

ANTICOMPETITIVE PATENTS: AN INCORPORATION SOLUTION

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Abstract

Given the plethora of studies and commentary regarding the anticompetitive effects of patent protection, this paper offers a novel solution—that patents be regulated with an incorporation protocol. Under the protocol, the patent is to be transferred to a special-purpose corporate vehicle, which would then issue tailor-made securities to the inventor of the patent and to potential buyers or rivalrous users. In this manner, the patent is split along the contours of three basic corporate instruments—heterogeneous capital structure, separation of ownership and control, and an independent legal personality. We show how incorporation allows for dissecting the patent into its underlying components, separating the different types of legal protection—Property Rule and Liability Rule. Furthermore, employing the incorporation protocol allows lawmakers to grant the inventor with exactly the type of protection envisioned by patent law without any excessive power. We show how this may be achieved, embedding our novel proposal within current rules and regulations of patent law (as well as those imposed by courts). Thus, by relying on known-and-tested corporate mechanisms, thereby incurring the inevitable agency costs associated with these mechanisms, transaction costs and risks can be minimized, enforcement can be improved, and the heterogeneous preferences of individuals can be easily accommodated. The Incorporation protocol thus allows for flexibility in protecting patents while facilitating efficient exchange.

1. Introduction

Patents confer monopoly, but are far from determinative of market power. They grant the patentee (under certain conditions) an almost-exclusive right to use the invention, market it, or otherwise exploit its potential, but say nothing about existing and potential real-world substitutes. Since market power stems from the willingness of consumers to pay for a specific product in lieu of others, patentees enjoy (close to) exclusivity as to the product marketed, but have no guarantee of monopoly rents (or indeed, profitability).¹

¹ See generally, Lemley, Mark A. *IP and antitrust: An analysis of antitrust principles applied to intellectual property law*. (2009); Hovenkamp, Herbert J., *Markets in IP and Antitrust* (September 1, 2012). Georgetown

Patents are presumed to advance innovation by creating incentives for innovation, as returns on R&D investments are protected for those successful in creating a marketable good. The economic goal of patenting is achieving profit through marketing the patented good, contracting for royalties on its use within other goods, or both. Profits accruing from such use depend on users not being able to circumvent the patent, thus while no promise of market power is made by the state, it obviously condones some level of monopoly profits on patented goods, as rewards granting ex post incentives to R&D investment.

Antitrust law is based on disdain for monopolies, most markedly for those relying on state protection. "Monopolies are odious, contrary to the spirit of a free government and the principles of commerce" stated the Maryland constitution, enacted in 1776. "Perpetuities and monopolies are contrary to the genius of a free State, and ought not to be allowed" reads the North Carolina Declaration of Rights. All-in all, colonial America made clear in numerous legal and public documents, that monopoly is an evil to be condoned by none, setting the backdrop for public support for antitrust law which continues to this day.² While popular sentiment is strong and pervasive, this hate for monopolies was initially directed against Royal Grants, monopolistic licenses granted by the Crown to exclusivity in certain trades or commercial endeavors. Not exactly the patent of today, but closer to it than to the form of privately-achieved market power which dominates current antitrust.³

Current patent law does not confer automatic market power, nor any form of economic advantage, but it allows for its creation, indeed fostering it. Despite this apparent clash between patent protection and antitrust, the two may be said to share similar goals. Both aim for fostering innovation, increasing economic growth, incentivizing the marketing of goods and services, and even creating the competition. While innovation and economic growth are oft-stated goals for both antitrust and patent law, competition is much more commonly associated with the former than the latter. Indeed, patents are often referred to as achieving other goals at the expense of competition. Nonetheless, patents, with the protection they create for marketable inventions, encourage R&D as well as bringing its results to the market, creating goods to be offered and fostering the competition for their creation. In this sense, patent law encourages "competition for the market" of the type discussed by antitrust treatments of network markets and natural monopolies.⁴ According to this formulation, the potential for future monopoly creates a race among market participants to be the first to attain it, based on a strong first-mover advantage that will grant interim profits. This race fosters competition in the development of necessary infrastructure, both

Law Journal, Vol. 100, 2012; Herbert Hovenkamp, INNOVATION AND COMPETITION POLICY: CASES AND MATERIALS (available at <http://www.uiowa.edu/~ibj/InnovationCompetitionPolicyCasebook.shtml>)

² Eric Daniels, 'Reversing Course: American Attitudes about Monopolies, 1607-1890' in *The Abolition of Antitrust* (Gary Hall, ed., Transaction Press, 2006)

³ Adi Ayal, *Fairness in Antitrust: Protecting the Strong from the Weak* (Hart Publishing, Oxford, 2014)

⁴ Richard Schmalensee, 'Antitrust issues in Schumpeterian industries' (2000) 90 *American Economic Review* 192

technological and of marketing techniques, in order to exploit the natural monopoly or winner-take-all network.⁵

What patent lawyers know well is incorporated in antitrust rules regarding network industries: that competition for the market induces ex ante investment, and ex post monopoly profits should be seen as the price to be paid by society in order to achieve the positive externalities associated with the initial race. Coupled with the market's natural tendency towards instability and occasional overhauls, one can expect a form of punctuated equilibrium.⁶ In such a state, every once-in-a-while one 'winner' is replaced by another, with constant innovation by both winners and losers - one trying to preserve current status quo, while the others try to overturn it.

Beyond competition for the market, patents create competition in the market as well, as each marketable patent creates the incentive to circumvent it, in finding alternative technological means to achieve similar results - or in finding substitutes not depending on the patented technology.

Despite our hope that patent and antitrust law complement each other and strive for social optima, there are numerous ways that patents may be used to impede competition. They could be used for direct exploitation, raising royalty rates and licensing fees in a way commensurate with classic analysis of monopoly and its deadweight losses⁷; they could be used to forestall development of competing products⁸; they could form the base of industry-wide standards, achieving monopoly profits for substitute and complementary products along the way⁹; and they could be used for plain old-fashioned extortion - threatening litigation in order to recover unwarranted pay-to-leave settlements¹⁰. Each of these has been extensively discussed in the literature, and the law continues to carve out exceptions to patent protection in order to prevent the more excessive abuses.

These exceptions, whether decided upon ex ante in patent rules or ex post in court proceedings regarding enforcement, cast doubt on the traditional formulation of patents as property rights allowing patentees ultimate discretion as to how, when, and if their inventions will be used. In many cases, patentees' power is limited, forcing them to license their patents at (court-determined)

⁵ Evans, David S., and Richard Schmalensee. "Some economic aspects of antitrust analysis in dynamically competitive industries." *Innovation Policy and the Economy, Volume 2*. MIT Press, 2002. 1-50.

