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A Comparative Study of Patent Infringement Remedies Related to Non-Practicing Entities in the Courts of Canada, the United Kingdom, and the United States

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**A COMPARATIVE STUDY OF PATENT INFRINGEMENT
REMEDIES RELATED TO NON-PRACTICING ENTITIES IN
THE COURTS OF CANADA, THE UNITED KINGDOM, AND
THE UNITED STATES**

ALEKSANDAR NIKOLIC

**A THESIS SUBMITTED TO
THE FACULTY OF GRADUATE STUDIES
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Abstract

This work examines the scope of non-practicing entity behavior and whether the debate on remedies can lead to changes that encourage the goals behind a patent system. Innovation is often the stated goal but the significance of innovation commercialization is often ignored. Furthermore, there has been an increase in business models that involve alternate means of monetizing patents, not all of which were contemplated in the purpose of the patent system. Using the goals of the patent system as a backdrop, this work provides an overview of the impact of remedies available to courts in Canada, the United Kingdom, and the United States on patent systems. The courts have the tools in each jurisdiction to grant remedies appropriate to the infringement. However, systemic limitations in each patent system often prevent the courts from reviewing disputes.

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Introduction

Growing economic reliance on intellectual property development and use has led to a significant rise in patent applications, patent grants, and patent litigation. Increases in patent grants have led to more patents in the marketplace, not all of which can be used to put the underlying innovation into practice. Each patent comes with rights conferred by the grant, regardless of the patent owner's use of the underlying innovation. The combination of strong patent rights and increased patenting volume has encouraged business practices that exploit the rights that come with a patent rather than use the underlying innovation. Instead of using patents to create goods and services for consumers, a variety of businesses have begun to actively use patents to not only obtain licensing revenues but also to employ strategies that may actually be anti-competitive. The non-practicing entity has become a hotly debated concern in jurisdictions where intellectual property is becoming a significant economic driver. Some scholars have begun to see non-practicing entities (NPEs) as a concern because of a perceived negative impact on innovation, on the pricing of goods and services, on investment, and even on invention marketing. There is a perception that current efforts to encourage the intellectual economy are creating regimes that encourage business models that prize patent accumulation and rent-seeking rather than invention or invention marketing.

Non-practicing entities are not something new, but in light of increasing business development relying on patented innovation non-practice, a debate has started over the merits of the current system in encouraging innovation versus patent accumulation and rent-seeking. This has been fuelled by what is perceived to be exorbitant court awards to non-practicing companies at the expense of companies that are actually producing goods. A debate has ensued between groups that see nothing wrong with current strategic use of patents and those that see it as detrimental to the goals of a patent system. NPEs, and a subset known as patent trolls, are at the heart of the debate over the proper functioning of patent systems.

NPEs have been a particular concern in the U.S., where the specter of the patent troll has raised debate about the workings of the entire patent system. The volume of patents issued has increased dramatically over the past twenty years, leading to innovation. However, this has also led to creative patent drafting and a robust trade in patents as a commodity, separate from the underlying innovation. Troll success has also encouraged companies to come up with new business models that defend against troll practices, and also to find new ways to exploit the

patent system. As trolling has become more sophisticated and specialized, large companies have not only created defensive systems to combat this behavior but they have also created their own business models that emulate and expand on trolling behavior. Offensive and defensive tactics have exploited areas of the patent system that were previously little used, developed, or even considered.

A patent system exists to encourage innovation. It has always been held that the strong property rights that come with a patent, particularly the right to exclude, would encourage innovation and benefit society. But it seems that there has been an inadvertent consequence where rent-seeking has increased at the expense of commercialization. The proliferation of patents has led to the creation of markets, market-makers, auctions, and a general increase in patent trade. Commercialization has always been assumed as part of the “innovation” goal but commoditization and trade are not the same as invention commercialization. While patent trade has increased, that does not mean that the innovations represented by the patents are being put into use; nor does it mean that the rights granted by a patent have been used to increase general social benefits. The legal system has been used effectively in both offensive and defensive situations to obtain nuisance settlements or questionable remedies. These dispute resolutions potentially disrupt society and border on punitive, rather than compensatory. Thus the grant of strong property rights in a patent has led to a robust patent trade and licensing regime. However the innovation supposedly stemming from the increase in patenting and increased rights is questionable. These strong property rights have led to a significant patent trade through auctions, cross-licensing, and aggressive enforcement; yet the questionable public benefit of strong rights has raised only limited discussion.

In the U.S., there has been a recent focus on limiting remedies available to NPEs. Scholars, commentators, and practitioners have been debating the merits of establishing a remedy system that treats different entities differently when granting relief for patent infringement. The U.S. debate has moved to other jurisdictions but the debate has been on the merits of U.S. approaches rather than an analysis of business practices within these other jurisdictions. Rather than learning from the U.S. experience and being proactive, other jurisdictions have remained silent on the operation of NPEs within their borders.

This work will look at patent infringement remedies in the U.S., Canada and the United Kingdom.¹ Through a comparison of patent infringement remedies and approaches in these three common law jurisdictions, this work will detail the benefits of flexibility when courts are settling disputes that involve at least one non-practicing entity. All three have very similar approaches to patent law and property law but with sufficient distinctions to warrant examining the merits of these differences in relation to NPEs. Since economic considerations are part of the examination, comparing Canadian, U.K., and U.S. approaches to remedies is an attempt to gauge the success that NPEs have had in establishing their business models in small, medium, and large economies. Much of the scholarly work related to non-practicing entities has come from the U.S. This work will examine some of the issues that exist in the three patent systems that courts either face or may face. While NPE business models may be prevalent throughout the U.S., that does not mean that these businesses will not expand into other markets to take advantage of the world-wide embrace of increasing intellectual property protection. There are already indications that NPEs are tailoring business methods to take advantage of the laws of different jurisdictions.

This work will first review approaches taken by scholars to patent infringement remedies, particularly economic analysis of legal remedies and the impact these remedies have in relation to the goals of the patent system. The economic debate has centered on whether a property-based or a liability based remedy system provides greater incentive and results that more accurately reflect market-oriented compensation. The debate also touches on the impact of patent trolls and how best to limit their impact on the patent system, or whether it is even desirable to limit trolling.

The second part of this work is intended to establish a starting point for analysis by illustrating the theoretical debates over idealized remedy regimes in comparison to the existing legal framework for patent remedies. It starts by determining what a patent system is designed to achieve. Patents have been deemed property but because of their intangible nature they differ from physical property. Starting with an initial definition of property, ideological approaches to property are placed next to the laws established by all three jurisdictions to determine the extent of property rights that exist in a patent under their respective laws. Once the extent of property

¹ Since the vast majority of patent infringement cases take place in London, this work will look at English courts (including England and Wales). Within the United Kingdom, Scottish and Northern Irish courts are the only other courts that can hear patent disputes. While they are competent to handle patent issues, very few cases come before the Scottish or Northern Irish courts. Therefore they are not considered in this work. The term England or English courts are heavily used and have been used interchangeably with U.K. or U.K. courts.

rights that come with a patent are defined, the remedies available to patent owners when there is a transgression of those rights are reviewed. Remedies fall under either property rules or liability rules and through this grouping, the remedies available in all three jurisdictions are reviewed. Current remedies are well tailored to dealing with patent infringement and courts have considerable flexibility in applying these remedies to balance the demands of the patent owner with the goals of the patent system.

The third part of this work examines various NPE business models and how the system encourages these models under its current structure. Trolls have been vilified by a significant group of commentators and it is only natural to start by determining which patent holders fall under that term. In light of the emergence of patent trolls, inventor motivations to obtain a patent are reviewed. Based on empirical data, it appears that the patent system provides very different encouragement than what is theoretically intended. While marketing is a goal of the patent system, inventors often have several reasons for getting a patent only one of which is marketing the underlying innovation, and it is often not the primary reason. This is followed by an examination of what is meant by patent “practice” and the difficulties that exist in commercializing or marketing a patent. In light of the varying motivations inventors have to obtain a patent and the difficulties that exist in commercializing a patented invention, the business methods of patent trolls are examined. It appears that trolling practices have encouraged other aggressive patent use tactics that have received far less scrutiny. These tactics may even be deemed “legitimate” practice. It also appears that trolls provide a benefit to a segment of inventors, and may also provide services which encourage certain patent system goals while thwarting others. Other NPEs have embraced business strategies which encourage patent accumulation but do little to encourage commercialization or follow-on innovation, and these practices may even hamper competition. Despite concerns over patent trolls, their business models have found a niche within the current system. Concern over trolling practices outside the U.S. is muted but there are indications that NPEs have made attempts to enter the Canadian and the U.K. markets.

The fourth section examines the flexible remedy approach, highlighting some of the benefits while pointing out the limitations of both extreme and one-size-fits-all approaches. It starts by reviewing the flexible approach to injunction awards illustrated by the U.S. Supreme

Court in *eBay v. MercExchange*.² Despite a strong leaning towards property remedies in all three jurisdictions, the respective courts all have powers to provide fact-dependent remedies. Powers to grant flexible remedies is followed by a review of the feasibility and accuracy of court calculated damages under a liability theory rather than a property theory. The section also examines the benefits as well as the limitations of property remedies and analyzes the debate among scholars as to whether property remedies lead to overcompensation, under-compensation, or something else.

Part four further considers the limitations on court powers in upholding the goals of a patent system. It reflects, as well, on other ways the patent system encourages NPEs. NPEs take advantage of several gaps in the patent remedy system, and their practices rely on these gaps to obtain revenues. Current economic analysis when it comes to NPEs focuses on a specific goal rather than all the goals of a patent system, and it fails to differentiate among the motivations of the patent seekers. In order to accurately perform an analysis of the system, scholars should start with an accurate accounting of its goals, followed by an examination of various business models and motivations to patent. Courts have considerable powers when granting and tailoring remedies to meet the goals of the patent system while appropriately compensating patent owners. A flexible approach to remedies that incorporates all these factors will best determine the appropriate compensation for a patent owner, in light of the rights held and the harm inflicted.

In summary, courts have considerable powers to grant appropriate remedies. Under current patent laws, there are gaps that will encourage certain business models that may be different from what was intended when the patent regime was established. While it appears that patent trolls and other forms of NPEs have created business models that are likely to remain for the foreseeable future, such patent owners do not necessarily have to receive the same compensation or same remedy as would a patent holder who is successfully embodying the goals of the patent system. Despite the powers available to the courts, there are systemic issues which cannot be addressed through legal remedies and which require serious scrutiny if the goals of the patent systems are to be achieved.

² *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006).

Chapter One

Literature Review

The following literature review is an examination of the patent infringement remedies available to a non-practicing patent holder. The literature is from the United States where a particular non-practicing entity, known as the “patent troll”, has been the subject of significant concern when it comes to the proper functioning of the patent system. The material covers three areas. The first part will provide a very brief overview of the varying reasons for the existence of a patent system, including the objectives and goals sought in establishing one. Next, patent trolls, their business models, and the impact that these entities have on the patent system are considered. Remedies are often intertwined with any discussion on patent trolls. The third part of this literature review will focus on infringement remedies. Scholars have divided patent remedies into what are termed property rules and liability rules. This section examines the spectrum between pure property and pure liability rules. While no one seems to call for either spectrum extreme, several approaches to remedies are reviewed. Robert Merges calls for strong property rules with some flexibility. Roger Blair and Thomas Cotter prefer strong property rules but with greater accuracy for damage calculations. Peter Menell recognizes the property aspects of patents but concludes that there are sufficient differences between intellectual and real property to warrant a more flexible approach to patents. Finally, Mark Lemley and Carl Shapiro call for damages in lieu of injunctions when non-practicing entities are involved.

Purpose of a Patent System

Before examining the impact that changes to infringement remedies can have on the patent system, the objectives for establishing a patent system need to be clear; and those objectives, as understood by the commentators, should be articulated. According to Robert Merges, Peter Menell, Mark Lemley and Carl Shapiro, the purpose in creating a patent regime is to foster innovation.³ Roger Blair and Thomas Cotter expand upon this statement by indicating that a patent system should maximize social values by subtracting social costs from social benefits.⁴ The social benefits are to encourage discovery and dissemination of new ideas.⁵ The

³ Robert Merges, *The Trouble With Trolls*, 24 Berkeley Tech. L.J. 1583, 1589 (2009); Peter S. Menell, *The Property Rights Movement’s Embrace of Intellectual Property: True Love or Doomed Relationship?*, 34 Ecology L. Q. 713, 722 (2007); Mark A. Lemley and Carl Shapiro, *The Patent Holdup and Royalty Stacking: Reply to John Golden*, 85 Tex. L. Rev. 2163, 2173 (2007).

⁴ Roger D. Blair & Thomas F. Cotter, *Rethinking Patent Damages*, 10 Tex. Intell. Prop. L.J. 1, 44,45 (2001).

social costs are: 1) the “systemic costs of processing, enforcing, and maintaining patent rights”; 2) the potential of existing patents to inhibit invention, by raising the cost of follow-on inventions; 3) duplicated efforts by multiple inventors; and 4) the existence of “deadweight” losses arising from patent monopoly rights.⁶ The social benefit of giving exclusive rights to a patentee should outweigh the social costs and any existing patent system should do this better than any alternate schemes.⁷

The purpose of a patent system is not just to encourage innovation for the sake of innovation but to foster innovation which will benefit society. Few of the authors go into detail about the purpose for having a patent system; however the social considerations indicated by Blair and Cotter cover both a broader purpose and a greater number of stake holders in a patent system than those indicated by the other authors.

An inventor receives a patent in exchange for public disclosure of the invention. Innovation is embodied through the patent requirements. In addition to disclosure, elements such as non-obviousness and utility must also be satisfied before a patent can be granted to the inventor.⁸ The incentive is derived from a form of property right in the patent, giving the inventor certain privileges.⁹ These privileges include the right to exclude others from making, importing, using, or selling the invention. Merges focuses on factors that encourage innovation but ignores any social costs. Blair and Cotter examine the risks that exist for the inventor when embarking on the innovation process, and concede that there must be a sufficiently high inducement to offset the risks.¹⁰ However, they also note that protections to one stakeholder must be balanced against the social costs that arise if incentives actually stunt innovation and result in extreme monopolistic pricing that affects consumers.

The Non-Practicing Entity (Patent Trolls)

There is a particular group of non-practicing entities, known as patent trolls, that have been accused of abusing the patent monopoly and acting contrary to the goals of the patent system. Robert Merges writes that, while patent trolls are acting within the law, their actions are

⁵ *Id.*, at 45.

⁶ *Id.* at 46.

⁷ *Id.*

⁸ Merges, *Supra note 3*, at 1589.

⁹ *Id.* at 1588-89.

¹⁰ Blair & Cotter, *Supra note 4*, at 48.

detrimental to innovation and the patent system as a whole. Timo Fischer and Joachim Henkel performed an empirical study of several firms that they considered to be patent trolls. They, too, deem any benefits provided by patent trolls be outweighed by their detriments. However, Fischer and Henkel also concede that patent trolls have an effective business model and they are likely to retain their niche within the patent system.

Robert Merges defines a patent troll as entity that engages “in inefficient, socially wasteful patent transactions.”¹¹ Trolls often refer to themselves as market makers, indicating that they provide a beneficial function within the patent system. In this case, market-making is considered a function where an entity purchases an undervalued patent to market it to other firms who are unaware of its existence. Merges indicates that this is a false definition used by patent trolls to give legitimacy to their actions.¹² In his estimation, there is no social value to these actions and they only serve to encourage litigation. Trolls are often middlemen in a transaction. They purchase a patent from one entity and then find entities already using the patented invention, from which they can extract a royalty payment in exchange for continued use of the patented invention. They use the threat of litigation to obtain payments from entities that already practice the patent. While trolls like to be referred to as market-makers or middlemen, they do not create markets that facilitate patent trade, nor are they necessarily resellers of patents. They are merely seekers of royalties. This raises the question whether there is something wrong with finding value in something overlooked by others?

Merges believes that these transactions do not contribute to the innovation process and actually impede innovation through “rent-seeking” behavior that often rises to the level of blackmail. Rent-seeking occurs when a property owner does not exploit the owned property, leaving others to use it in exchange for a fee.¹³ Thus, the owner “rents” the property to others to use and exploit. In the patent world, this behavior occurs when an inventor receives a patent for his/her invention but does not practice that invention, instead exacting payments from others who already use and exploit the invention. The patent in this case, does not encourage innovation for social benefit, but merely as an instrument for collecting rents.¹⁴ Merges considers this a

¹¹ Merges, *Supra* note 3, at 1588.

¹² *Id.*, at 1599-1600.

¹³ *Id.*, at 1587-88.

¹⁴ *Id.*, at 1587.

strategic use of gaps in the laws where the patent holder uses the threat of litigation to procure payments from a manufacturer or socially productive entity.¹⁵ This behavior is becoming more extreme as it becomes a regular strategic maneuver.

Increases in rent-seeking actually discourage innovation. With complex technologies, a troll that obtains a patent for a relatively minor part can threaten the already producing technological manufacturer with an injunction unless the manufacturer consents to pay a substantial royalty.¹⁶

Propertization provides a significant incentive for inventors to innovate. However, the growing treatment of patents as property, independent of the underlying innovation, has also led to increased rent-seeking behavior. While rent-seeking is not necessarily bad, if it is combined with transactions that diminish and suppress innovation then it may be a detriment to society.¹⁷ Nonetheless, Merges contends that the use of property law theory for patents is still preferable despite its potential to encourage rent-seeking. Increased innovation is the goal of the patent system and this incentive is necessary despite increased rent-seeking. Merges cites Adam Smith, calling for a distinction between productive and unproductive transactions where self-interest should be tempered by “ethical virtues such as justice and prudence.”¹⁸

Merges also posits that people who argue that trolls are performing a genuine market-making function, by acting as middlemen to transactions between sellers and buyers, ignore the impact of such transactions. These middlemen, unlike those in other industries where they help to develop and market, or facilitate commercialization, do not perform their own research and development, nor do they add to the existing innovative pool. Trolls merely increase the volume of litigation. If trolls actually serve a function by encouraging patent trade, that may be a useful function. However, if trolls call themselves middlemen but merely purchase and sue, that is another matter.

¹⁵ *Id.* at 1592-1603.

¹⁶ Merges, *Supra* note 3, at 1590-91.

¹⁷ *Id.* at 1603-07.

¹⁸ *Id.* at 1602.

Merges contends that trolling behavior is a form of blackmail, an act with no social virtue or benefit.¹⁹ Blackmail is a wasteful economic transaction because a party uses resources to get information and in exchange for suppressing that information, receives a payment from another party.²⁰ While Merges may liken trolling to blackmail, a patent is part of the public record. Trolls trade in patents that have not yet been enforced against parties that are allegedly practicing the underlying innovation described in the patent, with the intent to seek rent from the allegedly practicing parties. The threat of litigation and a potential injunction forces a payment from the alleged infringer. There may be some similarity to blackmail in the potential injunction that threatens to deprive the alleged infringer of a revenue source; but more significantly, it threatens to make society poorer by removing a potential product from the marketplace or raising the cost of production and ultimately, the cost of the product. However, a better analogy may be that trolling is really champertous behavior since a troll is less interested in depriving society of the patented product and more interested in being paid for someone's use, by using injunctions and the courts as negotiating levers.

Historically, the courts have been effective in placing limits on troll-like behavior. These judicial decisions were interpretations of the existing law, but they prevented more extreme solutions from being implemented through new legislation resulting from public outcry.²¹

Timo Fischer and Joachim Henkel take a closer look at patent trolls through a statistical analysis of data collected to examine and clarify characteristics of trolling behavior.²² Their study concludes that: 1) patents obtained by trolls are generally broad and have a high likelihood of being infringed; 2) the patents purchased are generally part of "thickets" and have a high substitution cost; and 3) patents sought by trolls tend to be higher quality than those of practicing entities, resulting in a higher probability that patent validity will be upheld by a court.²³ The

¹⁹ *Id.* at 1599-1602.

²⁰ Merges, *Supra note 3*, at 1600-01.

²¹ *Id.*, 1583, 1607-1609.

²² Timo Fischer & Joachim Henkel, *Patent Trolls on Markets for Technology - An Empirical Analysis of Trolls' Patent Acquisitions*. at 3, Paper presented at "Opening Up Innovation: Strategy, Organization and Technology" at Imperial College London Business School, June 16 - 18, 2010, <http://www2.druud.dk/conferences/viewpaper.php?id=501834&cf=43> (last visited Dec. 12, 2010); see also http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1523102&rec=1&srcabs=1498390 (alternate source last visited Dec. 12 2010). Their research determined that there are patent trolls operating throughout the European Economic Zone and not just in the United States.

²³ *Id.*, at 2.

study by Fischer and Henkel did not delve into business method patents (which are available in the United States) or situations that involved relatively weak patents but were resolved out of court.

Fischer and Henkel define trolls "as individuals or firms that seek to generate profits mainly or exclusively from licensing or selling their (often simplistic) patented technology to a manufacturing firm that, at the point in time when fees are claimed, already infringes on the [troll's] patent and is therefore under particular pressure to reach an agreement with the [troll]."²⁴ Trolls should be distinguished from other non-practicing entities such as pure research firms or licensing firms that seek to license to others before infringement is detected.²⁵ However, they recognize that the term "troll" may cause confusion because their definition encompasses not only entities who hide their patents until they are infringed but also inventors who are failed licensors who later enforce patent rights once they discover infringement.²⁶ Fischer and Henkel further point out that trolls may also have a positive effect because these entities may force large corporations to respect the rights of small or financially constrained inventors.²⁷ Thus it seems that trolls may be reviled because of their willingness to litigate but they may be nonetheless beneficial for a segment of patent owners. However, Fischer and Henkel still denounce trolling behavior because its detriments outweigh its benefits.

Patent trolls are active buyers and sellers of patents, purchasing or licensing patents in an effort to obtain revenues through reselling the patent or through licensing agreements.²⁸ This behavior challenges the belief that increased patent rights improve market functions for technology.²⁹ What distinguishes trolls from other purchasers is that they are entities interested in purchasing a patent solely for its exclusion rights and not for the underlying technology.³⁰ Furthermore, transactions involving trolls do not generally concern technology transfer but rather the selling or licensing of patent rights to an entity already using the patented technology.³¹

²⁴ *Id.* at 3. Fischer and Henkel use the term "troll" and "shark" interchangeably throughout the paper.

²⁵ *Id.*

²⁶ *Id.* at 4.

²⁷ Fischer & Henkel, *Supra note 22*, at 4.

²⁸ *Id.*, at 3.

²⁹ *Id.*

³⁰ *Id.*

³¹ *Id.*

These patent-only transactions are part of the business model used by trolls.³² Purchasing patents for enforcement and not commercialization is what has caused consternation among the patent community.

Fischer and Henkel proceed to clear up some misconceptions about patent trolls. There is a generally held belief that patent trolls purchase patents of dubious quality but their most commonly used business strategies would indicate otherwise.³³ Three business strategies or combinations of strategies are commonly used by trolls: 1) an injunction-based strategy; 2) a damage-based strategy; or 3) a cost-switching based strategy.³⁴ An injunctive strategy employs a low-quality patent to successfully induce an infringer to settle if a potential temporary injunction would immediately affect the infringer, but defensive measures to invalidate the weak patent take years.³⁵ A damage-based strategy requires a higher quality patent since the troll is going after a monetary award from a court and invalidity proceedings to overturn the patent are generally part of such a suit.³⁶ A troll uses a “switching cost-based” strategy because it would be costly for the infringer to switch to a non-infringing alternative.³⁷ This strategy exploits the high cost of moving to use of a non-infringing product through the threat of a potential injunction award by the courts. The latter two strategies require a full trial and eventual judicial remedy. They take time and higher quality patents are required because a troll will have to overcome invalidity proceedings in order to be successful.³⁸

Patentee friendly injunctions and high damage awards encourage the patent troll business model.³⁹ Since courts, especially in the U.S. rarely take into account an infringer’s cost in switching to a replacement technology due to an injunction, Fischer and Henkel argue that this can lead to excessive damages particularly in cases where a non-infringing technology can easily be used.⁴⁰ Excessive damage awards are common, as shown by the “holdup” analysis conducted by Mark Lemley and Carl Shapiro, described below. Fast and easily obtained pre-trial or

³² Fischer & Henkel, *Supra note 22*, at 3.

³³ *Id.*, at 4.

³⁴ *Id.*

³⁵ *Id.*

³⁶ *Id.*

³⁷ Fischer & Henkel, *Supra note 22*, at 4.

³⁸ *Id.*

³⁹ *Id.* at 4.

⁴⁰ *Id.* at 5; In Canada, the courts actually do take switching into account when an account for profits is being calculated.

preliminary injunctions increase a troll's leverage over the infringer, thereby increasing the potential to obtain high royalties.⁴¹

A patent troll is more likely to acquire a patent with a broad scope because there is a greater chance that such a patent will be infringed, whereas a practicing firm is less concerned with a broad scope since its primary concern is to prevent others from making similar products.⁴² Since one strategy employed by trolls is to attack infringers who face a high cost of employing alternate technologies, a troll will likely focus on purchasing patents with a "high-degree of overlap" or those that are a part of complex technologies, or those patents that are part of thickets.⁴³ Over the last decade larger companies have not only diversified the business-side of their intellectual property but they have also learned how to defend themselves from trolls and use tactics to exploit competitors. Yet, companies are still not immune from troll attacks.

Despite recent efforts by courts, Fischer and Henkel believe that the patent troll business model will continue to be successful. They feel it will continue because 1) determining patent boundaries is complicated, making it difficult for inventors to predict whether a new product will infringe; 2) there are an ever increasing number of patent application filings; 3) not all countries have made legal changes to curb trolls; 4) laws requiring patent practice may easily be circumvented by creating nominal production facilities; and 5) the switching cost-based strategy is not affected by any of the current legal changes.⁴⁴

The business models which trolls employ favor the troll over practicing entities when it comes to identifying and purchasing patents.⁴⁵ Patent trolls are adept at identifying suitable patents and extracting value, as both are core competencies of the troll's business model.⁴⁶ By contrast, practicing firms are generally in the business of using the patented invention and will extract value from patents by 1) preventing imitation, 2) cross-licensing, or 3) licensing.⁴⁷

⁴¹ *Id.* It should be noted that preliminary injunctions are rare in Canada and the U.K. and are becoming increasingly rare in the U.S. because in most cases, money damages will make a wronged patent holder whole, especially when the patent holder is a non-practicing entity.

⁴² Fischer & Henkel, *Supra note 22*, at 7.

⁴³ *Id.*

⁴⁴ *Id.* at 5-6.

⁴⁵ *Id.* at 6.

⁴⁶ *Id.*

⁴⁷ Fischer & Henkel, *Supra note 22*, at 6.

Obtaining full value from a patent will generally involve some licensing.⁴⁸ Attempts to receive royalties may be difficult because without an amicable agreement another practicing entity may counter-sue for other product infringement, or the attempted licensor may be in a business relationship with the potential licensee.⁴⁹ Trolls are not vulnerable to either type of counter-suit.⁵⁰ While firms that obtain patent can be said to be in the business of using the patented inventions, there is a push to patent as much as possible, creating an abundance of patented innovations but no clear use for these innovations, leading to greater efforts by companies to find commercial value for their intellectual property portfolio.

Remedies and Their Impact

To understand the impact of remedies on the patent system the origins of how economic analysis has divided remedies into property rules and liability rules should be examined. Despite the existence of a hybrid system, there is still considerable debate on whether a pure property remedy system is superior to a pure liability remedy system. Robert Merges argues for a property based system. Blair and Cotter argue that a property system is necessary but that damages would be better determined by a tort law analysis. Finally Peter Menell argues that patents are very different from tangible property and the same property rules should not be applied to both tangible and intangible property.

Before the term “patent troll” was coined, Robert Merges examined whether property rules or liability rules were more conducive to patent infringement remedies. In the wake of increased concern over patent trolls and potential patent system changes to curb troll behavior, there has been increased debate on which set of rules would make better remedies to combat patent infringement. Economic analysis under these rules stems from the Coase transaction theorem and the subsequent expansion by Guido Calabresi and A. Douglas Melamed.⁵¹ Merges describes a property rule as a legal entitlement where the entitlement holder sets an anticipated price and only after reaching an agreement with a second party through bargaining can the

⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ See R.H. Coase, *The Problem of Social Cost*, 3 J.L. & Econ. 1 (1960); and See Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 Harv. L. Rev. 1089 (1972).

entitlement be lawfully used by the second party.⁵² Injunctive relief is the expected remedy for patent infringement and only through achieving an agreement with the infringing party, will the patentee allow the infringer to use the patented invention.

A liability rule accepts infringement, but is followed by a tribunal proceeding after infringement occurs to determine appropriate compensation for the infringement.⁵³ Such a remedy is perceived to be a compulsory licence, usually granted by the courts, allowing an infringer to continue using the patented invention in exchange for money.

Merges states that under Coase's theorem, if the transaction costs are zero, property rights allocations will eventually be transferred "to their highest-value use through private bargains."⁵⁴ However, if transaction costs are greater than zero, a transfer of property to a higher value user may not occur. This is an example of a property rule. The theorem was initially applied to physical property but also applies to patent transactions where it is certain that either a valid patent right does or does not exist.

Merges accepts the limitations of the theorem, noting that the problem of applying Coase's theorem to intellectual property rights arises from the property's intangible nature. Infringement detection and the severity of that infringement, or valuation, are not easily determined because a patent's scope or boundary is often unclear. The value of prior patented creations on a current product or process and the uncertainty over whether an independently created invention infringes a previous one further blur the boundaries. Valuation is further complicated as patented works can be cumulative and even interdependent. The boundary uncertainty also makes it difficult for parties to effectively negotiate a transaction. Furthermore, neither strategic behavior nor the use of blocking patents is part of the Coasian consideration. Both of these tactics will result in conflict rather than a negotiated, equitable division of assets and resources. All these complications indicate high transaction costs which will prevent efficient transactions.

Calabresi and Melamed expanded upon Coase's theorem, indicating how shifting transaction costs may change a property rule to a liability rule and vice versa. A liability rule

⁵² Robert P. Merges, *Of Property Rules, Coase, and Intellectual Property*, 94 Colum. L. Rev. 2655, 2655 (1994).

⁵³ *Id.*

⁵⁴ *Id.*, at 2656.

will likely be preferred if transaction costs are high, there are many parties to a transaction, or transaction valuation between the parties is complicated. Conversely, if transaction costs are low, there are few parties to a transaction, or valuation is easy, a property rule may be better suited. Merges argues that patent cases fit the Calabresi/Melamed property rule criteria. In a patent dispute there are two parties to a transaction, transaction costs between the parties are relatively low, and courts have a difficult time properly determining the value of the patented invention due to the complexity of the patented invention and specific market conditions.⁵⁵ In Merges' opinion, the parties to the transaction are best suited to accurately value the technology while courts are less able to determine the value of complex intellectual property transactions.⁵⁶ Thus a liability rule will create inaccurate results when damages are determined by the courts and a property rule would allow a more accurate resolution. Courts are readily able to make complex calculations with tangible property. However, there is a general perception among many U.S. intellectual property scholars, that the intangible nature of patents confuses assessment by all parties who are not the plaintiff and defendant. However, accurate valuation is really not possible when interested parties differ in their assessment and one uses a lever, such as an injunction, to pry more royalties out of the pocket of the other.

There have been arguments that transaction costs are actually high and not low, because patents and patent transactions are both complicated. This makes a liability rule more suitable for deciding patent disputes. Rather than preventing patent transactions, Merges contends that the presence of strong property rights will actually facilitate patent transactions rather than preventing them because private parties will force institutional changes to lower transaction costs.⁵⁷ For emerging technological industry segments, he holds that the current presence of high transaction costs should not be changed through government intervention but should, for the time being, be resolved through private transactions.⁵⁸ Others argue that the pervasive transaction costs should lead to the use of liability rules and even compulsory licenses.⁵⁹ However, strong property rules should continue even in the face of high transaction costs because they have led to

⁵⁵ *Id.* at 2664.

⁵⁶ *Id.* at 2664-65.

⁵⁷ Merges, *Supra* note 52, at 2655.

⁵⁸ *Id.*, at 2662-63.

⁵⁹ *Id.* at 2662.

private institutional changes which eventually lowered transactional costs.⁶⁰ Strong property rules actually led to private contracts that established private liability rules through the creation of patent pools.⁶¹ Merges contends that statutory liability rules enforced by courts would lack the flexibility that private institutions and institutional agreements have.⁶² However, in making this claim, Merges ignores the potential anti-competitive nature of patent pools and also assumes that private institutions lack the bureaucracy and other externalities which confuse court assessment.

Without a right to injunctive relief, Merges believes that a patent will be worth considerably less and this loss of value would diminish the incentive to invent.⁶³ He further asserts that although using injunctive relief as a bargaining chip in negotiations may lead to overcompensation, a damages based system will likely undercompensate.⁶⁴ This point is discussed below in greater detail. While there is some truth to such economic claims, perfect compensation is unlikely regardless of the method used to determine it and terms such as overcompensation and undercompensation are relative.

Calls in the U.S. to change the current property rule system of dealing with infringement to a liability rule system require closer examination. Merges believes that compulsory license awards are a rash decision and parties should be allowed to examine creative solutions to resolve impasses.⁶⁵ Scholars should examine a wide range of enforcement technologies and techniques, in addition to institutional changes and arrangements using property rights theory.⁶⁶ It would also appear that small adjustments to the patent system (such as those outlined in the eBay decision below) appear to appeal to Merges.⁶⁷ Merges recites a common U.S. position towards compulsory licenses, but it has also become a position taken by Canada and the U.K. in recent years.

⁶⁰ *Id.*

⁶¹ *Id.* at 2662.

⁶² Merges, *Supra* note 52, at 2662.

⁶³ *Id.*, at 2667.

⁶⁴ *Id.*

⁶⁵ *Id.* at 2672-73

⁶⁶ *Id.*, at 2672-73

⁶⁷ Merges, *Supra* note 3, at 1586.

In a more recent work Merges finds that patent trolling has caused a re-examination of whether patents should be treated the same way as physical property. Examining patent rights under a property law theory is problematical because patents are based on an underlying technology. Infringers and courts often have a difficult time defining the exact boundaries of the patented technology. This causes an increase in measurement costs (litigation fees) to determine the boundaries. Merges indicates that, while measurement costs are an increasing problem, attempts to ameliorate these increases should be handled with subtle methods rather than with wholesale changes to patent law. Large scale and significant changes to the law may actually cause unforeseen results which may destabilize the system rather than resolve the problems.

Merges supports a private solution rather than changing the existing patent laws. This is the preferred solution in a market economy; wholesale systemic changes may be avoided if a private solution can be found, particularly if private solutions are diminished and greater public involvement takes place. This is an ideological position lacking a long enough historical timeline to show whether it is a correct position. Merges notes that overly strong and inefficient property rules can be overcome if the cost of coordinating a solution between private parties is low, but firms will race to acquire more patents if “coordination costs” are high.⁶⁸ Coordination costs are the cost of establishing private cooperative transaction systems as a means of overcoming strong property rights.⁶⁹ However, property rights in patents do not lend themselves to a collective private solution since increased property rights push inventors to compete with one-another. High competition is likely to encourage inventors to lobby for stronger patent rights, encouraging a legislative solution. Nonetheless, Merges contends that legislative changes should be discouraged because only some parties will be consulted through the legislative process. There is also a great deal of lobbying from groups with widely differing interests. Furthermore, the legislative process is slow-moving and the process’ deal-making nature may create undesirable changes.⁷⁰ There is a certain irony in this position because patent law is a legislative creation, already shaped by some of the interests Merges feels will make undesirable changes.

⁶⁸ *Id.* at 1607.

⁶⁹ *Id.* at 1607.

⁷⁰ *Id.*, at 1605-09.

There have been numerous calls for changing the U.S. patent laws to combat trolling behavior, but competing interests have created a legislative impasse. Even if legislation were passed, the potential side effects could cause unforeseen harms to property rights. The unforeseeable impact on property rights dictates that minor institutional adjustments may be better suited for determining damages in patent cases.⁷¹ Such an adjustment was made when the U.S. Supreme Court limited the use of automatic permanent injunctions in the *eBay v. MercExchange* case, greatly limiting a powerful bargaining tool that trolls use to exact royalty payments. The Supreme Court's directive was a prime example of how the legal process and the courts were effective in combating problems with the patent system. Judicial discretion to limit injunctions was encouraged so that disproportionate damage settlements can be curbed when a patented invention is a component of a complex multi-component device.⁷² With *eBay* in mind, *Merges* suggests that the Court should fashion a test to limit damages to strict conformity with the actual economic value of the patented invention. The test should examine the infringer's profit with the patented invention minus an estimate of the infringer's profit using the next alternative.⁷³

Problems with both the legislative process and self-regulation lead *Merges* to suggest that the courts are the most capable entities for dealing with the impact of trolls on the system. However, even the courts have difficulty. Complex technologies and the difficulty of apportioning the value of a patented component in relation to a whole device are challenging issues for judges (and juries in U.S. courts). That is why valuation rules should be established to clearly define differences in profit between the infringer's product including the infringing component and the profit using an unpatented alternative (the next best thing). This solution, like the *eBay* decision for injunctions, would be a minor change and would help limit the rent-seeking behavior of trolls.⁷⁴

Merges believes that current remedies must be further refined. Expert testimony refers to an apportionment "rule of thumb" entitling patentees to between a quarter and a third of profits of the infringer's product. The use of this rule leads to further valuation problems for complex

⁷¹ *Id.*, at 1586.

⁷² *Merges*, *Supra note 3*, at 1585.

⁷³ *Id.* at 1613-14.

⁷⁴ *Id.* at 1612-14.

devices consisting of several patents.⁷⁵ Patent drafting also leads to expansive interpretations of inventions, even though the invention may only be a small component of the entire device.⁷⁶ Finally, patent trials are generally very complex. This complexity leads judges to deny evidence showing that other patented or non-patented components are significant to the invention.⁷⁷ These are problems with the patent trial system which relatively minor changes may resolve.⁷⁸

Roger Blair and Thomas Cotter are more concerned with greater accuracy in patent damage calculations. They indicate that tort law principles are well suited to patent remedy analysis. Blair and Cotter start by stating that a patent system should strive to maximize social values, where social costs are subtracted from social benefits.⁷⁹ They argue that the most economically efficient approach to meet the goals of the patent system in the U.S. is through the tort law “cause-in-fact” standard (“but-for”) and proximate cause concepts can be applied to accurately gauge damages, promote innovation, and encourage disclosure.⁸⁰ Tort-law concepts could be used to more accurately assess infringement damages. Despite their desire to see these concepts commonly applied by courts, Blair and Cotter are firm believers that injunctions should still be awarded as part of patent remedies and that the same remedies should be available to patent holders, regardless of whether the holder is practicing the invention or not.

In supporting their argument, Blair and Cotter describe the current damage remedies available under the U.S. Patent Act. These include lost profits and a reasonable royalty. The availability of lost profits and reasonable royalties as infringement awards are moves towards a “tort-law framework,” despite reluctance of courts to treat patent damages as other torts.⁸¹ Disgorging profits attributable to the infringement, under the theory that profits are held in trust for the patentee, has not been a valid remedy since 1946, due to the perceived expense, time and complexity of accounting for profits.⁸² The Patent Act currently entitles patentees to recover

⁷⁵ *Id.* at 1612-13.

⁷⁶ *Id.*, at 1613.

⁷⁷ *Merges, Supra note 3*, at 1613.

⁷⁸ *Id.* at 1613.

⁷⁹ Blair & Cotter, *Supra note 4*, at 44,45.

⁸⁰ *Id.* (It should be noted that these are all common methods of analysis in Canada and the U.K. despite their novelty to U.S. patent analysis).

⁸¹ *Id.* at 4.

⁸² *Id.* at 6-7. Design patents remedies include profit disgorgement. However, design patents have been ignored because the non-practicing entities have been relatively inactive in this area, focusing on utility patents. Furthermore, it is a much less litigated area of patent law. See Philip Elmer-DeWitt, *Apple's \$2 billion claim comes*

“damages adequate to compensate for infringement,” but no less than a reasonable royalty.⁸³ Current compensation awards for lost profits or reasonable royalties have never been defined by statute but calculation methods have nonetheless been left up to the courts.⁸⁴ Courts lack residual authority to award restitutionary damages; but under statute, courts can award up to treble damages for willful infringement.⁸⁵

Lost profits are one method of determining damages because infringers can reduce patentee profits by: a) diverting sales; b) causing lower sale prices due to competition with the patentee; c) increasing patentee costs through advertising and marketing expenditures; and d) causing lost sales for products sold in conjunction with the patented product or non-patented products that compete with the infringing products.⁸⁶ To determine whether lost profits should be awarded, courts have used a four factor test established in *Panduit Corp v. Stahl Bros. Fibre Works, Inc.* These factors are: 1) demand for the patented product; 2) absence of acceptable non-infringing substitutes; 3) manufacturing and marketing capability to exploit invention demand; 4) the amount of profit the patentee would have made.⁸⁷ To determine the amount of profit, courts take into account the price at which the patent owner would have made increased sales but also the costs associated with making increased sales.⁸⁸

Historically, lost profits calculations have been complicated because of substitutability and apportionment.⁸⁹ The concept of substitutability requires courts to determine whether there are non-infringing products which could be substituted for the infringing product.⁹⁰ However, determining whether a product is a substitute can depend on several factors including technologies involved and the prices of products.⁹¹ If a substitute exists, the patentee’s sales

from a twist in U.S. patent law, CNNMoney, <http://tech.fortune.cnn.com/2012/08/01/apples-2-billion-claim-comes-from-a-twist-in-u-s-patent-law/> (last visited July 12, 2013) and Andrew M. Ollis and Colin B. Harris, *Design Patent Damages*, *Landslide Magazine*, (May/June 2010) <http://www.oblon.com/sites/default/files/news/Design%20Patent%20Damages%20-%20May-June%202010.pdf> (last visited July 12, 2013).

⁸³ Blair & Cotter, *Supra note 4*, at 7, citing 35 U.S.C. §284.

⁸⁴ *Id.*, at 7.

⁸⁵ *Id.*

⁸⁶ *Id.* at 10-11.

⁸⁷ *Id.* at 17.

⁸⁸ Blair & Cotter, *Supra note 4*, at 20.

⁸⁹ *Id.*, at 13.

⁹⁰ *Id.* at 13.

