²⁵ As Professors Andrew Gold and Henry Smith insightfully suggest in their exposition of "inclusive functionalism" — in a vein related to Goldberg's earlier notion of "inclusive pragmatism"¹²⁶ — the

120. See Sichelman, *supra* note 34, at 554–59. One private law response may be that the "traditional" approaches to patent law remedies — namely, those that attempt to restore the status quo ante — inadequately reflect the multifarious ways for private law to remedy harm. For instance, Goldberg has proposed a "fairness" approach to tort damages that does not always attempt to make the plaintiff whole. See John C.P. Goldberg, *Two Conceptions of Tort Damages: Fair v. Full Compensation*, 55 DEPAUL L. REV. 435, 436–47 (2006). Henry Smith has suggested that equity has acted as a second-order, open-ended "safety valve" to remedy opportunism and similar problems, effectively modifying the baseline of first-order tort or other private law doctrines. Henry E. Smith, *Equity as Second-Order Law: The Problem of Opportunism* (Harvard Public Law Working Paper No. 15-13, Jan. 15, 2015), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2617413 [<https://perma.cc/7ZVF-73LU>]. I am not averse to fine-tuning patent law in such a manner, and perhaps private law means can fully accomplish patent law's generally public-oriented goals — a question I leave for another day.

121. See *id.* at 531–33; John C. P. Goldberg, *Introduction: Pragmatism and Private Law*, 125 HARV. L. REV. 1640, 1640 (2012) ("Private law defines the rights and duties of individuals and private entities as they relate to one another.").

122. Claeys, *supra* note 114, at 838.

123. John C.P. Goldberg & Benjamin C. Zipursky, *Torts as Wrongs*, 88 TEX. L. REV. 917, 927 (2010) (quoting Richard A. Posner, *A Theory of Negligence*, 1 J. LEGAL STUD. 29, 31–32 (1972)).

124. Goldberg & Zipursky, *supra* note 123, at 937.

125. *Id.* at 984–85.

126. Goldberg, *supra* note 121, at 1648–55 (describing "inclusive pragmatism").

“wrongs” approach is hardly “formalistic,” but rather rests on pragmatic aims implemented via traditional private law “concepts.”¹²⁷

Although the pragmatic aims of traditional private law and patent law often sound in the rhetoric of individual interests,¹²⁸ the theoretical aims of patent law generally do not.¹²⁹ Patent law certainly may have “dual uses” to serve social and individual ends, but it rarely presents fundamental concerns of “intrapersonal wrongs” in the way tort law does. In other words, patent law in practice may tend to sound in private law, but the “patents-as-*inherently*-property” mantra does not make for a coherent theoretical lens.¹³⁰ Rather, to borrow from — yet transform — Professor Robert Merges’s notion of base and midlevel principles in IP, the regulatory aim of innovation is the “foundation” of patent law upon which “midlevel principles” of common law property, contract, and tort may rest to serve everyday, pragmatic aims.¹³¹ As such, the assertion that my analysis turns on “bad conceptual priors” is unsound because patent law — unlike private law — can essentially be boiled down to utilitarian aims.

IV. CONCLUSION

Recent scholars have made great strides in advancing the perennial patents-prizes debate by largely dismantling the putative divide between the two means of advancing innovation. Yet, there remain important differences between the two systems regarding follow-on invention and commercialization. Specifically, the property rules of patent law provide unique benefits and impose unique costs that differentiate patent from prize systems. Nonetheless, my critique should not obscure the important ramifications of these scholars’ analyses. Rather than being stark alternatives, patents and prizes can often serve as complementary tools to enhance the social aim of innovation.

127. Andrew S. Gold & Henry E. Smith, *Sizing Up Private Law* (Aug. 9, 2016) (working paper), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2821354 [https://perma.cc/47YU-7EZR].

128. So while I do not agree with Goldberg and Zipursky that all torts are “wrongs,” I believe most are. *Cf.* Goldberg & Zipursky, *supra* note 123, at 937.

129. *See* Sichelman, *supra* note 34, at 529–36.

130. *See, e.g.*, Adam Mossoff, *Exclusion and Exclusive Use in Patent Law*, 22 HARV. J.L. & TECH. 321, 322 (2009) (“The status of patents is undisputed: patents are property.”).

131. ROBERT P. MERGES, JUSTIFYING INTELLECTUAL PROPERTY ix (2011).