⁶ Gersick, Connie JG. "Revolutionary change theories: A multilevel exploration of the punctuated equilibrium paradigm." *Academy of management review* 16.1 (1991): 10-36.

⁷ See generally, C. Bohannon and H. Hovenkamp, *Creation Without Restraint: Promoting Liberty and Rivalry in Innovation*, (Oxford University Press, 2011)

⁸ Compare Alan Devlin and Michael Jacobs, Anticompetitive Innovation and the Quality of Invention, 27 Berkeley Tech. L.J. 1 (2012) with Jonathan Jacobson, Scott Sher and Edward Holman, *Predatory Innovation: An Analysis of Allied Orthopedic v. Tyco in the Context of Section 2 Jurisprudence*, 23 Loy. Consumer L. Rev. 1 (2010)

⁹ Cary, George S., et al. "The Case for Antitrust Law to Police the Patent Holdup Problem in Standard Setting" *Antitrust LJ* 77 (2010): 913.

¹⁰ Leaffer, Marshall. "Patent Misuse and Innovation." *J. High Tech. L.* 10 (2009): 142; Henkel, Joachim, and Markus Reitzig. "Patent sharks." *Harvard Business Review* 86.6 (2008): 129

reasonable rates or refusing them injunctive relief unless they meet a (court-determined) test. In other words, patents are sometimes protected with a liability rule rather than a property rule.

In what follows we build upon the dual nature of modern-day patents, accepting them as mixed bundles of property and liability protection. We argue that current law could be better explained, and much better enforced, if patents were incorporated and their uses delineated ex-ante using traditional corporate instruments which we outline below.

2. Property and Liability in Patents

The fact that patents can be used to both foster innovation and impede it requires no introduction. A plethora of studies, both theoretical and empirical, tackled the pro-competitive versus anti-competitive elements of patent law, most focusing on case-specific attributes which determine the actual effect of legal protection. A general theme can be established, according to which patents and their legal protection are generally considered useful to society. Nonetheless, recent years have seen a rise in patenting, and more so, in patent litigation (and the threat thereof), to the point where many scholars seek ways to limit patent protection in various ways, so that its excess does not dwarf its success. Indeed, one can easily derive a general point regarding patent protection—that optimization, rather than maximization, is the key for successful regulation.

This article focuses on one general theme regarding optimization of patents—the distinction between property-rule protection and liability-rule protection.¹¹ Under property rules, the owner of an asset is entitled to solely determine its use, profiting thereof by self-utilization, sale, licensing, or forgoing its use altogether. Under liability rules, the owner is protected only as far as requiring court-determined compensation if others impede the owner's use. In the patent protection context, this easily translates into injunctive relief for those protected by property rules, while liability grants the owner damages alone. Injunctions are the legal system's way of announcing that the owner alone gets to determine if and how the asset gets used. They are traditionally seen as equitable relief, signifying that the protection is not merely economic, but stems from a belief in the owner's rights as meriting direct intervention. As equitable relief, though, injunctions are also subject to courts' assessment of the plaintiff's conduct, often raising issues regarding good faith and the ways in which injunctive relief will be used in practice.¹²

The distinction between property rules and liability rules dates back to the seminal paper by Calabresi and Melamed in the early 1970's, which has generated

¹¹ Guido Calabresi & A. Douglas Melamed. Guido Calabresi & A. Douglas Melamed, Property Rules, Liability Rules, and Inalienability: One View of the Cathedral, 85 HARV. L. REV. 1089, 1092-93 (1972)

¹² See discussion of *Ebay v. MercExchange* below.

seemingly endless scholarship in diverse legal fields.¹³ In the context of intellectual property and patent law, it has also been applied extensively, with most commentators pointing out that judicial decisions often tout property-rule protection, while using liability rules as seeming exceptions, despite their proliferation and prevalence. In 2006, the United States Supreme Court handed down a landmark decision which stated very clearly that injunctive relief for patents is subject to a four-pronged test, where plaintiffs failing to satisfy one or more of the conditions will be limited to court-determined damages.¹⁴ In other words, property-rule protection requires stringent conditions, while liability rules govern all remaining cases of patent infringement.¹⁵

The application of the property/liability distinction to patent law is far from new, and scholars have offered numerous arguments for preferring one type of protection over the other, depending on the relevant circumstances.¹⁶ Courts typically do not overtly use the property/liability terminology in their rulings, yet apply the same framework when deciding whether to grant injunctions (applying a property rule) or limit the plaintiff to damages (liability protection). In *eBay v. MercExchange*, the Court clarified the limited role injunctions should play in patent protection, relegating injunctive relief to subordinate status. Injunctions, originating in equity, were defined as the exception rather than the rule, even where patents are concerned.¹⁷ The role of liability protection for patents was thus clarified and expanded.

¹³ For a comprehensive overview of the literature, see WARD FARNSWORTH, *THE LEGAL ANALYST: A TOOLKIT FOR THINKING ABOUT THE LAW* 188-97 (2007); Henry E. Smith, *Property and Property Rules*, 79 N.Y.U. L. REV. 1719, 1731-48 (2004). The literature that followed was initially focused on resolving nuisance disputes and defining real-property rights, but led to applications in many other legal contexts as well. See, e.g., recent examples: Keith N. Hylton, *Property Rules and Defensive Conduct in Tort Law Theory*, 4 J. TORT L. 1 (2011) (defensive conduct in tort law); Keith N. Hylton, *Some Notes of Property Rules, Liability Rules, and Criminal Law* in RESEARCH HANDBOOK ON THE ECONOMICS OF CRIMINAL LAW ____ (Alon Harel and Keith N. Hylton (eds.), 2012) (criminal law); Troy A. Rule, *Shadows on the Cathedral: Solar Access Laws in a Different Light*, 2010 U. Ill. L. Rev. 851 (solar access laws); Amnon Lehavi, *Intergovernmental Liability Rules*, 92 VA. L. REV. 929 (2006) (land use controls).

¹⁴ That test requires a plaintiff to demonstrate: (1) that it has suffered an irreparable injury; (2) that remedies available at law are inadequate to compensate for that injury; (3) that considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction. See, *Ebay Inc. v. MercExchange, L.L.C.*, 126 S. Ct. 1837, 1839 (2006).