⁹¹ *Id.* at 13-14.

would be lower even if there was no infringement.⁹² The concept of apportionment was used by courts to try to determine what part of the infringer's profit is the result of using the patented invention, when the infringing technology is only a small part of the finished product.⁹³

Since the mid 1980s, U.S. courts have implemented tort law cause-in-fact and proximate cause standards in determining patent damages.⁹⁴ Blair and Cotter contend that this adoption has resulted in a simpler analysis but it has also required courts to become more economically sophisticated than they previously were.⁹⁵ Determining the profits a patentee would have earned but-for the infringement is still not without problems.⁹⁶ It has resulted in a more flexible application of the Panduit test regarding the following two factors: 1) a partial absence of non-infringing substitutes exists (factor two of the original test) and 2) where infringement has resulted in lost sales of unpatented products (factor three of the original test).⁹⁷ Recent analysis of Panduit factor two indicates that apportionment calculations have given way to a market share calculation approach.⁹⁸ This is because the availability of substitute products is no longer measured on a technological basis but through a consumer demand basis and because substitutes tend to be imperfect, resulting in sales by non-infringing competitors.⁹⁹ Therefore, either a patented component is the reason for product demand, entitling the patentee to its entire market value of lost profits on sales; or a product without the patented component is a non-infringing substitute and lost profits attributed to the patented component result in no lost profits.¹⁰⁰ In a "but-for" analysis of patent infringement damages, apportionment calculations become unnecessary.

There have been three cases where the court applied a "but-for" analysis permitting recovery for damages resulting from lost profits on the sales of unpatented products.¹⁰¹ In *Paper*

⁹² *Id.* at 14.

⁹³ Blair & Cotter, *Supra note 4*, at 14.

⁹⁴ *Id.*, at 22.

⁹⁵ *Id.* at 22.

⁹⁶ *Id.* at 24.

⁹⁷ *Id.* at 24.

⁹⁸ Blair & Cotter, *Supra note 4*, at 24.

⁹⁹ *Id.*, at 26-7.

¹⁰⁰ *Id.* at 27.

¹⁰¹ Blair & Cotter, *Supra note 4*, at 29; See also *Paper Converting Machines Co. v. Magna-Graphics Corp.*, 745 F.2d 11 (Fed. Cir. 1984); *Rite-Hite Corp. v. Kelly Co.*, 56 F.3d 1538 (Fed. Cir. 1995)(en banc); and *King Instrument Co. v. Perego*, 65 F.3d 941 (Fed. Cir. 1995).

Converting Machines v. Magna Graphics, the court found that industry standards indicated that every purchaser would buy an entire line of products and that patentee would have sold patented and non-patented products together but-for the infringement.¹⁰² In *Rite-Hite v. Kelly* the court stated that cause-in-fact and proximate cause applied to patent infringement, allowing damage recovery for “reasonable, objectively foreseeable consequences of infringement.”¹⁰³ *King Instrument v. Perego* indicates some problems with a “but-for” analysis because the court allowed a non-practicing entity to collect lost profits due to infringement of its patent, even though the lost profits were for sales of non-patented products.¹⁰⁴ Blair and Cotter opine that the Federal Circuit rightly decided that a reasonable royalty would not be sufficient compensation in *King*. However, lost profits are normally not awarded to non-practicing entities and could not be justified through a “but-for” test or even a standard causation test.¹⁰⁵ There does not appear to be a clear answer and the precedential value of *King* is questionable, especially since it can potentially result in punitive damage awards.

If lost profits cannot be shown, a patentee can still be awarded no less than a reasonable royalty in damages.¹⁰⁶ To determine a reasonable royalty, courts have relied on either the Georgia Pacific factors or the analytical approach.¹⁰⁷ The Georgia Pacific factors are a series of fifteen factors which can be considered to determine a reasonable royalty.¹⁰⁸ Not all fifteen factors need be considered and courts often focus on only a few to determine a reasonable royalty.¹⁰⁹ By contrast, the analytical method subtracts the infringer’s rate of return on non-infringing goods from the rate of return of the defendant’s infringing goods, multiplying this rate by the number of infringing goods sold to determine the royalty.¹¹⁰

Blair and Cotter note that the Georgia Pacific factors assume royalty calculations based on a hypothetical willing licensor and licensee at the time of infringement.¹¹¹ The rate tends to

¹⁰² *Id.* at 29-30.

¹⁰³ *Id.* at 31.

¹⁰⁴ *Id.* at 34-5.

¹⁰⁵ *Id.* at 36-7.

¹⁰⁶ Blair & Cotter, *Supra* note 4, at 37.

¹⁰⁷ *Id.* at 38-9.

¹⁰⁸ *Id.* at 38, see also *Georgia Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970) (list of 15 factors).

¹⁰⁹ *Id.* at 39.

¹¹⁰ *Id.* at 39.

¹¹¹ Blair & Cotter, *Supra* note 4, at 40.

leave some profit for the infringer because the calculation falls between the “maximum incremental profit (or cost savings)” expected by the infringer and “the maximum profit the patentee could have expected to earn from her next-best alternative to licensing the invention.”¹¹² Blair and Cotter indicate that while royalties are regularly determined by U.S. courts, there are problems with royalty calculation methods when it comes to accurately determining a royalty. The first difficulty is the assumption of a hypothetical negotiation. Infringement and a valid patent have been conclusively determined by the courts prior to an award of damages based on the hypothetical negotiation. In a real negotiation patent validity and infringement are commonly both uncertain and this uncertainty often factors into negotiations.¹¹³ The second issue is that courts may take into account events that occur after infringement to determine the royalty rate, removing further uncertainty which would exist in a real negotiation.¹¹⁴ Risk removal by the courts would seem to inflate the reasonable royalty rate. While a reasonable royalty may seem to leave the infringer no worse off than before the infringement, infringers still face a significant penalty because of litigation costs and the general coupling of an injunction with the royalty payments as part of the final remedy.¹¹⁵ Another issue with the reasonable royalty calculation is that a willing licensor and licensee may not actually reach an agreement, making the royalty calculation a substitute for lost profits.¹¹⁶ A final issue with a court determined royalty rate is that courts may have to apportion the damages where the patented invention is a small part of the whole product while entire market calculations are used to determine rates when the patented invention is the reason for market demand.¹¹⁷

It appears that Blair and Cotter do not support the use of a reasonable royalty because there are too many factors which skew the awards. Although a reasonable royalty is considered part of a liability rule, it does not really conform to the “but-for” tort standard that they advocate. The lack of accuracy does not make it suitable for a liability remedy. Not only does a reasonable royalty award lack accuracy but it is generally coupled with an injunction. The injunction gives the patent owner considerable leverage in future negotiations and can potentially result in a

¹¹² *Id.* at 40.

¹¹³ *Id.* at 41.

¹¹⁴ *Id.*

¹¹⁵ *Id.* at 42.

¹¹⁶ Blair & Cotter, *Supra note 4*, at 42-3.

¹¹⁷ *Id.* at 44.

windfall. Nonetheless, the reasonable royalty award appears to be a fixture of the patent system and courts are striving for greater accuracy in situations where it is an appropriate remedy. The appropriateness of this remedy will be discussed later.

Blair and Cotter state that the objectives of a patent system should be to “maximize social values” or the difference between social benefits and costs.¹¹⁸ The social benefit of patent protections should outweigh the social costs and the resulting system should do this better than any alternate patent schemes.¹¹⁹ Blair and Cotter next use economic arguments to support remedies that would return the patent owner to the position she would have occupied but-for the infringement.¹²⁰ Their arguments point to a conclusion that a liability oriented approach can better achieve the goals of the patent system by promoting invention and increasing disclosure.¹²¹

The current patent system is theoretically based on market transactions and incentives. The incentive is that inventors gain the right to exclude others from the marketplace for a period of time.¹²² This right to exclude is protected by a property rule granting the inventor an injunction against infringers, rather than a liability rule which would allow infringement but with indefinite damage payments.¹²³ It is widely believed that injunctive relief encourages licensing negotiations which more accurately reflect the market value of the invention rather than a compulsory license granted by the courts under a liability theory.¹²⁴ A second theory supporting injunctions is that an inventor requires injunctive relief as an incentive to try to recover the investment in the invention.¹²⁵ Blair and Cotter argue that a better method would be one where inventors are made no worse off and infringers no better off as a result of the infringement.¹²⁶ However, this would require that a patentee be awarded the greater of her lost profits or the

¹¹⁸ *Id.* at 45.

¹¹⁹ *Id.*

¹²⁰ *Id.*

¹²¹ Blair & Cotter, *Supra* note 4, at 45.

¹²² *Id.*

¹²³ *Id.*, at 48.

¹²⁴ *Id.*

¹²⁵ *Id.*

¹²⁶ Blair & Cotter, *Supra* note 4, at 48-9.

infringer's profits attributable to the invention, a rule rejected by U.S. courts.¹²⁷ Nonetheless, a liability rule can be adapted to the current system to best serve the goals of the patent regime.¹²⁸

As part of their analysis of the patent system goals, Blair and Cotter examine some of the risks faced by inventors. Determining whether to invest in the inventive process entails risks, such as: 1) the risk of failure; 2) the risk that even if the invention is created, there may be no market for it; 3) the unknown cost of creating the invention; and 4) the risk of infringement.¹²⁹ These risks exist even if there is a patent system. Without a patent system to protect inventors, the cost of copying an invention may be small compared to the cost of invention.¹³⁰ Alternatives to a patent system may cause the inventor to keep the invention secret or to enter the market in an attempt to capture the marketplace by virtue of being first to market.¹³¹ Because of the risks, some protection is necessary.

If courts were to adapt the current system to one where an inventor would be put in the position the inventor would have been but-for the infringement, lost profits would be the difference between the inventor's actual profits and the amount potentially earned but-for the infringement. Royalties would amount to the value to which the parties would have agreed to but-for the infringement.¹³² This system would also have to include legal fees without current limitations imposed by the courts, accounting for interest due to time between infringement and final payment, and extending damages for potential future losses beyond the trial.¹³³

As part of the lost profits analysis, Blair and Cotter examined three types of infringement behaviour in an attempt to show that infringement damages can accurately be modeled. The first behavior is known as Cournot Behavior, where competition affects production quantities.¹³⁴ Two time frames were examined. The first case examined a situation where the infringer plans to be in the market for a short period while the second is where the infringer expects to be on the

¹²⁷ *Id.* at 49.

¹²⁸ *Id.*

¹²⁹ *Id.* at 47.

¹³⁰ *Id.*

¹³¹ Blair & Cotter, *Supra note 4*, at 48.

¹³² *Id.*

¹³³ *Id.* at 50-1.

¹³⁴ *Id.*, at 52.

market for an extended period because infringement will be difficult to detect.¹³⁵ In the short period situation, due to an increase in the quantity on the market, the price of the patented product falls, decreasing patentee's profit because of price erosion.¹³⁶ In the long period infringement, damages to the patentee result from price erosion due to an increased quantity of patented goods on the market and also because the patentee will be forced to decrease the quantity produced.¹³⁷ In the short and long period models, damages amount to the difference between patentee's actual profit and the "but-for" profit, while infringer profits are less than the damage amount.¹³⁸ In the short period, price erosion accounts for the damages but the infringer profits are lower than damages.¹³⁹ In the long period, price erosion and lower quantity account for the damages; but again, infringer profits are lower than actual damages.¹⁴⁰ Even if restitution were available, it would undercompensate the patentee.¹⁴¹

The second type of infringement behavior is known as Bertrand Behavior, where patentee and infringer compete on price.¹⁴² This model assumes that the patented and infringing products are substitutes for one another and that the infringer enters the market with a lower-priced product than the patentee.¹⁴³ In a situation where the infringer enters for a short period, consumers will purchase the lower-priced product, leaving the patentee with no profit while the infringer earns slightly less than patentee's potential profits but-for the infringement.¹⁴⁴ For a long-period situation, the patentee will be forced to lower prices to compete, so that the product price will be equal to costs, resulting in no patentee or infringer profits.¹⁴⁵ In the short-period study, restitution would approximate patentee damages (assuming costs remained equal).¹⁴⁶ In a long-period situation damages would still be equal to but-for profits; but since the infringer also earns no profit, restitution does not adequately cover the damages.¹⁴⁷

¹³⁵ *Id.* at 53-5.

¹³⁶ Blair & Cotter, 10 Tex. Intell. Prop. L.J. at 53-5.

¹³⁷ *Id.* at 55-6.

¹³⁸ *Id.*, at 53-56.

¹³⁹ *Id.*, at 53-54.

¹⁴⁰ *Id.*, at 55-56.

¹⁴¹ Blair & Cotter, *Supra note 4*, at 53-54.

¹⁴² *Id.* at 57.

¹⁴³ *Id.*

¹⁴⁴ *Id.*

¹⁴⁵ *Id.*

¹⁴⁶ Blair & Cotter, *Supra note 4*, at 57.

¹⁴⁷ *Id.*

Chamberlain Behavior represents the third type of theoretical infringement behavior, where parties do not compete but split sales between them.¹⁴⁸ The price would remain constant but sales would be divided evenly, resulting in damages due to sales erosion.¹⁴⁹ In this case, damages would be equal to infringer profits due to the infringer half of sales.¹⁵⁰ This theory ignores certain externalities such as the first mover's advantage and assumes that all other factors between the parties (including production, marketing, demand, supply, market access, etc.) are equal.

These three models indicate that damages are calculable and the difference between actual and "but-for" profits can be determined.¹⁵¹ While accurate remedies will depend on courts taking into account the correct economic behavior, as well as other variables, accurate measurements are possible and courts are capable of developing accurate remedy calculations.

Blair and Cotter further provide a method of determining whether courts should grant royalty payments or require that lost profits be awarded. In examining a reasonable royalty, idealized calculations would lead to a license agreement where patentee would not agree to a royalty less than profits that could be made by manufacturing the invention, while the infringer would agree to a royalty no higher than potential profits from using a non-infringing alternative.¹⁵² If a patentee can earn higher profits manufacturing the invention, the patentee would not have granted a license and this would result in a lost profits calculation.¹⁵³ However, if profits cannot be calculated a reasonable royalty calculation would be used to serve as a deterrent.¹⁵⁴

Up to this point, Blair and Cotter have ignored "that patent infringement is a strict liability tort and that independent discovery of an already patented invention is not a defense."¹⁵⁵ The question arises whether it is economically optimal to demand "but-for" damages from an

¹⁴⁸ *Id.*

¹⁴⁹ *Id.*, at 58.

¹⁵⁰ *Id.* at 58.

¹⁵¹ Blair & Cotter, *Supra note 4*, at 58-9.

¹⁵² *Id.* at 59.

¹⁵³ *Id.*, at 59.

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

infringer who discovered the invention independently.¹⁵⁶ Under these circumstances Blair and Cotter indicate that economic considerations should take into account which party bears the burden of patent notice and patent search, and of how these considerations impact damage calculations. If the burden of notice lies with patentee, he will provide notice of the patent when the benefit exceeds the costs.¹⁵⁷ If the burden lies with the infringer, she will conduct a patent search if benefits exceed costs, taking into account the probability that someone else already patented the invention, the likely damages in an infringement suit, and the expected cost of litigation.¹⁵⁸ Ideally, a patent system will allocate the burden of notice or search depending on the level at which it would encourage or inhibit innovation, but this is not easily determined.¹⁵⁹

The current patent system requires patentees to provide notice in order to recover damages¹⁶⁰ but there are issues with the current law because: 1) constructive and not actual notice is required; 2) no notice is required for processes; 3) if patented goods are not marked then actual notice must be given to infringers; and 4) entities that hold patents but choose not to market their inventions do not have to provide notice.¹⁶¹ If tort concepts are to be more readily applied notice rules need to be better at providing notice.

Blair and Cotter apply a further tort law principle, proximate cause, to the remedy calculation. Even if a breach exists, and the breach causes injury, liability is limited to injuries which are proximate to the breach.¹⁶² In a patent remedy situation, even if the injury would not have occurred but-for the breach, the injury may not be foreseeable, or it may be too speculative, or too remote.¹⁶³ They argue that proximate cause can easily be applied to U.S. lost profits analysis due to unpatented goods that compete with the infringing product or loss of sales for convoyed goods.¹⁶⁴ However, in a situation where an infringer is aware of the patent, infringement is considered intentional and any damages resulting from the infringement,

¹⁵⁶ Blair & Cotter, *Supra note 4*, at 60.

¹⁵⁷ *Id.* at 64.

¹⁵⁸ *Id.*

¹⁵⁹ *Id.*

¹⁶⁰ See 35 U.S.C. §287

¹⁶¹ Blair & Cotter, *Supra note 4*, at 64-5.

¹⁶² *Id.* at 70-1

¹⁶³ *Id.* at 71.

¹⁶⁴ *Id.*, at 72.

including collateral and unpatented goods, are foreseeable.¹⁶⁵ Proximate cause has a greater applicability for the innocent infringer without notice, since damages to conveyed or unpatented goods may be too remotely connected or unforeseeable.¹⁶⁶ However, a further problem exists when proximate cause analysis is applied to an injury that would be the same whether a patented invention was used or a non-infringing alternative was used. Blair and Cotter point out that by ignoring the non-infringing alternative the infringer increases the probability of harm to the patent owner and should thus be liable for the injury.¹⁶⁷

Blair and Cotter lastly move to examine patent non-use. They note five reasons why an inventor may not commercialize her patent.¹⁶⁸ These reasons are: 1) the patented invention may not be commercially viable; 2) the patented invention is less viable than patentee's other technologies; 3) the invention is not viable within the patentee's area of expertise; 4) willing licensees are unavailable; or 5) the new invention would compete with patentee's existing products.¹⁶⁹ There are other reasons not to commercialize a patent. However, Blair and Cotter fail to mention purely strategic reasons for patent applications and focus on areas where commercial value can be gained from the patent itself. It is their position that reasons 1) - 4) should result in reasonable royalty damages.¹⁷⁰ However, because of *Rite-Hite* and *King Instrument*, a party who did not market or license his patented invention for reason 5) may be able to recover lost profits.¹⁷¹ This is further supported by proximate-cause analysis which could result in lost profits from lost sales of other non-patented goods and, in the opinion of Blair and Cotter, would be consistent with the purpose of patent law.¹⁷²

Under current U.S. law, patent non-use is perfectly valid and the Supreme Court has stated that it will not invalidate a patent for failure to work.¹⁷³ Some commentators have stated

¹⁶⁵ *Id.*

¹⁶⁶ Blair & Cotter, *Supra note 4*, at 73. It should be noted that this analysis is not commonly used in U.S. patent remedy analysis but it is proposed by Blair and Cotter as a possible method for future analysis. This particular remedy analysis, does not necessarily apply to jurisdictions outside the U.S., and is one not used under U.K. law.

¹⁶⁷ *Id.* at 73.

¹⁶⁸ *Id.*, at 75.

¹⁶⁹ *Id.* at 75-6 (viability may be limited because of "lack of demand, cost, lack of financing, inability to develop a marketable embodiment, or underestimation of its commercial value").

¹⁷⁰ *Id.* at 76.

¹⁷¹ Blair & Cotter, *Supra note 4*, 74.

¹⁷² *Id.*

¹⁷³ *Id.* at 81.

that non-practicing patent owners should not receive the same protection as practicing entities, going so far as to state that infringement should be encouraged in some cases. However, Blair and Cotter indicate that these positions pose problems related to disclosure, pre-emptive patenting, and enforceability. Nonetheless, U.S. practice indicates that remedies may be affected by use and non-use.

Pre-emptive patenting is anti-competitive behavior. It is where an inventor already has a patented invention but patents a subsequent invention to suppress the subsequent invention, in an attempt to extend the monopoly on the first invention.¹⁷⁴ Yet, an economically rational patentee would not use a subsequently patented invention if using it lowered overall profits or if the lost profits on the sale of other products would be greater than the royalty received as a result of licensing the subsequently patented invention.¹⁷⁵ Blair and Cotter feel that economically rational behavior will rarely result in pre-emptive patenting. Thus the rare occurrence of pre-emptive patenting should not lead to exceptions to patent protections for such actions.¹⁷⁶

Blair and Cotter further take the position that any rule penalizing patent non-use would impact disclosure because an inventor would likely choose to keep an invention secret if there were no way to enforce rights without marketing the invention.¹⁷⁷ However, this also seems to imply that the importance of the freedom to use or not use would trump the importance to the inventor of both the protections and potential damages. Thus under this reasoning a patentee would rather suppress an invention rather than receive less than the full potential royalty value of a patented invention. If patent protections such as injunctions were removed and damages limited to just a reasonable royalty, Blair and Cotter believe that an inventor, faced with the prospect of patenting two inventions but only practicing one, would likely choose to suppress the non-practiced invention rather than patent it.¹⁷⁸ Of course this creates a risk that without patenting the second invention, someone else will patent it. This may not have been contemplated by Blair and Cotter, since at the time of writing, the U.S. was still operating under a first-to-invent system. Even if the inventor patents both inventions but only practices one, the lack of an injunction will encourage infringement since the worst penalty faced by an infringer

¹⁷⁴ *Id.*

¹⁷⁵ *Id.* at 77.

¹⁷⁶ *Id.*

¹⁷⁷ Blair & Cotter, *Supra* note 4, at 82.

¹⁷⁸ *Id.* at 83.

would still amount to a compulsory license.¹⁷⁹ Finally, it may also not be economically or socially beneficial to patent both inventions and market them merely to maintain patent rights.¹⁸⁰

To summarize, Blair and Cotter support an absolute right to an injunction as a remedy for patent infringement, but they recognize that damages are also part of the remedy. They call for a tort-law analysis for damages and point out that even though the current system does not support disgorgement as a remedy, lost profits are well suited as a remedy under a “but-for” analysis. While they seek to reform infringement damages, Blair and Cotter are very much against awarding a reasonable royalty except where no other remedy is available, and they do not support the award of damages in lieu of an injunction.

Peter Menell is another voice in the debate over whether property rights should be applied to patents. Merges, Blair, and Cotter are strong supporters of treating patents as property. However, Merges also recognizes that there may be limits to the effectiveness of awarding an injunction for every infringed patent. Like Merges, Menell supports a patent system that incorporates some flexibility to avoid decisions which lead to results contrary to the goals of the patent system. However, while Merges, Blair, and Cotter, support property rights in a patent, Menell directly attacks attempts to treat patents like physical property. Menell would greatly limit the property rights associated with a patent.

Menell believes that peculiarities in the nature of a patent should discourage courts from treating patents in exactly the same way as physical property. Ideological movements should yield to the proper working of an efficient intellectual property system, because a system that treats patents as an absolute property right may actually hinder the goals of an intellectual property system. A continued Utilitarian approach rather than an absolute approach is better suited to the continued well being of the U.S. patent system. Menell examines some of the problems that exist in granting absolute property rights to intellectual property. To support his examination, he illustrates the differences between physical property and intellectual property, especially the incompatibility of absolute property rights when applied to intellectual property. He further indicates that there are competing interest groups in the battle over the applicability of

¹⁷⁹ *Id.*

¹⁸⁰ *Id.*

property rights to intellectual property and that these groups often have widely differing motivations.

Menell notes that the philosophy of John Locke considers life, liberty, and property to be an inalienable right and is a motivation for the Property Rights Movement (PRM).¹⁸¹ The PRM supports strong - even absolute, property rights. While there are calls for this absolute vision to apply to all property, including patents, the natural rights theory has really only applied to inventorship in U.S. IP.¹⁸² Menell posits that the framers of the constitution had no intention of granting absolute property rights in intellectual property, since powers to promote science and the useful arts were given to Congress. Since Congress was given this power, it seems to indicate a more Utilitarian approach rather than the granting of an absolute right. Utilitarianism has played a greater role in developing actual intellectual property law than absolute property rights.¹⁸³ Menell indicates that under both the natural rights and utilitarian theories, private property is considered exclusive, transferable, and free from government interference. Utilitarianism, through neoclassical economic theory, examines property as a bundle of rights, with the bundled rights being adjusted as needed to promote science and progress.¹⁸⁴ The rights in the bundle are owned and transferable but can also be limited.¹⁸⁵

Intellectual property protection is justified because the competitive market is unable to support efficient innovation in areas where research and development is costly but the outcomes are easily and cheaply duplicated.¹⁸⁶ Protecting innovation is a legal solution to a market problem. By granting exclusive use to a person for a period of time, knowledge development is protected. However, such a grant creates a monopoly, resulting in a deadweight loss to consumers and potential limits on further research use of the knowledge.¹⁸⁷ Patent law attempts to balance protections with disclosure and public access.¹⁸⁸

¹⁸¹ Menell, *Supra note 3*, at 723-24.

¹⁸² *Id.* at 725.

¹⁸³ *Id.* at 725-26, See also U.S. CONST. art 1, §8, cl.8.

¹⁸⁴ *Id.* at 726.

¹⁸⁵ *Id.*

¹⁸⁶ Menell, *Supra note 3*, at 726.

¹⁸⁷ *Id.* at 726-27.

¹⁸⁸ *Id.* at 727.

Protections granted by a patent come in the form of a grant of certain property rights. Despite this, Menell states that treatment of property rights should vary with the type of resources.¹⁸⁹ Patents are significantly different from physical property. There is a utilitarian goal in granting property ownership, including a belief that private use will be more efficient than others. However, the goals in granting property rights to land or physical property are different than those of patents and come with different conditions. One difference is that patents are intended to promote innovation. To achieve this goal, associated laws must be flexible enough to change with public policy, technology, and economics.¹⁹⁰ Another difference is that patent exclusivity is limited because of the non-obviousness, novelty, utility, and disclosure requirements, the experimental use defense, and other limitations.¹⁹¹ A further distinction between property and patents is that use of a patent by one party does not limit or prevent use of that knowledge by another, whereas physical property use is more limited, despite the ability for physical property to accommodate multiple interests.

Menell points out that the PRM seeks to establish strong property rights and apply these rights to both physical and intangible property. Their motivation for strong protection is primarily ideological in nature, whereas patent owners see property rights as a means of profiting from investments in invention and innovation.¹⁹² These owners “tend to be far more agnostic about government intervention” particularly since government tends to provide funding for so much technological research.¹⁹³

In addition to ideological differences, there are significant other differences between tangible (physical property) and intangible property (patents). Physical, tangible property can be depleted through over-use while intellectual resources cannot be depleted in such a way.¹⁹⁴ Exclusive rights, such as those given to real property owners, could lead to under-utilization of intellectual property, limiting the cumulative nature of technological progress.¹⁹⁵ The PRM group believes that all resources should be owned, but patent law limits ownership protection for

¹⁸⁹ *Id.*, 720-21.

¹⁹⁰ *Id.* at 722.

¹⁹¹ Menell, *Supra* note 3, at 722 (other limitations include limits on medical procedure patents, and prior use rights for business methods).

¹⁹² *Id.* at 742-43.

¹⁹³ *Id.* at 743.

¹⁹⁴ *Id.* at 744.

¹⁹⁵ *Id.*

certain knowledge and attempts to place much in the public domain.¹⁹⁶ Ownership is also limited to a certain period of time. A second issue over making absolute property rules for patents is that boundaries are ill-defined for most patents, while they are quite clear for tangible property.¹⁹⁷ Monitoring and enforcement costs can be very high for infringement because of the need to observe the flow of knowledge, whereas tangible property can be easily monitored.¹⁹⁸ Finally, considerable debates among patent owners over limits and application of property law prevent a unified front. Certain technological areas support strong protection, while others support weaker protection or weaker protections in certain cases.

The PRM is tied with a social, political, and economic ideology. The movement supports strong property rights, minimal government involvement in markets, and individual liberty.¹⁹⁹ While property protection plays a role in fostering progress and invention, very strong protection could stunt innovation, which is dependent on the cumulative nature of knowledge.²⁰⁰ These strong rights might also prevent optimal use of IP resources because of the potentially high transaction costs in obtaining licenses.²⁰¹ Strong property rules could limit the flexibility currently built into the IP protection system.²⁰² Finally, in certain technological fields, a trend towards collaborative efforts would be hindered by strong property rights.²⁰³

Because of the philosophical, religious, functional, structural, and political differences between proponents of PRM and IP owners, it is unlikely that there will be a viable marriage between the two. While there are similarities and property law plays a role in IP protection, if IP were to adopt protections of the kind advocated by the PRM group, the purpose of IP protection would likely be thwarted.

Mark Lemley and Carl Shapiro also support a more flexible patent system which limits absolute property rights, in particular for situations involving certain non-practicing entities. They specifically mention trolls as the non-practicing entities that are the most egregious abusers

¹⁹⁶ Menell, *Supra note 3*, at 745-46.

¹⁹⁷ *Id.* at 746.

¹⁹⁸ *Id.*

¹⁹⁹ *Id.* at 751.

²⁰⁰ *Id.* at 752.

²⁰¹ Menell, *Supra note 3*, at 752.

²⁰² *Id.*

²⁰³ *Id.* at 753.

of patent property rights, creating holdup and royalty stacking situations. Lemley and Shapiro provide an economic analysis for why flexibility is necessary, particularly with certain non-practicing entities. A patent holdup occurs where a patentee uses an injunction award or the threat of injunction to gain exorbitant royalties from an infringer who is heavily invested in the use of the patented technology.²⁰⁴ For a holdup to occur, it is a necessary condition that the infringer is invested heavily in using the patented technology and the prospect of having to stop using the technology is costly.²⁰⁵ If a litigation outcome determines that a patent is valid, the patentee's bargaining position is extremely strong. If post litigation negotiations fail, the infringer must stop using the infringing product and attempt to design around it or wait until the patent term expires.²⁰⁶ The result will be that the infringer will likely pay more than the actual value of the patent in order to avoid the costly alternative of not using the patented technology.

Continuing the analysis, Lemley and Shapiro state that in a situation where a producer has no competition, that producer will make the most profit.²⁰⁷ However, if there is a competing product on the market the producer's profits will be reduced.²⁰⁸ To support their holdup argument, Lemley and Shapiro developed a calculation to determine a natural benchmark for a negotiated patent. The benchmark is supposed to indicate the royalty rate that two parties would agree to under normal negotiating conditions. If the negotiations take place before litigation, the litigation outcome's uncertainty is part of the patent valuation. Because of this uncertainty, Lemley and Shapiro determined that the resulting royalty rate will be directly proportional to the patent strength.²⁰⁹ Prior to litigation, infringement and validity are both uncertain. After litigation, patent validity and infringement will both be conclusively determined. Therefore negotiations taking place before litigation will result in a royalty considerably lower than a royalty negotiated with certain patent validity and certain infringement.²¹⁰ The negotiation which takes into account uncertainty is considered the benchmark for what a reasonable royalty should be.²¹¹ Lemley and Shapiro based their benchmark calculation on the per-unit value of the

²⁰⁴ Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 Texas L. Rev. 1991, 1993 (2007).

²⁰⁵ *Id.* at 1996.

²⁰⁶ *Id.* at 1996.

²⁰⁷ *Id.* at 1997-98 (producer refers to a patent owner making a good or providing a service).

²⁰⁸ *Id.* at 1998.

²⁰⁹ Lemley & Shapiro, *Supra note 204*, at 1999-2000.

²¹⁰ *Id.*

²¹¹ *Id.* at 1999-2000.

patented feature to the infringing firm (V), the patent strength (θ), and the bargaining skill of the patent holder (B).²¹² Both the patent strength and the bargaining skill are measured on a scale of 0 to 1. This benchmark calculation ($V \times \theta \times B$) is used for comparisons to post-litigation court awards and royalty rates made through negotiations with a looming threat of injunction.²¹³

Lemley and Shapiro examined the impact of injunctive power using two strategies that can be used by an infringer facing litigation: 1) litigation alone and 2) litigation and product redesign.²¹⁴ If the infringer gambles and loses using the litigation strategy, the infringer will face redesign costs plus lost sales due to market absence.²¹⁵ Lemley and Shapiro calculated royalty rates in these circumstances and compared them to the benchmark rate. Using an example where only 10% of total sales are lost due to market absence, their model shows that an infringer will agree to a royalty amounting to 110% above the benchmark royalty rate in order to avoid an injunction.²¹⁶ This rate will increase as the redesign complexity increases.²¹⁷ If the infringer chooses to redesign during litigation, the infringer not only incurs the litigation costs but the redesign costs. In order to avoid redesign costs, especially on a weak patent, the Lemley and Shapiro economic model indicates that the infringer would be willing to pay a 40% premium above the benchmark rate.²¹⁸ In situations where the patented invention adds no value to the infringer's invention, Lemley and Shapiro determined that all royalty above the benchmark rate is the result of a holdup and makes no economic contribution.²¹⁹

Royalty stacking is the situation where the components or manufacturing methods of a company's single product are covered by several patents, leading to multiple royalty payments to multiple parties.²²⁰ Royalty rates in a stacking situation are affected by rates that other firms pay to the patentee because of 1) rent splitting, 2) shutdown, and 3) a situation known as the Cournot complement.²²¹ In a rent splitting situation, a firm pays royalties to multiple patent holders, cutting into its profit margins. If that firm pays royalties to many patent owners, its margins will

²¹² *Id.* at 1996-2000.

²¹³ *Id.* at 2000.

²¹⁴ Lemley & Shapiro, *Supra note 204*, at 2000.

²¹⁵ *Id.* at 2001.

²¹⁶ *Id.*

²¹⁷ *Id.*

²¹⁸ *Id.* at 2002.

²¹⁹ Lemley & Shapiro, *Supra note 204*, at 2003.

²²⁰ *Id.* at 1993.

²²¹ *Id.* at 2011.

be reduced and so will the amounts it can pay to potential licensors. The relatively small profit margin on the product will likely limit the power of a threatened injunction by any one patentee.²²² If the downstream firm's royalty payments are each above the benchmark royalty limit, the company may still be able to operate; however the firm will shut down before the profit margin becomes less than zero.²²³ The Cournot complement arises when multiple downstream firms "with market power sell complementary products."²²⁴ A holdup results in a product price increase leading to reduced demand and output, ultimately increasing the economic deadweight loss and resulting in a net social detriment.²²⁵

Infringement can result from an overt act to use a patented technology or it can be the result of independent development. The point in a product's development timeline is also significant as to how strong a patentee's bargaining position is. The threat of an injunction early in product development will have little effect, as the infringer can design around the patented invention. However, once the product is developed and on sale, the threat of an injunction can be extremely effective because of the potential cost of production shutdown and the cost to design around the patented invention. Lemley and Shapiro assume that the cost to design around the patented innovation will be large, but this will often vary with what is actually patented and the technological field. These circumstances clearly make it more profitable for a patentee to engage in strategic behavior, waiting until the infringer is already in production before providing infringement notification.²²⁶ This delay and surprise create a holdup situation. If there are multiple patents that cover an invention, this may result in multiple holdups and a royalty stacking situation, imposing costs on the infringer that are out of proportion with the actual value of the patented inventions.

Holdups and royalty stacking are amplified after courts have determined that a patent is both valid and infringed. Not only are damages disproportionately large but they are often followed by a permanent injunction. This creates a twofold burden on the infringer. Based on a benchmark calculation model developed by Lemley and Shapiro, post-trial negotiations, the failure of which may result in an injunction, will result in royalties that are significantly higher

²²² *Id.* 2012.

²²³ *Id.* at 2012-13.

²²⁴ Lemley & Shapiro, *Supra note 204*, at 2014.

²²⁵ *Id.*

²²⁶ *Id.* at 1992.

than the benchmark value. The royalty is 110% greater than the benchmark in situations where the infringer solely decides to wager on the outcome of litigation, and loses.²²⁷ If the infringer redesigns the product during litigation, the award will be 40% higher than the benchmark rate; but that amount will depend on both the redesign cost and the probability of litigation success.²²⁸

Lemley and Shapiro indicate that royalties tend to be particularly disproportionate in situations where a component of the infringer's product is patented, but the rest of the product is predominantly non-infringing.²²⁹ The single component may result in an injunction preventing sale of the entire device. Thus it is not uncommon for an infringer to pay a high royalty fee simply to avoid litigation and the threat of an injunction.²³⁰ Lemley and Shapiro believe these situations are ripe for abuse, as illustrated by the results of *NTP v. Research in Motion*, where the parties agreed to a settlement eighteen times the reasonable royalty award.²³¹ The size of reasonable royalties damage awards are a significant concern, particularly in electronics and semi-conductors.²³²

Courts will generally rely on the Georgia Pacific factors to determine a reasonable royalty. The fifteen factors are applied based on hypothetical negotiations at the time of the infringement.²³³ Lemley and Shapiro determined that a court royalty award ends up being higher than the benchmark royalty partly because validity and infringement risk, assumed in a real negotiation, are removed.²³⁴ Calculations not only ignore risks inherent in a real negotiation but they also do not account for the unwillingness of the parties to agree.²³⁵ They list three further reasons why reasonable royalties overcompensate patentees: 1) reliance on industry rates are from past legal battles and not private deals; 2) experts overcompensate because private agreements are not publicly disclosed; and 3) determining the royalty rate for a patented component can be messy and inaccurate, particularly if apportionment calculations need to be

²²⁷ *Id.* at 2001.

²²⁸ *Id.*

²²⁹ Lemley & Shapiro, *Supra note 204*, at 2008.

²³⁰ *Id.* at 2009.

²³¹ *Id.* See also, *NTP Inc. v. Research in Motion*, 2003 WL 23100881 at 1 (E.D. Va. Aug 5, 2003).

²³² *Id.* at 2025-29, referring to case studies on 3G Cellular technology, WiFi, and others.

²³³ *Id.* at 2017-18.

²³⁴ Lemley & Shapiro, *Supra note 204*, at 2019.

²³⁵ *Id.*

made for a component.²³⁶ In relation to the third reason, calculations can further be skewed when applying the “entire market value” rule, which also permits royalties on unpatented products so long as the patented product drove sales.²³⁷ The strength of the Lemley and Shapiro argument depend on many assumptions and their arguments will be analyzed in greater detail when several economic approaches to patent remedies are examined in Part IV.

Lemley and Shapiro make several policy recommendations to curb strategic patent holdups and royalty stacking by non-practicing entities. There should be limits on injunctions and imposition of stays for certain patentees.²³⁸ After an infringement suit is completed, if the patentee is a non-practicing entity and the cost of the redesign burden for the infringer is very high, the courts should stay an injunction and allow parties to negotiate a licensing agreement.²³⁹ If the parties cannot reach an agreement, then the court should decide on a continuing reasonable royalty that would allow the infringer continued use of the patented innovation. If the redesign burden on the infringer is low and the patent adds to the infringer’s product, the court should award an injunction and allow the parties to negotiate a licensing agreement.²⁴⁰

In component situations, courts should also determine royalty assessment by comparing the value of the patented component to the next best non-infringing alternative.²⁴¹ This would reflect a truer valuation of the actual component.²⁴² This comparison has a precedent in determining damages for lost profits because courts limit damage awards due to the presence of non-infringing alternatives.²⁴³

Finally, in order to more accurately assess the value of the patented invention, Lemley and Shapiro believe that courts should also take into consideration other non-patented components of the device.²⁴⁴ This will allow the court to more clearly see the value of the patented invention in the context of the whole device.²⁴⁵ Court procedure could be modified

²³⁶ *Id.* at 2021-23.

²³⁷ *Id.*

²³⁸ *Id.* at 2035-36.

²³⁹ Lemley & Shapiro, *Supra note 204*, at 2037.

²⁴⁰ *Id.* at 2038.

²⁴¹ *Id.* at 2039.

²⁴² *Id.*

²⁴³ *Id.*

²⁴⁴ Lemley & Shapiro, *Supra note 204*, at 2040.

²⁴⁵ *Id.*

during damage assessment to allow courts to consider the royalties on other components in the device.²⁴⁶ Alternatively, since modifications to allow other agreements into evidence may cause greater complications, parties could introduce evidence indicating the value of other non-patented components to buyers.²⁴⁷ This would allow the courts to assess the value of the patented device in the context of a multi-component product.²⁴⁸

²⁴⁶ *Id.* at 2041.

²⁴⁷ *Id.*

²⁴⁸ *Id.*

Chapter Two

Purpose of a Patent System

Before examining how remedies can affect a patent system, there should be some indication what the goals of a patent system are. Why create a patent system at all? The United States (U.S.) constitution clearly states that Congress can make laws to promote science and the useful arts.²⁴⁹ Canada's constitution entitles Parliamentary regulation of patents and copyrights, but it does not describe the goals, or encompass the breadth of control given to U.S. Congress.²⁵⁰ Nonetheless, Canada's federal government still has significant power over the regulation of patents, compulsory licensing, and property rights.²⁵¹ Powers to regulate patents are not constitutionally enshrined in the United Kingdom (U.K.), but making laws to regulate patents, inventions, and the sciences is well within the law-making power of Parliament.²⁵² While neither the U.K. Constitutions Reform Act 2005 nor the 1977 Patent Act state intellectual property goals, there is an unwritten assumption that the patent act is to benefit society.²⁵³

Commentators often stress that encouraging innovation is the goal of a patent system.²⁵⁴ Of course it is true that patent systems are designed to encourage innovation, however that is not the only goal. Innovation is just one of several goals and these other goals should not be ignored when analyzing a patent system.²⁵⁵

David Vaver states that a patent system is supposed to “create incentives for innovation, without unduly limiting access for consumers and follow-on innovators.”²⁵⁶ There must be a balance between protection and access to allow others to expand upon the patented works.²⁵⁷

²⁴⁹ U.S. CONST. art. I, § 8, cl. 8.

²⁵⁰ David Vaver, *Canada's Intellectual Property Framework: A Comparative Overview* 17 I.P.J. 125 (2004); see also *The Constitution Act 1867* (U.K.) 30 & 31 Vict., c.3, as reprinted in R.S.C., No. 5 (Appendix 1985), App. II, No. 5, s. 91(22).

²⁵¹ Prior to 1988, Canada had an intellectual property system that regularly awarded compulsory licenses for drug manufacturers, removing such practices in 1988, and encouraging more of a property based system.

²⁵² The United Kingdom has a unitary system of government, with Parliament being the supreme law-making body.

²⁵³ David Vaver, *Reforming Intellectual Property Law: An Obvious and Not-So-Obvious Agenda*, Stephen Stewart Lecture for 2008 quoting *Gowers Review of Intellectual Property* (December, 2006).

²⁵⁴ Merges, *Supra note 3*, at 1589; Menell, 34 *Ecology L. Q.* at 722; Lemley & Shapiro, *Supra note 3*, at 2173.

²⁵⁵ See 35 U.S.C. § 200, Policy and Objective (innovation is not directly mentioned but the policy and objective stated in the patent act includes promotion of commercialization and public availability of invention as well as protecting the public from nonuse or unreasonable use of inventions). The Patent Acts of Canada and the United Kingdom do not specifically state a policy or objective in their respective statutes.

²⁵⁶ Vaver, *Supra note 250*, at 144.

²⁵⁷ David Vaver, *Sprucing Up Patent Law*, 23 I.P.J. 63, 64 (2010).