¹⁵ The Court stated that these conditions are part of the general law of equity, governing injunctive relief generally, and applying in equal force to the Patent Act. *Id.* at 1839

¹⁶ See, e.g., Daniel A. Crane, *Intellectual Liability*, 88 Tex. L. Rev. 253 (2009); James Bessen & Michael J. Meurer, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk* (2008); Mark A. Lemley & Philip J. Weiser, *Should Property or Liability Rules Govern Information?*, 85 TEX. L. REV. 783 (2007); Lemley, Mark A., and Philip J. Weiser. "Should property or liability rules govern information." Tex. L. Rev. 85 (2006): 783; ., ROBERT P. MERGES, *Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 Cal. L. Rev. 1293(1996) ;

¹⁷ See, H. Tomas Gomez-Arostegui, *Prospective Compensation in Lieu of a Final Injunction in Patent and Copyright Cases*, 78 Fordham L. Rev. 1661 (2010), defining the implicit compulsory licenses that courts craft when refusing injunctive relief, especially in the case of ongoing royalties. For a more general review of compulsory licensing and its benefits, see, Joseph A. Yosick, *Compulsory Patent Licensing for Efficient Use of Inventions*, 2001 U. Ill. L. Rev. 1275.

The four-pronged test espoused by the Court in *Ebay* included a general ‘public interest’ limitation, which can be applied to anti-competitive patent assertions. Well before *Ebay*, other exceptions to the rule of patent enforcement were used to limit anti-competitive patent use. For example, a patent owner seeking to impede competition might attempt to leverage the patent or condition its licensing on simultaneous purchases of unpatented products. In all these cases, both old and new, courts refused to sanction anti-competitive patent enforcement, implicitly deciding that patents are not always protected by property rules. Had property rules been the norm, owners of patents would be justified in denying licenses or conditioning them on additional purchases, regardless of competitive effect. Property rules are clear-cut and non-contextual: the owner gets to determine the way his product is used, if at all. An owner’s decision not to use his asset is as legitimate as a decision to market it, license it, or even destroy it altogether. When conditions on self-determination are introduced, the underlying property right is relegated to lesser protection, as suddenly the owner must justify a supposedly-autonomous decision on how the asset is employed.

When courts find the owner’s right exists, but refuse to grant injunctive relief, damages are imposed, thus liability rules govern the interaction. Needless to say, when others know that infringement results in compensation according to judicial determination, the governing liability rules effect ex-ante decisions regarding infringement and contractual negotiations between the relevant parties.¹⁸ The fact that courts determine ex-post what level of protection applies to valid patents, shows not only that property rules are considered insufficient, but that liability rules occasionally require ex-post tailoring according to the context of the case at hand.¹⁹

Prior to *Ebay*, most discussions of liability-rule protection in patent law referred mostly to FRAND commitments undertaken in standard setting organizations (SSO’s).²⁰ There, a firm owning a standard-essential patent is expected to make a windfall gain once the standard is accepted industry-wide. Licensing is expected to flourish once the industry coalesces and the patent becomes a necessary gateway for production of all relevant goods. The patent-owning firm is thus expected to agree to forgo the right to unilaterally determine license conditions, in exchange for the benefits accruing from the expansive demand resulting from the standard-setting process.²¹ FRAND commitments can be

¹⁸ See, *Ebay v. MercExchange*, at 1842 (Kennedy, J., concurring) (“[A]n injunction, and the potentially serious sanctions arising from its violation, can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent.”)

¹⁹ Katherine J., *Patent Fair Use 2.0* (May 7, 2011). *UC Irvine Law Review* (“The lower courts’ responses to the *Ebay* ruling demonstrate that district court judges, at least, find it useful to have some mechanism for ex post tailoring at their disposal”, Text at note 82).

²⁰ FRAND commitments entail the patent owner pre-committing to agree to licensing at Fair, Reasonable, And Non-Discriminatory terms, i.e., not to refuse access nor to charge the highest price attainable. Since what constitutes a “fair and reasonable” price is debatable, FRAND commitments essentially entail deference to an outside party (court or committee) determination of price – precisely the definition of liability rules.

²¹ Swanson, Daniel G., and William J. Baumol. “Reasonable and nondiscriminatory (RAND) royalties, standards selection, and control of market power.” *73 Antitrust Law Journal* 1 (2005); George S. Cary, Larry C. Work-

undertaken in a variety of forms, but they all include relinquishing the patent owner's basic right to determine access unilaterally - forgoing property-rule protection.²²

We see, then, that property and liability rules are intertwined in patent law, both ex-ante and ex-post. Ex ante, FRAND commitments and predictable limitations on injunctive relief signify liability rules will be enacted, affecting contractual negotiations regarding patents. Ex post, courts reserve the right to tailor patent protection to the case at hand, making liability rules less predictable, but still a governing norm that must be taken into account.²³ The preference for liability rules is likely to increase, given that patent filings are ever-rising, and the resulting patent thickets make infringement an almost-certain event.²⁴ The use of patent power to exclude competitors and monopolize markets is actionable under antitrust law.²⁵ Yet it is clear that not all patents confer market power, and even where they do, enjoying returns on a valid patent is part of the incentive mechanism promoting innovation and driving investment in developing patents ex-ante. Ex ante tools for protecting legitimate patent power should thus be combined with ex post analysis separating the wheat from the chaff.

We thus turn to our proposal: regulating patents with a-priori governance structures via incorporation. As we show below, incorporating the patent facilitates ex-ante determination of its property and liability components, in a way that enhances predictability and foreknowledge of the relevant prices governing future uses.

Dembowski, and Paul S. Hayes, *Antitrust Implications of Abuse of Standard-Setting*, 15 GEO. MASON L. REV. 1241 (2008)

²² Property rule protection allows for holdup, which is considered by many to be both inefficient and unfair. See generally, Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEXAS L. REV. 1991 (2007). Others dispute this claim, see, John M. Golden, *Commentary, "Patent Trolls" and Patent Remedies*, 85 TEXAS L. REV. 2111 (2007); J. Gregory Sidak, *Holdup, Royalty Stacking, and the Presumption of Injunctive Relief for Patent Infringement: A Reply to Lemley and Shapiro*, 92 MINN. L. REV. 714 (2008); Geradin, Damien and Layne-Farrar, Anne and Padilla, Jorge, *The Complements Problem within Standard Setting: Assessing the Evidence on Royalty Stacking* (January 8, 2008). *Boston University Journal of Science and Technology Law*, Vol. 14, No. 2, 2008; Damien Geradin & Miguel Rato, *Can Standard-Setting Lead to Exploitative Abuse? A Dissonant View on Patent Hold-Up, Royalty Stacking and the Meaning of FRAND* 3 Eur. Competition J. 101 (2007). For replies to the criticism leveled at the royalty stacking paradigm, see, Lemley, Mark A., and Carl Shapiro. "Reply: Patent holdup and royalty stacking." (2007).

²³ See also, Dan Burk and Mark Lemley, *The Patent Crisis and How the Courts Can Solve It* (2009), making a more general argument in favor of tailoring patent law to industry characteristics. Relatedly, Maureen A. O'Rourke, *Toward a Doctrine of Fair Use in Patent Law*, 100 Colum. L. Rev. 1177 (2000), argues for ex-post exemptions from patent infringement, depending on the type of use employed, in a manner similar to that employed in copyright law.