The incentive should not only encourage innovation but also encourage the inventor to develop and market the invention. An effective patent system should also allow an inventor to recover the cost of creating the invention and even make potential profits. However, an ideal system would also keep rewards in proportion with the effort put in by the innovator. Financiers and distributors should also have an opportunity to make a profit since they are responsible for making the inventions or inventive results publicly available. There must ultimately be a balancing of rights between patent owners and potential beneficiaries of the invention.

Amy Landers, like Vaver, indicates that the patent system has several goals beyond innovating for the sake of innovation. She notes that a patent system should encourage commercialization in order to truly be a system that benefits the public.²⁵⁸ Innovation as a goal encourages patent accumulation. However, patent accumulation also encourages patent-only transactions, which does not necessarily lead to greater commercialization.

Similarly, Roger Blair and Thomas Cotter look beyond just encouraging innovation as the sole goal of the patent system. They indicate that the patent system should be designed to “maximize social values” or the difference between social benefits and costs.²⁵⁹ Encouraging discovery and dissemination of new ideas are social benefits of a patent system.²⁶⁰ These benefits include not just the creation of new ideas but also commercialization or use of the inventions to ultimately benefit society. As noted earlier, the social benefit of giving exclusive rights to a patentee should outweigh the social costs and any existing patent system should do this better than alternate schemes or systems.²⁶¹

These goals are significant in the context of encouraging access to innovation information, economic development, investment, and commercialization. The beneficiaries of a patent system are not only inventors. They are also future inventors, investors, and consumers. The benefit to society stems from these directly related goals.

An inventor’s attempt to create an invention involves certain risks which can have economic implications, such as: 1) the risk of failure or not creating the invention; 2) the risk that

²⁵⁸ Amy Landers, *Working Together in a Digital World: Liquid Patents*, 84 Denv. U.L. Rev. 199 (2006).

²⁵⁹ Blair & Cotter, *Supra note 4*, at 45, 49.

²⁶⁰ *Id.*, at 45.

²⁶¹ *Id.*

even if the invention is created, there may be no market for it; 3) the unknown cost of research and development; and 4) the risk of infringement.²⁶² These risks exist with or without a patent system and whether or not the inventor is cognizant of them. They also indicate how tenuous the position of the inventor may be even if the inventor has the protection of a patent. Each of these risks involves significant financial and labor investments with potentially limited rewards.

Even if the patent owner is capable of overcoming all of the risks, she may still choose to sell the invention or license it to another. There are several business reasons to do this, even if the buyer or licensor is a competitor. The incentive is greater profit through patent trade. Optionally, the patent owner may choose to neither license nor sell the patented invention, opting to do nothing. Each of these marketing avenues is available to the patent owner. While profiting from an invention is a great incentive, there are a myriad of reasons why a patentee may choose a particular marketing strategy.

The initial financial risks associated with the research and development process fall to the inventor. Upon completing an invention, the inventor may attempt to commercialize it in order to receive compensation and potential profits for her labour. However, if the inventor does not have the resources to market the innovation or if there is no market for it, she will receive no compensation. At this point, an inventor is a non-practicing entity because the innovation is not being used. In an effort to recover some of the invested costs, she may try to sell or license the innovation to someone who is more capable of marketing it. If the inventor is lucky enough to find a patent licensee or buyer, then some or all of the risk will be transferred to the buyer. The buyer will have to overcome similar risks in finding a way to recover the cost of paying for the patent. From an economic standpoint, the buyer will face the potential that there is no further market for the invention and the risk that the patent might be infringed or invalidated. Thus the risk has shifted to the purchaser and the purchaser must try to recover the expenditure as well as the potential cost of the risks. Despite the protections afforded by a patent, the risks are considerable. As Blair and Cotter indicate, there is a risk involved in creating an innovation but there is also a risk in marketing the innovation. The patent system will ideally create incentives for innovators to encourage taking these risks.

²⁶² *Id.* at 47.

Without a patent system, an inventor who devotes the time, effort, and resources to create an invention will face the possibility that another party may copy and market the invention without having to devote the resources to invent.²⁶³ The cost of copying an invention is usually small compared to the cost of research and development in creating the invention. Since both the copyist and the inventor would have to expend resources in commercializing the invention, the copyist avoids the costs devoted to the inventive process, creating a competitive advantage. This generally puts the inventor at a distinct disadvantage when the two parties compete in the marketplace. This may be less of a disadvantage if the inventor is a large company with significant resources, but it puts small inventors with limited resources at a significant competitive disadvantage. Big or small, there is a disincentive to put forth the time, money, and effort to create since someone might just copy the resulting invention before a company can successfully reach the market. A system that lacks adequate protection may cause the inventor to keep the invention secret unless she can enter the marketplace and capture an overwhelming share of consumers by being first to commercialize the innovation.²⁶⁴

Without patent protection, invention will go on but there will be less willingness to publish information and more care taken before goods are openly sold. An inventor would either have to be first to market or would have to keep the invention secret. In being first to market the inventor would use that position to gain such a significant hold on the product market that competitors would have difficulty convincing consumers to switch to their product. Achieving market supremacy is difficult. Even if an inventor manages to be first to the marketplace, there is no guarantee that the inventor's product will sell. The copyist may actually have an advantage by being patient. By collecting marketing data on the product, the copyist can enter the marketplace at a later time and use the marketing data to nullify any advantages the inventor may have due to the head-start. The alternative to gaining overwhelming market share is for the inventor to keep the invention secret. This may work if the patent is for a process but it becomes difficult to prevent others from re-constructing materials or machines. Secrecy also limits follow-on inventions because information is not published or shared. This also puts fewer products into the stream of commerce, thus affecting society.

²⁶³ Maureen A. O'Rourke, *Rethinking Remedies at the Intersection of Intellectual Property and Contract: Toward a Unified Body of Law*, 82 Iowa L. Rev. 1137, 1144-45 (1997).

²⁶⁴ Blair & Cotter, *Supra note 4*, at 48.

The patent system is an attempt to correct the market inefficiency created by copyists by providing protection for inventors in an effort to encourage innovation.²⁶⁵ A patent system should do this by protecting inventors from copyists and by providing incentives to create, to disclose or publicize, to commercialize, and to encourage others to use this information for further invention. The system should further create a disincentive for copyists. Publication and disclosure allow other inventors to improve upon existing inventions. Protection for inventors is also intended to encourage research and development (R & D), which provides jobs and encourages scientific education within a country. R & D spending also increases manufacturing and commercialization efforts as viable inventions enter the marketplace. Invention commercialization also provides new and better products for consumers. If these results come about because innovation is encouraged, then it is clearly beneficial for a country to find ways to encourage innovation.

However, a patent system should not provide incentive to innovate for the sake of innovation. Nor should such a system exist to solely protect the inventor or create barriers that exclude users and future inventors.²⁶⁶ Encouraging innovation is intended to ultimately benefit society at large and not just inventors or invention owners. However, a system that disseminates innovation without protecting the inventor actually discourages other inventions. A patent system should strike a balance between protecting inventors, follow-on inventors, and beneficiaries.

Blair and Cotter list social costs which arise when patent protection exists and these should be balanced against the social benefits. These costs include: 1) the “systemic costs of processing, enforcing, and maintaining patent rights”; 2) the potential for existing patents to inhibit invention, by raising the cost of follow-on inventions; 3) the increased cost of the inventive process and ultimately the products created, due to patent infringement searches; 4) duplicated efforts by multiple inventors; 5) the existence of “deadweight” losses arising from

²⁶⁵ Henry Carr, *Intellectual Property Litigation*, Oxford Intellectual Property Research Centre EIPR Papers (22 Nov. 2005).

²⁶⁶ See Vaver *Supra* note 250, at 143-161, 159.

patent monopoly rights; and 6) the potential litigation costs due to unclear patent boundaries.²⁶⁷ There should be a net social benefit when balancing benefits and costs.

William Landes and Richard Posner indicate that disclosure is a significant reason to create a patent system, even as they question other reasons given in support of the system.²⁶⁸ Without a patent system, Posner and Landes believe that inventors would invest more heavily in methods of maintaining trade secrecy. There would also be greater funding for inventions that could be kept secret. Posner and Landes propose that another consequence of keeping manufacturing processes secret would be a generally less efficient manufacturing system. Disclosure through a patent allows process licensing to someone who would be better able to use the innovation, while trade secrets make such licensing difficult. If a trade secret were the only option, there would be no way of efficiently exchanging information about a process that may be useful in other industries or in other areas. The innovator may never learn of other potential uses and a manufacturer in another industry would have no easy way of learning of the invention. A system relying on trade secrets is not a particularly efficient system and the goals sought under the current system would be difficult to achieve. Landes and Posner indicate that patenting may be unnecessary where a monopoly exists but it is needed in high-competition environments. To increase profits, owners of a monopoly can both lower costs and raise prices on their innovation. Innovations that are difficult to reverse-engineer give the inventor an experience advantage which can also act as a barrier to entry. Landes and Posner further note that without patent protection, an inventor would have to use superior efficiency or economies of scale to create barriers to entry for other manufacturers. The advantages of experience and low costs can allow a company without a patent to entrench itself and limit competition. However, a patent is necessary in competitive industries because companies have neither the economies of scale nor expertise superior to their competitors. In high competition environments, a patent rewards innovation by giving innovators a limited monopoly to gain an advantage over their competitors, in exchange for disclosure. Landes and Posner finally conclude that even if a patent would be unnecessary to encourage innovation, patenting is essential to follow-on innovation because it encourages disclosure.

²⁶⁷ See Blair & Cotter, *Supra* note 4, at 46.

²⁶⁸ William M. Landes & Richard A. Posner, *The Economic Structure of Intellectual Property Law*, . 329-30 (Belknap Press of Harvard University Press 2003).

If the cost of obtaining, maintaining, or enforcing a patent is high innovators will not resort to patents and will seek alternative ways to protect their innovations. This indicates that patent applications and awards should be reasonably available to inventors. Dispute resolution should be accessible and remedies should be credible in order to prevent infringement. However, the protections given by a patent should not be so strong that new inventors will be discouraged from wading into the creative waters for fear of being bitten by patent enforcers. A balance must be maintained. There must be a system to notify others that an invention is patented and there must be a means of finding these inventions without undue cost. Boundaries should also be clear to limit boundary disputes, to prevent the unwary from infringing, and to prevent patent holders from claiming well beyond their bounds. Independent inventors face the highest burden because their efforts may be for naught. An ideal system would limit duplicated efforts. Finally, deadweight losses are economic losses faced by consumer society because of higher than optimal pricing and lower than optimal access to the invention. Each of these costs will have a detrimental effect on inventive efforts and each provides an obstacle to an ideal patent system.

Attempts to balance costs and benefits are reflected, to an extent, in infringement remedies in Canada, England, and the U.S. because all three jurisdictions have remedies that are not intended to punish infringers but to compensate inventors²⁶⁹. However, existing gaps in the system have allowed certain patent holders to obtain very high profits, not as a result of their creative abilities or marketing prowess but because of their willingness to litigate. Long-standing approaches to patent remedies may fall short in certain situations and may not be maintaining the goals of the patent system. Furthermore, debate in dealing with a certain non-practicing patent holders has focused entirely on patent holders and infringers but not on the other stake-holders. As legal interpreters, it should fall to the courts to mitigate potential inequities in the system and to protect other stake-holders.

²⁶⁹ Nonetheless, punitive remedies do exist. An accounting for profits may be punitive if a court determines infringement profits to be greater than actual profits. Compensation for loss of sales on convoyed goods may also be perceived as punitive. Finally, in the U.S. there is the potential for a court to award treble damages for willful infringement, but since *In re Seagate Technology, LLC*, (Fed. Cir., 2007), courts have been less likely to award willful infringement damages, especially if procedures to determine if potential infringement exists have been followed.

A Short Summary of Property Rights in Patents

Property can be defined as a legal thing with an “objectively defined area for value-producing activity and choice.”²⁷⁰ Ownership is created through an operation of law, and that law ultimately dictates the level of control that an owner will have over that object.²⁷¹ The level of control granted will entitle owners to use the object so long as it is within the boundaries of the law. Therefore, to facilitate efficient resource usage by private persons, rights and control must be legally defined before a person can make decisions related to the property.

Property rights, in their broadest form, entitle a person to complete control and ownership over a thing while excluding all others from control and ownership.²⁷² A property right creates a legal entitlement in the owned property. This entitlement gives the property owner a legal right to use the property and a right to prevent others from using the property. Non-owners are not entitled to use the property, and only with the permission of the owner can anyone else obtain rights or entitlement to the property. In a pure free-market system the entitlement holder sets an initial price, and only after reaching an agreement through bargaining with a second party can the entitlement be legally infringed or taken by the second party.²⁷³ The bargain reached may entail a partial or complete transfer of control and ownership.

There can be many property rights but these will often include a right to exploit the property, a right to property alienability, and a right to exclude others from the property. It is often stated that the most significant entitlement is a right to exclude. It is not that the right to alienability, the right to exploit, and any other rights are unimportant but they are often limited by a country’s statutes.²⁷⁴ While the right to exclude may also be limited, that limit generally pertains to the government’s use and not use by other parties. Included in the patentee’s right to exclude is the right to prevent others from making, using, selling, or importing the innovation which is the subject of the patent.²⁷⁵ A person or entity has no right to use the patentee’s

²⁷⁰ Emily Sherwin, *Property, Rules, and Property Rules*, Cornell Law Faculty Working Papers, 38 (8-16-2007) http://scholarship.law.cornell.edu/clsoops_papers/26/ (last visited September 27, 2011).

²⁷¹ *Id.*, at 38-9.

²⁷² Menell, 34 *Ecology L. Q.* at 720-21.

²⁷³ Merges, *Supra note 52*, at 2655.

²⁷⁴ See U.S. Patent Act, Canadian Patent Act, and U.K. Patents Act 1977. See also below discussion on Patents as Property in Canada, England, and the United States at page 55.

²⁷⁵ See U.S. Patent Act, Canadian Patent Act, and U.K. Patents Act 1977.

invention and may even have a duty not to use the patentee's invention.²⁷⁶ A person or entity may acquire rights to use the patented innovation if authorized by the patentee. However, quite often patent acquisition may be limited by the state.

A further aspect of the right to exclude is that knowledge or intent is not a factor in determining liability for a breach of that right. Anyone using a patented invention without the patentee's authorization has breached the patentee's rights. The breach is known as patent infringement and it is a strict liability issue. Infringement, like a physical trespass, requires no intent or knowledge. Innocent infringers and even good-faith avoiders are just as liable as the willful one.²⁷⁷ Only an authorized right to enter or use the property would be valid while all others would face sanctions.

Patents, Property, and the Property Rights Movement

It is commonly stated that economic theory justifies creating patent protections because the free-market is unable to support efficient innovation in areas where research and development is costly but the outcomes are easily and cheaply duplicated.²⁷⁸ Patent protection is a legal solution to a market problem. In order to provide incentive for inventors to put in the time and effort to innovate, knowledge is protected by granting exclusive use to a person for a period of time. This prevents the copyist from taking advantage of the labors of another and encourages people to invent. However, there is a question of whether the patent incentive is really necessary. William Landes and Richard Posner have found that the incentive will vary depending on the industry and that the cost of copying will vary depending on the innovation. In many industrial applications the cost of duplicating an industrial innovation will be very high, creating a cost disadvantage for the imitator.²⁷⁹ Even without a patent, the inventor will gain an advantage by being first to market and the first to develop expertise in producing the innovation.

²⁷⁶ Shyamkrishna Balganesh, *Demystifying the Right to Exclude: Of Property, Inviolability, and Automatic Injunctions*, 31 Harv. J.L. & Pub. Pol'y 593, 598 (2008).

²⁷⁷ James Bessen and Michael Meurer, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovation at Risk*, 30-33 (Princeton University Press 2008) (Although it should be noted that the remedy awarded by the courts may vary depending on the type of infringement).

²⁷⁸ Bessen and Meurer, *Supra note 277*, at 30-33; See also Stuart Graham and Ted Sichelman, *Why Do Start-ups Patent?*, 23 Berkeley Tech. L.J. 1063 (2008).

²⁷⁹ Landes & Posner, *Supra note 268*, at 313.

The exclusive grant creates a monopoly, resulting in an economic deadweight loss to consumers and potential limits on further research use of the knowledge.²⁸⁰ A deadweight loss is a result of monopolistic pricing, creating higher prices for the patented invention and lower supply, as patent law attempts to balance the protections with disclosure and public access. Limits on further research arise under strong property rights rules because any use not-authorized by the patent owner is prohibited. This creates the need for licensing (which is not a bad thing), but would stunt innovation if the property right were so strong that a researcher would be afraid to commence research for fear of infringing.

Peter Menell believes that treatment of property rights should vary with the type of resources.²⁸¹ While patents are considered property in each of the three jurisdictions, they are also property distinct from physical property. One distinction is that patents are intangible whereas physical property is tangible. This is significant because tangibility is directly related to the scarcity or limited availability of physical property. Communal property is considered to be inefficient and wasteful in a free-market economic system because everyone will want to use and abuse the property because of its lack of scarcity. By contrast, private ownership is supposed to encourage efficient use of scarce resources and property. However, with a patent, it is not the scarcity of resources but the lack thereof, which is really a concern. While physical property use is limited and cannot easily be used by multiple parties, the use of a patent by one party does not limit or prevent use of that knowledge by another. Limitless patent usage is what actually requires a property right because access to a patented innovation would otherwise be easy. The property right granted in a patent is intended as incentive to invest in the innovation process. Thus patent owners are given the right to exclude all others for a period of time, essentially giving the owner exclusive use for that time. The property right is not granted for efficient use of scarce resources. The incentive of property rights in a patent is granted to encourage innovation, and it is widely believed that continued protection will further encourage commercialization.

While efficient use of property can be attributed to patents rights, the incentive to innovate and use of scarce resources are very distinct goals. Efficient use of scarce resources

²⁸⁰ Menell. at 726-27; Sannu K. Shrestha, *Trolls or Market-Makers? An Empirical Analysis of Nonpracticing Entities*, 110 Columbia L.R. 114, 122 (2010).

²⁸¹ Menell, 34 Ecology L. Q. at 720.

may be a policy for providing property rights in land or goods but for patents it is the complete lack of scarcity which the property right attempts to address. The property right, through the right to exclude, provides a limited period where the inventor can commercialize the innovation in an attempt to profit (and recover R&D costs). As Landes and Posner point out, the monopoly and property protection granted to an innovator will influence the mark-up in price for the innovation but will not have a bearing on costs incurred in making the innovation.

Patents also entail an exclusive property right created with the intent to promote innovation and commercialization. Economic efficiency is behind calls to adjust aspects of patent rights. Economic efficiency is a separate concern apart from the original goals of promoting innovation and subsequent commercialization. Improving efficiency may help the system but it is not a goal of a patent system.

Additional concerns in a patent system entail that the exclusive right in a patent is tempered by laws that allow flexibility capable of adapting to changes in public policy, technology, and economics.²⁸² Such exclusivity limits can be seen in the duration of a patent and by a threshold requirement that the underlying invention is non-obvious, novel, useful, and is of an appropriate subject matter.²⁸³ A specific duration limits the exclusivity timeframe and allows the patent to eventually enter the public sphere. A requirement for an invention to be non-obvious, novel, useful, and of appropriate subject matter limits the scope of what can be patented to new inventions, ones that differ from existing inventions, and have commercial applicability. Laws of nature or abstract thoughts cannot be patented.

Under international agreements, Canada, the U.S., and England have all established patent terms of twenty years. Physical property ownership may last a lifetime or even longer, while patent property rights are limited in duration.²⁸⁴ This duration is significant because patents fall into the public domain after the twenty year period.²⁸⁵

²⁸² *Id.*, at 722.

²⁸³ *Id.* These limitations apply to all three jurisdictions.

²⁸⁴ Property may belong to a trust for considerably longer than a lifetime and theoretically to a corporation for an indefinite period of time.

²⁸⁵ Term-extensions due to long government approval of goods involving patented components may extend the life of a patent beyond the twenty year term. There is also the more questionable practice of ever-greening or other competitively questionable deal-making practices which may extend patent terms beyond their initial twenty years.

There are also functional and structural differences between tangible and intangible property which require different treatments than physical property. Scarcity applies not only in regard to the amount of physical property available but also to the depletion of property value through over-use. The intangible nature of a patent prevents it from being depleted either through overuse or scarcity.²⁸⁶ Physical property has very distinct and usually obvious boundaries; patent boundaries are far less clear and rely on interpreting claim language intentionally written to claim as much as possible. Finally, enforcement costs can also be very high for patents because of the need to observe the flow of knowledge. By contrast, land can be much more easily monitored.²⁸⁷ The lack of clear boundaries makes both avoiding and monitoring infringement complicated because neither the patent owner nor the infringer is necessarily clear when the boundary lines of the patent have been crossed.

Under natural rights, private property is considered exclusive, transferable, and free from government interference. The natural-rights philosophy of John Locke considered life, liberty, and property to be inalienable rights.²⁸⁸ While there are calls for this absolute vision to apply to all property, including patents, the natural rights theory has limitations. Despite the best efforts of property rights supporters, patent property is not considered absolute. Property inalienability is limited in each of the jurisdictions, whether by constitution or through limited protection under laws or both. Support for strong property rights also appears to be misguided in the case of patents because the property right created in a patent is a statutorily created right in all three jurisdictions under examination. The statutory rights also contain limits and allow for considerable government interference. As will be seen, strong property rights have caused concerns in the current system.

Utilitarian ideals, while not reaching the level of property inalienability, also considered private property to be exclusive, transferable, and free from government interference. Utilitarianism, through neoclassical economic theory, examines property as a bundle of rights.²⁸⁹ Each of the rights in the bundle is owned and is transferable.²⁹⁰ Utilitarianism, rather than natural law, has played a greater role in developing patent law. This can be seen in the U.S. and

²⁸⁶ Menell, *Supra note 3*, at 744.

²⁸⁷ *Id.*

²⁸⁸ *Id.*, at 723-24.

²⁸⁹ *Id.*, at 726.

²⁹⁰ *Id.*

Canada because their respective constitutions give their federal legislative bodies the power to promote the progress of science and to make laws regarding patents.²⁹¹ These philosophical underpinnings can also be seen in England through the development of the patent as a property right and also in limitations imposed by the government through moral and equitable principles. Furthermore, each country has adjusted the bundled rights as needed to promote science, progress and economic benefits. While the patent system in each country has been relatively free from interference in property rights in recent times, interference is possible under each statute.

There has been a substantial push to establish strong property rights for all physical and intangible property owners. There are many groups which support this property rights movement, and naturally, patent holders support the idea of strong property rights for their own intangible property. But there are ideological differences between patent owners and property rights advocates. Propertizing everything so that it can be bought and sold with no government interference may not be as feasible for patents. Menell observed that strong property rights supporters want strong private property protection because of free-market, anti-government ideology while patent owners tend to see property rights as a means of profiting from research investments.²⁹² What motivates the parties in their property rights support is actually quite distinct. Patent owners “tend to be far more agnostic about government intervention” particularly since governments tend to provide funding for so much research.²⁹³ Patent holder views on propertization apply insofar as they can profit from it. Ideology plays far less of a motivating role. Patentee support for strong property rights also varies with the technological area. Pharmaceutical companies want extremely strong protections whereas other technological areas are more flexible. Patentees waver in their views on strong property rights, supporting strong propertization when they are patent owners. When they are being accused of infringement, their view may be quite the opposite.

There is also no small irony in property rights advocates’ support for strong property rights for patents. In particular, their demand for government non-interference directly opposes

²⁹¹ Menell. at 725-26, See also U.S. CONST. art 1, §8, cl.8; and see *The Constitution Act 1867* (U.K.) 30 & 31 Vict., c.3, as reprinted in R.S.C., No. 5 (Appendix 1985), App. II, No. 5, s. 91(22).

²⁹² Menell, *Supra note 3*, at 742-43.

²⁹³ *Id.*, at 743.

the statutorily created rights and protections for patents.²⁹⁴ It is strange that intellectual property rights are part of this movement, especially since patent laws are already a form of government intervention in the market-place. Without patent laws, an inventor's labors would be for naught because a copyist would not have to expend the research and development cost and effort but could merely copy the invention. Without patent laws inventors are likely to keep information secret, or be forced to take risks to enter the marketplace in such a way so that the invention would prevent others from entering into competition with the inventor. In order to prevent inventors from keeping innovations secret and to eliminate some of the risks for inventors, the patent system provides protection from copyists by giving inventors a limited monopoly and property right in the patent. Thus it is government intervention which is responsible for maintaining the property rights enjoyed by intellectual property holders (government intervention also maintains the rights of holder of land and goods). Otherwise harsh free-market conditions would prevail.

Despite this ideological push, countries have kept patents from becoming like physical property. Each of the governments has retained considerable control over patent rights and has created circumstances where patent rights can be limited.

Patents as Property Under Statute in Canada, the United States, and England

The specifics of property rights will vary from country to country. However, in Canada, the U.S., and England patent property rights are treated similarly. Each country has a strong sense of property rights that is entrenched in its laws and social consciousness. The specifics of patent rights vary, but the general concepts are very similar. Each country grants a property right in the patent, but each country also recognizes that the right is not absolute. There are limits defined in each country's statutes.

Canada

The Canadian Patent Act provides the patent holder with what seems like an affirmative right, to make, use, construct, and sell the patented invention.²⁹⁵ The patent act states that a

²⁹⁴ There is further irony in the fact that all property rights exist by virtue of the existence of a state. The existence of law-making and enforcing bodies, which are usually arms of the state, are what generally ensure peaceable possession, ownership, and any other rights that may come with property. However, a detailed discussion of property rights is beyond the scope of this work, and physical property rights are only brought in to the extent necessary to show similarities and distinctions between intellectual and real or physical property.

²⁹⁵ *Canadian Patent Act*, R.S.C. 1985 c. P-4, s. 42.

patentee has “the exclusive right, privilege and liberty of making, constructing and using the invention and selling it to others to be used[.]” This language, along with language in other sections of the Patent Act, indicates that patents are viewed, under the statute, as property.²⁹⁶ Section 27(4) refers to the “boundaries” of the patent as property and s. 49 details the requirements that must be followed to assign a patent.

Canadian courts have often treated patents as a form of physical property but more recently have used language which emphasizes that patent rights are really just the right to exclude.²⁹⁷ In his dissenting opinion in *Harvard College v. Canada*, Justice Binnie stated:

“[T]he Patent Act gives the owner, as against the rest of the world, ‘the exclusive right, privilege and liberty of making, constructing and using the invention and selling it to others to be used ...’ (emphasis added), and in that respect is framed as a positive right, its effect is essentially to prevent others from practising an invention that, but for the patent monopoly, they would be permitted to practise. In exchange for disclosure to the public, the patent protects the disclosed information from unauthorized use for a limited time.”²⁹⁸

It is clear from the legislation and case law language that Canadian courts view patents as a form of property with rights and privilege that come with such ownership. This quote also indicates that the right to exclude is understood as paramount despite the other affirmative language in the statute.

²⁹⁶ *Canadian Patent Act*, R.S.C. 1985 c. P-4, s. 27(4) (indication that patent claims are required to define the subject-matter of the “privilege or property” being claimed); see also ss. 49 (refers to assigning patents “...property or interest in the invention...”), 55.2 (refers to the exclusive “...property or privilege granted by the patent...” in reference to infringement exceptions), and 60(2) (referring to the “...exclusive property or privilege...” of the patent in the context of infringement limits) (these sections all refer to the property or privilege grant of a patent).

²⁹⁷ *Harvard College v. Canada (Commissioner of Patents)*, 2002 SCC 76, para. 64 (Dissenting opinion of Binnie J.); *Smith, Kline & French Laboratories Ltd. v. Canada (Attorney General)*, 1985 CarswellNat 60, par. 17 (While the main issue regards the constitutionality of compulsory licensing, this case is a clear indicator that patents are considered a form of property and are referred to, as such, throughout the case).

²⁹⁸ *Harvard College v. Canada (Commissioner of Patents)*, 2002 SCC 76, para. 64.

Yet despite case law and affirmations of property rights in parts of the Patent Act, rights entailed by the patent may be limited for national security and defence purposes.²⁹⁹ Canada has also specified very detailed rules for exporting drugs for humanitarian purposes, thus creating a further limitation to property rights through the grant of a compulsory license.³⁰⁰ There is also a section of the patent act which entitles the government to grant a compulsory license to another party if the patent right is found to have been abused.³⁰¹ Thus the disclosure, sale, use, the right to exclude, or any other right associated with patent as property are far from absolute and may be limited by the Canadian government.

United States

The U.S. Patent Act provides that a patent holder has the right to exclude others from using, making, importing, or offering for sale, or selling.³⁰² The Act further states that for the purposes of ownership and assignment, patents “shall have the attributes of personal property.”³⁰³ In *Patlex Corporation v. Mossinghoff*, the Federal Circuit Court unequivocally stated that patents are property.³⁰⁴ This view is reinforced by the concurring opinion of Chief Justice Roberts in the recent *eBay v. MercExchange* decision, where he reaffirms support for traditional property rights associated with patents.³⁰⁵

Property in the U.S. is commonly viewed as a bundle of sticks, with each stick in the bundle representing an exercisable right. In patent law, the right to exclude is considered the most powerful right, or biggest stick, held by the patent holder.³⁰⁶ It is also the right that is specifically granted by statute. It is not that other rights are less important, but there are certain conditions under U.S. patent law which may limit other rights. There are specific provisions in the patent code which may prevent disclosure of patented information for national security

²⁹⁹ See *Canadian Patent Act*, R.S.C. 1985 c. P-4, s. 20 (particularly ss. 20(7)(8) and (17) which entitles the government to expropriate any patent and patent invention related to safety of the State).

³⁰⁰ See *Canadian Patent Act*, R.S.C. 1985 c. P-4, ss21.01 – 21.2.

³⁰¹ See *Canadian Patent Act*, R.S.C. 1985 c. P-4, s65 (case law has created very exacting conditions which must be met before a license will be granted but the power to grant a compulsory license nonetheless exists); see *Brantford Chemicals Inc. v. Canada (Commissioner of Patents)* (F.C.) [2007] 4 F.C.R. 547; and see *Torpharm Inc. v. Canada (Commissioner of Patents)* (F.C.), [2004] 4 F.C.R. 29.

³⁰² U.S. Patent Act, 35 U.S.C. §154(a)(1).

³⁰³ 35 U.S.C. § 261

³⁰⁴ *Patlex Corporation v. Mossinghoff*, 758 F.2d 594, 599 (Fed. Cir. 1985) citing *Consolidated Fruit Jar Co. v. Wright*, 4 Otto 92, 96, 94 U.S. 92, 96, 24 L.Ed. 68 (1876).

³⁰⁵ See *eBay v. MercExchange* (concurring opinion Roberts J.).

³⁰⁶ *Patlex Corporation v. Mossinghoff*, 758 F.2d at 599; See also *Zoltek Corp. v. United States*, 442 F.3d 1345, 1368 (Fed. Cir. 2006) (Per Curiam) and *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700, 703 (Fed. Cir. 1992).

purposes, and there may be limitations on the sale of patents if the sale creates a situation that would be contrary to anti-trust or competition laws.³⁰⁷ A recent decision in *Zoltek v. United States* has indicated that use of an unlicensed patent by the U.S. government is not a taking under the eminent domain protections of the Fifth Amendment but as a creation of federal statute; and a waiver of sovereign immunity exists through the Tucker Act.³⁰⁸ The Tucker Act creates a procedure whereby a patentee can claim compensation when the United States government uses, manufactures, or has manufactured a patented invention.³⁰⁹

England

The U.K. Patents Act 1977 explicitly states that a patent shall be considered personal property and the property owner can mortgage, assign, or license either the patent or any rights under the patent.³¹⁰ The right to exclude can be seen from the remedy associated with a violation or infringement of the patent grant. The Patent Act not only confers property rights on patent holders, but also confers the ability to bring infringement proceedings under s.61 of the 1977 Act and to seek the appropriate remedy or remedies for the infringement.³¹¹ These remedies include enforcing the right to exclude as well as other equitable remedies and damages, but remedies will be covered in more detail below.³¹²

There are also limitations to the patent grant and the absolute property nature of the patent. The 1977 Patent Act allows patent grants to be limited if they are contrary to public policy and morality.³¹³ Public welfare is assumed within the patent granting process.

Considerable power is retained by the government to control property rights in a patent grant. Limitations may be placed on the property right if an invention relates to national

³⁰⁷ See 35 U.S.C. §§ 181-188, Chapter 17, Secrecy of Certain Inventions and Filing Applications in Foreign Countries; and see Department of Justice 1995 Antitrust Guidelines for the Licensing of Intellectual Property, <http://www.justice.gov/atr/public/speeches/0167.htm> (last visited Sept.24, 2011).

³⁰⁸ See *Zoltek Corporation v. United States*, 442 F.3d at 1351-53 (Fed. Cir. 2006) reversed in part by *Zoltek Corporation v. United States*, 672 F.3d 1309 (Fed. Cir En Banc 2012) (the reversal was over the scope of sovereign immunity as it pertains to claims made under the Tucker Act but the court did not change its opinion indicating that unlicensed patent use is a taking under the eminent domain clause of U.S. CONST. Amend. V).

³⁰⁹ See "Tucker Act" 28 U.S.C §1491.

³¹⁰ *U.K. Patents Act 1977*, Section 30 (Section 31 deals with patents in Scotland but because of legal distinctions between England and Scotland, only English law will be considered).

³¹¹ *Hartington Conway Ltd's Patent Applications* [2004] R.P.C. 7, para. 25.

³¹² *U.K. Patents Act 1977*, Section 61 (an injunction is the primary remedy to enforce the right to exclude).

³¹³ See *U.K. Patents Act 1977*, Sections 1(3), 22, and 23.

security, government use, public welfare, or emergency.³¹⁴ There is also a process whereby a license may be granted by the government to another if specific conditions are met.³¹⁵ While there is no requirement to use a patent, this power may be exercised to create a compulsory license. Finally, the right to sell or license a patent may be curtailed by the government if it is found that exercising those rights would impede competition.

An aspect of U.K. law that is quite different from Canadian or U.S. law is that the patentee can apply to have an entry made on the register indicating the availability of licenses as of right for an already registered patent.³¹⁶ Registration makes it known that a patent holder is offering licenses on reasonable terms to any applicant and that, if the parties cannot agree to terms, the U.K. Patent Office will set the licensing terms. This lowers patent renewal fees for the patentee but it essentially precludes making claims for infringement and, since an infringer can seek a license as of right, royalty demanded by the patentee can be limited.

One final consideration in granting a property right is the morality element under the 1977 Patent Act. Even if all the other conditions are met, the state reserves the right to deny a patent grant due to morality and public policy considerations.³¹⁷

Similarities and Differences

In any jurisdiction, the rights assigned by law define the scope of the property right. The bundle of rights or available rights may vary according to the statutory language. The statutory language in the three jurisdictions indicates general similarities and slight differences in rights held by patent holders.

In Canada, the statutory language indicates a right to act in utilizing the patented invention. However, the Canadian Supreme Court indicates that patent rights are primarily prohibitive. Even though the Patent Act frames a patent as containing an explicit right, privilege and liberty to make, construct, and use, it is the right to exclude that the courts interpret as

³¹⁴ See *U.K. Patents Act 1977*, Sections 55-59. There are also considerable rules and regulations governing drug production, including limitations on blocking patents.

³¹⁵ See *U.K. Patents Act 1977*, Sections 48A-B.

³¹⁶ See *U.K. Patents Act 1977*, Sections 46.

³¹⁷ *U.K. Patents Act 1977*, Section 1(3).

supreme.³¹⁸ There is little guidance on the extent of the rights, privileges, and liberties in making, constructing, and using, despite statutory support; but it can safely be assumed that they exist unless proscribed elsewhere in the statute.

By contrast, the U.S. statutory language merely confers a right to exclude others from using the patent. It does not provide a right to actually use the patented invention. Patents also have the attributes of property, but there is no place in the Patent Act that specifically refers to a patent as being property. Patent rights, including the right to exclude, exist insofar as the statute does not prohibit or limit the right.

Under English law, a patent is actually referred to as personal property, entailing all property rights as well as enforcement options through the courts. Unlike the Canadian and U.S. statutes the U.K. 1977 Patent Act provides for the affirmative right to trade in either the patent or rights associated with it. This would appear to indicate that there is strong support for patent treatment as property. However, the act is also quite thorough in assigning rights and remedies to this intangible property.

However, in the discussion over the grant of property rights there is a distinction in the treatment of rights among the three jurisdictions. Morality is missing from the discussion when dealing with property in the U.S. but it is very much a part of the grant of rights in England. David Vaver indicates that a property right in the U.S. is independent from the use of that right.³¹⁹ Patent rights are granted without consideration for morality or public policy and regardless of whether the invention is “good” or “bad,” leaving the morality associated with property use as part of other laws. In England, a property right has a moral quality to it and property rights may be denied if these rights would be contrary to public policy or social morals.³²⁰ Thus there appears to be a tempering of the absolute nature of property rights in

³¹⁸ *Harvard College v. Canada (Commissioner of Patents)*, 2002 SCC 76, paras. 64-65 (Dissenting opinion of Binnie J.) (Binnie J. indicates that despite the affirmative language in the Patent Act, these are essentially all part of the right to exclude).

³¹⁹ David Vaver, *Need Intellectual Property be Everywhere? Against Ubiquity and Uniformity*, 25 Dalhousie L.J. 1, 9 (2002).

³²⁰ *Id.*

England, and this view may also extend to intangible property rights in patents. This is both a common law approach to property and an approach supported by statutory language.³²¹

In Canada, as in the U.S., there is no statutory support for morality, but the Canadian Supreme Court has made patent granting decisions based on morality and has allowed the Patent Office some moral discretion.³²² While, it seems that patent granting decisions and the property rights associated with a patent may be limited on moral or public order considerations by both the courts and the Patent Office, the recent *Amazon.com v. Canada* seems to have curtailed that notion.³²³ It also appears that the usefulness requirement for patentability may still be used in Canada to potentially limit patentability if an innovation can cause public harm, or at least, provide no public benefit.³²⁴

Despite the differences in morality and public policy treatment among the three jurisdictions, each of the three jurisdictions has national security limitations on patent grants. It is not clear to what extent national security measures may be used to encompass morality related issues when a patent will affect the public and public order.

While there are differences between the three jurisdictions, the case law and the statutes make it clear that patents are considered a type of property in all three, but that limits exist to that property right. Furthermore, each of the three jurisdictions emphasizes the patent holder's right to exclude others in the enjoyment of the patent, with their respective legislatures retaining certain powers to limit those rights. The patent holder gains that right once a patent is issued. Yet each statute also specifically indicates certain conditions where the patent is treated as property. Each statute also defines limitations for the right to exclude and conditions where that right may be curtailed. There are also limitations on the right to sell, use, or license. It can be said that a patent is property, but the operation of law limits both the scope of ownership and of control over that property in each of the jurisdictions. Whether a patent has attributes of property rights or is considered property, rights in a patent are conferred by statute in all three states.

³²¹ *Id.*

³²² *Harvard College v. Canada (Commissioner of Patents)*, 2002 SCC 76 (see Bastarache J. opinion where a composition of matter was not considered to encompass higher life forms; and see Binnie J. opinion objecting to the majority decision based on morality where the patent act does not contain any language allowing patent denial based on social morality, public interest, or public order).

³²³ *Amazon.com, Inc. v. Canada (Attorney General)* [2010] 4 F.C.R. 541 paras. 36-37.

³²⁴ See David Vaver, *Intellectual Property Law 2d*, 339 (Irwin Law Inc. 2011).

Property Remedies

A property rule is designed to generally prevent intentional violations of a property right without express consent from the property holder. Such a rule imposes severe penalties on a person who violates a property right so that the penalties will act as a deterrent.³²⁵ The penalty is generally severe enough so that potential rights violators will either bargain with the property owner or decide to avoid violating the right, rather than trying to infringe.

A breach of rights entitlement is usually enforced against an infringing party in the form of an injunction granted by the courts. An injunction is a property rule remedy. It prevents the infringer from continuing the property trespass and prevents the infringer from taking or using the property. Property remedies are ordinarily not merely monetary compensation but are equitable in nature. Courts have considerable discretion in granting property remedies, especially when the remedies are intended to right a wrong that cannot be resolved merely with money.

Damages are normally not part of a property rule but are generally considered part of a remedy that falls under a liability rule.³²⁶ However, beyond an injunction, such equitable remedies as restitution or disgorgement are valid property remedies.³²⁷ Restitution is a remedy that either restores a property right or returns profits made through improper use of another's property to the property owner.³²⁸ Disgorgement takes the profits the rights-violator made in using the property and gives the profits to the property owner. These remedies entail

³²⁵ Mark Lemley and Philip Weiser, *Should Property or Liability Rules Govern Information?*, 85 Tex. L. Rev. 783, 798 (March 2007). It should be noted that this is a general rule stated by the authors and not an absolute rule that covers all situations. Property law has exceptions such as innocent infringement and trespass in emergencies.

³²⁶ Calabresi & Melamed, *Supra note 51*, at 1092; Saul Levmore, *Unifying Remedies: Property Rules, Liability Rules and Startling Rules*, 106 Yale L. J. 2149, 2153-2157 (1997) (note particularly footnotes 16-19 for explanations of remedies involving injunctions and damages or disgorgement being hybrid property/liability rule remedies); Emily Sherwin, *Introduction: Property Rules as Remedies*, 106 Yale L. J. 2083, 2085-86 (1997).

³²⁷ Blair & Cotter, 10 Tex. Intell. Prop. L.J. at 33.

³²⁸ The terms restitution and disgorgement are being used interchangeably here but U.K. and Canadian courts have indicated that there is a distinction between restitution for wrongdoing and restitution for unjust enrichment. Disgorgement of profits is a form of restitution but it is generally granted for an intentional wrongdoing. Nonetheless, discretion still rests with courts, and may be granted for unintentional wrongs as in the case of patents. Restitution, generally reverses benefits. See James Edelman, *The Measure of Restitution and the Future of Restitutionary Damages*, (26 April 2010) (advance proof to be published in [2010] Restitution Law Review) http://www.propertybar.org.uk/_data/assets/pdf_file/0006/83778/The_measure_of_restitution_and_the_future_of_restitutionary_damages,_J_Edelman.pdf; See also *Devenish Nutrition Ltd v Sanofi-Aventis SA (France)* [2008] EWCA Civ 1086, [2009] Ch 390 at [3] and *Kingstreet Investments Ltd v New Brunswick* [2007] SCC 1 and [2007] 1 SCR 3 at [33].

compensation to the property owner for the wrongdoer's unjust use as a result of the violation. Alternative remedies can also be granted by the courts if disgorgement and injunctive relief are not sufficient.

Injunctions, disgorgement, and restitution are generally severe enough deterrents so that a party will generally attempt to negotiate for use of the property rather than violate the property right. Thus a property owner will decline to enforce property rights or will even sell property rights if a bargain is reached.

It is generally perceived that negotiations are preferable to court enforcement. Thus the perception is that an injunction will allow parties to freely agree or not to agree rather than having a court imposed license which neither party would normally accept. This position is also heavily advocated by property rights movement supporters. While an injunction allows the parties to "freely" come to an agreement, an injunction provides one party with a considerable amount of leverage in the negotiations. Also, free negotiations without government interference may be preferred by individual parties; but support for absolute injunction awards ignores some of the larger patent system considerations.

Remedies Under Liability Rules

Liability rules are designed to create an objective valuation of the patent innovation, where the state or third party arbitrator determines the value of the patent. In the case of patents, the element of the state that determines the value is the court.³²⁹ A liability rule, unlike a property rule, accepts infringement, but it is followed by an after-the-fact tribunal proceeding to determine appropriate compensation for the infringement.³³⁰ In this way, the legal system allows the infringement in exchange for an imposed payment for the offending act.

Under liability rules, a court-imposed penalty creates a form of compulsory license where the injured party must accept a damage award in exchange for previous infringement. The court grants compensation or imposes a penalty for using the patented innovation without consent.

³²⁹ Parties can have the value of their patents determined through alternative dispute (ADR) mechanisms. However, ADR may be a completely private path towards resolving disputes and may or may not involve the state at all. Also, ADR may or may not involve a binding decision, enforceable by the state. ADR is often a part of a private agreement between disputing parties. ADR mechanisms that are part of the state and part of state institutions that resolve disputes, could also fall under the term "court" used above.

³³⁰ *Merges, Supra note 52*, at 2655

The award will usually cover the period of patent use without consent from the time the infringement was discovered to the time of the court decision. Damages, disgorgement, and restitution are all remedies for prior use violations.

However, for continued violations, an injunction or potential further intervention by the courts is the basis for compelling an infringing party into a licensing agreement. The patent owner can negotiate a licensing agreement, whether an injunction is awarded or not; but economic analysis indicates that the patent owner's bargaining power will be lessened without an injunction. Without an injunction the award by the court becomes the basis for terms in a licensing agreement and the threat of court costs plus imposition by the court becomes the bargaining leverage for the patent holder. With an injunction, the threat of forcing the infringer to stop using, selling, or making the infringing innovation acts as leverage.

Economists have argued that without an injunction, the court damage award becomes the ceiling or worst case scenario for a licensing agreement. They have also argued that, without an injunction, patent owners will suffer hardship because they will be undercompensated by infringers. Without an injunction, patent owners will rely on the threat of further court proceedings as a means of compelling licensing. Further court proceedings are seen as inadequate leverage. Economists appear to assume that remedies already granted by a court will be followed if courts are asked to resolve a subsequent infringement dispute. While precedent is followed in all three jurisdictions, there is no guarantee that remedies will follow precedent. The uniqueness of each patent and the fact specific nature of the patented innovation and extent of infringement will continue to play a role in damage calculations. The uncertain outcome of a court proceeding is likely to compel most parties to come to a licensing agreement in all but the most extreme disputes. Courts can also award an ongoing royalty or a compulsory license that calculates present value of future sales in a lump-sum award or a court can provide other oversight remedies.³³¹ Courts further have the power to tailor remedies to the harm thus

³³¹ *Bard Peripheral Vascular, Inc. v. W.L. Gore & Assocs.*, (U.S. Dist. Arizona, 2010) aff'd *Bard Peripheral Vascular, Inc. v. W.L. Gore & Assocs.*, 670 F.3d 1171, 2012 U.S. App. LEXIS 2612 (Fed. Cir., Feb. 10, 2012).

allowing plaintiffs to obtain “capitalized future royalties” in circumstances where an injunction would be inappropriate and obviating the need for ongoing resort to the courts.³³²

Disgorgement is a remedy available in Canada and England in the form of an accounting for profits. Restitution is a potential remedy but it is generally not awarded for patent infringement in any of the three jurisdictions or more properly, the term may have meaning that goes beyond damages or awards for infringement. However, the restitutionary principle to right wrongs where a remedy is designed to compensate is part of general damage awards in all three jurisdictions. Any confusion regarding restitution depends on a general confusion over the definition of restitution. The definition of restitution may involve compensation for harm, or it may involve compensation for the infringement of a right, devoid of an injury or even punishment for infringing a right.³³³ An account of profits is actually disgorgement. Under an account of profits, damages are generally not awarded in conjunction with the remedy. Thus, restitution may actually be broader than an accounting. Furthermore, restitution may actually cover such remedies as unjust enrichment, which is not currently available as a patent remedy in the U.K.³³⁴ Both disgorgement and restitution are equitable remedies that are viewed as property remedies, but they are more akin to liability rules. Nonetheless, disgorgement and restitution, like damages, are remedies imposed by the courts. These remedies are objectively determined by the courts; they do not rely on an injunction as a lever to strike a subjective bargain. Because they are imposed on parties rather than bargained, these remedies have

³³² See *Id.*; and also *Seager v. Copydex, LTD.* (No. 2) [1969] 2 All ER 718, [1969] 1 WLR 809, [1969] RPC 250, [1969] FSR 261; and *Cadbury Schweppes Inc. v. FBI Foods Ltd.*, [1999] 1 SCR 142.

³³³ See the complete opinion for *A-G v. Blake* [2001] AC 268 (HL)

(While this is a case for a breach of contract, Lord Hobhouse, Lord Steyn, and Lord Nicholls all seem to refer to restitution, restitutionary remedies, and restitutionary damages creating confusion over terminology. There is also considerable discussion regarding property rights and compensation for infringing a right, yet the discussion is over compensation for a breach of contract - not a property right. Thus restitution appears to cover more than just an account of profits); See also Francesco Giglio, *Pseudo-Restitutionary Damages: Some Thoughts on the Dual Theory of Restitution for Wrongs*, (2009) 22 Can. J.L. & Juris. 49 – 78 and David Stevens and Jason W. Neyers, *What's Wrong With Restitution?*, (1999) 37 Alta. L. Rev. 221-270 for a more detailed discussion on restitution principles.

³³⁴ See David Vaver, *Intellectual Property Law 2d*, 617 (Irwin Law Inc. 2011), citing *Union Carbide Corp. v. BP Chemicals Ltd.*, [1998] F.S.R. 1 (Ch.) (unjust enrichment at common law unavailable for patent infringement)..

elements of objective determination. The combination of objective determination with imposition makes these remedies more akin to liability rules.³³⁵

Disgorgement entails the payment of all infringer's net profits to the patent owner arising from the infringer's wrongful use of the patented invention. Restitution is a distinct form of compensation, particularly because the patent holder may not have been damaged but may still receive a remedy. Compensation entails putting the injured party into the position the injured party would have been in but for the infringement. Full compensation may be a policy goal or even a stated goal but it may not be possible. Restitution, as a remedy, may not completely compensate because damages suffered by the injured party may involve loss of reputation, loss of market share, lost profits, and other damages not covered through monetary compensation.

While embodying elements of compensation in all three jurisdictions, the other form of remedy which falls under the liability rule category is statutory damages. Damages are available under statute in Canada, England, and the United States in the form of lost profits or a reasonable royalty. An award of lost profits would be the difference between the patentee's actual net profits and the amount the patent owner could potentially have earned but-for the infringement. A financial award of lost profits can be similar to restitution where the damage suffered by the injured party is strictly monetary. However, if there are other injuries suffered by the patent owner, then restitution will likely be much more than lost profits. The other liability rule remedy is for a royalty award based on an estimate of the value to which the parties would have agreed but-for the infringement.

It has been argued that a fair approach would entail that a patentee be awarded the greater of her lost profits or the infringer's profits attributable to the invention.³³⁶ This is a liability based system because it would return the wronged inventor to the position in which she would have been but-for the infringement. However, such an approach would necessarily result in an imposed license but would only compensate for prior infringement.

³³⁵ Calabresi & Melamed, *Supra note 52*, at 1106-09 (Disgorgement and restitution are not market driven transactions but are determined and imposed by the courts thus making these remedies objective remedies and part of liability rules rather than property rules).

³³⁶ Blair & Cotter, 10 *Tex. Intell. Prop. L.J.* at 49.

Commentators and patent holders alike have been very vocal against situations where the court imposes a royalty payment to the patent holder. Both parties have argued that patent owners are undercompensated unless they can negotiate with infringers using an injunction as leverage. Arguments supporting the undercompensation position will be examined later in this work.

Patent Remedies

Before continuing the examination of remedies in the light of policy goals of the patent system, there should be a brief comment on some aspects of court structure and procedures which distinguish the three jurisdictions. Patent cases in the United States are before non-specialized federal courts, although there has recently been some experimentation with having specialized patent judges within each federal district court. The recently passed America Invents Act aims to move patent disputes out of federal trial courts and to place initial disputes before Patent Office tribunals. Appeals from the Patent Office tribunals can directly be appealed to the Federal Circuit Court, a specialized court with limited subject matter jurisdiction that hears all patent case appeals. Disputes may still end up before federal trial courts but it is the intention of recent changes to streamline the dispute process through the Patent Office and to lower trial costs. In England, there are specialized patent courts and appeals are heard before a general appeals panel which usually includes at least one former patent judge. In Canada, there are neither specialized patent courts nor specialized courts of appeal, but federal courts are courts of limited subject jurisdiction, which normally hear patent cases.³³⁷ In both Canada and England, patent cases are solely before a judge, with no jury, increasing some judicial discretion. U.S. patent cases that go before federal trial courts are juried trials unless the parties agree to do otherwise, but Patent Office tribunals are not juried. The presence of juries minimizes some of the discretion which resides with the English and Canadian judiciary. One final nuance of the court systems are legal fees. In the U.S. each party pays its own legal fees, but the court may award legal fees in exceptional circumstances. In Canada and England, the loser generally pays

³³⁷ The Superior Court has concurrent jurisdiction to hear patent cases, but most patent cases are before the Federal Court, partly because the Superior Court is a court of general jurisdiction and partly because of the patent experience held by the federal courts. Recently, the Quebec Superior Court reaffirmed that concurrent jurisdiction exists to hear patent cases (See Alexandra Steele, QUEBEC SUPERIOR COURT REAFFIRMS ITS JURISDICTION OVER PATENT INFRINGEMENT CASES, citing *Beauchesne v. Roy*, C.S.Q. 615-17-000209-048, October 1, 2004 (<http://www.robic.ca/admin/pdf/409/142.170-AST.pdf>)). There may be strategic reasons to choose Superior Court to the Federal Courts but, nonetheless most patent cases are before Federal Courts.

the legal costs but these are subject to limitations by the courts and are usually less than two thirds of the total legal costs.³³⁸ Liability rules, property rules, and equity rules are legal rules which the courts in all three jurisdictions can and do apply to patent infringement remedies in order to better balance the goals of the patent system.

Remedies Under Property Rules and Patents

A property right in a patent is a statutorily created right. That right entails a property right in the patent itself, distinct from the underlying invention and any property rights in the invention. As already noted, the U.K. patents act is the only statute in the three jurisdictions that explicitly refers to a patent as property. However, under the statutes in all three jurisdictions there are sections covering the sale or assignment of patents, and it is within these sections that there is direct reference to patents as property.³³⁹ Although the U.S. and Canadian patents lack a direct reference that patents entail property rights, sections of their respective patent acts refer to patents as property. All three statutes indicate that the patent itself and all of the rights that the patent entails are alienable.³⁴⁰ Throughout each of the statutes, there is additional language which refers to some of the traditional rights associated with property. A common right directly stated in each statute in each of the three jurisdictions gives inventors the right to exclude others from the marketplace for the patented innovation for a period of time. There is also either a directly stated or implied right to use the patent and the patented invention in the statutes of each of the three jurisdictions, which combines with the common law and certain natural rights which exist in property ownership. These rights exist by virtue of patent ownership (and the statutory and common-law rights this entails) and do not vary if the patent is owned through inventorship or through purchase.³⁴¹

U.S., Canadian, and English courts all have the power to grant equitable relief through injunctions, enforcing property rights. Canadian and English courts not only have the power and discretion to grant an injunction but also to require infringers to “deliver up” and destroy any

³³⁸ See Freshfields Bruckhaus Deringer (2007): ‘A Guide to Patent Litigation in Europe – England and Wales’ p.10 (a losing party bears the costs but a winning party will generally receive only two-thirds of the costs); The legal costs recovered will vary but other authorities have indicated that it may be as low as one-third of legal costs).

³³⁹ See 35 U.S.C. § 261, *Canadian Patent Act*, R.S.C. 1985 c. P-4, s. 49, and *U.K. Patents Act 1977*, Section 30.

³⁴⁰ Alienability and any of the other property rights associated with a patent are not absolute and there is language in the U.S. Patent Act, the *Canadian Patent Act*, and the U.K. Patent Act which entitles the government to limit rights.

³⁴¹ Severin De Wit, *The Case eBay Inv. V. MercExchange LLC, its Impact on NPE’s and Patent Enforcement* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1613585 (last visited July 7, 2012).

goods in relation to the infringing innovation.³⁴² Injunctions can be granted for an actual or implied threat to infringe.³⁴³ Delivery-up and destruction are additional equitable remedies that the courts may apply using their discretionary powers to prevent further infringement.³⁴⁴ This is where the court either orders the infringer to give the patent holder the infringing goods for the purpose of destruction or allows the patent holder to supervise the destruction of the offending goods.

A U.S. court can grant injunctions under any terms it sees as reasonable.³⁴⁵ In his study of injunctive powers in patent infringement cases, John Golden has indicated that there are no specific provisions for impounding or destruction of patented goods as in Canada or England. Injunction remedies have generally been narrow, with full equitable powers reserved for repeat offenders in contempt of an injunction order.³⁴⁶ Nonetheless, instructions for an injunction are made to prevent future violations. While delivery and destruction are not generally granted, the courts have the power to grant such remedies if necessary to prevent future infringement.³⁴⁷ Courts are given the flexibility to make remedies as broad or tailored as necessary.

Until recently, there has been a perception that U.S. courts have not only been quick to award injunctions but that they have almost ubiquitously awarded them as a remedy for patent infringement. In the 2006 eBay decision, the Supreme Court reaffirmed the equitable nature of injunctions and provided a test which courts should use to determine whether an injunction should be awarded.³⁴⁸ To receive an injunction, a plaintiff must show that: 1) he has suffered

³⁴² Simon Thorley, Richard Miller, Guy Burkill, Colin Birss, and Douglas Campbell, *Terrell on the Law of Patents*, 569 (Sweet & Maxwell, 2006), citing *Chiron Corporation and Others v. Organon Teknika Ltd (No. 10)* [1995] R.P.C. 325; See also *U.K. Patents Act 1977*, Section 61(1)(b); Patrick E. Kierans and Rowena Borenstein, *Injunctions – Interlocutory and Permanent*, Intellectual Property Disputes: Resolutions and Remedies, Vol. 2, 15-1, (Thomson Canada Limited 2004).

³⁴³ Thorley et. al. *Supra note 342* at 563, citing *Frearson v. Loe*, (1878) 9 Ch.D. 48 at 65 and *Coflexip S.A. v. Stolt Comex Seaway MS. Ltd.* [2001] R.P.C. 9, para. 13; see also Kierans and Borenstein, *Supra note 342* at 15-4; see also *Patent Act*, R.S.C. 1985, c. P-4, s. 57.1.

³⁴⁴ Kierans and Borenstein, *Supra note 342* at 15-18,19, see also *Baxter Travenol Laboratories of Canada Ltd. V. Cutter (Canada) Ltd.*, (1980), 52 C.P.R. (2d) 163 (F.C.T.D.), affirmed order for delivery-up or destruction (1983) 68 C.P.R. (2d) 179 (F.C.A.); See also *U.K. Patents Act 1977*, Section 61(1)(b).

³⁴⁵ 35 U.S.C. § 283.

³⁴⁶ John M. Golden, *Patent Infringement Injunction's Scope* (Draft material February 01, 2011) http://www.law.stanford.edu/display/images/dynamic/events_media/John%20Golden%20-%20Injunctions'%20Scope.pdf (last visited April 01, 2012).

³⁴⁷ *Id.*

³⁴⁸ See *eBay v. MercExchange*.

irreparable injury; 2) remedies available at law (money damages), are inadequate to compensate for the injury; 3) a remedy at equity is warranted upon considering the balance of hardship between the plaintiff and the defendant; and 4) the public interest will not be “disserved” by a permanent injunction. Injunction awards are still common but courts should apply the eBay test before awarding an injunction.

Canadian courts note the equitable nature of awarding an injunction but are almost certain to award a permanent injunction upon a finding of infringement.³⁴⁹ In Canada, s.57(1) of the Patent Act specifically allows injunctions as a remedy for patent holders. Once a court has found infringement, there is a presumption that a permanent injunction will be awarded in order to prevent further infringement. However, in *Unilever PLC v. Proctor and Gamble Inc.*, the trial court refused to grant a permanent injunction, granting instead a higher royalty rate for the remainder of the patent term.³⁵⁰ In another intellectual property case, it has been stated that refusing an injunction upon a finding of infringement is equivalent to creating an unacceptable compulsory license.³⁵¹ While this second case is a copyright issue, the dearth of case law on whether an injunction should be granted would seem to leave the definiteness of an injunction award open to some interpretation. Both cases were affirmed on appeal but did not go beyond the Court of Appeal. Based on the Unilever decision, granting an injunction is case specific but would seem to include an examination of 1) whether the patent is being practiced in Canada, 2) a balance of hardship upon the parties, 3) whether the plaintiff will be sufficiently compensated.³⁵² Since the case law is limited and the decision outlined in Unilever was specific to the circumstances, there does not appear to be a clear rule for situations where damages are awarded

³⁴⁹ The term permanent injunction denotes an injunction granted at the end of a trial. While the term is quite common in Canadian court decisions, (See for example *Laboratoires Servier v. Apotex Inc.* [2008] F.C.J. No. 1094, pp. 495, 498-500) it is not permanent or eternal but merely last until the end of the patent term or until suitably determined by a court of competent jurisdiction.

³⁵⁰ *Unilever PLC v. Proctor & Gamble Inc.*, [1993] F.C.J. No. 117 aff'd *Unilever PLC v. Proctor & Gamble Inc.*, [1995] F.C.J. No. 1005 (the Court of Appeal dismissed the appeal and cross-appeal, affirming the trial court decision).

³⁵¹ *R. v. James Lorimer & Co.*, [1984] 1 F.C. 1065 at 1073 (C.A.).

³⁵² In Unilever, the court awarded a higher royalty rate against Proctor & Gamble (P&G) but also determined that an injunction should not be awarded because Unilever did not practice the invention in Canada and because a balance of hardship would unduly affect P&G. At the time of the decision there was a recession and an injunction would affect P&G employees while there was no competing Unilever workforce affected by not granting an injunction. At the time there were only 19 months left on the patent term and infringement had been ongoing for a long period. An injunction would not remedy past infringement.

in lieu of an injunction. It would seem that Canadian courts are likely to award an injunction in the vast majority of circumstances, with potential exceptions in extreme circumstances.

In England, it is also very likely that a permanent injunction will be awarded once infringement has been found. Under the Patent Act, s.61(1) allows an injunction as a valid remedy for infringement. However, it is not an automatic grant and courts should examine each case on its facts to determine whether an injunction should be awarded.³⁵³ Thus, while the general rule is to grant an injunction, the courts are supposed to use their discretion.³⁵⁴ An injunction is not granted as of right and a court can grant damages in lieu of an injunction.³⁵⁵ However, courts are unlikely to award damages in lieu of an injunction because

[i]t is a working rule that damages can be awarded in lieu of an injunction if:

- (1) the injury to the plaintiff's legal rights is small;
- (2) and is one which is capable of being estimated in money;
- (3) and is one which can be adequately compensated by a small money payment;
- (4) and the case is one in which it would be oppressive to the defendant to grant an injunction.³⁵⁶

Courts have used this test as a starting point but have amended it according to the circumstances of the case. In making its decision, a court can take into account the interest of affected third

³⁵³ *Coflexip S.A. v. Stolt Comex Seaway MS LTD*, [2001] R.P.C. 9 (C.A.) para. 13 (an injunction is not granted because the infringer has committed a wrong but it is to prevent further harm to the patentee).

³⁵⁴ See *Coflexip S.A. v. Stolt Comex Seaway*, para. 10-21; *Biogen Inc. v Medeva Plc*, [1993] R.P.C. 475 (Ch.), [1995] F.S.R. 4 (C.A.), [1997] R.P.C. 1 (decision overturned by the court of appeals and the appeal was dismissed by the House of Lords because the claims were much broader than the invention warranted; however, the Patent Court's discussion supporting a presumption for granting injunctions and denouncing damages in lieu of an injunction remains valid); *Virgin Atlantic Airways Ltd v Premium Aircraft Interiors Group* [2009] EWCA Civ 1513 (C.A.) (supporting final injunctions even though an appeal was pending, but a small exception was carved out so infringer could complete a contract); See also *Sun Microsystems Inc. v Amtec Computer Corporation Ltd*, [2006] EWHC 62 (Ch) para. 34 (intention is one of the factors which may be considered).

³⁵⁵ *Vestergaard Frandsen A/S v Bestnet Europe Ltd* [2010] F.S.R. 2 citing s.50 of the *Supreme Court Act 1981*, and also *Shelfer v City of London Electric Lighting Co (No.1)* [1895] 1 Ch. 287 citing Section 2 of the Chancery Amendment Act 1858, commonly known as *Lord Cairns' Act* (succeeded by s.50 of the *Supreme Court Act*); see also Opinion of Lord Nicholl in *Attorney General v Blake*, [2001] 1 A.C. 268 referring to the principles of the Lord Cairns act which remain, allowing the court of chancery to grant damages in lieu of injunctions.

³⁵⁶ *Shelfer v City of London Electric Lighting Co (No.1)* [1895] 1 Ch. 287, p. 322.

parties, such as the public.³⁵⁷ However, it was noted that the 1977 Patent Act has listed several protections for the public, as well as circumstances where compulsory licenses can be granted and by whom.³⁵⁸ Even though a test exists, and courts are supposed to use their discretion when deciding to grant an injunction, courts have overwhelmingly used their discretion to decline to award damages in lieu of an injunction.³⁵⁹

English courts have rarely found an injunction to be oppressive. While case law is limited regarding non-practicing entities, an injunction is still likely to be awarded, especially if there has been a reasonable license offer made by the patent owner. It would be difficult for the infringer to claim oppression, if an injunction would be awarded, when the infringer refused a reasonable license offer.³⁶⁰ However, English courts are also willing to consider anti-competitive behavior if the patent holder wants the injunction for strategic reasons.³⁶¹ This may limit some strategies used by companies that wield their portfolio like a club while only practicing a small number of their patented innovations.

In both Canada and England, almost all patent cases that have been decided by the courts have been between practicing entities. Courts are supposed to use their discretion in awarding injunctions. By using their discretion, courts could manage situations where a non-practicing patent holder attempts to use the legal process to drive up royalty payments. An infringer with an entrenched and commercially successful technology, faced with a potential injunction, would have to meet the royalty demands of the patent holder or face the consequences of the injunction.

³⁵⁷ *Chiron Corp v Organon Teknika Ltd* (No.10) [1995] F.S.R. 325, p. 331 (although an injunction was ultimately granted by the court).

³⁵⁸ *Chiron Corp v Organon Teknika*, p. 332-35.

³⁵⁹ Robin Jacob, *Patent Trolls in Europe – Does Patent Law Require New Barriers?*, For the May 2008 GRUR Meeting, Stuttgart, (23 May, 2008) http://www.grur.de/cms/upload/pdf/Jahrestagung/2008/GRUR_JT2008_Rede_Jacob_2008-05-23.pdf. The Rt. Hon. Sir Robin Jacob indicates that injunctions are not granted out of hand but are equitable remedies in English patent courts. However, in the two examples provided to show that injunctions are not always awarded, Sir Robin uses *Seager v Copydex* [1967] 1 WLR 923, (a breach of confidence case) and *Banks v EMI Songs* [1996] E.M.L.R. 452 (a copyright case). There has been a subsequent patent case, *Virgin Atlantic v. Premium Aircraft*, [2009] EWCA Civ 1513, where an exception to a permanent injunction was created so that partially completed contractual obligations could be met. A high award was granted to Virgin and the injunction was enforced for all other infringing goods.

³⁶⁰ *Injunctions in cases of Infringement of IPRs*, United Kingdom Committee Group Report for Q219 for AIPPI Working Committee, International Association for the Protection of Intellectual Property, https://www.aippi.org/download/committees/219/GR219united_kingdom.pdf (last visited August 22, 2012).

³⁶¹ *Id.*

The court could create a remedy which prevents the infringer from facing extreme hardship but would still provide the patent holder with adequate compensation. However, given that there are very few published cases that involve non-practicing entities that make it to a final decision, it is not certain how courts in Canada and England will react when faced with a non-practicing entity. It is likely that the case would be extremely fact-specific and the scope of the decision would be limited to only the parties involved.

Preliminary Injunctions

A preliminary injunction or interlocutory injunction is an available remedy in all three jurisdictions, but they are rarely awarded. They also tend to be extreme remedies which are granted because, in their absence, the party suing for infringement will be faced with an uncompensable harm.

In the United States, preliminary injunctions for patent suits are considered an extraordinary remedy and are seldom awarded.³⁶² The test to determine whether a preliminary injunction should be granted is: 1) a reasonable likelihood of success on the merits; 2) irreparable harm if relief is denied; 3) a balance of hardships in plaintiff's favour; and 4) public interest is in favor of the grant.³⁶³

In Canada, preliminary injunctions are also rare. The test to determine whether and injunction should be granted examines: 1) whether there is a serious question to be tried (this standard entails only a limited review of the merits);³⁶⁴ 2) whether the applicant can show it will suffer irreparable harm; and 3) it requires the court to perform a balancing of hardship between the parties pending a final decision.³⁶⁵ Furthermore, the party seeking a preliminary injunction is required to pay a certain amount of money to a trust account or to provide a third party bond in the event that a preliminary injunction is granted but patent infringement is not found.

³⁶² John M. Golden, *Principles For Patent Remedies*, 88 Tex. L. Rev. 505, 514 (2010); See also Vaver, *Supra note 250*, at 178.

³⁶³ *Proctor & Gamble Co. v. Kraft Foods Global, Inc.*, 549 F.3d 842, 847 (Fed. Cir. 2008).

³⁶⁴ *RJR MacDonald Inc. v. Canada (Attorney General)*, [1994] 1 SCR 311, p. 78; see also David Vaver, *Intellectual Property Law 2d*, 627 (Irwin Law Inc. 2011).

³⁶⁵ Kierans and Borenstein, *Injunctions – Interlocutory and Permanent*, 15-4, *Intellectual Property Disputes: Resolutions and Remedies*; See also Vaver, *Supra note 250*, at 176.

In England, the court in *American Cyanamid Co v Ethicon Ltd*, illustrated a test to determine whether a court should award an interlocutory injunction.³⁶⁶ The House of Lords has stated that there must be a seriously arguable case to be tried. If there is a serious case to be tried, the court should then examine the balance of convenience between the parties. In examining the balance of convenience, if the plaintiff could adequately be compensated by monetary damages with a successful finding of infringement, this would be an argument against awarding an injunction. If the plaintiff could not be compensated by damages, then the analysis would turn to examining the hardships on the alleged infringer, if the infringer were to win at trial. Interlocutory injunctions are relatively seldom used or granted.³⁶⁷

The exact analysis conducted by the court is different for each of the three jurisdictions but there are significant similarities in what courts examine. Irreparable harm and a balance of hardships are part of the analysis performed by each of the courts. A more significant similarity is that all three jurisdictions consider this an extreme remedy which will be awarded only if a plaintiff can satisfy a significant burden.

Injunction Summary

The theory behind injunctive relief is that it encourages licensing negotiations, which more accurately reflect the market value of the invention than does a monetary remedy granted by the courts under a liability theory.³⁶⁸ However, it is also not uncommon for companies to use injunctions as a means of removing competitors, thereby leaving the patent holder with a monopoly. The liability rule is further reviled by patent owners and property rights supporters because a monetary award granted by a court for infringement has been likened to a compulsory license that will generally result in a much lower royalty rate than one negotiated by the parties. A second theory assumes that an inventor requires injunctive relief as an incentive to try to recover any investment in the invention.³⁶⁹

However, a patentee may waive the right to enforce an injunction through an agreement with the infringing party. Remedies associated with tangible property entail injunctive relief and

³⁶⁶ *American Cyanamid Co v Ethicon Ltd* [1975] 2 W.L.R. 316, 407-08 (H.L.)

³⁶⁷ Robin Jacob, The Rt. Hon. Sir, *The Harold Fox Lecture 2011 the Common Law of Intellectual Property*, 23 I.P.J. 159, 165 (2011).

³⁶⁸ Blair & Cotter, 10 Tex. Intell. Prop. L.J. at 44,48.

³⁶⁹ *Id.*

normally also disgorgement of profits associated with the violation. However, since patents are intangible property, these remedies are not always associated with relief for patent infringement.

Disgorging Profits

In Canada and England, the courts can award the infringed party a disgorgement of the infringer's profits as a result of improperly using the property. This is known as an account of profits.³⁷⁰ The remedy is not available in the U.S. This is not a damage award but an equitable remedy. Courts in England do not consider an account of profits as a restitutionary remedy, since the patent holder may have suffered no loss; but it is nonetheless compensation for the infringer's violation of the patent holder's rights.³⁷¹ In Canada, the remedy may also be available if the patent holder has suffered no loss, even though there may be a right to the infringer's profits as ill-gotten gains.

Disgorging Profits in the U.S.

An accounting of profits is not a remedy available in U.S. courts. The 1946 Patent Act, removed infringer profits from the available remedies for patent infringement but it was not certain that the remedy was unavailable until the U.S. Supreme Court's interpretation that Congress intended that disgorgement should not be a valid remedy for utility patents.³⁷² The Supreme Court also deemed disgorgement to be an expensive process, it was time-consuming and the calculations were often very complex.³⁷³ There is also a perception that the patent holder would get a windfall under such a method.³⁷⁴ This is especially true if the patent holder were unable to take commercial advantage of the patent or if the patent owner were taking advantage in one geographic region but not another. There has also been a question whether

³⁷⁰ See *Patent Act*, R.S.C. 1985, c. P-4, s. 57(1)(b) (October 30, 2010); See *Patents Act* 1977, section 61(1)(d).

³⁷¹ *Devenish Nutrition Limited v Sanofi-Aventis SA (France) & Ors*, [2008] EWCA Civ 1086, 2008 WL 4153573 para. 52-53 citing Opinion of Lord Nicholl in *Attorney General v Blake*, [2001] 1 A.C. 268, 2000 WL 989475, 8. (note: while this is not a patent case, equitable remedies relating to patent law are discussed as well as equitable remedies in general).

³⁷² See Caprice L. Roberts, *The Case for Restitution and Unjust Enrichment Remedies in Patent Law*, 14 *Lewis & Clark L. Rev.* 653, 665; See also *Aro Mfg. Co. v. Convertible Top Replacement Co. (Aro II)*, 377 U.S. 476, 505 (1964); and *Gen. Motors Corp. v. Devex Corp.*, 461 U.S. 648 (1983).

³⁷³ Blair & Cotter. *Supra note 4*, at 6-7.

³⁷⁴ Of course this naturally brings up the question of why design patent allow disgorgement of profits. Often multiple patents may cover a product, including both design a utility patents. The remedy under 35 U.S.C. §289 entitles patent holders to get either damages or disgorgement if the disgorgement is greater than damages but both can be claimed if damages exceed disgorgement. There is no clear answer as to why so much debate exists about the viability of disgorgement for utility patents while it is a valid remedy for design patents. Two factors that may play a role, is the general lack of non-practicing entities making claims for design patent infringement and the second is the relative dearth of high profile cases (Although the ongoing Apple v. Samsung battle may change this).

such an award is justifiable from a patent efficiency standpoint. The patent holder would get all of the net profits from an infringer who may be better equipped to use the patented innovation in a more efficient manner. When combined with an injunction, this is an extremely powerful deterrent. If the patent infringer is a competitor, there may be some justification in this remedy. However, if the infringer is not a competitor this remedy may actually be detrimental to further innovation and general commercialization of patented innovations.

Disgorging Profits in England

In England an account of profits provides compensation to the patentee by depriving the infringer of profits improperly made through a breach of patentee's rights and by giving those profits to the patentee.³⁷⁵ The theory is based on the reasoning that the infringer's profits are really profits that belong to the patentee because the patentee is the only party that could rightfully use the patent to make profits. The infringer is required to disgorge all profits as a result of the infringement and not just profits at the time of infringement.³⁷⁶ The payout by the infringer may be substantial, with a potential maximum total amounting to all of the infringer's profits. For complex devices, where the infringing invention is merely a part of the product or process, damages may be apportioned; but if the invention comprises a large part of the product or process then profits will likely not be apportioned and the infringer will have to disgorge all profits associated with the breach.³⁷⁷ To mitigate the severity of this remedy, the infringer may deduct costs from revenues including: research and development, financing, manufacturing costs, and distribution costs.³⁷⁸ The burden of proving cost deductions lies with the infringer. Courts will use accounting principles as a guide for apportionment and for determining revenues and expenses.³⁷⁹

Justice Pumfrey of the Patents Court stated that the Patent Act 1977, should be interpreted so that a plaintiff can elect between an account of profits or damages but not both.³⁸⁰ While damage awards may be claimed (as in a case where there is a patent holder and an

³⁷⁵ Thorley et. al., *Supra note 342*, at 586 citing Pumfrey J. in *Spring Form Inc. v. Toy Brokers Ltd.* [2002] F.S.R. 17 at para 7.

³⁷⁶ *Id.* citing *Imperial Oil v. Lubrizol* [1996] 71 C.P.R. (3d) 26, CA (Can. Fed.) (The profits are not the incremental profits advocated by the defense in *Celanese International v. B.P. Chemicals* [1999] R.P.C. 203.).

³⁷⁷ *Id.* citing *Hoechst Celanese International v. B.P. Chemicals* [1999] R.P.C. 203 at 222.

³⁷⁸ Thorley et. al., *Supra note 342*, at 587.

³⁷⁹ *Id.*

³⁸⁰ The 1977 Patent Act appears to reflect what has been common practice in the English courts since the 19th Century.

exclusive licensee), only one accounting will be calculated by the courts, and apportioned if necessary.³⁸¹ To elect between damages and profits, there must be sufficient disclosure to allow the patent holder to choose between them.³⁸² This will require disclosure of financial data, but the court can make estimates if financial data do not provide sufficient information.³⁸³

An election for remedy or lost profits is at the discretion of the courts, but the courts appear to be looking to provide some guidance on how the choice between an account of profits and damage are made. Recently, Justice Sales stated that the remedy should vary with the context, where a commercial context would create lesser protection while fiduciary relationship would entail greater protection.³⁸⁴ The court considered intellectual property rights not quite akin to a fiduciary duty but still worthy of some care and investigation that would thus require greater protection under the articulated spectrum.³⁸⁵ Thus if the context required greater protection, the plaintiff would have greater freedom to choose the remedy.³⁸⁶

English courts have further stated that an account of profits will not apply to innocent infringers, although s.62 of the Patent Act also limits who is an innocent infringer.³⁸⁷ This mitigates the harshness of the award, against a certain class of infringers. It also provides some motivation for parallel innovation by limiting innocent infringement compensation. However, for this defence the burden lies with the infringer to prove that the invention was, in fact, made independently and without reference to the patented invention. This must be shown as of the date the infringement started and that there is no reasonable ground for supposing that a patent exists.³⁸⁸

Disgorging Profits in Canada

In Canada, once infringement is determined, patentees can elect either an accounting for profits or for damages as generally alternate remedies.³⁸⁹ An accounting of profits is an equitable remedy awarded at the discretion of the court, whereas damages are statutory

³⁸¹ *Spring Form Inc. v Toy Brokers Ltd*, [2002] F.S.R. 17, para. 26.

³⁸² Thorley et al, *Supra note 342*, at 572 citing *Island Records v. Tring* [1995] F.S.R. 560.

³⁸³ *Id.*

³⁸⁴ *Vercoe v Rutland Fund Management Ltd* [2010] EWHC 424 (Ch) para. 343.

³⁸⁵ *Id.* at 344.

³⁸⁶ *Id.* at 340.

³⁸⁷ Thorley et al, *Supra note 342*, at 572-73; See Also Patent Act, 1977 section 62(1).

³⁸⁸ Conditions regarding changes to a specification are also placed in s.62 of the *Patent Act*.

³⁸⁹ Peter Wells, *Monetary Relief – Profits*, Intellectual Property Disputes: Resolutions and Remedies, Vol. 2, 18-2, (Thomson Canada Limited 2004).

remedies.³⁹⁰ A successful plaintiff is entitled to damages while an election exists for plaintiffs to claim an accounting for profits.³⁹¹ The discretionary nature of this remedy may result in a court's denying an election of an accounting for profits. Failure to work or commercialize the patented invention is a significant factor in a court's decision to award the remedy and may lead to a denial.³⁹² Canadian courts have indicated wariness in granting account of profit awards to non-practicing entities. However, denying an election for an accounting is not certain even if the patent holder is a non-practicing entity. There is further debate on the conditions for which accounting for profits should be granted to a plaintiff. The two extremes of the debate place one faction supporting the remedy in all cases except where the infringer can show why it should be denied; a second faction believes that an accounting for profits should be an exceptional remedy, to be awarded in only the most extreme cases.³⁹³ There is little discussion about a middle solution. However the recent *Monsanto v. Schmeiser* decision may temper the enthusiasm of plaintiffs if a possibility exists that there may be no remedy if an account of profits yields no profits over non-infringing alternatives. Despite the continuing debate on the extent of circumstances in which the remedy should be awarded, it is still available for patent holders in Canadian courts.

Courts generally require the patentee to elect either profits or damages after discovery has been completed but before the trial or the damage trial begins and before the court determines the size of the awards.³⁹⁴ However, there must be sufficient discovery to allow the plaintiffs to make an educated determination of damages or profits. The plaintiff has the burden of proving the defendant's revenues due to infringement, while the defendant has the burden of proving legitimate expenses and deductions which may minimize net profits and mitigate the award.³⁹⁵

³⁹⁰ Wells, *Supra*, note 389 citing *Unilever plc v. Proctor & Gamble Inc.* (1993), 47 C.P.R.(3d) 479, affirmed (1995), 61 C.P.R.(3d) 499 (F.C.A.); see also *Patent Act*, ss.55, 57.; see Francois Grenier, *Monetary Relief – Damages*, Intellectual Property Disputes: Resolutions and Remedies, Vol. 2, 17-1, (Thomson Canada Limited 2004) at 17.5 citing *Merck & Co. v. Apotex Inc.*, 2006 FCA 323 (F.C.A); *Eli Lilly and Co. v. Apotex Inc.* [2009] F.C.J. No. 1229, par. 647.

³⁹¹ *Canadian Patent Act*, R.S.C. 1985 c. P-4, s. 55(1).

³⁹² Wells, *Supra*, note 389, at 18-4, citing *J.M. Voith GmbH v. Beloit Corp.* (1993), 47 C.P.R. (3d) 448 (F.C.T.D.) Rouleau J; affirmed on this point (1997), 73 C.P.R. (3d) 321 (F.C.A.).

³⁹³ Wells, *Supra*, note 389, at 18-4, citing *Wellcome Foundation Ltd. v. Apotex Inc.* (1991), 40 C.P.R. (3d) 361 at 369 (F.C.T.D.) (burden on defense to show otherwise) and *J.M. Voith GmbH*, *Supra* note 392.

³⁹⁴ Kurtis Andrews and Jeremy De Beer, *Accounting of Profits to Remedy Biotechnology Patent Infringement*, 47 Osgoode Hall L.J. 619, 641 (2009).

³⁹⁵ *Id.* at 641-42.

While courts require as much information as possible to calculate the damages, estimates may be used to determine the final profits.³⁹⁶

In calculating expenses, courts attempt to determine which expenses arise because of infringement and which expenses would exist regardless of infringement.³⁹⁷ Two distinct expense calculating approaches have been developed by the courts. The “full cost” approach or “absorption method” considers that all expenses may be deducted from profits.³⁹⁸ The second is the “differential cost,” or “direct cost”, or “differential profit” method which considers only expenses which arise due to infringement, expenses which would not have occurred otherwise.³⁹⁹ While the full cost approach tends to agree more with generally accepted accounting principles, recent cases have considered the differential cost method to be more just.⁴⁰⁰ In determining the differential cost method, indirect or fixed costs cannot be deducted from the profits unless they are directly attributable to the infringing activity.⁴⁰¹

The Supreme Court of Canada recently created what appears to be a third method based on income differential. It entitles the patent owner to those infringer profits which are directly attributable to the invention minus the profits that the infringer could have made using a non-infringing alternative.⁴⁰² This approach was articulated in *Monsanto Canada Inc. v. Schmeiser*, which resulted in an award of zero profits. The Court reasoned that the infringer’s profits would have been the same had he used infringing or non-infringing products. This would seem to be the currently favored calculation method. There has also been some confusion because the Supreme Court termed the method used in *Monsanto* to be the differential cost method. Whether it replaces the current differential cost calculation is not clear.

Damage Remedies

In all three jurisdictions, lost profits and reasonable royalties are available damage remedies. Lost profits or reasonable royalty awards for infringement are more akin to a “tort-law

³⁹⁶ *Id.* at 642-43.

³⁹⁷ *Id.* at 643-44.

³⁹⁸ *Id.* citing *Wellcome Foundation Ltd. v. Apotex* (1998), 151 F.T.R. 250 at para. 42 (F.C.T.D.) and citing *Diversified Products Corp. v. Tye-Sil Corp.* (1990), 38 F.T.R. 251 at para. 2. (F.C.T.D.).

³⁹⁹ *Andrews and De Beer, Supra note 394*, at 643-44 citing *Wellcome v. Apotex* at para. 31.

⁴⁰⁰ *Id.* at 644 citing *Diversified Products* at para. 3.

⁴⁰¹ *Id.*, at 645.