²⁴ See, Daryl Lim, *Patent Misuse and Antitrust: Rebirth or False Dawn?* 20 MICH. TELECOMM. & TECH. L. REV. 299 (2014); Beard, T. Randolph; Kaserman, David L., *Patent Thickets, Cross-licensing, and Antitrust*, 47 Antitrust Bull. 345 (2002); Shapiro, Carl. "Navigating the patent thicket: Cross licenses, patent pools, and standard setting." *Innovation Policy and the Economy* (MIT press, 2001). 119-150;

²⁵ Mark A. Lemley, *A New Balance Between IP and Antitrust*, 8 Southwestern Journal of Law and Trade in the Americas 237 (2007); Joseph Farrell, John Hayes, Carl Shapiro & Theresa Sullivan, *Standard Setting, Patents, and Hold-Up*, 74 ANTITRUST L.J. 603 (2007); Thomas F. Cotter, *Patent Hold-up, Patent Remedies, and Antitrust Responses*, 34 J. CORP. L. 1151, 1194 (2009); Christopher Hardee, *Single-Firm Opportunism and the FTC's Rambus Defeat: Implications for Section 2 of the Sherman Act*, 18 TEX. INTELL. PROP. L.J. 97, 103-04 (2009);

3. An Incorporation Solution: The Mechanism Explained

3.1. Pre-patents: A land-use example

Given the ubiquity of patents, and their multiplicity of uses and effects, we seek a method which would allow for differentiation between levels of their legal protection. The incorporation solution we propose allows for granting property rule protection to some aspects, while limiting others to liability rule protection. The choice between levels of protection can vary on a case-by-case basis, with some aspects determined by the private actors involved, and some determined by the state. The private determination of how to best protect the patent will be discussed under the voluntary regime in Section __. The level of state protection depends also on public-interest parameters, which will be discussed under the non-voluntary regime in Section __.

In order to better introduce the novel incorporation solution, we shall first show its application in a non-patent scenario, e.g. in real-property land disputes. This relatively simple scenario will exemplify how the mechanism works, and thereafter we shall apply it to the more complex patent scenario.

Imagine a rural landscape, with a majestic view of open fields and grassy hills upon which several farms and villages are interspersed. A developer comes along, who sees the open space as a great opportunity. Several scenarios come to mind, from keeping the natural beauty, through allowing the construction of a few holiday venues, and up to letting the developer build up his dream-village, complete with shopping malls and high-rise condominiums.

Assume the local residents enjoy their current view and relative seclusion, and most oppose any construction whatsoever. The developer views the open space as a resource, wasted by the current residents' backwardness, while the residents take his view on modernity as offensive to their sense of well-being. Both sides have an interest in the property, though their differing views on how best to exploit it create tensions that require legal intervention.

Two obvious extreme solutions are available: on one extreme, the state might grant the prior residents voting rights in the relevant planning commission, so that development is prevented through a democratic process. On the other extreme, the state might prevent resident intervention based on the fact that they own their own land, and not the empty tracts between the separate farms and villages. In other words, the legal regime might view the residents as either owners or non-owners, with diametrically opposed implications on their ability to influence the future of their surroundings.

Between these two extremes lies a continuum of possibilities which posit the residents as neither dictators nor subjects of the situation, but allows them

some influence on how the conundrum is solved. Such possibilities might allow them to limit the extent of development (but not prevent it altogether), to gain some of the material advantages from development, or more generally—to be considered as partners to be consulted and reasoned with. These intermediate possibilities give standing and influence to the residents, without vesting them with veto power or ignoring them altogether.

An incorporation solution grants us a mechanism by which all of the different governance structures might be implemented, where the manner in which corporate instruments are used allows for flexibility in application. At its most basic form the incorporation solution works as follows: consider the land in the open-space example as the entitlement to be incorporated. A corporation is formed, with its sole asset being the tract of land up for development. What is to be done with this land will be determined by the officers of the corporation, whose choice is governed by the corporate by-laws on one hand, and the general meeting of stockholders on the other. Corporate by-laws are pre-determined and form the external boundaries of permissible action, while stockholders vote on how best to make use of corporate property - within the game-rules specified in the by-laws.

At one extreme, the undeveloped land is state property, with local residents uninvolved in determining its use. Under this scenario, the state essentially sells all stock of the land-corporation to the developer. Corporate by-laws encompass the duties towards the state, such as planning laws, taxation, etc. The developer can then determine the land's best use and ignore residents altogether.

At the other extreme, the land belongs to the residents, who are vested with the corporation's stock and can decide if and under what conditions to allow development. They could sell the stock, incorporate limitations on permissible uses into the by-laws, or simply refuse any change to their property.

Both these extremes view the tract of land as one cohesive entitlement granted to one of the two interest-groups. Both are possible (indeed, prevalent) in the real world, and both have little to gain from incorporation. The incorporation mechanism begins to shine between these extreme views, within the continuum governing intermediate solutions. Where the different interest groups are all considered relevant to the situation at hand, we need a more flexible solution giving each an indeterminate say on future land use.

3.2. Corporate Law Mechanics

Our mechanism calls for forming a corporation with the relevant tract of land as its sole asset. Corporate articles of association and by-laws (hereinafter: The by-laws) are structured to allow initial commercial development of the land, but not the extensive uses which are considered harmful to current residents. The corporation's common stock is then sold to the developer, with the cash receipts

infusing the corporate treasury. Since, in the intermediate solutions considered here, residents are viewed as legitimate stakeholders whose interests should influence development, they are granted a preferred stock, which vests them with two distinct advantages: first, they are first to gain from corporate profitability, and second, they get to determine the price charged for allowing further development. The first aspect stems from preferred stockholders being the first to benefit from corporate dividends, the second stems from preferred coupons being a step towards changing the corporate by-laws which determined the extent of development.

In order to understand how this works, let us review the basics of preferred share ownership. When preferred shares are issued, they are accompanied by a preferred coupon, which is the extent of remuneration necessary to 'buy out' the preferred stockholders. Until this coupon is satisfied, that is until corporate profits are sufficient to cover the amount listed, common stockholders can receive no dividends. Furthermore, if the corporate by-laws limit the uses to which the land asset can be put, officers of the corporation cannot fulfill the developer's wishes without renegeing on their legal obligations towards the corporation. The result is thus that the developer must first satisfy the residents' interests before moving on to his own.