⁴⁰² *Id.* at 648, citing *Monsanto Canada Inc. v. Schmeiser*, (2004), 31 C.P.R. (4th) 161 (S.C.C.).

framework,” even though U.S. courts do not treat patent damages as they do other torts.⁴⁰³ English courts consider a patent infringement to be an economic tort. Canadian courts also take a “tort-law” approach to remedies. The U.S. Patent Act entitles patentees to recover sufficient damages to compensate the patent owner, but no less than a reasonable royalty.⁴⁰⁴ In England and Canada damages are alternative remedies to an accounting for profits. In both Canada and England lost profits and reasonable royalties are considered damages, distinct from the equitable remedy of an accounting for profits. A patent holder can elect between an accounting of profits or damages. If damages are chosen, the holder can further choose between royalties and lost profits if the patent holder is exploiting the invention through its own sales of either goods using or made through using patented invention.⁴⁰⁵

Since patent laws and systems are statutory creations in Canada, England, and the U.S., residual authority to award damages is limited to remedies specified in the statutes. U.S. courts do not have residual authority to award restitutionary damages; but under statute, courts can award up to treble damages for willful infringers.⁴⁰⁶ This is a remedy that has become more difficult to prove, making willful infringement an exceptional remedy.⁴⁰⁷ In England remedies are also limited by statute, and there is no cause of action for unjust enrichment outside of the Patents Act 1977.⁴⁰⁸ Canada’s Patent Act lists remedies, but there does not appear to be a common law rule against remedies outside the statute. Nonetheless, it is not likely that Canadian courts will go outside the statute since there are many remedies already available. Punitive damages are available in Canada but are rarely awarded and only in exceptional situations for extreme egregious conduct.⁴⁰⁹

⁴⁰³ Blair & Cotter, *Supra note 4*, at 4.

⁴⁰⁴ 35 U.S.C. §284.

⁴⁰⁵ See *Monsanto Canada Inc. v. Schmeiser* [2004] S.C.J. No. 29 p. 100; *Apotex Inc. v. Merck & Co.* [2009] F.C.J. No. 712. In both cases, the remedy is referred to as compensation for lost sales and a remedy for lost profits should not be confused with an account of profits. See *Colonial Fastener Co. v. Lightning Fastener Co.*, [1937] S.C.R. 36 at 44-45 (lost sales due to process infringement).

⁴⁰⁶ Blair & Cotter, *Supra note 4*, at 7.

⁴⁰⁷ *In re Seagate*, 497 F.3d 1360, 1371 (Fed. Cir. 2007) (en banc).

⁴⁰⁸ Thorley et. al., *Supra note 342*, at 563, citing *Union Carbide v. B.P.Chemicals* [1998] F.S.R. 1.

⁴⁰⁹ Andrews and De Beer, *Supra note 394*, at 638-39, citing *Dimplex North America Ltd. v. CFM Corp.* 292 F.T.R. 38 at para. 123 (F.C.) and *Wi-Lan Technologies Corp. v. D-Link Systems Inc.* (2006), 57 C.P.R. (4th) 1 at para. 7 (F.C.).

Damage awards in all three jurisdictions for lost profits or reasonable royalties are not defined by statute, leaving calculation methods up to the courts in each jurisdiction.⁴¹⁰

Determining the value of damages will often entail expert testimony interpreting accounting principles or industry standards, but courts also have discretion to make estimates, if necessary.

Damages in the United States

In the U.S., courts commonly use a four-factor test, established in *Panduit Corp v. Stahlin Bros. Fibre Works, Inc.*, to determine whether lost profits should be awarded to the patent owner. These factors are: 1) demand for the patented product; 2) absence of acceptable non-infringing substitutes; 3) manufacturing and marketing capability to meet product demand; 4) the amount of profit the patentee would have made.⁴¹¹ The burden to establish these factors lies with the patent owner.⁴¹² In determining the amount of profit, courts take into account the price at which the patentee made increased sales as well as the costs associated with increased sales.⁴¹³

A variant of the Panduit test is the two-supplier market test used where there are only two competing suppliers in the marketplace.⁴¹⁴ This test combines the demand and non-infringing substitute analysis of Panduit into one factor.⁴¹⁵ This variant places the burden on the patent owner to show 1) that there are two suppliers in the relevant market; 2) that the patentee would be capable of making the sales taken by the infringer; and 3) that the patentee can show the profits it would have made from the diverted sales. U.S. courts have further stated that it can be inferred that the patentee would have made the infringer's sales or would have charged more had there been no infringement.⁴¹⁶

There does not appear to be a single test for determining lost profits because each case is fact dependent. In determining lost profits, courts are instructed to avoid speculative

⁴¹⁰ Blair & Cotter, *Supra note 4*, at 7 (This is also true in Canadian and U.K. courts where the remedies are named but not defined) see *U.K. Patents Act 1977* and *Canadian Patent Act*, R.S.C. 1985 c. P-4; see also see *Jay-Lor International Inc. v. Penta Farm Systems Ltd.*, 2007 FC 358 par. 120.

⁴¹¹ *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152 (6th Cir. 1978).

⁴¹² *Tate Access Floors, Inc. v. Maxcess Technologies, Inc.*, 222 F.3d 958, 971 (Fed. Cir. 2000); *Rite-Hite Corp. v. Kelley Co., Inc.*, 56 F.3d 1538, 1545 (Fed. Cir. 1995).

⁴¹³ Blair & Cotter, *Supra note 4*, at 20.

⁴¹⁴ *Micro Chemical, Inc. v. Lextron, Inc.*, 318 F.3d 1119, 1124 (Fed. Cir. 2003) (The test is similar to Panduit but the focus is on the number of competitors in the marketplace).

⁴¹⁵ *Id.*, at 1124.

⁴¹⁶ *Amstar Corp. v. Envirotech Corp.*, 823 F.2d 1538, 1543 (Fed. Cir. 1987).

calculations.⁴¹⁷ Some techniques used by courts include: 1) multiplying per unit profits based on the number of sales lost;⁴¹⁸ 2) calculating the gross receipts of sales absent infringement; and 3) finding the difference between gross receipts and the cost of sales.⁴¹⁹ It is also quite common for courts to hire accountants to determine profit calculations.⁴²⁰ However, even though considerable accounting information may be put before the court, actual damage amounts are ultimately determined by a jury, rather than by judges.⁴²¹

U.S. courts use a tort law approach to lost profits, where the patent owner has the burden of showing that, but for the infringement, the patent owner would have made the sales.⁴²² There is now a more flexible application of the Panduit test for situations where 1) a partial absence of non-infringing substitutes exists (factor two) and 2) where infringement has resulted in lost sales of unpatented products (factor three).⁴²³ Recently, courts have replaced apportionment calculations with a market share approach.⁴²⁴ Courts have determined that substitute products should no longer be measured on a technological basis but through a consumer demand basis.⁴²⁵ Therefore, either a patented component is the reason for product demand, entitling the patentee to its entire market value of profits on sales, or a product without the patented component is a non-infringing substitute and there would be no lost profits attributed to infringement.⁴²⁶

U.S. courts determined that patent infringement remedies may include compensation for lost sales of non-infringing goods as well. The reasoning is that but-for the lost sales due to infringement the patent holder would have also sold the non-infringing goods. These cases are: *Paper Converting Machines v. Magna-Graphics*; *Rite-Hite v. Kelly*; and *King Instrument v. Perego*. In *Paper Converting*, the court found that industry standards indicated that every purchaser would buy an entire line of products and that patentee would have sold patented and

⁴¹⁷ *Hebert v. Lisle Corp.*, 99 F.3d 1109, 1119 (Fed. Cir. 1996)

⁴¹⁸ *Golden Blount, Inc. v. Robert H. Peterson Co.*, 438 F.3d 1354, 1370 (Fed. Cir. 2006) (no clear error in calculating lost profit damages).

⁴¹⁹ *King Instruments Corp. v. Perego*, 65 F.3d 941, 953 (Fed. Cir. 1995).

⁴²⁰ *Hartness Intern. Inc. v. Simplimatic Engineering Co.*, 819 F.2d 1100, 1106 (Fed. Cir. 1987).

⁴²¹ *Wechsler v. Macke Intern. Trade, Inc.*, 86 F.3d 1286, 1293 (Fed. Cir. 2007).

⁴²² *Blair & Cotter*, *Supra note 4*, at 22.; See also *Wechsler*, 86 F.3d at 1293; and *Rite-Hite Corp. v. Kelley Co., Inc.*, 56 F.3d 1538, 1545 (Fed. Cir. 1995).

⁴²³ *Blair & Cotter*, *Supra note 4*, at 24.

⁴²⁴ *Id.* at 24.

⁴²⁵ *Id.* at 26-7.

⁴²⁶ *Id.* at 27.

non-patented products together but-for the infringement. In *Rite-Hite* the court determined that the sale of unpatented goods was proximately related to infringed goods, allowing damage recovery for “reasonable, objectively foreseeable consequences of infringement.” In *King* it was determined that a non-practicing entity could collect lost profits due to infringement of its patent, even though the lost profits were for sales of non-patented products.

Even if lost profits cannot be shown, a patentee can still be awarded no less than a reasonable royalty in damages.⁴²⁷ To determine a reasonable royalty, courts have relied on the *Georgia Pacific* factors and infrequently on the analytical approach.⁴²⁸ The less common analytical method subtracts the infringer’s rate of return using a non-infringing good from the return on infringing devices and multiplies this result by the number of infringing goods sold.⁴²⁹

To help with royalty calculations, many courts have adopted the *Georgia-Pacific* factors as a means of measuring a reasonable royalty.⁴³⁰ Not all factors will always be applicable and the list is not exclusive. The factors to be examined include:

1. The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty.
2. The rates paid by the licensee for the use of other patents comparable to the patent in suit.
3. The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold.
4. The licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly.
5. The commercial relationship between the licensor and licensee, such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter.
6. The effect of selling the patented specialty in promoting sales of other products of the licensee; that existing value of the invention to the licensor as a generator of sales of his non-patented items; and the extent of such derivative or convoyed sales.
7. The duration of the patent and the term of the license.
8. The established profitability of the product made under the patent; its

⁴²⁷ See 35 U.S.C. § 284.

⁴²⁸ Blair & Cotter, *Supra note 4*, at 38-9; see also *Georgia Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970) (list of 15 factors).

⁴²⁹ *TWM Mfg. Co., Inc. v. Dura Corp.*, 789 F.2d 895, 899 (Fed. Cir. 1986).

⁴³⁰ *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F.Supp. 1116, 1121 (S.D.N.Y. 1970).

- commercial success; and its current popularity.
9. The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results.
 10. The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention.
 11. The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use.
 12. The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions.
 13. The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer.
 14. The opinion testimony of qualified experts.
 15. The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licensee- who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention- would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license.

The Georgia Pacific factors are used to determine a royalty based on a hypothetical willing licensor and licensee at the time of infringement.⁴³¹ The calculated rate tends to leave some profit for the infringer because the calculation falls between the “maximum incremental profit (or cost savings)” expected by the infringer and “the maximum profit the patentee could have expected to earn from her next-best alternative to licensing the invention.”⁴³² It has been quite common to assume a 25% royalty rate and then use the Georgia-Pacific factors to adjust upwards or downwards to determine a final royalty rate.⁴³³ Recently the Federal Circuit Court of Appeal has stated that the 25% rule is too speculative and should not be considered a rule of thumb.⁴³⁴ Thus it would appear that the 25% rule is no longer applicable for determining royalties in the U.S. and no longer a problem for those calling for more accurate remedies.

⁴³¹ *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F.Supp. 1116, 1121 (S.D.N.Y. 1970).

⁴³² *Blair & Cotter, Supra note 4*, at 40.

⁴³³ John M. Golden, “Patent Trolls” and Patent Remedies, 85 Tex. L. Rev. 2111, 2144 (2007).; see also *Blair & Cotter, Supra note 4*, at 24.

⁴³⁴ *Uniloc USA, Inc., v. Microsoft*, 632 F.3d 1292 (Fed.Cir.2011).

Damages in the United Kingdom

Patent infringement is considered an economic tort and damages are intended to be compensatory not punitive, placing the injured party in the same position the party would have been in had there been no infringement.⁴³⁵ The burden to prove losses lies with the patent owner, but damages are nonetheless to be liberally assessed against the infringers.⁴³⁶ However, compensation exists for any losses claimed if the patent owner's injury was 1) foreseeable, 2) caused by the wrong, and 3) not contrary to public or social policy.⁴³⁷ Each infringing sale made by an infringer is considered a wrong; and, for the purposes of damage calculations, it is not relevant that the infringer could have used a non-infringing product to make sales.⁴³⁸ If precise figures cannot be determined, the court will still infer damages and assess estimated awards.⁴³⁹

If the patent owner is a manufacturer, the owner can claim compensation for lost profits if the patent owner would have made the sales.⁴⁴⁰ Lost profits can include other harm from infringing sales, such as lost sales, loss of goodwill, losses due to price reduction, or losses due to parallel imports.⁴⁴¹ If the patent owner is not a manufacturer, the compensation will amount to a royalty payment.⁴⁴² If the patent owner had licensed the patent, damages are generally determined to be lost royalty and damages are calculated based on a royalty rate for each infringing good sold, using the license as a basis for the rate.⁴⁴³ Even if the patent holder is a manufacturer, the holder must have been able to make the sale in order to claim lost profits.⁴⁴⁴ If the holder could not have made the sale, damages will be calculated as a reasonable royalty. The

⁴³⁵ Lord Wilberforce in *General Tire & Rubber Co. v. Firestone Tyre and Rubber Co. Ltd.* [1975] F.S.R. 273 at p. 277-78 citing Lord Blackburn in *Livingstone v. Rawyards Coal Co.* (1880) 5 A.C. 25 at 39.

⁴³⁶ See *General Tire v. Firestone* [1975] F.S.R. at p. 278 citing *Pneumatic Tyre Co. Ltd. v. Puncture Proof Pneumatic Tyre Co. Ltd.* (1899) 16 R.P.C. 209 at p. 215.

⁴³⁷ Thorley et. al., *Supra note 342*, at 577; see also *Ultraframe (UK) Limited v Eurocell Building Plastics Limited, Eurocell Profiles Limited* [2006] EWHC 1344 (Pat) citing and summarizing the general legal principles considered in *Gerber Garment Technology v Lectra Systems* by Jacob J at first instance at [1995] RPC 383, and by the Court of Appeal at [1997] RPC 443 ("It is not enough that the loss would not have occurred but for the tort. The tort must be, as a matter of common sense, a cause of the loss").

⁴³⁸ *Catnic Components Ltd. and Another v Hill & Smith Ltd.* [1983] F.S.R. 512, at p. 521.

⁴³⁹ Thorley et. al., *Supra note 342*, at 579 citing *Gerber Technology v. Lectra Systems* [1997] R.P.C. 443 CA.

⁴⁴⁰ See *General Tire v. Firestone* [1975] F.S.R. at p. 278 citing *The United Horse-Shoe and Nail Co. Ltd. v. John Stewart & Co.*, 13 A.C. 401.

⁴⁴¹ Thorley et. al., *Supra note 342*, at 579

⁴⁴² See *General Tire v. Firestone* [1975] F.S.R. at p. 278.

⁴⁴³ *Catnic Components Ltd. and Another v Hill & Smith Ltd.* [1983] F.S.R. 512, at p. 519.

⁴⁴⁴ *Id.*, at p. 521-22.

reasonable royalty rate is determined by assessing what a potential licensee not on the market would pay and by ignoring an alternate use of non-infringing substitutes.⁴⁴⁵

There does not appear to be a fixed standard or specifically defined set of rules which courts use. Instead there is a fact dependent analysis used by the courts. However, examining case law, there are certain considerations that courts have taken to determine royalty rates and lost profits. As an example, in *Gerber v. Lectra*⁴⁴⁶ the court took several factors into account to determine lost profits from patented goods the patent holder would have sold. These included: 1) Competitive tenders when competing with the infringer; 2) price differential between patent holder's product and the infringer's; 3) technical product differences; 4) marketing approach; 5) associated or convoyed products, equipment parts, and services; 6) price depression; and 7) losses due to infringer's accelerated entry into the market.

A reasonable royalty is determined by assuming that a willing licensor and licensee would agree to a license.⁴⁴⁷ As a first source of guidance, courts will see if there are comparable licenses in the relevant field.⁴⁴⁸ Courts can then use the "profits available" approach to calculate royalty terms. This method apportions the infringer's profits on the sale of infringing goods between the infringer and the patent holder.⁴⁴⁹ In *General Tire*, Lord Wilberforce warned, that since royalty damage calculations are very case specific and fact dependent, courts should be wary of transferring the conclusions of one case to another.⁴⁵⁰ Nonetheless, the general principle of calculating damages based on determining the number of infringing goods sold and multiplying this amount by a per-unit royalty is the basis for royalty damages.⁴⁵¹ A royalty can be estimated if there is no existing license or royalty, but courts are to use facts that will help determine this rate. In an example of factors that were considered by English courts in determining a royalty, the court in *Cabot Safety Corp.'s Patent* considered the following: 1) the commercial value of the invention; 2) comparable licenses; 3) the nature of the invention; and 4)

⁴⁴⁵ Thorley et. al., *Supra note 342*, at 579 citing *Catnic Components v Hill and Smith Ltd.* [1983] F.S.R. 512.

⁴⁴⁶ *Gerber Garment Technology Inc. v Lectra Systems Ltd. and Anr.* [1995] R.P.C. 383, at pp413-19.

⁴⁴⁷ *Ultraframe (UK) Limited v Eurocell Building Plastics Limited, Eurocell Profiles Limited* [2006] EWHC 1344 (Pat) citing and summarizing the general legal principles considered in *Gerber Garment Technology v Lectra Systems* by Jacob J at first instance at [1995] RPC 383, and by the Court of Appeal at [1997] RPC 443.

⁴⁴⁸ See *General Tire v. Firestone* [1975] F.S.R. at pp.280-81.

⁴⁴⁹ *Cabot Safety Corp.'s Patent* [1992] R.P.C. 39, pp.50-56 (The court also considered the return on investment for determining a royalty but this was a less favored method).

⁴⁵⁰ See *General Tire v. Firestone* [1975] F.S.R. at p. 278.

⁴⁵¹ *Id.* (citing Fletcher Moulton LJ in *Meters Ltd v Metropolitan Gas Meters Ltd* ((1911) 28 RPC 157 at 164, 165)).

profits available. These are all extremely fact dependent considerations and will generally rely on expert testimony.

Damages in Canada

If an accounting for profits is not available or the plaintiff elects for damages, lost profits and a reasonable royalty are the two methods of determining damages. While damages should be liberally assessed, they are limited to what a plaintiff may prove.⁴⁵² Whether damages are assessed as lost profits or reasonable royalties may depend on the patent holder's revenue stream. If a patent holder is primarily a licensor, then infringement remedies will likely come as royalties, while manufacturers and retailers will likely receive lost sales.⁴⁵³ Lost profits are supposed to compensate for sales which would have been made but-for the infringement, whereas a reasonable royalty is determined by what the infringer would have paid as a royalty had the two parties entered into a licensing agreement.⁴⁵⁴ For lost profit damages, the plaintiff has the burden of showing that it would have been able to make the sale and its lost profits amount.⁴⁵⁵ If lost profits cannot be shown, then a reasonable royalty will be awarded; but the plaintiff still has the burden of showing what a reasonable royalty should be.⁴⁵⁶ It is clear why a patent owner would attempt to obtain an accounting for profits because the burden of proof lies with the plaintiff for damages whereas the greater burden of proof lies with the defendant if an accounting of profits is elected.⁴⁵⁷ However, as *Monsanto v. Schmeiser* illustrates, the choice of an accounting of profits may result in no award if there is no benefit to the infringing component versus a non-infringing alternative.

For infringement between the time a patent is published and issued, a patentee is entitled to reasonable compensation from an infringer and this has been interpreted as a reasonable royalty by the courts.⁴⁵⁸ After a patent has issued, sale of patented goods, including springboard (sales made by the infringer after the expiry of the patent that would not have been made had the

⁴⁵² *Andrews and De Beer, Supra note 394*, at 636 citing *Unilever PLC v. Proctor & Gamble Inc.* (1995), 98 F.T.R. 80 at para. 47 (F.C.A.).

⁴⁵³ *Andrews and De Beer, Supra note 394*, at 637.

⁴⁵⁴ *Id.* citing *Allied Signal v. Du Pont* (1998) 142 F.T.R. 241 at para. 19 (F.C.T.D.).

⁴⁵⁵ *Grenier, Supra note 390* at 17-4.1 (Lost profits are calculated by showing potential revenues less any costs incurred).

⁴⁵⁶ *Id.*

⁴⁵⁷ *Wells, Supra, note 389*, at 18-6.

⁴⁵⁸ *Grenier, Supra, note 390*, at 17-6.1 citing *Jay-Lor International Inc. v. Penta Farm Systems Ltd.*, 2007 FC 358 (F.C.); see also Patent Act s.55(2).

infringer not been infringing the patent prior to expiry and expanding market share) and conveyed sales (sales of goods sold in conjunction with or as a result of sales of the patented good but not necessarily covered under the patent), will generally be considered for damage calculations.⁴⁵⁹ Springboard and conveyed sale losses can be included in damage calculations as long as they are foreseeable and not remote.⁴⁶⁰ Lost profits on sales outside of Canada may be included but only if those sales flow from infringement in Canada.⁴⁶¹ Further lost profit damages may arise as a result of loss of goodwill or losses due to parallel imports.⁴⁶²

A reasonable royalty is based upon a hypothetical negotiation between a willing licensor and licensee.⁴⁶³ However, the royalty rate can be determined either by reference to the incremental profits before taxes or by determining anticipated profits, where applicable.⁴⁶⁴ Courts will first need to determine the infringer's profits before applying any factors to adjust the rate. Courts may begin with a royalty rate of 25%-33.3%. The royalty rate may be adjusted by reference to thirteen non-exclusive factors which were outlined in *Allied Signal v. Du Pont*. These factors are:

1. Transfer of technology: If there is none then the rate should be reduced.
2. Differences in the practice of the invention: If the infringer brings its own technology in the practice of the invention the royalty should be reduced.
3. Non-exclusive license: Lack of license exclusivity and lack of total control over the market would reduce the royalty rate.
4. Territorial limitations would reduce the royalty rate.
5. Term of the license: a license for a limited term as opposed to the full patent term would reduce the royalty rate.
6. Competitive technology: The availability of competing technologies would reduce the royalty rate.
7. Competition between licensor and licensee: If they are competing entities that would increase the royalty rate.
8. Demand for the product: increased demand for the innovation would increase the royalty rate.
9. Risk: a low risk for lowered future sales would tend to increase the royalty rate.

⁴⁵⁹ Grenier, *Supra*, note 390, at 17-6.1.

⁴⁶⁰ *Id.*, at 17-8 citing *Gerber Garment Technology v. Lectra Systems* (1995) R.P.C. 383 at 400,402.

⁴⁶¹ *Id.*, at 17-9 citing *Allied Signal*, at 140.

⁴⁶² Thorley et. al., *Supra* note 342, at 579

⁴⁶³ *AlliedSignal Inc. v. Du Pont Canada Inc.* (1998), 142 F.T.R. 241, 78 C.P.R. (3d) 129, 1998 CarswellNat 271 (Fed. T.D.) para. 199.

⁴⁶⁴ *Jay-Lor International Inc. v. Penta Farm Systems Ltd.*, 2007 CarswellNat 1218, 2007 FC 358, 59 C.P.R. (4th) 228, 313 F.T.R. 1 (Eng.) paras. 147-49.

10. Novelty of invention: Increased novelty would increase the rate whereas lower novelty would reduce the royalty rate.
11. Compensation for research and development costs: Higher costs would increase the rate while lower costs would reduce the royalty rate.
12. Displacement of business: A royalty rate will tend to be higher if it results in increased revenues to the licensee.
13. Capacity to meet market demand: The royalty rate will be reduced if the patentee does not have the capacity to produce enough of the product to satisfy the market.⁴⁶⁵

While *Allied Signal* is a significant case when it comes to determining damages, damage assessment is very fact specific, leaving considerable discretion with judges. This test is also intended to act as a guideline and not as an absolute set of rules to be followed.

Property/Liability Rule Considerations

Summary of Damage Awards and the Liability Rules

Attempts to balance costs and benefits should be considered by courts in light of increased international patent system harmonization.⁴⁶⁶ In awarding remedies, courts should take the purpose of the patent laws and the system into account. Whether property or liability rules apply, or whether some hybrid application is used, courts should maintain the purpose of the patent system in coming to their decisions. This is not the same as having courts apply policy but is concerned with applying laws in a manner that applies evenly to all stake-holders. This should not be an issue for courts since legislative intent is regularly used in U.S. courts to interpret statutes.⁴⁶⁷ While use of legislative intent may be less common in Canada, laws are still meant to be interpreted with purposive intent, "ascertained through an analysis"

⁴⁶⁵ *AlliedSignal Inc. v. Du Pont Canada Inc.* at para. 209; see also *Jay-Lor International Inc. v. Penta Farm Systems Ltd.*, paras. 159-175 (This segment illustrates the thirteen factors used by courts to determine a reasonable royalty rate). There are some similarities but also significant differences from the Georgia Pacific factors used in the U.S.

⁴⁶⁶ See Trade-Related Aspects of Intellectual Property Rights Agreement (TRIPS) and European Economic Union Directive 2004/48. TRIPS is an agreement among World Trade Organization (WTO) members which provides for minimal intellectual property rights standards for all member nations. Canada, the United States and the United Kingdom are all signatories to TRIPS. These countries are developed nations and under WTO agreements, were required to implement the TRIPS agreement. Each country has implemented the minimal standards, including minimum infringement remedy standards. In England, there has been further harmonization with the rest of the European Economic Union (all WTO signatories), with a recent move to harmonize remedies through Enforcement Directive 2004/48. English courts have managed to harmonize remedies while changing little in their approach to remedies and leaving considerable discretion with the courts. See Jacob, *Supra note* 359, p.2.

⁴⁶⁷ I will note that many scholars and judges are critical of this practice, yet it is something nonetheless done by courts.

of statutory purpose or the purpose of the right granted.⁴⁶⁸ Canadian courts will use legislative intent to interpret laws.⁴⁶⁹ Within the past twenty years, English courts have begun to examine legislative intent in certain situations and a purposive approach to interpreting laws has become common when resolving an ambiguity or interpreting laws implementing European Community laws.⁴⁷⁰ Indications are that courts in each of the three jurisdictions are not only capable but competent to make decisions where the purpose of the statute must be taken into account.

In each of the three jurisdictions, damage awards consist of lost profits or reasonable royalties. Lost profits calculations in all three jurisdictions require that the patent holder be able to show that the holder would have made the profits being claimed but for the infringement. The plaintiff would have to have the manufacturing capability to make the goods sold by the infringer and the capability of selling those goods. Essentially, the plaintiff would have to also be a manufacturer and likely a competitor of the infringer. Therefore, lost profits is likely not a remedy available to non-practicing entities. It is far more likely that a reasonable royalty will be calculated by the courts to determine damages for such entities.⁴⁷¹ It should be noted that in the U.S., *King Instrument* is likely an outlier case, but it is nonetheless a precedent for patent owners that do not practice the patented invention but have other competing products. It has perhaps been reduced to a very specific set of circumstances, and has not been followed in a subsequent decision. Nonetheless, *King Instruments* may still be a valid foothold for lost profits awards for certain business models of non-practicing entities. When determining a reasonable royalty, “reasonableness” is a very context dependent term. The complexity in determining what is reasonable is exemplified in the Georgia-Pacific factors used in U.S. royalty analysis and the Allied Signal analysis in Canada. The factors used in both jurisdictions give the courts instructions and guidance but there is still considerable leeway in determining which factors apply and which are more significant.

⁴⁶⁸ See *Bell ExpressVu Limited Partnership v. Rex*, 2002 SCC 42, [2002] 2 SCR 559, par. 30; *R. v. Oakes*, 50 C.R. (3d) 1, [1986] 1 S.C.R. 103, par.28 citing *R. v. Big M Drug Mart Ltd.*, [1985] 1 S.C.R. 295 at 344, [1985] 1 S.C.R. 295.

⁴⁶⁹ *Entertainment Software Association v. Society of Composers, Authors and Music Publishers of Canada*, 2012 SCC 34, [2012] 2 SCR 231 (see dissenting opinion of Rothstein J.).

⁴⁷⁰ See opinion of Lord Templeman in *Litster v Forth Dry Dock & Engineering Co Ltd.*, 1989 S.C. (H.L.) 96, stating that “the courts of the United Kingdom are under a duty to follow the practice of the European Court of Justice by giving a purposive construction to Directives and to Regulations issued for the purpose of complying with Directives”; See also opinion of Lord Griffiths, *Pepper (Inspector of Taxes) v Hart*, [1993] I.C.R. 291, p. 300 indicating that purposive interpretation should be used when a statute is ambiguous or will lead to an absurdity.

⁴⁷¹ Further study is necessary to see if there are differences in the scale of royalty awards between “genuine” licensors and non-practicing entities.

A liability rule has similarities to the tort law “cause-in-fact” standard; applying concepts of but-for and proximate cause.⁴⁷² This particular analysis in patent law is often part of the analysis in Canada and England, but not in the U.S. In Canada and England the system seeks to make inventors no worse off and infringers no better off due to the patent infringement. However, judicial discretion may result in potentially punitive damages and may result in an award of costs. This could create a windfall rather than just compensation, but the “reward” may actually make the inventor no worse off, when interest, time, and costs are taken into account. The courts in either country perform their remedy analysis by determining whether the patent owner would have made sales and not lost profits, but-for the infringement. However, Canada and England expand on the “but-for” analysis by including injunctive relief and an accounting for profits as a means of making the patent owner whole. Yet, both jurisdictions note that it is possible that solely monetary compensation may make a party whole without requiring an injunction. Damage awards in a liability based system are based on a tort theory, providing monetary compensation to restore the patentee to the position the patentee would have occupied but-for infringer’s wrongful acts.⁴⁷³

By contrast, granting an injunction forces the parties to negotiate. Negotiations after courts find for the patentee potentially create unequal bargaining power lying in favor of the patent holder. An agreement may or may not arise out of negotiations, and the consequences for the infringer are complete cessation of infringing activities with patent inventory seizure or destruction. Nonetheless, negotiation is the preferred solution in a free-market economy because this allows the parties in dispute to define their own agreement rather than having the court, as an entity of the state, impose a remedy.⁴⁷⁴ The negotiation may end in an unfair result because of the leverage held by the patentee with the right to exclude; but general social policy in Canada, England, and the U.S. is against awarding the equivalent of compulsory licenses. Unfair results are both valid and acceptable in a market system.

⁴⁷² Blair & Cotter, 10 Tex. Intell. Prop. L.J. at 44,45.

⁴⁷³ Thorley et. al. *Supra* note 342, at 577 citing *General Tire & Rubber Co. v. Firestone Tyre & rubber Co. Ltd.*[1976] R.P.C. 197 at 212; See also Grenier, *Supra* note 390, at 17-1 citing *Allied Signal Inc. v. Du Pont Canada Inc.* (1998), 78 C.P.R. (3d) 129 at 139-140; Andrews and De Beer, *Supra* note 394, at 636 citing Patent Act s.55; see also *Bayer Aktiengesellschaft v. Apotex Inc.* (2001), 10 C.P.R. (4th) 151) Ont. Sup. Ct.) at para. 12; see also *Beloit Canada Ltd v. Valmet-Dominion Inc.*, [1997] 3 F.C. 497 (F.C.A.).

⁴⁷⁴ See *Merges, Supra* note 3, at 1602-03; *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006) (Roberts J. concurring opinion).

Courts in each of the three jurisdictions are most likely to award damages as compensation for infringement taking place up to the end of the trial, as well as an injunction preventing the infringer from continued activity. These damages may include lost profits or reasonable royalties in all three jurisdictions, or the infringer's profits in Canada and England.

Another reason to consider pure liability rules rather than property rules is because the patent may be more akin to a contract between the patentee and the government rather than an actual property right. A patent is a legislatively created right whereby an inventor is granted a patent from the government if the inventor meets the required criteria. In exchange for meeting the patenting criteria, the inventor is awarded a right to exclude others. Infringers would be interfering with the contract right and would be liable for compensation arising from that interference. Thus damage remedies can easily be associated with a breach of contract, allowing liability rules to be applied to patents. While scholars such as Vaver have stated that the view of patents as contracts with the state do nothing to further legal analysis, this view does not seem to go away.⁴⁷⁵ In fact, despite views to the contrary, U.K. and Canadian courts nonetheless appear to still perceive patents as a contract with the state.⁴⁷⁶

In the U.S. there are calls by a few academics, notably Blair & Cotter, to bring back disgorgement as a remedy.⁴⁷⁷ There are several reasons why this may actually be feasible. Given the complexity involved in economic calculations for both reasonable royalties and lost profits, the disgorgement calculation is not significantly more complicated. Extensive discovery rules should allow patentees to obtain the necessary profit information from infringers. Since the *King* case, it has been shown that there may be a need for damage awards that are not as extensive as lost profits but are more generous than those available through a reasonable royalty. Disgorgement is also seen as less like a compulsory license. However, while disgorgement may work as a remedy for past infringement, a court would still have to either impose an injunction, or award some form of continuing license, if the infringer wishes to continue using the patented invention.⁴⁷⁸ Blair and Cotter indicate that disgorgement may be an alternative to a compulsory

⁴⁷⁵ David Vaver, *Intellectual Property Law: Copyright, Patents, Trade-marks* (Irwin Law 2011) pp. 20-22

⁴⁷⁶ *Id.* at p.21.

⁴⁷⁷ See Caprice L. Roberts, *Business Law Forum: Intellectual Property remedies: The Case for Restitution and Unjust Enrichment Remedies in Patent Law*, 14 Lewis & Clark L. Rev. 653 (2010); See also Blair & Cotter, *Supra* note 4.

⁴⁷⁸ Continued disgorgement would be an untenable solution in most situations and would likely be difficult to enforce.

licensing issued by the court, but it would only be viable if the potential remedy would be onerous enough so as to encourage a licensing agreement between the parties. The authors also indicate that disgorgement has its limitations and is not onerous enough without further remedies. While there is some support in the U.S. to return disgorgement, it seems that Canada and England are making it more difficult for a patent holder to receive disgorgement, despite the popularity of the remedy with plaintiffs. Unfair results, windfalls, a lack of burden on plaintiffs and a heavy burden on defendants all factor into attempts to limit access to this remedy. If patent infringement is to be treated as a remedy to make whole rather than a penalty or punishment for infringers, this should be a major consideration in any policy shift to allow disgorgement as a remedy.

While patents are considered property, property remedies would normally be expected to be applied. However, patents are very different from tangible property because of their intangible nature. Patent remedies are not strictly property remedies since they also involve damages, which is normally a liability remedy. Liability elements are part of the available remedies for infringement allowing compensation for the harm suffered by patent holders, while tempering some of the harshness of injunctions (and where allowed, an accounting) and providing courts some flexibility on how to best compensate injured parties without harming the system or patent beneficiaries. Liability rules also provide some protection for patent owners where the infringer can easily design around the patented innovation, making injunctions powerless. A patent holder will be able to receive some compensation for infringement, even if that compensation may not be as high as the patent holder had anticipated. Through the implementation of a hybrid remedy system, a patent infringer will be required to provide some compensation for infringement but courts may still allow the infringement to continue if deemed beneficial to society. In many situations the patent holder does not have a manufacturing or competitive reason to demand an injunction but realizes that an injunction can be used as leverage in any royalty negotiation. This leads to a debate whether an injunction is justified in all situations. Without an injunction, it is likely that a court will impose a significant royalty payment on the infringer. This leads to the question of whether a patent holder should be entitled to enforce a property right, in the form of an injunction, to obtain as much money as possible in all situations.

Chapter Three

What is a Troll?

Since a patent owner will not always be able to practice the invention, the limited right to make and use includes the right not to make or not to use the patented invention. In combining the right not to use with the right to exclude, a patent owner can prevent others from using the patented invention despite not practicing the invention himself. There is no “working” requirement in Canada, the U.S., or England.⁴⁷⁹ Thus, in all three jurisdictions an entity can obtain a patent and enforce the right to exclude against an infringer even though the entity does nothing other than retain ownership of the patent. Any entity that holds a patent but does not put it into practice is a non-practicing entity. However, it is a particular segment of non-practicing entities, pejoratively labeled as “patent trolls,” that have achieved the enmity of manufacturers, legislators, scholars and many lawyers.

Trolls have been more of a concern in the U.S., but there is evidence that the trolling business model has achieved some success in Europe, as well as in Canada.⁴⁸⁰ This concern may amount to no more than intellectual curiosity in smaller economies, but the success of the business model in the U.S. and its potential for success in Europe have raised questions about the ability of current patent systems to operate effectively. This is the case especially because the new business models operate outside the traditional models which were envisioned when the patent systems were created. Despite the negative publicity received by trolls, there is also a segment of manufacturers, legislators, scholars and lawyers that hail the rise of patent trolls as a boon to the effective working of the patent system.⁴⁸¹ However, both supporters and detractors have had difficulty in identifying who, exactly, is a troll. Even if identified as a troll, it is not clear whether such entities are detrimental to the system. It is difficult to draw a line marking where trolling behavior begins and where legitimate behavior ends. This makes distinguishing

⁴⁷⁹ However, Canada and England have statutorily allowed a very narrow ability to grant compulsory licenses, usually for abuse or where the patent invention is not being used but demand is high and negotiations with the patent owner have failed to lead to a license. The standard is generally very high and companies rarely use this procedure as an alternative to licensing. See *Canadian Patent Act*, ss.21.01-21.2 and ss. 65-71 and *U.K. Patents Act 1977*, ss. 48, 48A, & 48B.

⁴⁸⁰ See Fischer & Henkel, *Supra note 22*; See Federal Court of Canada Docket: T-1661-07, *DataTreasury Corp. v. Royal Bank of Canada ET AL.* and Federal Court of Canada Docket: T-1472-07, *The Toronto Dominion Bank and Others v. DataTreasury Corp.*; See also *See Wi-Lan Technologies Corp. v. D-Link Systems Inc.*, 2006 FC 1484.

⁴⁸¹ James F. McDonough III, *The Myth of the Patent Troll: An Alternative View of the Function of Patent Dealers in an Idea Economy*, 56 EMORY L.J. 189, 205–06 (2006).

trolling behavior from “legitimate” non-practicing behavior problematic. Part of the problem exists because patent owners, academics, and businesses, are not in agreement as to whether trolls are actually a benefit or a detriment. Some see no reason to discuss trolls, as long as those entities are operating within the legal confines of the patent system and merely enforcing valid property rights. A further problem is that “trolls” often have “legitimate” patent uses while “legitimate” businesses often exhibit trolling behavior; trolls may actually practice patents that they hold while businesses will find ways to make money from patents that they do not practice. The perception of legitimate behavior has also been extremely subjective and even malleable, depending on who is affected and how.

Trolls have been defined as: “individuals or firms that seek to generate profits mainly or exclusively from licensing or selling their (often simplistic) patented technology to a manufacturing firm that, at the point in time when fees are claimed, already infringes on the [troll’s] patent and is therefore under particular pressure to reach an agreement with the [troll]”⁴⁸²; or entities who engage “in inefficient, socially wasteful patent transactions”,⁴⁸³ or entities involved in transactions that negatively impact the patent system. These definitions do little or nothing to clarify matters. They merely take the segment of non-practicing patent holders attempting to enforce their patents and label these entities and their practices in unclear, subjective, and derogatory terms. Often these labels are applied with ideological motives and usually by an entity that is being sued for patent infringement.⁴⁸⁴ Large manufacturers often use these labels when small, non-practicing entities attempt to enforce their patents against large entities.⁴⁸⁵ It does not help that terms like “efficient”, “wasteful”, or “negative impact” are extremely subjective terms over which differences of opinion arise. These definitions could just as easily describe IBM as they could Intellectual Ventures because they describe strategic behavior exhibited by every company which uses the threat of a suit to extract royalty payments.

⁴⁸² See Fischer & Henkel, *Supra note 22*.

⁴⁸³ Robert P. Merges, *Supra note 3*, 1588.

⁴⁸⁴ See *Id.*; See Victoria E. Luxardo, *Towards a Solution to the Problem of Illegitimate Patent Enforcement Practices in the United States*, 20 Emory Int’l L. Rev. 791 (2006); See Lemley & Shapiro, *Supra note 204* at 1993; these are just a small sampling of the academic papers focusing on the evils of patent trollyery.

⁴⁸⁵ See *Research in Motion v. NTP*; See *ebay v. MercExchange*; Several high-tech, electronics, and software manufacturing entities have banded together to create patent pools, patent sharing, patent licensing entities, or patent invalidity research companies to combat trolls. Such companies include RPX (<http://www.rpxcorp.com/>), Allied Security Trust (<http://www.alliedsecuritytrust.com/>), and Article One Partners’ Litigation Avoidance Program (<http://info.articleonepartners.com/litigation-avoidance/>). The companies involved in these organizations include IBM, Cisco, Intel, Oracle, HP, Microsoft, and several other large companies.

However, a patent owner has a legal right to demand royalties from any infringer and can attempt to exclude anyone from further infringement. Thus despite any negative connotations regarding “trolling” practices, their practices are within the legal rights of patent ownership.

Trolls are often viewed as patent speculators who exploit and coerce the system. The general objection to trolls is that they actively purchase patents with the intent to enforce the patents against current and potential infringers in order to obtain licensing royalties or a larger payout through litigation. It is not their enforcement of the patent that is troubling but their motivation for acquiring the patent and the impact on parties who are the targets of troll patent enforcement. Patent trolls have no interest in actually using or commercializing the underlying invention or ensuring that the innovation is commercialized. Their interest is to obtain royalties from alleged infringers who appear to be using the invention. The major distinguishing feature between a troll and other non-practicing entities is that trolls will wait to purchase a patent or will keep a purchased patent shaded from public scrutiny until another entity has infringed upon the patent before attempting to enforce its patent rights. There is no interest in purchasing the patent in order to use the underlying technology and there is little interest in attempts to license a patent before it is actually infringed. The infringer will often be a company that has developed the invention independently of the original inventor or a company unaware that its use is infringing an existing patent. Fischer and Henkel summarize trolling behavior characteristics: 1) trolls use surprise in an effort to catch infringers unaware that they are infringing and 2) trolls have no interest in the underlying invention but only in the patent rights associated with the invention.⁴⁸⁶ These characteristics distinguish trolls from other non-practicing entities, such as pure research firms or licensing firms that seek to find licensors before any infringement is detected.⁴⁸⁷

In Canada and England a patent application is made public within eighteen months of application filing, regardless of whether it is filed solely within the country or if it is intended for multiple jurisdictions. If a patent applicant has filed in the U.S. with the intent to file in another jurisdiction, that application will be published within eighteen months, acting as notification for any would-be infringers. This creates notice for potential infringers and eliminates most surprise

⁴⁸⁶ Fischer & Henkel, *Supra note 22*, at 19.

⁴⁸⁷ *Id.*, at 3.

filings. However an exception within U.S. patent law may still allow for surprise. A patent applicant can delay publication until the patent has issued, but only in circumstances where the patent applicant is filing only within the U.S. and no other jurisdiction.

Surprise is likely to occur because of the often unclear boundaries of a patent. Unlike real property or personal property, the actual boundaries of an intellectual property can be murky territory. The difficulty infringers have in identifying boundaries is illustrated by the fact that, in the U.S., willful infringement has been found to have occurred in very few cases.⁴⁸⁸ Independent parties can easily differ on the extent of patent boundary. In all three jurisdictions the patent boundaries are open to interpretation and are not definitively determined until a patent dispute reaches the courts. This can potentially force parties into protracted litigation in order to determine disputed boundaries.⁴⁸⁹ Additionally, each of the three jurisdictions has a different method of determining the extent of the boundaries.⁴⁹⁰ Confusion may exist within a jurisdiction, but there is even more uncertainty when trying to market a product in multiple jurisdictions. Thus, a party may infringe on a patented innovation without being aware that a patent exists.

Another difficulty in identifying trolls is the development of new business models, especially ones concerned with the property rights that come with the patent but not the underlying innovation. These business models include firms which are strict research and development firms that license their patented inventions and outsource manufacturing. There are also firms which purchase patents solely for licensing purposes. Licensing companies may also

⁴⁸⁸ Bessen and Meurer, *Supra note 277*, at 126 (willful infringement as found to have occurred in only 4% of the examined cases and even where willful infringement was found, there were a significant number of situations where enhanced damages were awarded due to insufficient investigation rather than just direct infringement).

⁴⁸⁹ Barrie McKenna, Paul Waldie and Simon Avery, *Patently absurd*, GLOBE AND MAIL <http://www.theglobeandmail.com/news/technology/patently-absurd/article810328/singlepage/#articlecontent> (last examined May 4, 2012).

⁴⁹⁰ US. Patent interpretation includes the doctrine of equivalents for interpreting patents; Canada includes a purposeful reading of the claims as described in *Free World Trust v. Électro Santé Inc.*, [2000] 2 S.C.R. 1024 and *Whirlpool Corp. v. Camco Inc.*, [2000] 2 S.C.R. 1067; UK patent interpretation is also includes purposeful reading of a patent as described in *Catnic Components Ltd and another v Hill and Smith Ltd* [1982] RPC 183 and further clarified in *Kirin-Amgen Inc v. Hoechst Marion Roussel Limited*, [2004] UKHL 46, incorporating still a third way of determining patent boundaries, including another interpretation of the doctrine of equivalents. *Merck & Co., Inc. v. Pharmascience Inc.*, 2010 FC 510 (CanLII), pp. 62-66 explains the nuances between the Canadian and U.K. methods of claim interpretation, particularly in terms of whether claims should be interpreted based on the intent of the inventor (Canada) or the understanding of the observer (U.K.).

include standards organizations and patent pools.⁴⁹¹ Non-practicing behavior would also encompass portions of the common practices of cross-licensing and in-licensing. Furthermore, many companies employ defensive patenting as a means of extending existing patent rights, preventing competitors from creating competing products, or merely defending against suits.⁴⁹² Furthermore, trolling behavior could also encompass not only failed licensors who later may enforce patent rights once the invention is infringed, but also entities that actively purchase patents in order to enforce them.⁴⁹³

Yet another business model includes market makers or middlemen. These entities purchase patents with the intent of reselling them or licensing them to other entities that can better use them, or with the intent of merely creating auction platforms. Such non-practicing entities will naturally seek to profit on these transactions. These transactions may even involve a form of arbitrage, where the purchaser buys from an inventor at a lower price, and, by virtue of its position as a market maker, will resell the patent to a buyer at a much higher price. Such practices help provide “liquidity” by connecting buyers and sellers and they help provide a “clearing” function for patents.⁴⁹⁴ In providing liquidity and clearing functions, these companies help facilitate the buying, selling, and licensing of patents by bringing buyers and sellers together or by merely helping to market and commercialize patents. Without these services, the small entity inventor would have a more difficult time finding buyers or licensees.

The line between middlemen and patent enforcers is not a clear one. In some cases, these entities will not only be resellers but also licensors looking to sell to parties who are already engaged in making goods or providing services that infringe the patent. Infringement may occur either due to lack of knowledge that a patent exists, or it may be intentional. In either case, some of these middlemen are adept at finding infringers from whom royalty payments can be claimed. An alternative tactic is to purchase a patent that has the potential to be infringed in the future. In either situation a middleman moves from being a reseller to a patent rights enforcer. The

⁴⁹¹ Technology companies have been banding together to purchase patent of mutual interest for licensing among themselves and to prevent others from purchasing these patents. Standards organizations have also created pools so that manufacturers can have reasonable fee access to patents involved in standards compliance. This includes .mp3 files, 3G and 4G wireless networks and other communication and data protocols.

⁴⁹² This last practice may raise anti-trust or anti-competition issues but this is left to competition law for enforcement and is only indirectly a concern of the patent system.

⁴⁹³ Fischer & Henkel, *Supra note 22*, at 4.

⁴⁹⁴ Shrestha, *Supra note 280*, at 130.

middleman no longer acts as a technology access facilitator but rather as a licensor and patent enforcers. Commercializing patented technology is not part of the business model. Yet it is not easy to definitively say whether even these middlemen, as final licensors, are trolls.

Nonetheless these demands for after-the-fact licenses are considered inefficient and a socially wasteful practice when a patent owner does not seek to find new licensors or purchasers for the patent or patented invention but rather seeks royalties from a patent sale to an already practicing entity. These owners do not seek out new users or uses for the patent nor is there an attempt to commercialize the patented innovation. They contribute nothing new to society. Thus, like the Fischer and Henkel definition, one of the key characteristic of these entities is that they seek to purchase patents that are already infringed or likely to be infringed. The key is that innovation use or patent resale to someone who can use it, is not usually part of the business activity. They typically seek patent enforcement for royalties.

In their research, Fischer and Henkel lump middlemen or patent enforcers into the troll category but admit that they may also have a positive effect on the patent system. Attempts to enforce patents may be quite expensive, and small entities and individual inventors may lack the financial resources to pursue legal action against a large entity infringer. Patent trolls may have the financial resources and the legal expertise necessary to enforce their patents. Thus by either selling the patent to the troll or agreeing to a contingency fee arrangement, “trolls” force large corporations to respect the rights of small or financially constrained inventors.⁴⁹⁵

A further problem with identifying trolls is that it is assumed that manufacturers do not engage in trolling behavior. It is also assumed that the troll will be a small company that seeks to unfairly force deep-pocketed companies into licensing agreements. The image of trolls has been painted by the companies affected by them. However, both large and small manufacturing firms will often employ licenses to reach markets or products they normally do not deal with and manufacturers of all sizes commonly use their patent portfolios and the threat of litigation to force licenses upon other firms by collecting their share of what is perceived to be wrongfully obtained revenues.⁴⁹⁶ Since manufacturers accumulate patents covering products and processes

⁴⁹⁵ Fischer & Henkel, *Supra note 22*.

⁴⁹⁶ Graham and Sichelman, *Supra note 278*, 1075-76 (2008).

which they may not actually be practicing, these manufacturers may be non-practicing entities in some situations.

Despite the difficulties in determining who exactly is a patent troll, or who exhibits trolling behavior, vocal opponents will generally consider trolls to be entities 1) that purchase patents solely for the property rights and not the underlying invention; 2) that use a form of arbitrage by leveraging information, financial expertise, and legal expertise to obtain patents that are already being infringed or are likely to be infringed; and 3) that have a business model that involves purchasing or licensing patents for the purpose of obtaining royalties and litigation damages.

Mark Lemley has pointed out that universities are research and development institutions active in the transfer of technology to entities that can commercialize the patented invention. It appears, however, that U.S. universities have started to favor short term licensing revenues over legitimate technology transfer.⁴⁹⁷ This caused frustration in industry and has created a perception that some universities have become rent-seekers rather than innovators.⁴⁹⁸ Recently, universities have been accused of acting like trolls. Universities help fund research but they tend to act as middlemen in transactions between researchers and actual patent users. However, schools may seek out infringers much in the way that alleged trolls do. There have been indications that universities have started filing paper patents in an attempt to obtain greater licensing revenues, thereby increasing rent-seeking accusations against them. Paper patents are patents obtained by an inventor with no intention of putting that patent into commercial use. While universities, like many manufacturers, may exhibit some behavior which may be considered troll-like, it is difficult to discern whether an entity that actually conducts considerable research and attempts to find methods of commercializing inventions can be called a troll.

Even companies that are considered patent trolls cannot easily have their practices defined as detrimental to society, nor are their practices merely the purchase of patents to enforce and sue. Acacia Research Corporation, Rates Technology Inc., and Ronald Katz Technology Licensing Inc. have been involved in over five hundred lawsuits between them in the U.S but

⁴⁹⁷ Merges, 24 Berkley Tech. L.J., at 1611 (Citing Mark Lemley).

⁴⁹⁸ *Id.* at 1611.

each company claims to conduct considerable research. Intellectual Ventures denies being a patent troll and claims to be a research facility that provides beneficial services, especially for small inventors. There are no numbers for troll involvement in England, but *RIM v. Inpro Licensing* was a failed attempt by an alleged patent troll to obtain licensing revenues.⁴⁹⁹ This case indicates that the patent troll business model has potential for success in England.⁵⁰⁰ In Canada, Mosaid Inc. and Wi-Lan Technologies conduct some research, but they have also been called patent trolls for their operations in the U.S. In Canada, Wi-Lan appears to be the only one of the two involved in a patent infringement suit.⁵⁰¹ U.S. research and patent holding company DataTreasury recently settled its suit in Canada against several major banks.⁵⁰² This may indicate that patent trolls may be finding business opportunities in Canada. Actual infringement suits in Canada and England have not appeared before the courts, but private settlements outside the courts may be happening. Since agreements are private, court cases would help to illuminate whether trolling practices have managed to gain traction in either jurisdiction.

Among manufacturers who license, cross-licensors, research entities with aggressive patent portfolio management departments, middlemen, and pure research facilities, the line between trolling and non-trolling behavior has become very blurred. This creates a very fuzzy way of defining what it means to practice a patented invention.

Motivation to Patent, Trolls, Other Non-Practicing Entities

As stated earlier, the purpose of a patent system is to encourage innovation, commercialization of the innovation, and follow-on inventions for the benefit of society. The current systems in Canada, the U.K. and the U.S. offer protection for the inventor through a limited property grant. However, it should not offer so much protection that follow-on innovation, commercialization, and public access are curtailed. Thus a patent system becomes a balance between protections for inventors and the freedoms of invention users.

⁴⁹⁹ *Research in Motion UK Limited v. Inpro Licensing SARL* [2006] EWHC 70 (Pat) (The court found in favor of RIM because the patent was deemed invalid for anticipation or obviousness, but Inpro was nonetheless a firm that dealt solely with the purchase and licensing of patents).

⁵⁰⁰ See Inpro Licensing website <http://www.inprolicensing.com/about.html> (last visited September 07, 2012).

⁵⁰¹ See *Wi-Lan Technologies Corp. v. D-Link Systems Inc.*, 2006 FC 1484.

⁵⁰² Federal Court of Canada Docket: T-1661-07, *DataTreasury Corp. v. Royal Bank of Canada ET AL.* http://cas-ncr-nter03.cas-satj.gc.ca/IndexingQueries/infp_moreInfo_e.php?T-1661-07 (last visited November 20, 2012) and Federal Court of Canada Docket: T-1472-07, *The Toronto Dominion Bank and Others v. DataTreasury Corp* http://cas-ncr-nter03.cas-satj.gc.ca/IndexingQueries/infp_moreInfo_e.php?T-1472-07 (last visited November 20, 2012).

The grant of a monopoly and the subsequent right to exclude others from making, using, selling, or importing a patented invention or products made using the patented invention are considered to be the motivation for an inventor to invent. By providing incentive in the grant of a limited monopoly, the belief is that an inventor will be motivated to patent the innovation and will use the right to exclude to commercialize the invention. That is not to say that there will be no invention without the property rights offered in a patent. It says only that innovators are being encouraged to invent and to make public their inventions in exchange for the right. However, just because a patent owner has a right to exclude, the owner may not want to or may not be able to commercialize the invention. A person may seek a patent for reasons completely unrelated to commercializing the invention. A recent study by Stuart J.H. Graham and Ted Sichelman indicates that there are at least ten reasons entrepreneurs choose to patent. Manufacturing the invention or using a process is only one reason. Other reasons include: licensing, defensive strategies, cross-licensing, financing and acquisition, bullying competitors and pre-empting market entry, and blocking competitors.⁵⁰³

These are all common reasons but some clarification and explanation for each term is necessary. Licensing usually involves a mutual agreement or contract between parties where the patent owner agrees to allow the other party certain patent rights in exchange for consideration (generally royalty). A defensive patenting strategy can be implemented in several different ways. This strategy includes obtaining a patent so as to control the area around an existing product with the purpose of extending the patent monopoly; or controlling that area around patents in order to prevent similar products from being created by competitors; or merely owning patents in areas of art where they can be used against a competitor should the competitor decide to use its own patents to sue for infringement. Cross-licensing is the grant of a license where parties agree to allow each other access to all of the patents they own, usually with some payment going to the company with more patents to make up any deficiency in patent numbers. Financing is always important for a company, particularly for startup companies. Financial

⁵⁰³ Stuart J.H. Graham and Ted Sichelman, *Supra* note 278, at 1064-70 (2008) (The ten additional reasons to patent include: 1) to license patents to entities that manufacture the products 2) to prevent others from suing the practicing manufacturer as a defensive measure; 3) as a bargaining chip in a cross-licensing agreement; 4) to acquire investments; 5) to increasing chances of acquisition; 6) to "bully" competitors with a litigation threat ; 7) to prevent competitors from acquiring the same technology; 8) to block others from entering the market by patenting components or small improvements; 9) consumer perception; and 10) just to show off the patent).

institutions are more likely to give loans to companies that own patents because the patents are viewed as an asset which can be used as collateral. Patents also tend to give legitimacy to the technology being developed by the company, something investors like. Bullying involves obtaining patents, usually weak ones, in an effort to be a nuisance to competitors and increase costs. A blocking patent is similar to a bullying or a defensive patent, but it is generally a strong patent that is obtained to prevent a competitor from using its own invention without paying a license to the owner of the blocking patent.

It appears that motivation for obtaining a patent, in several situations, actually aims to prevent practice rather than encouraging it. Several other inventors seek to extract a payment from already practicing entities or entities that independently develop the patented invention. There are practices that seek payments from companies to actually increase costs and avoid lawsuits. There are further practices which are designed to actually suppress innovation so that existing products can remain on the marketplace.

Richard Posner and William Landes question whether the patent is necessary in order to encourage innovation.⁵⁰⁴ They indicate that the protection, while valid in cases where it is cheap and easy to copy an existing innovation, will not be as needed in industries where the innovation is complex and copying is both difficult and expensive. Furthermore, strategic reasons have possibly eclipsed innovation as the major motivator to patent applications.⁵⁰⁵

Stuart Graham, Robert Merges, Pam Samuelson, and Ted Sichelman used data from the 2008 Berkeley Patent Survey to conclude that patents actually created a weak incentive to innovate.⁵⁰⁶ This conclusion seems to disprove years of economic assumptions about patents. They find overall incentive to patent is relatively weak, and this applies not just to companies that do not patent but to those that patent as well.⁵⁰⁷ However, the incentive will also depend on the industry.⁵⁰⁸

⁵⁰⁴ Landes & Posner, *Supra note 268*, at 313.

⁵⁰⁵ Landes & Posner, *Supra note 268*, at 316-320.

⁵⁰⁶ Stuart J. H. Graham, Robert P. Merges, Pam Samuelson, and Ted Sichelman, *High Technology Entrepreneurs and the Patent System: Results of the 2008 Berkeley Patent Survey*, 24 Berkeley Tech. L.J. 1255 (2009).

⁵⁰⁷ *Id.* at 1285.

⁵⁰⁸ *Id.* at 1286.

The major motivator to patent is more to prevent copying than for financial reasons.⁵⁰⁹ Entrepreneurs are likely to license a product but it is often so that they can avoid a lawsuit.⁵¹⁰ Nonetheless, patents also play a role in helping startups find angel investors and venture capitalists.⁵¹¹ The number of patents for startups has greatly increased while the traditional incentive motivator seems low.⁵¹² Incentives to patent include securing investment, increasing chances of achieving an IPO, using patents as strategic negotiating tools, and defending against suits by others.⁵¹³

The cost of prosecuting and enforcing patents is a barrier for entrepreneurs and was not considered an incentive to patent.⁵¹⁴ This was actually a reason that entrepreneurs opted against patenting.⁵¹⁵ Patenting was also considered detrimental because of the desire to keep any disclosure secret and because patents provided weak protection, especially if other forms of protection might be available.⁵¹⁶

Thus it may be helpful to look at some of the problems existing in separating “legitimate” from “illegitimate” patent behavior and transactions. It may also help to look at some of the standard strategic practices used by patent owners in light of the “legitimate” versus “illegitimate” debate over patent use.

Amy Landers indicates that the patent system has several goals, some of which are diminished or ignored through current policies. While the current approach has created an incentive to innovate, it has been less effective at encouraging commercialization. She notes that the motivation to innovate is strongly supported by current laws and policies but that the commercialization incentive is small compared to the relatively risk free incentive to license and trade in patents. The recent increase in patent liquidity is a direct result of strong property rights and an acceptance of anti-competitive behavior in patent accumulation. The result has been an

⁵⁰⁹ *Id.* at 1262.

⁵¹⁰ *Id.* at 1263.

⁵¹¹ Graham, Merges, Samuelson, Sichelman, *Supra note* 506, at 1263.

⁵¹² *Id.* at 1287.

⁵¹³ *Id.*

⁵¹⁴ *Id.*

⁵¹⁵ *Id.* at 1309.

⁵¹⁶ Graham, Merges, Samuelson, Sichelman, *Supra note* 506, at 1309.

increase in offensive and defensive strategic behaviour that involves patent trade and litigation rather than commercialization.

Practicing a Patent: What Is It and Why It Is Not Always Viable

Determining whether an innovation is being practiced is significant because a patent right entitles the holder to prevent others from making, selling, importing, or using the patented invention with the goal of commercializing either the innovation or a by-product of the innovation. Through an examination of what gets excluded in the patent right, it can be inferred that all these actions by an infringer are “practice.” Licensing is not really using an innovation since the licensor is merely providing conditions where the licensee may potentially gain some rights in the patent or patented innovation. But once the licensee practices the patent, then that can be considered use, and the licensor’s royalty demands can be justified in exchange for enabling another to make commercial use of the invention. However, there are a significant number of licensing situations where the innovation will ultimately not be used other than as leverage in another transaction, leverage to prevent certain behavior, or leverage for more money. These situations are not necessarily encouraging product commercialization, follow-on innovation, or public benefit.

Practicing the patented innovation entails making a product which is either the underlying innovation or involves use of that innovation with the goal of either commercializing the product or for use in research with potential commercial uses.⁵¹⁷ If the underlying innovation of the patent is a process, practice will involve use of the process to make a good or as part of research for some commercial purpose. There is, however, a very grey area where patent practice is not clear. The question is relatively simple when the underlying innovation is a physical product or process but becomes less clear when it is something less tangible like an algorithm or business method. Also, patent commercialization is more difficult to determine since the patent is treated as property that can be traded, licensed, and used as collateral in financing. While trading patents involves a commercial transaction, in many instances the underlying innovation is insignificant except as a basis for enforcement against others. The power of a patent lies in the

⁵¹⁷ There are varying levels of research and commercial use between the three jurisdictions. The U.S. seems largely intolerant of any research related to a commercial activity. Canada and the U.K. allow some research for commercial purposes. In the pharmaceutical industry, Canadian courts are regularly hosting legal battles between generic and research-based (Rx) pharmaceutical companies. See *Astrazeneca Canada Inc. v. Apotex Inc.*, 2013 FCA 77 (CanLII), *Apotex Inc. v. Canada (Health)*, 2012 FCA 322 (CanLII).

breadth of the description of the underlying innovation, but practice still involves the underlying innovation and not just patent trades or licensing without innovation use.

Of all the reasons to patent, only making, using, selling, leasing, or any commercial activity that involves use of the patented innovation or process can be considered actual “practice” of the patented invention. Making and using a patent invention will generally translate into manufacturing the patented invention, or using the invention as part of a manufacturing process. It will also cover the importation of patented items, if there is a commercial purpose. The term practice generally involves some use which leads to innovation commercialization. All uses which do not lead to commercialization may fall under the category of strategic use.

Practice also entails conducting research using the patented product or process with the goal of developing a commercial application for a subsequent outcome product. It may not rise to the level of “practice” if the research is done strictly out of curiosity since that may be outside the proximate scope of use with commercial intent but it may nonetheless lead to follow-on innovation at a future time. If the research involves a commercial context it may be considered practice for the purposes of compensation to the patent holder. The level of research amounting to practice varies in the three jurisdictions being examined. In Canada and England some research is allowed even if a commercial purpose may be the end result.⁵¹⁸ The U.S. has a much stricter rule which limits patent invention use to research that is done for curiosity and where no commercialization is intended. Thus in the U.S., a researcher will most likely have to obtain a patent or licence before commencing research, but in Canada and England, the researcher may or may not have to obtain a license. In the U.K. and Canada, whether a license is necessary will largely depend on the industry, the nature of the research, the commercial aspects of the research, potential competition, where the research is conducted, and other factors. Generally, there is a greater tolerance of patent infringement in Canada and the U.K. when research is involved.

⁵¹⁸ These exceptions generally apply to experiments for regulatory purposes, such as generic drug approval; see Section 60(5)(b) of the Patents Act 1977; Directive 2004/27/EC; see also *Canadian Patent Act*, R.S.C. 1985 c. P-4; *Patented Medicines Regulations*, SOR 94/688; the *Patented Medicines Notice of Compliance* (Linkage Regulations), SOR 93/133; and see *the Use of Patented Product for International Humanitarian Purposes Regulations* (Access to Medicines Regime), SOR 2005-143.

After this brief explanation of practice, it should be noted that it may not always be possible to put the patent into practice. Even if a patent owner wants to use the invention, other obstacles must still be overcome. Using a patent for manufacturing, commercialization, or further research and development (R&D) may be possible for many patentees; but each of these functions requires a source of funding. Small companies and sole inventors may lack the money and resources to put a patented invention into practice or to develop the invention further. Financing may also be unavailable to such patent owners. Patents may also fail to be practiced because there may not be a market for the patented invention, or there may be no demand for it, or the inventor may be unable to develop a marketable embodiment, or the innovation may not be viable within the patentee's area of business expertise. There is a myriad of reasons why an invention may not be practiced. Even the largest companies with significant resources may not be able to put all their patents into practice, forcing these companies to choose another means of recuperating the cost of time and expense required to make the patented invention.

Even if there is demand for an innovation, there may be a lack of commercial value in making it. A patented invention may also be less viable than the holder's other technologies. Further use of the patented innovation or commercializing the invention may not be desired because the new invention would compete with patentee's existing products.⁵¹⁹ Supply, demand, scarce resources, personal preference, existing products, cost effectiveness, potential profits, and many other factors can play a role in whether a patent holder will choose to commercialize an innovation.

If a holder cannot practice the innovation an alternate means of commercialization is by issuing a license. Licensing may enable an inventor to recover the costs of making an invention plus some profits. A patent holder may issue a license to another party who may be better suited to using the patented invention. Economic theory indicates that a party will license the patented invention to a party that is capable of more efficient use. A patent holder that is also a manufacturer may also issue a license to another entity looking to use the innovation. It is possible, but not likely, that the manufacturer will license to a competitor; but it is likely that a company will license to a non-competitor if the opportunity arises. Additionally, the patent holder may issue a license to another manufacturer operating in a geographic region the patent

⁵¹⁹ Blair & Cotter, 10 Tex. Intell. Prop. L.J., at 75-6.

holder would normally not access. In this manner, the patent holder is compensated for creating the invention while the licensee obtains compensation for the cost of the license through commercializing the underlying invention or by using the patented invention to develop and commercialize other innovations. However, for practice to take place, the licensee must actually make or use or attempt to make or use the patented invention.

Certain licensing practices also raise the question of what exactly is meant by “practicing” a patented invention. It is hard to understand how a patent can be considered to be “in use” if the licensee is content to sit on the patented invention, even if consideration is paid for the license. Determining whether an entity is practicing its patented invention may lead to some confusion. As an example, once the patent holder licenses the invention to a non-competing manufacturer or to a manufacturer operating in a region where the patent holder would normally not operate, the patent holder may become a non-practicing entity even if the patent holder is actually using the innovation in its own region or its own industry. A patent holder who manufactures and sells in Canada but licenses the invention to a manufacturer in the U.S. and does not directly sell or manufacture in the U.S. is a non-practicing entity in the U.S. The same would apply if the patent holder used the invention in making mobile phones but the licensee used the patented invention to make lap top computers. In both examples, a manufacturer has become a non-practicing entity. Nonetheless, in both cases, while the patent holder is a licensor and not directly putting the innovation into practice, it is ultimately being practiced by the licensee.

Not all licensing attempts are made just to recover costs or to seek licensing revenues. The proliferation of patent applications is encouraging strategic behavior. This is behavior where commercialization and direct licensing revenues are secondary to protection, inconveniencing competitors, and other strategic goals. For example, cross-licensing may not always result in practice. There are also entities that purchase patents solely for the purpose of licensing to others or for the purposes of litigation. Both practices may involve using a patented innovation but both strategies may want the property rights associated with the patent rather than a desire to use the underlying innovation.

All the other reasons to patent generally do not involve putting a patented innovation into practice. These other reasons are strategic in nature and may sometimes be contrary to the goals

of the patent system. Often patent owners obtain a patent for the purpose of preventing others from using the invention rather than actually using the invention themselves. Since there is no requirement that a patent holder or even a licensee actually use a patented invention, some actions may have a dampening effect on innovation.

Market Inefficiency and Non-Practice

It has been assumed that a patent system is necessary to help encourage innovation, to help disseminate information, and to bring innovation to the marketplace for consumption. Without the protections offered by the current system it may also be assumed that copyists will prevail by taking advantage of the labors of innovators. The assumption further continues that, without protection inventors will be less likely to publish materials and innovation will become secretive. It is the lack of protection for innovation in the free market that has led to the creation of a patent system. However, in trying to correct a free-market failure other inefficiencies have come to light in the current system. There are gaps in the system where strong protection is encouraging new and unforeseen business models which may actually discourage innovation and subsequent commercialization. Creative people have used these inefficiency gaps to create successful business models that do not necessarily focus on innovating for commercial purposes.

In a system where a limited monopoly is incentive to invent, system inefficiency exists because firms that conceive and practice an invention without obtaining a patent do not need the patent as incentive. Clearly the incentive was not the limited monopoly granted by the patent. This would also indicate that the patent should not have been granted because of the easy duplication of an invention.⁵²⁰ A market system inefficiency also exists because firms that independently reinvent a patented invention show that it may be easier to reinvent an invention than to find the patent.⁵²¹ Just because a patent exists, it does not mean that an infringer would have been aware of the infringement even after a diligent search. This indicates a problem where independent researchers may not be able to determine a patent's boundaries.

Because the boundaries are often unclear, it is difficult to determine whether a new device or process is actually infringing an existing patent. Determining the boundaries and potential infringement will increase the cost of research due to the administrative task of

⁵²⁰ Fischer & Henkel, *Supra note 22*, at 20.

⁵²¹ Fischer & Henkel, *Supra note 22*, at 20.

performing patent searches. These unclear boundaries may end up increasing research costs because companies, large and small, will be forced to expend resources to conduct in-depth patent searches. Infringement which may not be present upon initial review of a patent may end up having a latent impact at a later time.

Boundaries are further blurred because of marking requirements for some innovations but not for others.⁵²² The lack of marking requirements may be the result of impracticability, as in processes, methods, or bio-chemical innovations, and it results in uneven notification requirements and hidden dangers for the unwary. It is often assumed that researchers are aware of technological innovations in their field, but they are also forced to be aware of all patents in their field and even those that may indirectly touch on their field. While patents searches may provide beneficial information for researchers, constant searches to determine whether current research is infringing take away from time and resources devoted to the innovation process due to bureaucratic compliance requirements to ensure non-infringement.

An entity which owns property but does not exploit the property through use may try to exploit it by renting the property to others. It is known as rent-seeking when renting the property, rather than using it, is the property owner's strategy. More broadly speaking, rent-seeking is where a person tries to increase existing wealth but does nothing to create it, or more directly, when an entity seeks economic gain from society but does nothing to benefit society.⁵²³ Rent-seeking may be a potential inefficiency in the patent system. The patent owner does not himself make, use, or sell the invention but actively seeks to collect payments (rent) from others who do use and exploit the invention. It is not that rent-seeking of itself is "bad" but there has been an increase in patent trade for rent rights and this may become a problem for innovation when a company obtains and purchases patents solely to collect payments from existing practitioners. This can be an impediment to innovation and subsequent commercialization particularly where the infringer independently developed the patented technology or a segment of the technology.

⁵²² Blair & Cotter, 10 Tex. Intell. Prop. L.J. at 64-65.

⁵²³ See Definition of "rent-seeking", INVESTOPEDIA, <http://www.investopedia.com/terms/r/rentseeking.asp> (last visited July 12, 2013).

There are companies that have taken advantage of the strong property rights associated with patents. Since patents can be bought and sold, these entities have acted as middlemen in transactions. They create a marketplace for patents by buying and selling patents. However, these middlemen also enforce the patents that they hold in between purchases and sales. Often, these “middlemen” may only purchase a patent for the right to enforce and not with an intent to sell. In the patent world, rent demands are backed up with litigation threats. There is nothing wrong with this business model per se, but these entities have created a niche that was not foreseen when the patent laws were developed. These are patent traders and enforcers rather than inventors and innovators.

On one hand, some of these entities may create a valid market for patents, increasing their liquidity by connecting buyers and sellers. This is a beneficial niche which did not exist before. It creates a notification platform for patent sellers, and it creates notice to buyers of patents available for sale. These markets allow small inventors to receive compensation for their patented innovation while providing larger companies with a way to find and connect with smaller inventors. This process may actually aid in commercializing innovation and can play a beneficial role for the public.

On the other hand, there are middlemen who do not create a market for buyers. They are patent holding companies or licensing companies, deriving their revenue from royalty collection rather than from creating liquidity. It is unclear whether - and to what extent - they have a positive or negative impact on the patent system. It is also clear that many of these companies, regardless of what name is given to them, are using the threat of legal action to obtain these royalties. The property rights associated with the patent are the goal of these companies, while the underlying innovation is only significant insofar as someone is infringing it. However, many businesses have taken notice of these companies and labeled them as patent trolls.

Still other companies who have long criticized trolls for their behavior have “spun-off” their patent portfolios to subsidiary companies or to special purpose entities. Others have created joint ventures or partnerships with other companies to purchase and enforce patents. In the spin-off model, the spin-offs have given the parent company a non-exclusive license and have enabled them to act as patent licensing and enforcing companies. In the latter situations companies have created specialized ventures with other companies to obtain patents, to license these patents to

the parent companies, and to enforce the patents against competitors or others not part of the venture.

Trolls: Good or Bad?

Robert Merges indicates that the most threatening non-practicing entity is one that not only seeks to exact royalty payments, but also use the threat of litigation and potential injunction awards as leverage to demand exorbitant sums which may be out of proportion with the patented invention's worth.⁵²⁴ However, demands for these royalties are only possible if the troll purchases a patent which has already been infringed and the infringer is either unaware that it is infringing or has done so intentionally. An alleged infringer will likely pay the royalty if there is a chance that it actually infringed the patent and the potential cost of litigation and remedy awards will be more than the royalty payments.

Under this business model, the actual underlying invention is of no concern to the troll. It has no desire to actually make or use the patented invention but purchases a patent solely for the property rights in the patent. These rights are significant because they allow the holder to enforce those rights against an infringer. The innovation upon which the patent is based is only significant if there is another entity using it or using a similar innovation. In these licensing transactions, the patent is not being used to create further innovations; nor is it being used to commercialize the underlying innovation. No one is being encouraged to license the patented innovation in order to further research or to produce new products or to make products more efficiently. The underlying innovation is only relevant insofar as it is used as a basis for enforcement, and the patent's only purpose is to obtain rent.

It is believed that trolls are responsible for an increase in rent-seeking since they have created markets and exchanges that encourage this behavior.⁵²⁵ The transactions in question not only do not contribute to the innovation process, but they may actually impede innovation through the rent-seeking behavior. A whole business model has been created around an instrument which can force users to make payments in exchange for nothing other than owning the instrument. Thus an accused infringer is either forced to incur the expense of litigation or to pay the demanded royalties. An alleged infringer may also be forced to find a non-infringing

⁵²⁴ Merges, *Supra* note 3, at 1590-91

⁵²⁵ *Id.*, at 1587-88.

alternative, or attempt to design around the patented innovation. This will add cost to the infringer, which will ultimately be passed to the consumer through higher priced goods.

Since a purpose in creating a patent regime is to foster innovation, Robert Merges has put forward that transactions solely for the purpose of getting rent or acts which use the threat of litigation would seem contrary to this goal and more akin to blackmail. A party uses resources to get information; and, in exchange for suppressing that information, receives a payment from another party. Thus blackmail is considered a wasteful economic transaction. The net result is that society is poorer for it, since information is suppressed through a financial transaction. Just as blackmail has a negative impact on society, trolling provides no benefit to the patent system.⁵²⁶ However, unlike blackmail, the threat is not to suppress information for payment. The threat is to the continued use of an invention. In exchange for royalty payments, the infringer can continue to use the patented invention.

A patent holder further has a right to exclude others from using the invention, and patent owners can seek damages from infringers whether they are practicing the invention or not. Patent owners can demand royalty payments, and they can even seek an injunction while refusing to license a patent. This even entails not allowing anyone to use the patented invention throughout the life of the patent.⁵²⁷ Since each of the three jurisdictions recognizes that patents can be bought and sold, why should the patent holder not profit by selling his patent rights to another? Patent ownership rights are transferable to subsequent owners, and the right to exclude is one of those rights. While trolls appear to be within their legal rights, this behavior may actually be worse than blackmail because the threat is not to prevent dissemination of information of dubious value but to prevent useful products and information from being on the market unless royalty fees are met. The potential injunction can deny the public and other significant stakeholders access to innovations that may already be on the market as well as to potential new innovations.

While the government in all three jurisdictions under examination can limit patent rights, limiting acts are the exception and not the norm. In Canada and the U.K. the statutes indicate

⁵²⁶ *Id.* at 1600-01.

⁵²⁷ There are limits in both Canada and the U.K. to the right to refuse. If there is demand for a product but there is no provider, their respective patent offices may issue a compulsory license to a party willing to make the product.

that a compulsory license may be granted if patent rights are abused. However, for abuse to exist, demand for the patented innovation must exist, no one can currently be practicing it, and the party wishing to use the innovation must have attempted negotiations to get a license. The patent owner cannot refuse outright to license, and royalty demands cannot be outrageous. While the threshold may not seem particularly high, this is a rarely used remedy in both countries.

It is further believed that innovation will be impeded because companies will be wary about venturing into new technologies for fear of facing litigation. Companies will face increased patent search costs to determine whether any newly created technology will infringe on an existing patent. As it is, the median cost of formal validity and infringement opinions is \$15,000.00 in the U.S.⁵²⁸ When complex devices, involving multiple patents, require a search the cost to perform a search can be extreme. Even if a search is conducted and a company deems it is not infringing, the potential lack of clear boundaries may still result in an infringement claim. Unclear boundaries require greater cost to accurately determine their extent. Even if resources are expended to perform a thorough search, the patent boundaries may be interpreted incorrectly and parties will often differ.

Despite some negative impact on the patent system, it can also be argued that middlemen and trolls have also benefitted many inventors. These entities actually create markets for patent trade and licensing. These markets make it easier for parties to trade patents by matching buyers and sellers. It allows the innovator to focus on his area of expertise while allowing the middlemen to engage in the act of buying, selling, licensing, and even suing.⁵²⁹

It can also be argued that trolls create a beneficial service for small inventors because they enable patent enforcement by entities lacking resources to find infringers and lacking resources to enforce patents. Finally, society may benefit because infringers will be forced to be creative and flexible in trying to avoid paying ongoing royalties to patent holders. Rather than paying a royalty once infringement is discovered, an infringer can also design a work-around or find a non-infringing alternative. This may actually increase innovation by forcing the infringer

⁵²⁸ INTELLECTUAL PROPERTY, *Assessing Factors That Affect Patent Infringement Litigation Could Help Improve Patent Quality* GAO-13-465, p. 30 (Government Accountability Office, August 2013) (citing the AIPLA, Report of the Economic Survey 2011 (Arlington, Va.: July 2011)).

⁵²⁹ De Wit, *Supra note 343*.

to come up with other inventive solutions. This may not be the most tenable benefit, but an extremely flexible and responsive company may be able to achieve this. However, many companies will likely not have the resources or the ability to alter designs of products that are in mid-production.

Another issue when looking at the impact of non-practicing entities is that there are no clear figures to calculate the number of suits filed by these entities. Estimates in the U.S. indicate that non-practicing entities are responsible for between 2% and 17% of all patent infringement suits but a recent government study in the U.S. indicated that patent monetizing entities were responsible for as much as 20% of all suits.⁵³⁰ This is a large disparity in the numbers, indicating that trolls may have some impact; but it may also indicate that the danger posed by trolls is greatly exaggerated. The numbers are likely smaller in Canada and England. Factors in this assumption include their respective market sizes, the smaller number of patents issued, and the general profit potential of royalty awards versus cost of litigation.⁵³¹ However, any assumptions about troll pervasiveness are unclear and lack empirical support.

Nonetheless, concern over the negative impacts of the patent troll business model may have brought to light issues greater than the direct impact of trolls themselves. There has been a larger increase in the interest in property rights of patents than in the inventions which spawn the patents. This interest has led to questions of whether the patent system is actually achieving the goals which it was designed to address and of what can be done, if anything, to alleviate any shortcomings in the goals or purpose of the patent system.

Other Non-practicing Transactions Compared to Troll Behavior

It has already been shown that manufacturing and licensing are just two of many reasons to obtain a patent. There are also many sub-categories within the scope of “licensing” which are actively used by companies to for both strategic and profit oriented reasons. While licensing is a commonly believed to be a form of patent practice, there actually appears to be a fine line between licensing practices that tend to commercialize innovations and those that are merely created for strategic purposes. For example, it may be hard to consider an invention as

⁵³⁰ Shrestha, *Supra note 282*, at 121; see also Government Accountability Office *Supra note 528* at 18.

⁵³¹ See Severin De Wit, see *Supra note 341*, (There is very little evidence that the European market has a significant number of trolls); See also Jacob, *Supra note 359* (The European system does not have all of the factors of the U.S. system that encourage patent trolls; but it is still likely that trolling will increase as patent grants increase).

being “practiced” if there is a cross-licensing agreement where the entities may or may not be using any of the patent inventions in the other party’s portfolio. There are still other patent transactions that are common but are not “practice.” These transactions are considered to be legitimate and there has been very little commentary on their impact on the patent system. There has been no outcry over their inefficiency or the need to protect companies from such waste. Many of these transactions have also been ignored because they are commonly used as motivators for patent application filings. Nonetheless, while applications may be increasing, there are serious questions about whether these transactions are truly helping innovation.

There are still other business decisions that involve patents but not the practice or attempted practice of the patented invention. Some include both offensive and defensive tactics either to protect existing products or to prevent competitors from invading the patent owner’s territory. It is also not uncommon for a company with a large patent portfolio to wield its portfolio as a club against startups and competitors by threatening to sue startups and companies with weaker portfolios for infringement if they do not pay a royalty to continue operations.⁵³² Many companies operate aggressive licensing departments that seek to obtain patents for the slightest innovation in an attempt to use their patent portfolios to obtain as much licensing revenue as possible. It has also become a practice that some large practicing entities have started to use non-practicing entities to enforce their patents against infringers but to avoid public backlash from the enforcement.⁵³³ Such companies are generally very large companies which innovate, but it is questionable whether their tactics can be considered “practicing” their patents; these patents are not really used except for licensing or litigation leverage. Some of these companies will not use their patents but will just accumulate patents covering loopholes in existing patents or loopholes in competitor patents. This results in a stockpile of paper patents. The innovations coming out of such practices are often relatively weak, while nevertheless

⁵³² Graham and Sichelman, *Supra note 278*, at 1076, 1080 (This article describes how IBM used its patent portfolio to bully Microsoft into paying \$30 million in royalties, convincing Microsoft to build up its patent portfolio arsenal in order not only defend itself but also to use the portfolio as a club against others. This article also describes how AT&T, Sprint, and Verizon used their portfolios and the threat of litigation to balance the competitive playing field against Vonage after Vonage began to take away too many customers); See also Michelle Armond , *Introducing the Defense of Independent Invention to Motions for Preliminary Injunctions in Patent Infringement Lawsuits*, 91 Calif. L. Rev. 117, 125-26 (Armond describes aggressive licensing tactics by companies such as Texas Instruments, Lucent Technologies, and IBM where companies focus on recording patents on paper rather than supporting the findings with experiments or applying for patents with comprehensive protection for negligible innovations).

⁵³³ See Government Accountability Office, *Supra note 528*, at p35-6.

allowing the patent owners to wield the full power of patent exclusion and the threat of litigation.⁵³⁴ Discussing patent office standards for obviousness and novelty are beyond the scope of this work but low standards encourage application filing to gain property rights over unclaimed patent territory, rather than for actual innovation. It has also become a trend for companies to band together in an effort to create a partner company to seek out and buy patents which may be potential patent troll targets. The parent companies would receive a license from the subsidiary under extremely favorable terms.

Obtaining patents for defensive purposes raises the question whether defensive measures are actual practice. It also raises questions over whether infringement is easy to identify and whether rudimentary searches are sufficient to discover patents which may be infringed. This may also indicate that determining the boundaries is more difficult than merely conducting a scan of available patents which may require specialized skills. Another issue concerns companies that are buying patents primarily out of fear of being sued. The chance of infringement may be remote, but a triable issue may still arise before the courts and lead to protracted litigation for strategic reasons or a nuisance settlement.