Using a corporation to achieve this result is different than merely limiting development, along several dimensions: First, on the enforcement side, corporate law vests officers with obligations towards the corporation, and makes them personally liable in cases of infraction. These obligations go beyond the contractual basis that the developer and residents might have worked out, relying on officers' agency and corporate law to prevent breach. Second, corporate by-laws are pre-determined to specify precisely which uses are allowed and which are forbidden, preventing future disputes that might arise in an under-specified contract. Third, corporate law pre-determines the method of changing any ex-ante limitations, as by-laws can be voted on and adjusted according to changing needs. Still, until the preferred coupon is paid in full, the common stockholders are indebted to the preferred ones, so that the latter can prevent any diminution of their rights. Fourth, when the coupon is satisfied, the preferred stockholders are officially separated from the company, allowing unimpeded development. Fifth, and perhaps most important, the preferred coupon is determined ex-ante by the residents themselves, allowing them to state the extent of their preference for non-development.

The preferred coupon essentially states the price residents are willing to take in exchange for their acquiescence to further development. They are the ones to state this price ex-ante, essentially limiting the corporation (and the developer purchasing its common stock) until the coupon is satisfied. Setting the price too high will lead to the corporation never reaching the required profitability, thus never paying out the residents' demands. Setting the price too low will lead to excessive development without the residents being fairly compensated for their loss. Residents thus have an incentive to price the coupon

just right—allowing development only in those cases where its benefits truly outweigh the costs they bear.

It should be noted that in some cases, residents will prefer open space to monetary compensation, and that too, is a legitimate result. Where the psychic and social costs of development are too high, preventing it can be a viable and optimal solution. In other cases, the problem is that some residents have a high valuation of the open space, while others prefer money to landscape. In these cases, corporate law allows for free trade of the preferred shares, allowing those with high valuation to purchase the shares from those with low valuation, essentially benefitting both.

In short, the incorporation solution allows for flexibility in application, so that different residents set different prices, and the internal mechanism of trade among them equalizes opportunity and transfers the shares to their most efficient users. In the end, the preferred coupon is set by those willing to “put their money where their mouth is”—those paying for the right to set it at a high level due to their strong preference for non-development. Residents preferring money to landscape are able to sell their shares to those willing to pay for unencumbered views.²⁶

The developer, on the other hand, knows in advance precisely to what uses he may put the land (e.g., what type of construction is allowed) after purchasing the common stock. He also knows the future price to be paid for lifting the limitations set out in the corporate by-laws, and can plan accordingly. The separation between common and preferred stock allow for purchasing one set of uses today, and delaying the purchase of further uses until profitability is sufficient to pay its price. In other words, the developer gets both the benefit of planning and knowing in advance the price of more extensive uses to which he might put the land, and the opportunity to separate between phases of development in order to base action on cash flow. The separation between uses thus both facilitates business planning and lowers the financial costs of its implementation.

3.3. Incorporating—Property Rules vs. Liability Rules

The incorporation solution facilitates exchange and allows for divergent views to be accommodated, but its advantages go beyond the direct parties involved. In real property, as in intellectual property, different levels of protection exist. In the land-use example, residents might be allowed to prevent the construction of high-rise buildings, but not impede commercial construction. Their

²⁶ More generally, the mechanism allows for trade of the option to set the preferred coupon, facilitating transfer of rights from low-valuation users to high-valuation ones. Furthermore, where deemed appropriate, outside parties could enter the fray and buy out some or all of the concerned residents, thickening the market and introducing additional players.

voting rights might be used to prevent turning their town into a city, but not to prevent the paving of new roads or construction of highways or bridges. Even when resident interests are protected, this protection might take the form of property rules (requiring resident approval before a measure is taken), or liability rules (requiring compensation, but not granting residents a right-of-refusal).

The distinction between property rule protection and liability rule protection is one of the most-discussed in the literature, and pervades all types of property. In a previous paper, we showed how incorporation might infuse this distinction with new vigor, thus here we merely outline its main aspects.²⁷

Property rule protection vests owners with the right to solely determine how, and if, their asset is used. An owner might prefer to be the only one able to use the asset (exclusivity) or might prefer non-use altogether. If I own my house, I can live in it, rent it out, or leave it empty without relinquishing my hold on it. If ownership is protected via liability rules rather than property rules, the owner may no longer prevent unwanted usage, but is still compensated for any unwanted intrusion. In the land-use example above, residents vested with property-rule protection may prevent development altogether, but if their interests are protected by liability rules, their sole claim is to compensation.

The incorporation mechanism separates between property and liability protection via the different types of stocks involved. When the developer purchases the common stock, he exchanges money for the right to use the land in ways specified in the corporation by-laws. The residents cannot prevent such use, thus even if they are compensated for it, their protection is limited to liability rules - at least for the basic usage allowed. The preferred shares, on the other hand, come with veto power regarding extended usages the developer might hope for. Such uses (e.g., high-rise buildings outlawed by current by-laws) require by-laws to be changed, which will only occur after satisfying the preference coupon. In other words, the residents' acquiescence must be bought at the price they specified ex-ante. The ability of residents to prevent uses they abhor, or set their own price, reflects the property-rule protection they enjoy.

The land-use example thus shows how some of the residents' interests are protected via property rules, while others are protected via liability rules. The extent of protection is set out the game-rules specified by legal rules generally, and corporate by-laws specifically. The incorporation mechanism itself is value-neutral, allowing the entitlement to be protected as pure property, pure liability, or anything in between. Deciding the extent and type of protection is an ideological choice, best situated in the underlying law governing the question at hand. Once the nature of the rights is specified, the incorporation mechanism can be used to implement them by crafting the by-laws accordingly. Anything allowed by the by-laws is essentially protected by liability rules, as the purchaser of common stock pays in cash for these rights. Anything requiring preferred stockholders acquiescence vests them with property-rule protection, as they may

²⁷ Adi Ayal and Yaad Rotem, *Incorporation Rules*, 10 *REVIEW OF LAW & ECONOMICS* 1 (2014).

state their own price (when setting the preferred coupon) or refuse altogether by setting a price higher than anyone would be willing to pay. Corporate by-laws are thus mutable by buying out the preferred stockholders, at the price of their choice.

3.4. Incurring Agency Costs

Of course, protecting any entitlement with an Incorporation Rule generates costs of its own. These costs can be generally described as the agency costs associated with managing and controlling the entitlement within the framework of a corporation.²⁸ However, the efforts to minimize these agency costs are streamlined and regulated by corporate law norms, in a manner which suggests that the costs associated with Incorporation Rule protection may *occasionally* be lower than the costs associated with any other form of protection—be it property rule, liability rule, or any combination thereof. Obviously, the social planner's final decision as to which form of protection to choose for a given entitlement in any particular context depends on a comparison of the relative costs associated with each. For example, the protocol may be employed in any case in which a beneficial deal between the owner of the land and a potential buyer might be forgone, or some of its potential surplus may be lost, due to a combination of market failures, bargaining costs, emotional involvement, uncertainty as to future needs, and current liquidity problems.