Some companies with large patent portfolios, such as IBM, have embraced the idea of creating a special purpose entity (SPE) to whom the patent portfolio is sold. The SPE would grant a non-exclusive license on all of the company's patents, allowing full use, but would pursue an aggressive licensing and enforcement strategy. Investors finance the SPE, which uses the money to pay for the patent portfolio. In this manner, the company obtains a large payment for its patents while investors are generally compensated through portfolio royalties. There is great similarity between this practice and that of a patent troll.

The recent U.S. GAO report on patent litigation noted that many operating companies (practicing entities) partner with non-practicing entities for enforcement purposes or they have subsidiaries that perform litigation on behalf of the operating company.⁵³⁵

⁵³⁴ Florian Mueller, *When it comes to patents, IBM stands for 'International Bullying Machines'*, <http://fospatents.blogspot.com/2010/04/when-it-comes-to-patents-ibm-stands-for.html> (IBM is likely the largest patentee in the world, but the quality of its patents is not considered nearly as high; yet currently makes over \$1 billion in licensing royalties).

⁵³⁵ See Government Accountability Office *Supra note 528*, at p. 19.

To obtain full value from a patent some licensing may be involved.⁵³⁶ Attempts to receive royalties may be difficult for most practicing entities. Competing entities will generally have patents that cover their own and competitors' products making some infringement likely. Companies often come to an amicable agreement because, without it, competitors may get into battles over multiple patent infringement claims. Another complication exists because the attempted licensor may be in an existing business relationship with the potential licensee.⁵³⁷ A true patent troll is not likely vulnerable to either counter-suit.⁵³⁸ The SPE, like the troll, would likely remain immune, but the company that originally sold the portfolio to the SPE may be vulnerable to retribution suits from competing company SPEs.

A common way around a licensing impasse between competitors is a cross-licensing agreement. This is a form of license where two companies agree to exchange patent portfolios (or a portion of their portfolios). The company with fewer patents pays royalties to the company with more patents. These agreements often allow the company holding more patents to demand royalties from the competition.⁵³⁹ Cross-licensing has a further purpose as a protective measure to ward off countersuits by these same competitors.

The economic efficiency of cross-licensing is questionable; and, despite the general lack of concern over this practice, its positive effect on innovation in the patent system is less than clear. Since not all patents in the agreement will be practiced, the threat of litigation will nonetheless force the company with fewer patents to pay a royalty to the company with more patents. This does not necessarily encourage inventiveness. It does encourage companies to accumulate patents for every small innovation or variation no matter how trivial. This also encourages companies to find holes in their competitor's patent portfolios to strengthen bargaining positions for cross-licensing, rather than for putting an invention into practice. Weak obviousness standards, particularly in the U.S., and the fact that almost "anything under the sun that is made by man" is patentable further contribute to this situation.⁵⁴⁰ In Canada and England the obviousness and subject matter standards seem to be loosening as well. Canada currently

⁵³⁶ Fischer & Henkel, *Supra note 22*, at 6.

⁵³⁷ *Id.*

⁵³⁸ *Id.*

⁵³⁹ Graham and Sichelman, *Supra note 278*, at 1066; see also Shrestha, *Supra note 280*, at 122.

⁵⁴⁰ See *Diamond v. Chakrabarty*, 447 U.S. 303 at 308 (1980) (This case is often cited as the beginning of a view where patent rights are granted for an extremely broad interpretations of valid patentable subject matter).

recognizes business method patents and software patents.⁵⁴¹ While England officially follows E.U. patent standards denying business methods and software patents, there is a push to allow these types of subject matter. In England, whether a business method or software patent is granted often depends on claim construction.⁵⁴²

A further issue with cross-licensing is that the parties exchange portfolios, finances, or other resources without necessarily practicing a patent which is part of the exchange. The accumulation of patents forces another party to pay for patents they may not be infringing. It also forces a party to pay for a patent which neither party to the cross-licensing agreement may ever use. Thus there is an exchange of money for potential use of a patent, not for actual use. This is akin to paying for a potential trespass or potential liability prevention – almost like a kind of insurance. Cross-licensing has not been questioned because parties to a cross-licensing agreement find it cheaper to just agree to the license rather than face litigation over potentially hundreds of patents in a cross-licensor's patent portfolio. Perhaps such royalty payments can be favorably compared to a type of insurance or as nuisance avoidance due to the exclusionary property right granted in a patent. The practice has helped spur patent accumulation but it is not clear whether these transactions actually encourage innovation or whether cross-licensing benefits the patent system. The practice has resulted in the proliferation of both paper patents and practiced patents. This has been described as the “nuclear option” of the patent world. Since a single patent suit can be very expensive, the prospect of battling over several or several hundred patents is something no company is willing to accept. Since cross-licensing is a practice used by companies to avoid litigation, changes to remedies will have little impact on cross-licensing practices. Furthermore, cross licensing will occur regardless of the obviousness standard or the strength of patents. A tougher obviousness standard may limit the number of patents accumulated by companies, but it will not limit the practice of cross-licensing.

⁵⁴¹ *Canada (Attorney General) v. Amazon.com, Inc.*, 2011 FCA 328 (CanLII), <http://canlii.ca/t/fp53r> (Last visited on June 17, 2012).

⁵⁴² Patent applications relating to methods of doing business, U.K. Intellectual Property Office, <http://www.ipo.gov.uk/pro-types/pro-patent/p-law/p-pn/p-pn-businessmethod.htm> (last visited June 17, 2012); See also Hilary Pearson, *Software and business method patents - recent leading European and U.S. decisions* (August 11, 2010), http://www.twobirds.com/English/News/Articles/Pages/Software_business_method_patents_recent_leading_European_US_decisions.aspx (last visited November 20, 2012).

Despite some of the inefficiencies existing in cross-licensing, there are some benefits. In a market economy, cross-licensing is a market solution where parties agree to a transaction between themselves and without legislative intervention. Companies prefer this solution because agreement terms are generally secret and offer agreement structure flexibility. The transaction costs of making a cross licensing agreement are clearly seen as being cheaper than litigation, and without the uncertainty of anticipating a court decision. Another benefit to cross-licensing is that a company will have access to a competitor's patents which it would not have had otherwise. This may encourage research and development into areas that a company had not considered prior to receiving access to a competitor's patents. Transaction costs are also lowered because negotiations are not for each individual patent but merely for access to the accumulated total of patents. A final benefit is that companies are encouraged to publicize innovations through patenting in order to maintain a competitive balance with other companies in the industry. Thus a company is encouraged to publish even the most insignificant innovation in an attempt to accumulate patents.

A cross licensing agreement can be considered a market remedy rather than a legal remedy. As has been seen, while it may not necessarily be the most efficient method of encouraging the goals of the patent system, it does provide benefits for patent holders, follow-on innovators, investors, and even consumers. Innovators are encouraged to publish their innovations, no matter how meager, and decisions are made by the innovators themselves rather than through government and judicial intervention. However, these benefits may not necessarily result in a net benefit when compared with the detrimental aspects of cross-licensing practice.

Defensive patents and pre-emptive patents may also have more questionable net contributions to the goals of the patent system. Yet these reasons to patent are also considered acceptable patent uses by both patent applicants and even many commentators. They are useful methods that a manufacturer can employ to protect itself from competitors. The defensive patent is normally not intended for practice but only as a shield to protect against competing manufacturers. Most often the defensive patents will not be used except as a means of countersuing a competitor who decides to assert its own patent exclusion right.

Pre-emptive patenting is a defensive situation wherein a company decides to patent an invention, which it may or may not be using, merely to prevent its competitor from either using

the innovation or acquiring a patent on the innovation. Pre-emptive patenting can take another form, where an inventor with a patented invention, patents a subsequent invention in an attempt to extend the monopoly on the first invention.⁵⁴³ The invention covered by the second patent is suppressed rather than commercialized, in an effort to thwart competition against the first invention.

A blocking patent is an offensive form of patenting which Posner and Landes believe results in a net social cost. A blocking patent comes into being when a competitor obtains a patent on an improvement to the existing technology, but the existing technology is in a patent owned by the technology producer. The original patent owner and improver are both unable to use the improvement. The original owner is blocked because the improver owns the patent on the new innovation. However, the improver is unable to use the new innovation because he cannot use the original patented invention. Landes and Posner believe that the negotiation costs are often lower than the potential royalty benefits that could be obtained by developing improvements.⁵⁴⁴ This would indicate that there is a financial incentive to adopt a strategy to try to obtain a blocking patent against competitors, whenever possible. The blocking patent merely increases the cost of competitor improvements, because a royalty must be paid to the improver. The potential royalty also encourages non-use by the improver. However, this is accepted as perfectly valid strategic behavior which encourages negotiations between parties. Since negotiations are a market solution, it is one preferred by many companies and commentators despite a net social detriment.⁵⁴⁵

There is really nothing in the patent laws that will prevent the practice of pre-emptive patenting or of blocking patents. Both practices use the right to exclude to gain a competitive advantage. Patent accumulation is encouraged in all three jurisdictions.⁵⁴⁶ This is a form of non-

⁵⁴³ Blair & Cotter, *Supra note 4*, at 82.

⁵⁴⁴ Landes & Posner, *Supra note 268*, at 317

⁵⁴⁵ Lemley & Shapiro, *Supra note 204*; Merges, *Supra note 4*; and Blair & Cotter, *Supra note 4*

⁵⁴⁶ U.S. policy as reflected on the US Patent and Trademark Office website

<http://www.uspto.gov/about/ipm/index.jsp> (last visited November 20, 2012). See Canadian Marketplace Policy Framework Branch http://www.ic.gc.ca/eic/site/693.nsf/eng/h_00024.html (last visited November 20, 2012), Intellectual Property Policy Directorate http://www.ic.gc.ca/eic/site/ippd-dppi.nsf/eng/h_ip00003.html (last visited November 20, 2012), and Canadian Intellectual Property Office <http://www.cipo.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr01090.html> (last visited November 20, 2012). See U.K. Intellectual Property Office <http://www.ipo.gov.uk/pro-types/pro-patent/p-policy.htm> (last visited November 20, 2012) and <http://www.ipo.gov.uk/consult-2009-feeserv.htm> (last visited November 20, 2012).

practice which has a net social detriment because new innovations are not being practiced and old ones are continued beyond patentable period. Competition is also being prevented because the patentee is not making the new innovation nor is the newer patent being licensed to another willing to practice the innovation. Anyone looking to practice the innovation will be limited as to any improvements and will have to obtain a license from the innovator to use the improvements. The original patent owner will have a significantly superior market position and will be able to obtain royalty payments with significantly less effort and solely through the mistakes or oversights of initial patent owners.

There are also some positive aspects to pre-emptive patenting as well. Pre-emptive patenting may not actually encourage innovation but it still encourages the inventor to make public the invention details. In a system that denies injunctions unless the innovation is practiced, it is believed that the patent owner would be more likely to suppress the new innovation rather than allowing another to bring a competing product to market. There is also a question about the extent to which society would benefit if a manufacturer were forced to market two similar and competing products just to maintain a patent right. However, none of these reasons to patent appear to work towards actively putting innovations into practice. Rents, extending original innovation terms, and competition harassment raise the price of final products without necessarily providing anything new for consumers or follow-on innovators.

Patent bullying may be another tactic used by manufacturers. The purpose may be to increase costs for competitors, to gain competitor technology, or to push someone out of the market.⁵⁴⁷ This is most effective when the party obtains a weak patent and uses the threat of litigation as leverage in its negotiations to obtain a nuisance settlement. Again, this tactic does not increase innovation, except where the “patent bully” gains access to a competitor’s technology. However, the licensing fees will raise the cost of production by increasing costs or pushing a competitor out of the market. This makes the consumer poorer, while doing nothing to encourage innovation. Because patents are obtained to inconvenience competitors and to gain royalties, this practice differs little from trolling practices.

⁵⁴⁷ Sichelman, *Supra note 278*, at 1068.

Clearly, “trolls” are not alone in perpetrating wasteful and inefficient transactions. Defensive patents, pre-empting patents, bullying competitors, and cross-licensing are all reasons for patenting that involve patented rights but not the underlying invention. The common characteristic among these transactions is that the rights are significant while the underlying technology may be utterly insignificant to the party obtaining a patent.

Given the variety of business practices involving patent transactions, it has become increasingly difficult to distinguish “legitimate” from “illegitimate” practices. However, none of the transactions are illegal.⁵⁴⁸ Using the term “troll” further obfuscates legitimate discussion about the patent system since it immediately assumes that entities labeled trolls are involved in “illegitimate” patent use while other uses are legitimate. All the transactions described are actually legitimate, but the question is whether they actually meet the goals of the patent system. Competition laws may also find these transactions acceptable but delving into that area is beyond the scope of this work.⁵⁴⁹ Even if competition laws become part of the analysis, an accused infringer must go to court to resolve these issues and may face a preliminary injunction until these issues can be resolved. These are all practices that use the threat of litigation to force royalty payments. For all but cross-licensing, remedy decisions may encourage or discourage recourse to the courts. Thus preoccupation with the impact of trolls on the patent system may actually be somewhat moot.

Since it is not easy to identify the “evil troll”, it is still worth examining the powers that courts have when awarding patent infringement remedies. Analyzing remedies will allow insight into whether courts have difficulty reaching reasonable decisions when dealing with non-practicing entities. Remedy analysis can also reveal whether any distinguishing characteristics of such decisions are justifiable under the goals of a patent system.

Why Trolls Succeed in the Current Systems – Strong Propertization?

Fischer and Henkel concluded that: 1) patents obtained by trolls are generally broad and have a high likelihood of being infringed; 2) the patents are generally part of “thickets” and have

⁵⁴⁸ Continuing a patent beyond its lifespan may raise competition law questions but this is far from certain in practice.

⁵⁴⁹ Trolling, cross-licensing, bullying, defensive patenting, and preemptive patenting are not per se illegal but some of these practices may end up being contrary to competition laws.

a high substitution cost; and 3) the patents tend to be of higher quality than those of practicing entities, leading to a higher probability that patent validity will be upheld by a court.⁵⁵⁰

Patent trolls are active buyers and sellers of patents, purchasing or in-licensing patents in an effort to obtain revenues through reselling the patent or through licensing agreements.⁵⁵¹ These transactions are only helped by a system that encourages strong property rights and a system that separates rights in the patent from rights in the invention. Trolls purchase patents solely for their exclusion rights and not for the underlying technology. They then use the patent in transactions to sell or license patent rights to an entity already using the patented technology. These patent-only transactions are a key part of the business model used by trolls.⁵⁵² However, there is nothing illegal about transactions that are concerned with patent rights as opposed to the underlying innovation. Buying, selling, and licensing patents and the rights to use the underlying technology are perfectly legitimate actions. Wi-Lan, Mosaid, Inpro, and Intellectual Ventures all conduct some form of research and development. These are all perceived patent trolls but they are not merely buyers, sellers, and licensors of patents. However, buying, selling, licensing, and litigation are a significant portion of business for each of these companies.

There has been a general belief that patent trolls purchase patents of dubious quality; however, Henkel and Fischer conducted a study that determined that this was not the case.⁵⁵³ Three business strategies or combinations of strategies indicate that trolls are more likely to pursue higher quality patents. The first strategy is an injunction-based strategy. Only the injunctive strategy can successfully induce an infringer to settle based on a low-quality patent. The threat of an injunction could result in an immediate impact on the infringer while invalidity

⁵⁵⁰ Fischer & Henkel, *Supra note 22*. This study identified a number of patent trolls operating in the U.S. and in Germany, and they proceeded to examine the patents held by these entities. While Germany is not being examined in this paper, like England it is part of the European Economic Union. Since the troll business model shows promise in Germany, it is likely that it will have success in other European Economic Zone countries. Canada is generally a small market relative to the U.S. and E.U. Nonetheless, because of its proximity to, legal harmonization with, and interconnectedness with the U.S. market, it too may be susceptible to the trolling business model. Despite Canada's relatively small internal market, Wi-Lan Inc. and Mosaid Inc., two research companies that have been dubbed by many as patent trolls, are based in Ottawa.

⁵⁵¹ Fischer & Henkel, *Supra note 22*, at 3. In-licensing is an agreement between two firms to share expertise or costs in the development of a product, particularly in the pharmaceutical industry. Such agreements may include expertise such as marketing, research resources, equipment, or any other expertise possessed by one company in exchange for expertise owned by another. <http://www.wisegeek.com/what-is-inlicensing.htm>

⁵⁵² *Id.*

⁵⁵³ *Id.*, at 4.

proceedings to overturn the patent could take years. Thus the threat of an injunction may result in a nuisance settlement. The second strategy is a damage-based strategy. A damage-based strategy requires a higher quality patent since the troll is going after a monetary award from a court, and invalidity proceedings are generally part of litigation. Not only will a troll have to show that there is infringement, but it will also have to overcome an invalidity defense by the infringer before being able to collect monetary damages. The third strategy is a cost-switching strategy. A troll uses a cost-switching strategy because it would be too costly for the infringer to switch to a non-infringing strategy. This strategy requires a high quality patent so that it is either apparent that the infringer's product or process is part of the patented innovation, or that the patent is strong enough to overcome an invalidity proceeding. The latter two strategies take time, and higher quality patents are required to overcome an invalidity proceeding in order to obtain a monetary remedy.

Henkel's and Fischer's study has flaws due to a relatively small sampling of patent trolls that fall under their definition. If trolls were always purchasing high quality patents, there would be less of a debate against trolls. Plaintiffs, armed only with a patent and little other assets make reprisals and countersuits difficult. Furthermore, they ignore the cost-benefit analysis that many companies perform on whether to pay a royalty or litigate. They do not take into account the impact of litigation costs versus royalty demands which has led many companies to pay the royalty demand rather than litigate.

A recent report published by the U.S. Government Accountability Office on patent litigation indicates that patents of dubious quality are in fact the source of much litigation.⁵⁵⁴ Patents with overbroad claims and unclear boundaries are the source of most disputes, whether involving non-practicing entities or not. While the report minimizes the impact of non-practicing entities, it also notes that a consistent twenty percent of all litigation in the United States is the product of non-practicing entities.⁵⁵⁵

Other commentators have held that patent trolls tend to focus on software, electronics, and other high-tech devices because of the complexity of the devices and because the devices are

⁵⁵⁴ See Government Accountability Office *Supra note* 528, at p.28 (Government Accountability Office, August 2013),

⁵⁵⁵ *Id.* at 4.

composed of parts covered by several patents.⁵⁵⁶ In the U.S., forty-six percent of all patent lawsuits involved software.⁵⁵⁷ Mobile phone devices may be covered by several hundred patents, with smartphones involving between 50,000 and 250,000 patented technologies.⁵⁵⁸ This is also an area of prolific patenting because of high competition, changing consumer tastes, changing consumer usage, and rapidly changing technology. Trolls have much less of an impact in areas outside of electronics. Nonetheless, it is within these areas that trolls seem to thrive.

Business methods are yet another area where trolls seem to be thriving.⁵⁵⁹ This area has been controversial but also appears to be ripe for litigation, usually because of the dubious subject matter to which patents are being awarded. Nonetheless, Canada and the U.S. allow these types of patents.

Furthermore, a review of companies with troll-like behavior indicates that trolls tend to purchase patents from smaller firms and not from large, practicing firms.⁵⁶⁰ Trolls also tend to purchase older patents 1) with more forward citations, 2) with few family members, 3) that are related to complex and crowded technology fields, 4) with many claims, and 5) with more non-patent literature references.⁵⁶¹ These factors make it less likely that such patents will be found invalid. Patents are also selected if they have a high probability of being infringed focusing on high quality (legally defensible) patents in dense technology fields.⁵⁶² These patents will generally have underlying innovations with high substitution costs.⁵⁶³ These findings indicate that trolls search for more obscure patents that cover innovations that have not been successfully

⁵⁵⁶ See Shrestha, *Supra note* 280, at 145; See also Nicholas Varchaver, *Who's afraid of Nathan Myhrvold?*, FORTUNE MAGAZINE, (June 26, 2006), http://money.cnn.com/magazines/fortune/fortune_archive/2006/07/10/8380798/index.htm (Last visited October 24, 2011); Fischer & Henkel, *Supra note* 22; Alex Blumberg and Laura Sydell, *When Patents Attack*, <http://www.npr.org/blogs/money/2011/07/26/138576167/when-patents-attack> (last visited Oct. 23, 2011).

⁵⁵⁷ See Government Accountability Office *Supra note* 528, at p.23.

⁵⁵⁸ *Id.* at p. 30 (citing the AIPLA, Report of the Economic Survey 2011 (Arlington, Va.: July 2011)).

⁵⁵⁹ See *eBay v. MercExchange*; and also *Amazon.com, Inc. v. Canada (Attorney General)* [2010] 4 F.C.R. 541 in Canada.

⁵⁶⁰ Fischer & Henkel, *Supra note* 22, at 13-14 (Trolls tend to select patents related to physics and electricity technological categories, with recent focus on telecommunications and information technology).

⁵⁶¹ Fischer & Henkel, *Supra note* 22; See also European Patent office definitions. (A patent family exists when there are several applications or documents for the same invention claiming the same priority).

<http://www.epo.org/patents/patent-information/about/families.html>; (Forward citations are after-occurring citations that reference a particular patent while backward citations reference materials prior to the patent filing).

⁵⁶² *Id.*, at 15.

⁵⁶³ *Id.*, at 18.

marketed, but which cover areas where existing technologies are likely to infringe the patent. Trolls operate in areas where the cost of coming up with an alternative is prohibitive.

Trolls have an advantage over practicing entities when it comes to identifying and purchasing patents.⁵⁶⁴ Patent trolls hire people with the expertise to identify suitable patents and to extract value from patents.⁵⁶⁵ The business model also involves a willingness to have courts settle disputes. By contrast, practicing firms are generally in the business of using the patented invention and will extract value through the patents by practicing the invention, by preventing imitation, cross-licensing, or potentially by licensing the innovation.⁵⁶⁶ Companies will generally try to avoid settling disputes in court. Even if some of the research they conduct is not traditional, they have a significant expertise in researching patents.

Yet another advantage that trolls have over manufacturing entities is that patent trolls are immune to a countersuit.⁵⁶⁷ This is because a non-practicing entity that is awarded an injunction against a manufacturer can prevent the manufacturer from making the invention while a countersuit by the manufacturer will have no effect because the non-practicing entity does not make anything.

Patent trolls would seem to have developed a sustainable business model. Trolls provide smaller companies with a willing buyer, something that the seller may normally not have. Trolls are also willing to enforce their patent rights. Strong property rights encourage trolls to use the threat of an injunction or litigation, especially since high substitution costs provide leverage over potential infringers.⁵⁶⁸ Finally, trolls have created a business model which uses technical expertise to pursue patents that are likely to be infringed, and they use legal expertise to drive litigation.

Trolls can be difficult to identify. Information on actual trolls tends to be limited because of several factors. Most companies are very quiet and few are public companies. Rarely do

⁵⁶⁴ *Id.*, at 6.

⁵⁶⁵ *Id.*, at 6.

⁵⁶⁶ *Fischer & Henkel, Supra note 22, at 6.*

⁵⁶⁷ Nicholas Varchaver, *Who's afraid of Nathan Myhrvold?*, FORTUNE MAGAZINE, (June 26, 2006), http://money.cnn.com/magazines/fortune/fortune_archive/2006/07/10/8380798/index.htm (Last visited October 24, 2011).

⁵⁶⁸ *Fischer & Henkel, Supra note 22, at 19.*

infringement suits proceed to trial.⁵⁶⁹ Even if a trial commences, patent trials often end when infringement is found and the parties negotiate their own licensing agreement. Many patent cases end up being settled between the parties and do not reach final judgment.⁵⁷⁰ Settlements are not part of the public record, and this limits understanding of how the system works in practice.⁵⁷¹

Another significant issue, when assessing the viability of a patent troll business model, is the existence of a “working requirement.” In Canada, the U.S., and the U.K there is no requirement to use the patent. Even if such a requirement existed, it is often quite difficult to tell whether a patent is actually being “used.” A company may be conducting research with a patent invention. It is also not easy to decide on the number of produced products which would constitute manufacturing.

Abuse laws in Canada and England exist but they are applicable in very narrow circumstances and come with very stringent criteria. To take advantage of these abuse laws, applicants must make significant attempts to negotiate a license and no non-infringing alternatives can exist. Finally, consumer demand must exist for a product that is being prevented from being used in the marketplace.

Despite the lack of a use requirement, patent holders are still entitled to some compensation under current laws when they do not use their patented innovation. Nonetheless, non-practicing entities will likely not have recourse to an accounting for profits in Canada and the U.K., and the non-practicing-entities will not have recourse to lost profits in any of the three jurisdictions. Furthermore, while injunctions are commonly awarded, they are still equitable remedies in all three jurisdictions and can be awarded at the discretion of the courts.

It has been shown that the patent troll business model will likely continue to be successful. The business model will continue because 1) determining patent boundaries is complicated, making it difficult for inventors to determine whether a new product will infringe;

⁵⁶⁹ Jay P. Kesan and Gwendolyn G. Ball, *How are Patent Cases Resolved? An Empirical Examination of the Adjudication and Settlement of Patent Disputes*, 84 Wash. U. L. Rev. 237, 258-65 (2006) (80% of all patent suits in the United States are settled by the parties before final judgment, with only 5% proceeding to final judgment, and the remainder being settled through procedural means).

⁵⁷⁰ Golden, *Supra note* 362, at 550-51; See also Government Accountability Office *Supra note* 528, at p. 25.

⁵⁷¹ *Id.* at 550-51.

2) there are an ever increasing number of patent application filings; 3) not all countries have made legal changes to curb trolls; 4) laws requiring patent practice may easily be circumvented by creating nominal production facilities; and 5) the switch-cost based strategy is not affected by any of the current legal changes.⁵⁷² Other reasons that trolls have found success is that technology is rapidly changing; thus, small innovations to existing technology become patentable. This creates a low barrier to competition entry but has also led to patent thickets. The electronics field has many small companies competing for an advantage or for a niche in the marketplace. Business methods and software patents could increase trolling behavior. The barriers to entry in these fields are relatively low, allowing individuals and small investors to enter the marketplace. Electronics, business methods, and software sectors have relatively low barriers to entry, making these areas popular for trolling. By contrast, the chemical, pharmaceutical, and biotech fields have high barriers to entry because of high research and development costs and heavy regulation. Thus certain technological areas are more amenable to trolling than others.

The trolling business model has been so successful that large technology companies such as IBM, Microsoft, Apple, and others have started to develop aggressive patent purchasing and enforcement strategies to compete with trolls for technology, while at the same time developing defensive strategies to mitigate the success of trolling against them. IBM has become a forerunner in adopting trolling practices into its business strategy. Recently, IBM established an SPE to which it sold its patent portfolio. In the transaction, IBM maintains a non-exclusive license to all patents it sells to the SPE, while the SPE pays regular royalties from the patent portfolio. The SPE completely focuses on licensing and litigation while IBM maintains its core business. Other companies such as Apple, Research in Motion, EMC, Ericsson, Sony, and Microsoft have purchased Nortel's patent portfolio and licenses from bankruptcy court in a consortium called Rockstar. Rockstar has now become an enforcement company, searching for infringers or potential infringers.⁵⁷³

⁵⁷² *Fischer & Henkel, Supra note 22, at 5-6.*

⁵⁷³ Josh Lowensohn, *Where most of Nortel's \$4.5B patent collection ended up*, CNET NEWS, [http://news.cnet.com/8301-13579_3-57438221-37/where-most-of-nortels-\\$4.5b-patent-collection-ended-up/](http://news.cnet.com/8301-13579_3-57438221-37/where-most-of-nortels-$4.5b-patent-collection-ended-up/) (last viewed July 24, 2012).

Patents, Non-Practicing Entities and Property Rules

While increased innovation is the goal of the patent system and propertization is believed to create a significant incentive for inventors to innovate, it is not quite clear whether the incentive helps achieve the system's goal. Under the current patent systems in Canada, England, and the U.S., there appears to be great motivation to patent but less motivation to commercialize the innovation. Stronger patent rights have encouraged patent applications and resulted in a steady increase in patents issued. While innovations are still coming out of these patents, and some of these innovations are being marketed, not all patents can successfully be put into practice. The combination of patent volumes and limited resources has also created other business niches and an increase in strategic behavior. Patent applicants have numerous motivations for filing a patent. While protecting a practiced innovation may be one reason to patent, there are a number of other common motivators that merely increase costs through royalty demands and the threat of litigation. A robust marketplace for patent transactions has evolved as has the litigation market. The patent transaction marketplace indicates that there is significant trade in patents and portfolio licensing, but there is no clear indication that these increased patent transactions are actually leading to increased practice or innovation application. Furthermore, the incentive offered by a patent may be working to increase paper patents and royalty revenues rather than actual innovation. Patent accumulation rather than innovation acquisition has become common and appears to be a side effect of patenting incentives.

Accumulation is also a by-product of the view that patents are valuable assets. This view has led companies to create strategies where patents become used to generate regular revenue streams. With some non-practicing entities, investor demand for returns has helped fuel litigation.⁵⁷⁴

With the increase in patenting motivators, patent use or practice becomes a concern as other revenue generating strategies are employed by patent owners. Resource limitations are one reason why patent holders may not choose to market their patented innovations. However, strategic reasons are also a consideration as to why technological innovations may not be entering the marketplace. Active attempts to recover research and development dollars have created a niche for patent trolls. These attempts have also caused companies with large research

⁵⁷⁴ Government Accountability Office *Supra note 528*, at p. 35.

and development expenditures to create intellectual property departments that aggressively seek royalty revenues. Some companies have learned from patent trolls, spinning-off their intellectual property portfolios into aggressive enforcement and licensing companies.

Both trolls and enforcement and licensing companies have discovered that litigation threats can be used to obtain royalties, regardless of whether there is actual infringement or not. Their goal is to resell patents or obtain licensing royalties. It is not to practice the innovation. Their interest in a patent is solely for its exclusion rights which may generate royalties. Trolls and enforcement licensing companies are not interested in the underlying technology. These companies rarely engage in transactions involving technology transfer. The property right to exclude creates an incentive in transactions involving the patent itself, not ones concerned with the underlying innovation. Furthermore, the right to exclude creates greater incentive to enforce the patent than it does to make or use the patented innovation. This behavior challenges the belief that increased patent rights improve market functions for technology and calls into question the wisdom of strengthening property rights.⁵⁷⁵

Current market theory assumes that a patent and the underlying technology are tied together, so that a benefit for sellers, buyers, and society exists as the technology is transferred to the more efficient user.⁵⁷⁶ Trolls, however, create a market for patents but not for the underlying technology.⁵⁷⁷ Their business profitability relies on rents or reselling the patent, with no use for the underlying technology. Cross-licensing is another transaction which may involve both the patent and innovation but often involves only the patent, not the underlying technology.

There is a separation between the patent as a thing and the underlying innovation as a thing. This presents a problem because a patent creates a property right, but the underlying invention can be created independently of patent ownership. The two are not necessarily tied together, and a property right can exist in both the patent and the invention. Owning a patent will not prevent another from independently coming up with the innovation. It is also possible for patent owners to have no knowledge of the underlying technology or who practices it.⁵⁷⁸

⁵⁷⁵ Fischer & Henkel, *Supra note 22*.

⁵⁷⁶ *Id.*

⁵⁷⁷ *Id.*, at 19.

⁵⁷⁸ *Id.*

This last point further illustrates the indifference to innovation that comes with some forms of patent ownership.

A troll's interest in a patent is to obtain royalty payments. In many cases, trolls seek these payments from companies that were aware of the patented innovation; but, due to patent enforcement costs, the patentee sold the patent to trolls for enforcement. These situations tend to get resolved through negotiations. There are also many situations where royalty payments are being demanded from parties who developed an innovation independently of the patent and were unaware that a patent existed. The innovation user has developed it independently of having a patent or a patent's incentives. This may result in a court battle. A third situation in which trolls purchase patents occurs because the patents cover technologies similar to existing technologies. In this third case, determining non-infringement will require a long, protracted court case, and alleged infringers are likely to pay a nuisance royalty rather than await the uncertainty of a court decision. These latter two situations are the ones that seem to fly in the face of the goals of the patent system. Without adding any kind of new innovation to the marketplace, both tactics generate revenue for the patent holder, while increasing costs for the technology user and the ultimate consumer.

The right to exclude can be wielded with considerable power. With complex technologies, a purchaser that obtains a patent for a relatively minor part can threaten the already producing technological manufacturer with an injunction unless the manufacturer agrees to pay a substantial royalty.⁵⁷⁹ People who argue that trolls are performing a genuine market-making function by acting as middlemen to transactions between sellers and buyers ignore the impact of these transactions. These middlemen do not perform their own research and development, nor do they add to the existing innovative pool. They merely increase the volume of litigation. Some have likened trolling behavior to a form of blackmail, an act with no social virtue or benefit.⁵⁸⁰ However, in all fairness to that assessment, alleged trolls do provide a means by which inventors and innovators, who put in the time and labor to develop the innovation, can collect royalties from entities that use their patented innovations. In particular, these entities may help small companies and sole inventors against infringement from large companies.

⁵⁷⁹ *Merges, Supra note 3*, at 1590-91.

⁵⁸⁰ *Id.* at 1599-1602.

Cross-licensors do not really care whether or not a patent is being infringed. They exchange money solely based on patent numbers. There is no indication that either party to the agreement is actually infringing the other's patents. Money is exchanged as a form of mutual insurance and to prevent a legal battle that may cover hundreds of patents. A cross-license appeals to businesses because it is a privately negotiated settlement. This solution also prevents even greater resources from being devoted to legal battles. Nonetheless, despite its appeal to businesses, a cross-license creates a situation where money is being spent for technology that has already been created, or for technology that will not be used, or for paper patents. Many businesses are willing to enter into cross-licensing agreements, but these agreements do not necessarily increase innovation.

Strategic filing should also be more of a concern. While strategic tactics generate revenue for patent holders through royalty demands, these patents tend to stifle innovation or, at the very least, increase competitor costs. Despite being legal, these strategies do not increase innovation nor do they help market an innovation. In the battle against trolls, these strategies have largely been ignored as being an impediment to innovation. Increasingly strong property rules have led to an increased effectiveness of the exclusion powers of patents.

Growth of patenting and propertization has increased rent-seeking behavior. The right to exclude is used as a threat to motivate alleged infringers into signing licensing agreements. While rent-seeking is not necessarily bad, rent-seeking combined with transactions that diminish and suppress innovation seems to have a negative impact on society and goes contrary to the goals of a patent system.⁵⁸¹

⁵⁸¹ *Merges, Supra note 3, at 1603-07.*

Chapter Four

As a result of the outcry over patent trolls, there has been much analysis, particularly economic analysis, to either support or condemn the practice. Economic analysis has also been applied to determine potential consequences of remedies in this field. A significant portion only focuses on the incentive aspects: whether or not a particular damage remedy will provide sufficient incentive to encourage inventors to innovate and make their innovations public. Another portion of the analysis focuses on compensation. One group of researchers attempts to determine the optimal compensation an inventor should have while other researchers take an ideological pro-privatization approach to compensation. Both seem to make the assumption that patent protection exists to encourage innovation without looking at the greater question of why and for whom? Neither view seems to take into account the impact on the greater patent system, including follow-on inventors and the general public. There appears to be very little examination of who the beneficiaries are under any remedy analysis. There is also very limited analysis of how remedies encourage innovation marketing. Whether greater protection actually leads to greater innovation is questionable. Furthermore, greater innovation does not necessarily entail greater commercialization or public benefit.

There are many reasons for an inventor to obtain a patent. If the purpose of patent protection is solely to encourage innovation, then the current system appears to offer some incentive in all three jurisdictions. However, if the goal is to encourage innovation marketing, then patent remedies may not be sufficient and the debate among U.S. scholars between property and liability rules is too narrow. Remedies are merely the final stage in a patent infringement dispute, and other factors may be playing a role in limiting effectiveness of the current system to encourage innovation and commercialization.

Outside the United States, the approach to patent trolls has been more measured. Commentators, such as David Vaver, have not been nearly as alarmed as U.S. commentators have been in regards to non-practicing entities. The injunction is a standard remedy in both Canada and England, and there is no reason why a court is unable to examine the situation without ignoring the impact on parties beyond the ones directly in dispute. There has also been a reluctance to embrace an economic analysis of patent remedies. This section will examine some of the most prominent commentators who used law and economics theory to support a particular

remedy approach and will indicate some of the limitations of their analysis. Much attention has been devoted to remedy analysis, but there are other areas of patent systems which may need further examination to encourage them to better meet their goals.⁵⁸²

Lemley and Shapiro take the approach that current remedy systems amount to a “holdup” that unfairly burdens infringers, particularly when alleged patent trolls and non-practicing entities are the patent owners. They believe that not only are royalties awarded by the courts too high, but that an injunction should be denied for the entire class of non-practicing entities. Sidak and Golden disagree with the “holdup” view and believe that an injunction is an essential part of the remedy in order for inventors to receive the appropriate value for their innovative contributions. Without the incentive of an injunction, innovation will decline and inventors will attempt to keep their creations secret. Robert Merges also indicates a preference for injunction awards especially in a situation where, like the eBay decision, courts have the responsibility of analyzing a situation and tailoring the award to fit the harm. He believes that legislators should stay out of the patent debate and let the courts create appropriate remedies.

Economic analysis often fails because it is not used to look at the purpose of a patent system, beyond the incentive to innovate. A true economic analysis should examine the impact on each of the parties or stakeholders in a system. That is, it should look beyond the benefits or detriments suffered merely by patentee and infringer. The general public or consumers are often neglected parties in a patent system analysis, as are follow-on inventors who build on existing inventions. Trolls and troll-like practices focus on the patents themselves, divorced from the underlying innovation. There should also be some examination as to why an approach that works for physical property should be applied to intangible property. When absolute property rights are discussed, confusion over patent boundaries is often ignored. Boundary confusion is common and it is often used to extract royalties from independent inventors. An additional aspect of remedies is the means of redress. In order for a party to obtain a remedy a patent owner must use the courts. This may seem obvious but the process entails costs and procedures, which are part of the remedy analysis. Finally, several patent strategies raise the cost of manufacturing and research because they involve paper patents and litigation. The current policy to encourage patent applications may help to encourage some innovation but it has also come

⁵⁸² See Jacob, *Supra* note 359.

with a significant number of paper patent applications, not patent innovation commercialization. This is common in electronics. Paper patents are part of a strategy used to extend the monopoly of existing products by capturing the surrounding area and preventing others from using innovations that fall into that intellectual territory. Paper patents are not put into practice. These strategies are often ignored in economic analysis that focuses on trolls; but this too creates great inefficiency. Cost and increased litigation arise as a consequence of such strategies. Also, such strategies entail anti-competitive behavior. While, anti-competition laws are beyond the scope of this work, the exclusion rights created by a patent may often limit competition.

A significant assumption that law and economics analysts seem to make is that a patent owner intends to commercialize the patented invention. Economists concede the deadweight costs due to a monopoly, but the cost of using a patent merely to exclude is often ignored as part of the economic analysis.⁵⁸³ Purposeful non-use is perfectly valid in the U.S. Non-use is also valid in Canada and England, however, a patent misuse process exists to prevent abuses. Even if patent misuse is pursued, the requirements are relatively narrow and may frustrate pursuers rather than encourage patent use. Actually using a patented innovation is not so simple and use requirements or minimal thresholds can lead to remedy complications. It is also very common not to use the innovation but to pursue only licensing opportunities. Thus it seems that patent non-use and rent collection should also be considered as part of the economic analysis.

The law and economics approach to patent remedy analysis may provide some interesting insight for patent policy development. However, examining patent remedies with an eye towards justifying legal approaches through the lens of economics creates a distorted view that highlights certain elements but ignores others. If one is to develop an economic analysis of patent remedies, then analysts should include all factors and not resort to short-cuts that ignore many significant elements. Commentators should also indicate which factors could not be quantified or which factors were ignored for economic analysis when presenting their final findings. Finally, given all of the analysis based on economics, the theoretical approaches used by many analysts require support from empirical data.

⁵⁸³ Perhaps U.S. commentators leave analysis of this type of practice to anti-trust laws.

The eBay v. MercExchange Decision

One of the cases that caused an outrage over automatic injunctions upon finding infringement was the highly publicized Research in Motion (RIM) v. NTP case.⁵⁸⁴ The settlement was made under the threat of an injunction which would have shut down the entire Blackberry e-mail network in the U.S., crippling not only corporate messaging but also some government communications. Ultimately, RIM paid over six hundred million dollars to clear all claims by NTP.

Following closely on the heels of the RIM decision, was eBay v. MercExchange. The eBay decision stemmed from another situation where a non-practicing entity, MercExchange, was suing eBay, a practicing entity, for infringement. It is well known that eBay is the largest online auction site and a sizeable company. An injunction against eBay would have potentially shut down the website, affecting millions of users. The trial court refused to issue an injunction, while the appeals court said that injunctions were the standard remedy upon a finding of infringement. The Federal Circuit Court issued an injunction order, leading eBay to appeal. The Supreme Court agreed that an injunction is a standard remedy but reaffirmed that it is an equitable remedy which requires some analysis by trial courts before being granted. Upon remand to the trial court, an injunction was not granted and only damages were awarded to MercExchange.

The Supreme Court's decision in eBay v. MercExchange had a significant impact on the debate as to whether patents deserve an absolute property right.⁵⁸⁵ In recent times, U.S. courts have generally granted injunctions as a remedy for patent infringement, without considering the implications of the decision. The Federal Circuit Court of Appeals has generally supported an absolute property rights view. However, in the eBay decision, the Supreme Court pointed trial courts away from precedents leaning towards an absolute property right and back to a discretionary standard based on the rules of equity. Patents are still considered property, but eBay is significant because the court reaffirms that while an injunction is an appropriate property

⁵⁸⁴ See *NTP Inc. v. Research in Motion*, 2003 WL 23100881 at 1 (E.D. Va. Aug 5, 2003). This case is a lightning-rod for the patent troll debate because not only did the courts award very large infringement damages to NTP, a non-practicing company that aggressively sought litigation, but also the threat of an injunction resulted in a settlement license that was eighteen times the infringement award – in excess of \$600 million. It is viewed as a particularly egregious decision in some circles because NTP originally demanded \$12 million for a license prior to commencing the lawsuit.