4. Incorporating Patents

4.1. Legal Personality, Separation of Ownership and Control

Upon its approval, the patent is to be incorporated in a special corporate vehicle. The holder of the patent would therefore be the corporate vehicle and not the inventor or any patent troll. This state of affairs is to remain constant until such time that the patent expires.

Having become the owner of the patent, the corporate vehicle is to operate under rigid articles of association and to employ managers as fiduciaries to the corporation to manage the patent. Within the confines of such mandate, the corporate vehicle's management will decide who the users are that may exploit the patent and what consideration should be given in exchange. Of course, management of the corporate vehicle is not interested in maximizing the interests of neither one of the parties alone involved but those of the group.

²⁸ See ADOLPH A. BERLE AND GARDINER C. MEANS, *THE MODERN CORPORATION AND PRIVATE PROPERTY* (1932). One could also remind of the transaction costs associated with incorporation itself, but these seem to be negligible.

The articles of association will delineate that the patent can be employed by potential users in accordance with an industry-standard, or it can be used in a specific, non-standardized manner. The articles of association will also mandate that the corporate vehicle charge users of the patent an amount of x for employing the patent in accordance with an industry-standard, or an amount of y_1 (to be set by the inventor) for any non-standardized usage. Users will be issued by the corporate vehicle appropriate securities (as will be explained immediately). This combination generates a liability rule protection for using the patent in a standardized manner, and simultaneously a property rule protection for using the patent in a non-standardized manner. Of course, in the former case, where liability rule protection is awarded to using the patent in accordance with an industry-standard, the price of taking the entitlement from the patent holder is set by a third party (e.g., a court of law). The award structure therefore resembles the FRAND system. In contrast, in the latter case, where property rule protection is awarded to a non-standardized usage of the patent, the price for using the patent is set by the patent holder himself, thereby allowing him to insist on receiving the true value of the patent.

If interested in preserving the existence of patent trolls, lawmakers may allow such trolls to acquire from the corporate vehicle a security (a preferred share, as will be explained in the next section) in exchange for x . This security will not allow its holder—the troll—to make use of the patent but to promote its use by others. If a troll is indeed allowed to join, the corporate vehicle will charge users of the patent an amount of x for employing the patent in accordance with an industry-standard, or an amount of $y_1 + y_2$ (y_2 having been set by the troll) for a non-standardized usage.

4.2. Forming a Capital Structure

The corporate entity is to issue securities—a preferred share to the inventor, carrying a coupon of x in case the patent is to be employed by a user according to a general industry-standard, or y_1 —if the patent is to be employed by a user in a non-standardized manner. While the amount of x is to be determined by a court (granting a liability rule protection to the inventor), y_1 is announced, in advance, by the inventor herself (granting her a property rule protection).

Should lawmakers be interested in allowing patent trolls to participate, then in exchange for payment of x to the corporate entity, a patents' troll may join-in and be issued a lower-ranking preferred share, carrying a coupon in the amount of y_2 , as announced by the troll itself when issued the security.

A potential user expressing an interest in the patent, or exposed as unintentionally infringing it, is to be issued an even lower-ranking security (e.g., common share) with voting rights—thereby allowing the patent to be employed in a specific manner as dictated by that user—in exchange for having the stream of

profits from the usage flow through the corporate entity. Otherwise, the user is to be strictly enjoined from employing the patent and the corporate entity is restricted to withholding the patent from that user.

Profits generated by the patent-based product are therefore streamed first to the inventor up to the amount of y_1 , then to the troll up to the amount of y_2 , leaving the user as the residual owner. Of course, payment in full of any of the preference coupons terminates the security to which it attaches.

This specific capital structure aligns the incentives of the corporate vehicle's management to maximize the total welfare of all parties involved. Since the role of the residual owner of the corporate vehicle is saved for the user, or users, of the patent, management's incentives are aligned to maximize these users' interests. Of course, en route to doing so, management of the corporate vehicle actually works to maximize the interests of the patent holder, and the troll when relevant, to receive the amount of y_1 and y_2 .

4.3. A Complementary Taxation Mechanism

Obviously, the context of intellectual property raises the unique problem of involuntary use of the property. i.e., the patent. For example, a certain producer may discover, or claim to have discovered, the fact of having infringed a patent only in retrospect. However, forcing such a producer to pay y_1 (or y_1 and y_2) set by the inventor (or by the inventor and the troll) may incentivize them to announce an excessive coupon (e.g., gazillion dollars...).

Still, it is possible to harness such opportunistic behavior of inventors and trolls by taxing them *in advance* for any coupon they announce.²⁹ For example, under such regulation, announcing a coupon of \$1 million as y_1 would require the inventor to deposit in advance a sum of \$200 thousand (20% of \$1 million) in order to be issued with the preferred stock.

Alternatively, if the "tax" amounts to a sum which the inventor cannot afford (say, \$200 thousand), a superior preferred share can be issued (to the state), carrying a preference coupon in that amount. In this case, the inventor will not be able to enjoy any proceeds from her patent until the superior preference stock, carrying the preference coupon in the amount of the "tax", is satisfied. On the other hand, wealth constrained inventors will not be excluded from announcing whichever value they believe their patent to be worth.

²⁹ See, e.g., [Fennell][Parchomovsky and Bell]

5. Discussion

As seen above in section 2, current patent law is rife with limitations on the exercise of patent power. Patent owners might conceive of the patent as their (intellectual) property, but the protection afforded by law is a mix of property and liability rules, limited ex-ante and applied ex-post by judges not always willing to grant injunctions. The precise mix between property-rule and liability-rule protection for patents is determined by ex-post judicial discretion regarding injunctive relief as well as ex-ante limitations imposed by patent offices or legislatures.

Incorporating patents is in many ways similar to incorporating land. In both cases there is an underlying asset whose legal properties are determined by legislatures and courts prior to incorporation, and in both cases our mechanism is flexible enough to accommodate any determination of rights and obligations, or how they are allocated between the relevant parties. In other words, the decision which components of the property right are allocated to whom, as well as the contours of protection afforded, is external to the mechanism suggested here. The incorporation solution allows for implementing any division of rights, being a procedure which streamlines implementation rather than a determination of substantive law.

Given that patents have both property rule and liability rule components, as shown above, incorporating them allows for distinguishing between the different aspects in both protection and ownership. Assume, for example, a patent allowing for property-rule protection of one aspect (e.g., determination of product price), and liability-rule protection for another aspect (e.g., royalties from SSO partners). The incorporation mechanism would separate between the two by having corporate by-laws specify all liability-protected uses as allowable ex-ante, and all property-protected uses subject to authorization.³⁰

The corporation would issue two types of shares: common stock and preferred stock. Common stock allows for basic use of the asset, essentially what does not require additional authorization. Thus common stock allows use subject only to payment of the determined stock price, equivalent to liability rules. The price of common stock shares is determined during issuance and incorporation, which could be determined by the relevant third party (e.g., court, patent office, SSO) employing the mechanism and deciding on incorporation. In other cases, the owners of the patent determine the price for which they are willing to sell the rights to basic usage.³¹

³⁰ Authorization could entail the type of shareholder vote required to change the by-laws, or requiring a specific vote by preferred share owners to endow the officers of the corporation with authority to employ the property-protected uses.

³¹ In section __ below, we separate between voluntary uses of the incorporation mechanism and involuntary uses imposed by legally binding rules or institutions. Voluntary uses allow patent owners to define ex ante

Preferred shares are granted to those whose interests are deemed worthy of property-rule protection. For example, using a standard-essential patent for production of standard-fitting products might be protected by a liability rule, allowing all (or all SSO members) to market such products subject to paying the patent owner royalties deemed fair and reasonable. Using the same patent in order to produce unrelated products, might not be subject to the same legal determination. Preferred shares are redeemable only by paying the preference coupon attached to them, and until this coupon is satisfied, profits from exploiting the patent cannot be distributed to common stock shareholders. Corporate by-laws may state that any vote to change them is subject to preferred shareholder approval, thus granting them veto power. In the example above, this means that even those owning the common stock and able to produce standard-fitting products are forbidden from employing the same patent on standard-irrelevant products.

Property rule protection implies veto power on the use of the asset, and control over the price at which it is sold or leased. Such is the power granted to preferred shareholders in our example. The price may be determined ex-ante by forming the corporation with a set preference coupon, and it may be left to future negotiations by stating an unrealistically-high amount. In the latter case, the preference coupon will never be satisfied at face value, but preferred shareholders retain the right to unilaterally change it at a future date.

Incorporation may be used for one patent at a time or as a method for pooling patents (such as when an SSO wishes to grant all standard-essential patents similar treatment). It may also be used ex-ante, when granting the initial patent, or imposed ex post, by a court finding infringement but limiting injunctive relief to some cases but not others. Below, we address the different issues arising in each context.

5.1. Levels of Voluntariness

The Incorporation mechanism may be used with all sorts of patents in all sorts of contexts. As a purely voluntary mechanism, a corporation might be formed around a patent in order to facilitate division of rewards between contractual partners, or to decide at the outset how future cases will be decided. For example, consider an innovative entrepreneur partnering with an investor bankrolling the operation. They might decide that royalties up to a certain level will be used to pay off costs involved in development and return the cash investment, and only profits thereafter will be distributed between the partners equally. In such a case, the corporate by-laws will stipulate that profits may be distributed to common stock shareholders only after the preference coupon is

which components or types of use are protected by liability and are allowed upon payment, and which require separate authorization.

satisfied, and the coupon would be set at the amount invested (or the portion thereof that the partners agreed would enjoy preferential treatment).

In cases where the incorporation mechanism is used to allocate use-rights, rather than cash-flow, the by-laws might stipulate that certain types of use (e.g., production and sales) are allowed ex-ante, and others (e.g., licensing) require authorization. In such a case, preferred shares would be allocated to the party whose authorization is required, allowing by-laws to be changed only after securing their agreement. Another option is setting the price of such agreement ex-ante, such as allowing the patent to be used in this way, but having the preference coupon set at the price determined when incorporation takes place. Practically, this would allow full exploitation of patent rights, but only after the pre-set price is paid in full.

Knowing in advance what the price will be for future uses of a patent, allows for predictability and facilitates business planning. One might initially set out a line of business based on one type of use, but keep as a future option the ability to switch from one business model to another. For example, one might start out by producing the patented product and selling it in the marketplace, and then decide to move on to licensing, producing complementary products, or other economic activity built on the patent's use. If the follow-on activity depends to any extent on the initial one, complementarities exist between stages of development, and investment in the initial stage depends on future expectations of reaping rewards in the second stage as well. A firm deciding how much to invest in the first stage will be wary of potential hold-up when it decides to expand or shift into second-stage activity, as the patent owner will by then know that sunk costs have been expended, and the firm has much to lose if authorization for the second stage is not granted. The problems accompanying such hold-up are familiar to students of institutional economics, and they apply here as well.³²

In order to prevent hold-up, and the fear of hold-up which lowers ex-ante investment, the patent owners might use the incorporation mechanism in order to set a price ex-ante, and specify it in the preference coupon. First-stage use of the patent is allowed once the common stock price is paid, and second-stage usage is allowed once the preference coupon is satisfied. Prices are set by patent owners at the time of incorporation, and all involved can take them into account, confident that hold-up will not occur. Such a set-up streamlines operations and lowers investment costs ex-ante, in a way which benefits all involved, as transactions costs and uncertainty are mitigated.

The fully voluntary regime thus has patent owners employing incorporation in order to allow differential pricing, differential use, or even in order to defer payment on second-stage use. This last benefit allows for purchasing patent use in stages, paying for initial usage via the common stock, and moving on to second stage usage only later on, when market conditions or accumulated cash flow

³² _Williamson TCE etc.

allows. Needless to say, deferring payment reduces capital costs, reducing the total price paid for patent use, and incentivizing investment ex ante.

Employment of the incorporation mechanism need not be completely voluntary. Legislatures, patent offices, or courts might intervene and distinguish between types of use subject to property-rule protection, and others protected only by liability rules. In such cases, the contours of incorporation depend not only on the patent owners, but are given by extant legal circumstances. FRAND commitments might not stem from SSO membership, but by refusal of courts to offer injunctive relief. In such cases, common stock would be pre-defined as purchasable at a set price, while only property-protected uses would be vested with the preferred share owners.

Ex-ante distinction of property rule versus liability rule protection is made possible via the incorporation mechanism and the different types of shares issued. Clarifying ex-ante which uses are subject to which type of protection, and at what price, offers significant benefits to all involved. Patent owners know the limitations of their property rights and can plan accordingly, would-be users know the regime governing the patent and the price thereof, and all involved save on the considerable litigation costs and associated uncertainty.

The share structure of the patent corporation can go well beyond the two-tier property/liability distinction. Corporate instruments are diverse and flexible enough to allow for multiple distinctions between planned and future uses of the patent, as well as divide revenue streams and investment opportunities between multiple actors. The incorporation mechanism allows for separating between different types of risks and potential rewards, and thus facilitates all sorts of planning and reduction of risk and costs. Incorporating our mechanism into legal distinctions made by patent offices and courts, allows for clarifying the policy goals associated with different circumstances. Anti-competitive uses of patent enforcement can be separated away from legitimate enforcement, by both involuntary legal distinctions enforced by courts, and by voluntary transactions between business partners and SSO's. Ex ante distinctions are obviously superior when possible, as they prevent problematic issues and facilitate planning. When these fail, ex-post interventions are possible, and worthwhile.

5.2. The public and private benefits of patent corporations

The incorporation mechanism offers multiple benefits to current patent law. First and foremost, the current situation is outweighed by uncertainties and ex-post determinations of the contours of protection each patentee can expect. The standards guiding injunctive relief are vague, the role of patent assertion entities ("patent trolls") is unclear, and patent litigation is often cumbersome in practice

and uncertain in result.³³ Using the incorporation mechanism is not a cure-all, but allows for clarifying ex ante which aspects of the patent will be subject to which ex post enforcement regime. FRAND commitments can be defined within corporate by-laws, and pricing can be set by the issue price of common-stock shares. Patent hold-up can be avoided by having the preference coupon known ex ante, thus even users mistaken in their assumption that common stock will suffice, will know the future price of potential infringement. This facilitates business planning, but moreover, clarifies the manner in which patent law will be enforced and the risks and rewards associated with each patent. The rewards are both private and public, as reduction of uncertainty increases investment and growth, and the rule of law is strengthened when the public can anticipate the legal ramifications of any particular action.

The incorporation mechanism also facilitates differential treatment of partner-corporations versus external entities. For example, the literature regarding patent assertion entities (“patent trolls”) is filled with suggestions to limit their ability to seek injunctions and cap the royalties they collect.³⁴ Here, we make no judgment on the wisdom of such suggestions, but the mechanism allows for incorporating such distinctions, where appropriate. For example, an SSO or industry-wide organization might create a common corporate structure usable for all partner-initiated patents. Such a structure would allow partners to purchase common stock (allowing pay-for-use on common terms), relegating non-partners to contractual determination of terms. In this way, firms within the same industry would be able to know ex ante the terms guiding patent use, without affording external entities the same consideration. Even within the industry or SSO, some uses could be set apart, requiring contractual deliberation and owner assent, by defining the by-laws and setting an appropriate preference coupon.³⁵

Private benefits include the ability of partners in patent or product production to set a menu of uses, defined ex ante and priced accordingly. Revenue streams from the different uses could be pre-planned and distributed among partners according to their individual circumstances and agreements. Furthermore, not all patent uses are commercially-determined, as some innovators and entrepreneurs have emotional investments as well, going beyond price and financial success. In such cases, patent owners with a particular subjective preference for self-production or a need to control particular uses, would be able to set them aside using the preferred shareholder’s prerogative. The preference coupon could be set to a higher amount taking into account psychic costs and

³³ A famous case-in-point is *Rambus Inc. v. FTC*, 522 F.3d 456 (D.C. Cir. 2008), which would have been avoided had the use of the patents in question been pre-determined using the incorporation solution we propose.

³⁴ See the debate between Lemley and Shapiro, *note 22 above*, on the one hand, and Golden, *note 22 above*, on the other. See also, Daniel Culley, Malik Dhanani and Maurits Dolmans, “Learning from Rambus – How to tame those troublesome trolls”, 57 *The Antitrust Bulletin* 117 (2012), arguing that competition law is sufficient to reel in excessive power held by some “trolls”, allowing patent law to remain plaintiff-neutral.

³⁵ Such ex ante determination would also solve *Rambus*-type problems and do away with the fear of litigation and its associated costs. Situations such as *Broadcom Corp. v. Qualcomm Inc.*, 501 F.3d 297, 310 (3d Cir. 2007) could be pre-determined either by SSO’s requiring all members’ patent pools being similarly incorporated, or by courts enforcing the liability regime ex post.

rewards, or even set prohibitively high, to prevent such uses altogether. Outsiders observing an unreasonably-high preference coupon would know that such uses require separate negotiations, or are to be avoided altogether.

Preference coupons, as mentioned above, can be transferable. This facilitates a market for those uses set apart in the by-laws as requiring preferred shareholders' assent, allowing initial patent owners to capitalize on their invention while letting others buy the preferred coupons for cash today, in exchange for the right to set these uses' future price. Thus, the incorporation mechanism allows for market processes which optimize patent use, while financing innovators who prefer the early and certain rewards over future and uncertain—but higher—profits.

Incorporation brings with it some procedural requirements and associated costs, but these are usually insignificant. The costs of forming a corporation pale in comparison with those of registering a patent, and especially in comparison to the costs of economic and legal uncertainty that incorporation solves. Standard-form corporations are available, and patentees can choose from a variety of internal mechanisms which were explained above. If the incorporation mechanism is to be applied widely, more standardized corporate structures are sure to be offered by SSO's, patent-intensive firms, and even courts. The latter become relevant when deciding ex post how to solve a patent issue that was not resolved ex ante. Courts deciding which uses deserve injunctive relief are essentially separating them into the category to be protected by a preference coupon. When ruling on the extent of FRAND commitments, they are essentially deciding the common-stock rights which can be assimilated into corporate by-laws. Ex ante determination is preferable of course to ex post intervention, but even a court ruling can be incorporated according to the mechanism above, in order to set clearly the legal regime governing the different uses and users, and prevent future follow-on litigation.

To those unfamiliar with corporate law, the incorporation mechanism might seem foreign and perhaps daunting. From such a perspective, the incorporation solution might seem intricate, cumbersome, or costly. Yet nothing could be further from the truth. Incorporation is a standard-form endeavor, requiring little more than filling out a few forms and paying a modest legal fee. The costs associated are slim, yet the rewards are potentially great. As far as legal planning goes, the benefits to both private actors and aggregate society are overwhelmingly larger than the small initial effort required for implementation. Cases where individualized adaptation are necessary might require some more planning than the standard-form variety, yet the long-term rewards are even larger, as specific and subjective circumstances are even more prone to unwanted legal ex post determination. The incorporation mechanism prevents courts from applying a standard solution to non-standard problems, allowing patent owners to pre-determine the regime under which they will be governed.

6. Conclusion

Patents are by definition a manifestation of new technology. But they too sometimes require Legal technology to complement them. Three basic, synthetic legal tools—corporate capital structure, separation of ownership and control, and the separate legal personality of a corporation—can improve the regulation of patents by reduce transaction costs, streamlining the protection and trade of patents, and encouraging the owner of a paten, inventors or trolls, to tell the truth about the value of the patent for them even when they would prefer to conceal it.