⁵⁸⁵ See *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006).

remedy, such a remedy is nonetheless an equitable remedy. The eBay opinion stated that courts should use a four factor test to determine whether a permanent injunction is warranted. While the eBay factors have been mentioned earlier, it bears repeating here. To receive an injunction, a plaintiff must show that: 1) it has suffered irreparable injury; 2) remedies available at law (money damages), are inadequate to compensate for the injury; 3) considering the balance of hardship between the plaintiff and the defendant, a remedy in equity is warranted; and 4) the public interest will not be “disserved” by a permanent injunction. Since a permanent injunction is an equitable remedy such awards are made at the discretion of the court.⁵⁸⁶ Through the concurring opinions of Justice Roberts and Justice Kennedy, the court indicated that there is a preference for awarding permanent injunction but that the right to exclude does not necessarily dictate that the remedy will follow that right. Justice Roberts indicated that, for the purpose of decision consistency, courts should follow precedent; and, since patents are property, an injunction should still be the norm. Justice Kennedy’s concurring opinion supports a presumption against granting permanent injunctions to non-practicing entities, because even if a dispute involved property, a property remedy will not always be appropriate. Justice Kennedy indicated that patent trolls are a sufficiently large problem in the United States that they warranted exceptional treatment by courts.

Throughout the twentieth century, patents have, for the most part, been treated as if they were property. Within the last thirty years there has been a dramatic increase in the number of patent filings in the U.S., Canada, and in England (this includes both direct filing through the United Kingdom’s Patent office and filings through the European Patent Office which come into force due to the United Kingdom being a contracting party to the European Patent Convention). When patent systems were originally developed the patent subject matter consisted of machines and processes to build machines. More recently, there has been an increase in filings within new subject matter categories such as software, business method, bio-chemicals, and genes.⁵⁸⁷ With the increase in patentable subject matter, a patent owner’s compensation for infringement may

⁵⁸⁶ See 35 USC §238.

⁵⁸⁷ Software, business methods, bio-chemicals, and genes are valid subject matter in the U.S. Canada seems to be trending towards accepting “Everything under the sun, made by man,” as valid subject matter but it is likely that the current *Amazon.com, Inc. v. The Attorney General of Canada and The Commissioner of Patents*, 2010 FC 1011, October 14, 2010, will be appealed to the Supreme Court. In England, business methods and software are not directly patentable subject matter but can be patented if certain technical criteria are met. In all three jurisdictions, claim wording can go a long way towards determining whether the subject matter can be patented.

come in the form of money damages; but a property remedy in the form of an injunction is still considered the norm.

The concurring opinion of Justice Kennedy indicates that patent trolls were a significant factor in his decision to recommend equitable considerations when awarding damages. The increase in patent applications and patent awards has led to a trade in the patents themselves, rather than the inventions underlying the patent. Furthermore, there has been an increase in transactions involving patents where the purpose of the transaction is to get licensing income or to obtain licensing income through a lawsuit. This has led to the legitimate question as to whether an injunction should always be awarded upon finding infringement. There is a further question regarding incentives that exist to encourage patent applications.

The eBay v. MercExchange (eBay) decision caused concerns around the patent world because an injunction is a standard remedy in most countries. As has been seen, Canada and England have denied injunctions only in the most exceptional situations. While the legal precedents in both jurisdictions are firmly entrenched and there is a competent judiciary capable of understanding patent lawsuits, there was still a fear that, because of market demands and growing patent transactions, the courts would adopt a more flexible approach to damages in lieu of an injunction. However, initial fears about diminished property rights and injunction denials have not come to fruition.

The fallout from this case has been considerable debate about whether injunctions should be awarded when the patent holder was a non-practicing entity. One side provided economic analysis to show that non-practicing entities would be overcompensated relative to their contribution if an injunction were granted. The other side provided economic data to show that injunctions rarely overcompensate patent holders and denying injunctions to non-practicing entities would create a slippery slope towards compulsory licenses and working-requirements for patents. There has been much discussion on the impact remedies can have towards evolving non-practice business activities.

Liability Calculations and the Pros and Cons of a Liability Rule System

A question raised by many commentators is whether a liability based system is superior to a property based system, especially if non-practice is an issue. If liability rules are to be

effective, they must result in calculable awards by the courts, they must adequately compensate, and they must create a disincentive for infringement while creating an incentive for inventors. In a pure liability system, the right to exclude would not be applicable. Instead, the patent owner would be financially compensated for the infringement but the infringer could continue using the innovation. However, this completely eliminates the property right preventing others from using the patented invention or the right not to use the invention at all. This gives companies with great resources an enormous advantage over smaller companies with limited resources. Well funded companies could just infringe if they had the means to pay. The injunction could no longer be used as leverage in negotiations. Also, small companies would have to chase large companies through the courts to receive compensation, making legal costs the biggest impediment to recovery for patent owners and those same costs as the largest source of leverage in negotiations. The leverage would only be powerful if profits from using the patented innovation were smaller than the potential legal costs or if those costs would sufficiently impact the infringer's use or profits if legal fees were required.

Liability based systems also seem to ignore the difficulty in making a party whole in certain situations. It may not be possible to make a party whole when the economic fallout includes loss of market share, loss of goodwill, falling stock prices and financial losses related to the stock price, loss of convoyed sales, or even bankruptcy. There are also other innumerable financial issues which may arise when a company is unable to sell a patented invention because an infringer is stealing sales. Even with a financial infusion that could compensate for infringement losses, a company may never recover because of other business factors. This also raises the question of whether a liability rule may end up destroying two companies. The loss of sales due to infringement or loss of profits due to pricing may be so great that a patent-owning company may not be able to recover even with a damage award. It is also possible that the damage award be so great that the infringer may not be able to survive paying damages. These issues are far more significant for competing practicing entities and are not really an issue for NPEs.

Blair and Cotter examined three types of infringement behavior in an attempt to accurately model infringement damages and determine whether courts could competently and accurately apply disgorgement calculations in the event of infringement. These examples are

briefly covered below. Blair and Cotter show how infringement affects the profits of both the patent owner and the infringer. While their examples all reflect the impact of infringement on practicing entities and not non-practicing entities, these examples are nonetheless significant because they show how patent owners are affected by infringement. Their examples also show how disgorgement can actually undercompensate in certain situations.

The first behavior is known as Cournot behavior, where the patent owner and infringer compete as a result of an increased quantity of patented goods on the market.⁵⁸⁸ Short-term losses are the result of price erosion due to the increase in goods on the market, while over time losses result because of lost sales and price erosion.

The second type of infringement behavior is known as Bertrand Behavior, where patentee and infringer compete on price.⁵⁸⁹ A lower price set by an infringer will result in lost sales by the patent holder. Over time, the holder will be forced to lower price in order to compete and will lose both sales and profits due to lower pricing.

Both these types of behavior result in lower profits than could be obtained if the patent owner were the sole patent user.

Finally, Chamberlain behavior is a situation in which the parties do not compete but split sales between them.⁵⁹⁰ This results lost sales for the patent holder.

These three models indicate that damages are calculable and that differences between actual profits and profits “but-for” the infringement can be determined.⁵⁹¹ Calculations may be complicated, but courts in all three jurisdictions are capable of calculating damages based on these models. In all three jurisdictions, losses due to price erosion are understood to be part of lost profit damage calculations. Courts are competent to determine damages due to price erosion, entitling the patentee to receive damages from sales it would have made at its original selling price but-for the infringement.⁵⁹² Courts in all three jurisdictions are capable of handling burden shifting issues, such as price erosion losses. The burden rests with the patentee, who must prove

⁵⁸⁸ Blair & Cotter, *Supra* note 4, at 52.

⁵⁸⁹ Blair & Cotter, *Supra* note 4, at 57.

⁵⁹⁰ *Id.* at 57.

⁵⁹¹ *Id.* at 58-9.

⁵⁹² Grenier, *Supra*, note 390, at 17-11

that losses were due to price reductions because of competition from the infringer and no other factors.⁵⁹³

These three models also indicate that profit disgorgement will only effectively compensate a practicing patent owner if the infringement fits the Chamberlain model. A lost profit analysis or a reasonable royalty would be better suited to monetarily compensate the patent holder. Assuming there are no other considerations in selecting a remedy, the competing entity might better seek a lost-profits remedy which would more closely approach its actual losses. This would also meet the liability rule goal of compensation and would make the infringed party whole again by awarding the profits lost to infringement.

Blair and Cotter indicate that an idealized reasonable royalty calculation would lead to a license agreement where 1) a patentee would not agree to a royalty less than the potential profits the inventor could make manufacturing the invention himself; and 2) the infringer would agree to a royalty that was no more than potential profits from using a non-infringing alternative.⁵⁹⁴ This calculation assumes that the patent owner is either a practicing entity or one contemplating practicing the innovation. If a patentee can earn higher profits manufacturing the invention, then the patentee would not grant a license and this would result in a lost profits calculation, or a disgorgement calculation outside the U.S. Under this reasoning, an NPE would not agree to a royalty less than the profits that could be made licensing the patent to others. However, this would also require that a minimum royalty increase profits over, or in addition to, existing licensing royalties. The calculation assumes that the profit motivation is the reason for obtaining a patent. However, as has been shown, there are a number of reasons to patent and a number of reasons which could increase royalty demands or lead to outright denials of licenses.

As has been shown through the three models, the lost profits remedy will more accurately compensate the patent holder in most situations whereas disgorgement will likely undercompensate. However, if lost profits and disgorgement cannot be calculated, a reasonable royalty calculation still exists to serve as a deterrent.⁵⁹⁵ In Canada - despite the shortfall shown

⁵⁹³ See Grenier, *Supra*, note 390, at 17-11 for Canadian cases; for English cases see Thorley et. al., *Supra* note 340, at 580 citing *Alexander & Co v. Henry & Co.* (1895) 12 R.P.C. 360 at 367; see also *American Braided Wire Co. v. Thomson* (1890) 7 R.P.C. 152 and *Wellman and Others v. Burstinghaus* (1911) 28 R.P.C. 326.

⁵⁹⁴ Blair & Cotter, *Supra* note 4, at 59.

⁵⁹⁵ *Id.*

in two of the three models - strategic reasons, financial document exposure, and burdens of proof are the major reasons why a company might consider an accounting of profits. The same reasons also apply in England. Despite the models shown by Blair and Cotter, there is a perception that an accounting of profits will actually yield larger returns for the patent owner in both Canada and England.⁵⁹⁶

These three models apply to practicing entities. NPEs will suffer none of these losses because NPEs do not make profits from the sale of patented goods, or from innovations using the patent good, or from any practice of the patented good or process. Disgorgement will likely result in a windfall for a patent owner. Reasonable royalties are the method by which NPEs will receive compensation without unduly burdening the infringer. This is also a method which will likely allow parties to present the least amount of information to the courts, to infringers, and potentially to the public. In England infringing an NPE's patent is treated as an improper infringer gain which can require disgorgement of lost royalties to the patent owner.

The benefit of relying on a liability rule is that courts can act to more fairly distribute damages, eliminating the need to remove goods from the marketplace, while still compensating a licensor. If damage awards are supposed to compensate the infringed party and not necessarily to punish the infringer, then liability rules remove personal motivation which would be present if an injunction were granted. It also creates a system where infringement may be tolerated in exchange for payments. This may amount to the dreaded compulsory license, but it is hard to argue that this is necessarily unfair since the licensor is primarily seeking monetary compensation. The difference would be between a court determined sum of money and a negotiated sum of money. (The amount may actually be more or less than the court award). The public may benefit because products already available on the market will remain on the market after court proceedings have concluded. This would not be so in a property system.

⁵⁹⁶ Markus Reitzig, Joachim Henkel, Christopher Heath, On sharks, trolls, and their patent prey—Unrealistic damage awards and firms' strategies of "being infringed", *Research Policy* 36 (2007) 134–154, http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6V77-4MMFVKS-1&_user=866177&_coverDate=02%2F28%2F2007&_rdoc=1&_fmt=high&_orig=search&_origin=search&_sort=d&_docanchor=&view=c&_searchStrId=1624635205&_rerunOrigin=scholar.google&_acct=C000045519&_version=1&_urlVersion=0&_userid=866177&md5=9a94be981265b2a3bcc5904c22cd0bd5&searchtype=a (Last checked Jan, 30 2011). For Canadian Accounting for profits see Andrews and De Beer, *Supra note* 392; and Michael Charles, *Monetary Remedies in Intellectual Property Litigation*, *J. Bus. Val.* 159 (2007).

While liability rules cover compensation for patent infringement, a difficulty arises because there is really nothing to prevent further or continued infringement without an injunction, other penalties, or oversight. The inventor would not have the option of using an injunction as leverage in negotiations prior to litigation. Currently, the motivation to come to an agreement exists because of the double leverage of litigation costs and a potential injunction. Avoiding the cost of litigation would be a potential reason for an infringer to agree to a negotiated license but the threat of an injunction would be a missing compulsion. A further drawback to a liability rule system is that this could encourage inventors to suppress innovations and not make patent applications until there is marketing evidence of commercial viability. Also, innovations that would compete with an inventor's existing products would likely also be suppressed rather than patented because there would be no way to prevent infringement.

Disgorging Profits - Concerns

Disgorging profits stems from the legal theory that ill-gotten profits attributable to the infringement are held in trust for the patentee. Ordinarily, this is a remedy associated with violations of tangible property rights. If intellectual property and tangible property are the same when it comes to remedies, it would seem to follow that an award of infringer profits should be given to the patent holder. An award of infringer profits can still be granted to a wronged party in Canada and England and courts in both jurisdictions feel comfortable making these decisions.

Awarding the infringer's profits to the patent holder was rejected by U.S. courts.⁵⁹⁷ Calculation complexity, the time-consuming nature of the award process, the expense of obtaining valid accounting data for the calculations, and the belief that disgorgement amounted to a windfall for the patent owner were all considerations. These concerns are still valid and are factors which regularly raise questions about the validity of profit awards in Canada and England.

A drawback to allowing an accounting of profits is that estimates are legally acceptable in determining profits and adequate compensation based on those profits. This not only creates a great uncertainty for parties in a dispute but can lead to awards that will overcompensate or undercompensate parties. From a practical standpoint, an accounting can end up being a gamble for the parties. A patent owner that elects for an accounting of profits may end up with nothing;

⁵⁹⁷ Blair & Cotter, *Supra note 4*, at 49.

or the owner may end up with all of the infringer's profits; or he may even end up with an award in between the actual profits and no profits. Furthermore, Blair and Cotter have shown that under-compensation is often likely when infringer profits are the award.

Some of the concerns about improper calculations and estimates may be allayed due to the existence of specialized courts in the United Kingdom. England's patent courts are capable of handling complex disputes. Such courts have some familiarity with accounting principles and have the capability of dealing with complex financial records. Also, because these trial courts have such specific jurisdiction, judges in these courts devote all their energy to patent infringement issues.

While Canada does not have such specialized courts, patent disputes are most often handled by federal trial courts with limited subject matter jurisdiction.⁵⁹⁸ Federal courts regularly handle patent disputes and are thus capable of managing complex technological and financial information presented to the courts. Furthermore, Canadian patent trials are usually bifurcated into infringement disputes and damage disputes. If the parties do not come to an agreement after infringement is resolved, damage awards fall to a tribunal dedicated to analyzing damages. In theory, an experienced patent arbiter decides infringement damage awards or disgorgement. The presence of specialized tribunals designed to assess the financial information of the parties should work towards allaying some of the fears that the calculations will be wildly speculative.

A further concern about disgorging profits is the potential for disproportionate damage awards where NPEs are concerned. Given how uncertain patent boundaries are, even a diligent party may fail to notice that the party's actions may infringe on an existing patent. The potential exists for an entity which sits on its patent to reap all of an infringer's profits. Requiring an infringer to disgorge all profits creates a very severe penalty for the infringer and will likely increase the cost of a patent search before commencing any future technological endeavors.

Canadian courts have indicated wariness about granting an accounting of profits to NPEs. In extreme cases an NPE may be able to make a compelling argument to receive all of an infringer's profits. Offsetting some of the concerns is that Canadian courts have made choosing

⁵⁹⁸ See above for comments on concurrent jurisdiction with the Superior Courts.

an accounting of profits potentially risky because of the decision in *Schmeiser v. Monsanto*. Courts can limit the remedy through a comparison of profits made using the patented product to potential profits made using a non-infringing alternative. Thus even if an NPE is allowed to choose an accounting of profits, its potential award may depend on the presence of non-infringing alternatives. It should also be remembered that an accounting of profits is an equitable remedy, leaving courts with discretion over whether to grant the award.

In England, there appears to be no official limitation to awarding an account for profits to an NPE. However, since it, too, is an equitable remedy, courts have discretion as to whether to allow a patent holder to elect it. Furthermore, an accounting of profits is considered an extreme remedy⁵⁹⁹, but an award of a reasonable royalty may still flow from an account of profits through a loss of royalty rather than a loss of profits.

Because an account of profits is an equitable remedy, the various equity maxims should apply. However, in Canada, a court recently stated that since an election for an accounting of profits is statutorily available, the maxims of equity need not apply to the court's discretion on whether to allow a party to elect.⁶⁰⁰ This leaves a great deal of power in the hands of the judges to decide whether or not to agree to an election for an accounting. Nonetheless, it is still considered an equitable remedy and equitable results are part of the court's discretion.

There are several arguments which fall on either side of the accounting of profit argument. An absolute property view awards the infringer's profits under a theory that gains made illegally by using the property of another are really the rightful profits of the infringed party. The absolute property view would seem to allow this award even for NPEs. Courts consider non-practice when deciding whether to allow a patent owner to claim infringer profits. But unlike lost profits, there is no need to show that the patent owner could have made the infringer's profits but for the infringement. An absolute property argument would allow infringer profits to be collected by a non-practicing patent owner, since these profits were ill-gotten gains from improper property use.

⁵⁹⁹ James Edelman, *The Measure of Restitution and the Future of Restitutory Damages*, (26 April 2010) (the remedy will generally involve some kind of wrongdoing).

⁶⁰⁰ *Beloit Canada Ltd. v. Valmet-Dominion Inc.*, [1997] 3 F.C. 497 (C.A.) paras. 116-17.

While an accounting of profits may not cover losses by a practicing entity, an NPE will suffer no actual losses from diminished sales or price lowering, as described by Blair and Cotter. The non-practicing entity will only have royalty losses as a result of these sales. Since current patent policy in Canada, England, and the U.S. is to compensate and not to punish, this would make disgorgement an unduly harsh remedy and a windfall for licensing companies or patent trolls, since these entities are looking for royalty payments. This remedy would be even more extreme if an infringer developed the invention independently of the patent and then faced a claim for disgorgement by an NPE.

A final concern about disgorgement is apportionment. When a patented item is a small part of the infringer's innovation, determining what part of profits are the result of the infringing item is a complex process. Estimates are common, and commentators seeking accurate or exact calculations will have issues with calculation assumptions and methods.

Issues with Royalty Calculations

The willing licensor/licensee assumption or hypothetical negotiation and the 25% rule pose problems for determining an accurate royalty rate. The first issue is that a valid patent exists to determine this rate, whereas a real negotiation would assume uncertain patent validity and infringement.⁶⁰¹ The second issue is that courts, to determine the royalty rate, may end up using or being influenced by events that occur after infringement, thereby removing further uncertainty which would exist in a real negotiation.⁶⁰² Both issues would seem to inflate the royalty rate beyond an actual negotiated royalty. Removing uncertainty would also appear to favor the patent owner, since patent uncertainty is expected as part of any licensing agreement. While a reasonable royalty may leave the infringed party no worse off than before the infringement, infringers still face a significant penalty because of litigation costs and the general coupling of an injunction with a royalty payment for infringement.⁶⁰³ The injunction becomes a greater factor when the injunction is wielded by an NPE to obtain royalties that are likely in excess of those awarded by the court.

In the U.S. each party pays its own court costs and lawyer's fees. However, an inflated royalty may actually off-set some of the expense of enforcing a patent. If a royalty is actually

⁶⁰¹ Blair & Cotter, *Supra note 4*, at 41; See also Lemley & Shapiro, *Supra note 204*, at 2012-13.

⁶⁰² Blair & Cotter, *Supra note 4*, at 41; See also Lemley & Shapiro, *Supra note 204*, at 2012-13.

⁶⁰³ Blair & Cotter, *Supra note 4*, at 42.

inflated because uncertainty is eliminated, infringers in Canadian or English courts may face a significant burden, since the loser pays most or all of the costs (although in practice, this will likely be significantly less than the total legal costs).⁶⁰⁴

A third issue with the reasonable royalty calculation is that a willing licensor and licensee may not actually reach an agreement, making the royalty calculation a substitute for lost profits of an NPE.⁶⁰⁵ All three jurisdictions assume that the parties would willingly come to an agreement at the time of infringement.

A final issue is determining royalty rates when the patented innovation is merely a part of a product versus royalty rates when the patented innovation is the reason for market demand. In the former situation apportionment is used to determine the royalty rates while in the latter situation, an entire market calculation is used to determine rates.⁶⁰⁶ Apportionment can become very complicated when the patented component is but a small part of the complete product and is not necessarily a significant factor in driving market demand.

Despite the fact that royalty calculations are neither easily calculable nor necessarily an accurate reflection of a non-adjudicated negotiation, they meet the legal requirement that the royalty be reasonable and that the royalty attempts to compensate rather than punish. The attempt is what is significant and a perfect remedy is not necessary. The lack of perfection in these calculations is still within the legal goals of the remedies and part of the three approaches taken by the courts towards compensation.

Strong Property Rights

There are reasons why the current system maintains property remedies when dealing with patents. A significant reason is that they can be a good solution to a problem and should not be discounted. Strong property rights, and thus injunctions, encourage private solutions through negotiations between the parties rather than public solutions created by the courts or governments. All three jurisdictions under examination support free-market systems. Such systems encourage negotiations between disputing parties and discourage government intervention. There is clearly a place for property remedies.

⁶⁰⁴ See Freshfields Bruckhaus Deringer report, *Supra note 338*.

⁶⁰⁵ *Id.*, at 42-3.

⁶⁰⁶ *Id.* at 44.

In a system where the patent owner and infringer are competitors, the patent system goals of increased innovation and public access to the innovation would still be maintained. If the patent owner and the infringer are competing entities, an injunction may be suited to allow the patent owner to prevent competition in its effort to market the innovation to the public. Any compensation that would come in the form of disgorgement would be justified since these would be the profits made using the property of the patent owner, and would, thus, be profits which should belong to the patent owner. Disgorgement is a relatively large penalty and is intended to make the infringer wary of infringing on the technologies of its competitors. In both Canada and the U.K. disgorgement is not considered part of the damages remedy. Despite the unavailability of disgorgement as a remedy in the U.S., injunctions are often awarded in conjunction with damages in all three jurisdictions. However, if the focus of property remedies remains on the injunction, since it is common to all three jurisdictions, the remedy will not remove the innovative product from the marketplace. Even if the infringer is prevented from using the patent innovation, the patent owner will still practice the innovation and produce goods for the marketplace (although the patent holder may be less efficient or less able to produce in the volumes demanded).

An injunction award may actually increase public access because an infringer will be willing to negotiate to still be allowed to use the patented innovation; and the patent owner, for additional profits, may allow use of the innovation. Lemley and Shapiro have illustrated how detrimental market absence can be for a company facing an injunction.⁶⁰⁷ The infringer can negotiate to maintain market share that it has already established or it can negotiate alternate uses which the patent owner may allow for a royalty payment.

There is one school of thought that believes that without a right to injunctive relief, a patent will be worth considerably less. Robert Merges has stated that because of the loss of value, the incentive to invent would not only be diminished but might disappear.⁶⁰⁸ Using injunctive relief as a bargaining chip in negotiations may sometimes lead to overcompensation when compared to the actual worth of the patents; but court-imposed, money damage systems

⁶⁰⁷ Lemley & Shapiro, *Supra note 204*, at 2001.

⁶⁰⁸ Merges, *Supra note 52*, at 2667.

will likely undercompensate inventors, thereby removing the incentive to innovate.⁶⁰⁹ This reasoning only focuses on the patent goal of encouraging innovation. Furthermore, a slippery slope argument does not lend itself to a moderate solution but encourages a solution embracing one of the extreme situations proposed. The patent is also but one incentive to innovate. Prior to patent protection, people were still innovating and it is likely that alternative innovation strategies will also arise if an injunction disappears.

From a cost/benefit standpoint, Landes and Posner indicate that it is not clear whether patent protection in fact creates a net benefit. They recognize that there are economic factors which require some form of protection. While they provide reasons that support creating property rights in inventions, they also indicate that propertization creates significant social costs.⁶¹⁰ Economic dead-weight is one significant social cost. A second cost is the arbitrariness of the patent markup, especially for a successful product. A patentee's monopoly markup is influenced by the degree of patent protection but has no bearing on the actual fixed costs incurred in making the invention. Potentially, a patentee will be able to charge higher prices, relative to marginal cost, resulting in profits that will be significantly higher than the costs incurred in making the invention. This will likely be the case for a particularly successful innovation. Property rights will restrict access to the patented invention more than is actually necessary to create incentives. Landes and Posner also point out that such circumstances will create an incentive towards rent-seeking behavior because of the windfalls arising out of over protection and monopolistic behavior.⁶¹¹ They also believe there is a disincentive to commercialize the patented innovation and a greater incentive to license.⁶¹²

The rise of patent trolls or other non-practicing entities is a direct result of the incentive created by strong property rules. Amy Landers uses the term "liquid patent" for patents that are being treated as assets. Liquid patents are patents that are being traded as commodities, not agreements which provide protections as a reward for innovation and the subsequent commercialization of the innovation. The statutes in all three jurisdictions will allow a non-practicing entity, just like a practicing entity, to seek an injunction. These strong property rights

⁶⁰⁹ *Id.*, at 2667.

⁶¹⁰ Landes & Posner, *Supra note 268*, at 310

⁶¹¹ Landes & Posner, *Supra note 268*, at 300

⁶¹² See Landes & Posner, *Supra note 268*, at 316-320; See also Landers, *Supra note 258*, at 230-34.

encourage innovation; but patent accumulation, rather than commercializing innovations, has been the result of these policies. A focus on innovation has increased the number of patent applications and patents granted, but there is less of an incentive to market innovations.⁶¹³ Through an injunction grant, a non-practicing entity may exercise the right to exclude a patent infringer from practicing the innovation. The injunction creates an incentive to obtain a patent but it does not necessarily provide an incentive to take on the risk of marketing the innovation. It is cheaper and potentially more profitable to wait for someone to infringe the patent. The social cost in this situation could be as high as removing the innovation from the marketplace. However, while a non-practicing entity will attempt to seek as high a rent as possible, it is not likely that it will demand rent that is so high as to have the infringer shut down production.

Severin De Wit points out that patents are actually illiquid assets since they are not easily tradable and inventors generally have to discover markets for these assets.⁶¹⁴ It is for this reason that trolls and other NPEs become important. Such companies actually create markets in their search for patents which can be used in their business model. However, NPEs are not the only bodies which create markets. While patents are not easily tradable, there is an increase in patent auctions, at least in the U.S.⁶¹⁵ Furthermore, while patents may not be easily tradable, their trade has increased, particularly for the rights that come with patents rather than for the underlying innovations.

While property protection plays a role in fostering progress and invention, over-strong protection could stunt innovation which is dependent on the cumulative nature of knowledge.⁶¹⁶ Since exclusion power belongs to the patent holder, a broad application of this power can be used to prevent patented technologies from being commercialized. These strong rights might also prevent optimal use of IP resources because of the high transaction costs in obtaining licenses.⁶¹⁷ In Coase's transaction theorem, if the transaction costs are zero, property rights allocations will eventually be transferred "to their highest-value use through private bargains."⁶¹⁸ However, if transaction costs are greater than zero, the costs may prevent property from being

⁶¹³ *Id.*

⁶¹⁴ De Wit, *Supra note 341*.

⁶¹⁵ Landers, *Supra note 258*.

⁶¹⁶ Peter S. Menell, 34 *Ecology L. Q.* at 752.

⁶¹⁷ *Id.*

⁶¹⁸ Merges, *Supra note 52*, at 2656-58; See also Coase, *Supra note 51*.

transferred for its highest price and greatest use. Transaction costs can involve elements such as negotiation time and effort, contract costs, appraisals, and boundary surveys. These costs can often be very high and will result in less efficient or non-existent property transfer and use. If the purchaser finds property that may be ideal for her purposes, transactions costs may be so high that the purchaser will seek less ideal property or not purchase any property at all.

Coase's theorem was initially applied to physical property but it can be applied to patent transactions where it is certain that either a patent right exists or does not exist. However, applying the theorem to intellectual property rights creates a problem because of a patent's intangible nature. It is the intangible nature of patents which makes infringement detection difficult because infringement, boundaries, and patent validity are often unclear or in dispute. The value of prior patented creations on a current invention and the uncertainty over whether an independently created invention infringes a previous one are further issues. Patent valuation is also complicated as patented works can be cumulative and even interdependent. Neither strategic behavior nor the use of blocking patents is part of the Coasian consideration. All these complications indicate high transaction costs which will prevent efficient transactions.⁶¹⁹

The Calabresi/Melamed model expanded on Coase's theorem and may apply to patents. The Calabresi/Melamed model advocates property rules as a default. However, if there are many parties involved in a property transaction or the transaction is particularly complicated, raising transaction costs, a liability rule may be better suited. Initially, a property rule would seem to apply to patents because there are two parties to a transaction, transaction costs affect the two parties, and courts have a difficult time properly determining the value of the patented invention because of the complexity of the patented invention and specific market conditions.⁶²⁰ Furthermore, the property rule allows individual parties to negotiate in coming to a deal. The parties are the most knowledgeable about their property and they can structure a deal that is best suited to the two parties. However, transaction costs are not necessarily clear and there are often situations where multiple parties are involved in patent transactions (non-exclusive licensing, industry pools, and patents related to standards). Even in negotiations between two parties, patent licensing can be complicated, often tying in to other patents held by the parties or other

⁶¹⁹ *Id.* at 2658.

⁶²⁰ *Id.* at 2664; see also See Calabresi & Melamed, *Supra* note 51, at 1092.

goods being sold. The transaction cost is increased if parties disagree on the extent of patent boundaries or whether there is infringement. Disputes that involve the courts greatly increase the transaction costs. When these transaction costs become high, it may be better to adopt a liability rule. However, once the patent validity, boundaries, and infringement are made clear, the transaction costs have been spent and further negotiations should theoretically be simple enough to entail a property rule. Common opinion holds that the parties to a patent transaction are best suited to accurately value the technology while courts are not well suited to determine the value of complex, intellectual property transactions.⁶²¹ This would indicate that courts should always grant an injunction and then let the parties negotiate a settlement. However, if transaction costs are taken into account because of unclear boundaries, validity, and infringement disputes, it would seem to indicate that a liability rule is better suited than a property rule. Thus, the Melamed/Calabresi rule seems to indicate that property rules should apply if the parties do not have to resort to the courts to determine boundaries, infringement, and validity; but a liability transaction may be better if the courts have to get involved. The economic analysis becomes even more complicated when multiple parties are involved in disputes, leading to the conclusion that perhaps a liability rule would be better suited and property rules should only apply in limited situations.

There is a strong belief that the presence of strong property rights will actually facilitate patent transactions rather than preventing them because private parties will force institutional changes to lower transaction costs.⁶²² Others argue that the pervasive transaction costs should lead to a use of liability rules and even of compulsory licenses.⁶²³ Robert Merges has argued that the current presence of high transaction costs in the emerging technological industry should not be changed through government intervention but should be allowed, for the time being, to resolve high transaction costs through private transactions.⁶²⁴ Strong property rules should continue even in the face of high transaction costs because these property rules have led private contractors to establish private liability rules through creation of patent pools. High tech companies have had some moderate success in creating successful patent pools. Standards organizations have also started creating patent pools in an effort to create a standard and to

⁶²¹ Merges, *Supra* note 52, at 2664-65.

⁶²² *Id.* at 2658.

⁶²³ *Id.* at 2662.

⁶²⁴ *Id.* at 2658-59.

provide user companies with access to patents for a reasonable royalty. It is generally believed that statutory liability rules enforced by courts lack the flexibility of private institutions and institutional agreements, such as patent pools. This reasoning applies to all 3 jurisdictions, given the power of the courts.

There is some merit in applying property rules to intellectual property. An injunction award or the threat of an injunction encourages disputing parties to negotiate a solution rather than have a court decide for them. A result is that those parties with the most information and the most understanding of the issues being negotiated can custom tailor a solution to their needs. A court imposed solution may be fair, but it may also favor one of the parties, or it may alienate both parties. The uncertainty about transaction costs related to patents also indicates that liability rules may be necessary to clear disagreements. There is further concern that a property rule, particularly the threat of enforcing an injunction, can provide the patent holder with a great deal of bargaining power. A non-practicing entity could end up with a windfall settlement from the infringer. This is especially true for a patented component that is but a small part of a complex device.

Compensation, the Holdup, Royalty Stacking and Non-Practicing Entities – The Economic Debate

There is a school of thought led by Lemley and Shapiro that claims that injunctive relief leads to a holdup and overcompensation. A patent holdup occurs when a patentee uses an injunction award or the threat of injunction to gain exorbitant royalties, well in excess of the value of the invention, from an infringer who is heavily invested in the use of the patented technology.⁶²⁵ It is a form of blackmail that results in an economically inefficient transaction. If a court awards an injunction upon finding infringement and patent validity, the patentee's bargaining position is extremely strong. The patentee can approach negotiations with the infringer knowing that, if negotiations between them fail, the infringer must stop using the patented innovation.⁶²⁶ Thus the infringer will have little choice but to agree to the royalty demands of the patentee unless the infringer decides to leave the market to redesign the product or the process to avoid infringement or decides to wait until the patent term expires. For an infringer heavily invested in using the patented technology, the prospect of having to stop using

⁶²⁵ Lemley & Shapiro, *Supra note 204*, at 1993.

⁶²⁶ *Id.* at 1996.

it is costly.⁶²⁷ Thus the infringer will likely pay more than the actual value of the patent in order to keep using the innovation.

Mark Lemley and Carl Shapiro developed a benchmark for licensing royalties to determine whether post injunction negotiations and court awards are excessive compared to pre-litigation negotiations. U.S. law deems that a reasonable royalty should be the minimum damage award and that damages should be based on a hypothetical negotiation by a willing licensor and licensee at the time of infringement.⁶²⁸ Their benchmark royalty rate is an attempt to take into account the patent infringement and validity uncertainty that a hypothetical licensor and licensee face in coming to a royalty agreement. They found that negotiations prior to litigation incorporate outcome uncertainty as part of the patent's valuation, resulting in a rate proportional to the patent strength. Since patent validity and infringement prior to litigation are uncertain, royalties would be considerably lower than those negotiated with a clearly determined patent validity and infringement outcome.

When the infringer gambles on winning in court without redesign and loses, the infringer faces costs for redesign, plus lost sales due to market absence or the cost of meeting the patent owner's post-verdict royalty demands. Lemley and Shapiro calculated that the royalty rate in this situation will be considerably higher than the benchmark rate. If the infringer chooses to redesign during litigation, the infringer not only incurs the litigation costs but the redesign costs. In situations where the patented invention is merely cosmetic or is not a significant sales driver, all royalty above the benchmark rate can be considered a holdup and makes no economic contribution.

Lemley and Shapiro have defined royalty stacking as the situation where the components or manufacturing methods of a company's single product are covered by several patents, leading to multiple royalty payments to multiple parties.⁶²⁹ Royalty payments to multiple licensors cut into the licensee's profit margins and have a trickle-down effect in raising the cost of downstream goods. Royalty stacking may also result in a net social detriment because price increases for downstream products lower demand as well as output, resulting in larger economic

⁶²⁷ *Id.*

⁶²⁸ Lemley & Shapiro, *Supra note 204*, at 1997- 2000; see also *Georgia-Pacific v. U.S. Plywood*, 318 F.Supp. at 1121.

⁶²⁹ *Id.* at 1993.

deadweight losses.⁶³⁰ Such royalty stacking effects can be seen with electronic devices and complex technologies that involve many components.

Since reasonable royalty calculations in the U.S. are supposed to be based on hypothetical negotiations at the time of the infringement, Lemley and Shapiro theorize that a court's damage award is higher than the benchmark royalty. They support their theory by noting that a considerable amount of risk and uncertainty, present in a real negotiation, are not present when a court actually calculates reasonable royalty damages. Even if a court were to be able to ignore its validity and infringement finding, the precedential damage findings, expert testimony, and court calculation capability limitations have skewed royalties upward.⁶³¹ A fourth factor to consider is the presence of juries in U.S. patent infringement and damages trials. Juries are believed to be more likely to award high damage awards rather than a judge or damages expert. This suggests that court awards are also in excess of the benchmark rate.

Infringement can result from an overt act to use a patented technology or it can result from completely independent development. Patent infringement is a strict liability wrong, because knowledge of infringement is not a factor in determining whether there is infringement. The point in a product's development timeline is also a significant factor in establishing the strength of a patentee's bargaining position. The threat of an injunction early in product development will have little effect, as the infringer can design around the patented invention. However, once the product is developed and on sale, the threat of an injunction can be extremely effective due to the potential cost of production shutdown and the cost of designing around the patented invention. These circumstances clearly make it more profitable for a patentee to engage in strategic behavior, waiting until an infringer is already in production before a patentee notifies the infringer.⁶³² This creates a holdup situation because of the time and expense invested in using the allegedly infringing technology. Such practices are commonly used by patent trolls. If there are multiple patents covering the invention, this will lead to a royalty stacking situation. This imposes costs on the infringer that are disproportionate to the actual value of the patented inventions. These increased costs are ultimately borne by consumers.

⁶³⁰ *Id.* The deadweight losses would exist even with royalty payments at the benchmark rate but they would be lower than under holdup conditions.

⁶³¹ Lemley & Shapiro, *Supra note 204*, at 2021-23.

⁶³² *Id.* at 1992.

The solution proposed by Lemley and Shapiro is to have courts exercise their discretionary powers to deny injunctive relief for potential trolls in order to prevent a holdup. Licensing negotiations should be conducted with the threat of a potential grant of a compulsory license rather than an injunction. This solution has essentially been described in the eBay decision in Justice Kennedy's opinion.

The Debate

Scholars such as John M. Golden and J. Gregory Sidak have indicated that the U.S. Supreme Court decision in *eBay Inc. v. MercExchange, L.L.C.* was influenced by Lemley and Shapiro's holdup rhetoric. Golden and Sidak are very critical of Lemley and Shapiro's article and the court decision.

Golden states that as a result of the eBay decision, trial courts have begun to deny injunctive relief, as a rule, to a class of patent holders. He questions whether the holdup actually exists and he examines the impact of denying injunctive relief to NPEs who are not trolls. Golden points out that the vague definition of a patent troll is broad enough to cover small inventors, universities, start-up firms, research oriented firms, and patent holding companies.⁶³³ It is likely that these companies will be treated as patent trolls by the courts.

Golden has stated that there are three conclusions which can be made as part of an actual bargaining process: 1) uncertainty related to the potential value of court damages, the potential injunction threat, and potential litigation costs may lead to a settlement substantially larger than the value of the patented invention's contribution; 2) uncertainty about damages, court costs, resource limitation, and "information asymmetries" may result in a settlement for much less than the value of the patented invention's contribution; and 3) litigation costs may become a greater consideration when the chances of showing infringement are low.⁶³⁴

From the perspective of the infringer, if the cost of a license is less than the cost of going to court and the cost of potential damages and an injunction, the infringer will pay for a license.⁶³⁵ Since a significant portion of the litigation costs are attributed to discovery in U.S. litigation proceedings, the probability of a court finding infringement may be less of a factor in

⁶³³ Golden, *Supra note* 433, at 2117.

⁶³⁴ *Id.*, at 2125.

⁶³⁵ *Id.*, at 2126.

the infringer's decision to agree to a license than the discovery costs.⁶³⁶ In essence, it becomes a nuisance settlement.

Golden is critical of the benchmark calculation because a reasonable royalty is supposed to be the "floor" for damages in the U.S., while the benchmark derived by Lemley and Shapiro would amount to a royalty ceiling.⁶³⁷ Furthermore, royalty calculations are highly speculative and apportioned damage values to match the contribution of the patented invention create further complications. Courts can use estimates but these may be far removed from the market-value of the royalty rate.⁶³⁸

Golden also illustrates that Lemley and Shapiro's economic model has flaws, because several other factors were not considered, especially ones that would have a downward effect on negotiated royalty rates. When parties begin the bargaining process information asymmetries result in risks for both sides. Infringers face the prospect of litigation costs, redesign, damages, and a potential injunction while patentees face litigation costs, uncertain damage awards, potential patent invalidity, and potential for an ineffective injunction due to re-design.⁶³⁹ Potential litigation costs become a bigger threat or nuisance for infringers than an injunction if the patent is weak or easily designed around.⁶⁴⁰ If the patent is a strong one, the holdup situation may occur but there are several reasons why the number of holdup situations will be limited.⁶⁴¹ The patent holder also faces high litigation costs, and since it is a long process it gives the infringer time to redesign the product.⁶⁴² A successful redesign before the end of litigation

⁶³⁶ *Id.*, at 2128 (litigation costs are substantial, on the order of \$1 million); See also Larry Coury, *C'est What? Saisie! A comparison of Patent Infringement Remedies Among the G7 Economic Nations*, 12 Fordham Intell. Prop. Media & Ent. L.J. 1101, 1106-07 (2003) (in 1995 median litigation costs were \$190,000 through discovery and \$300,000 through the end of litigation for disputes under \$1 million, while a second cited survey indicated that attorney fees for disputes were regularly over \$1 million). A more recent AIPLA report cited by the Government Accountability Office *Supra note 528*, at p.37, indicates that the estimated cost of litigation through discovery was \$350,000 when the damage stakes are less than \$1 million, \$1.5 million when the stakes are between \$1 million and \$25 million, and \$3 million when the stakes are over \$25 million.

⁶³⁷ *Id.* at 2140-41; See also 35 U.S.C. 284, which states that a patentee shall receive "no less than a reasonable royalty" for damages.

⁶³⁸ Golden, *Supra note 433*, at 2144; see also Blair & Cotter, *Supra note 4*, at 24; but note *Uniloc USA, Inc., v. Microsoft*, 632 F.3d 1292 (Fed.Cir.2011) (Starting with 25% of profits to determine royalties has been discredited).

⁶³⁹ *Id.* at 2128-31, 2133-35.

⁶⁴⁰ *Id.* at 2130-31.

⁶⁴¹ Golden, *Supra note 433*, at 2131.

⁶⁴² *Id.* at 2133-34.

nullifies the threat of an injunction as a bargaining tool.⁶⁴³ It is also likely that infringers will have a greater information advantage than patentees.⁶⁴⁴ Finally, there are other business factors that can limit the patent holder's ability to pursue litigation.⁶⁴⁵ These reasons show that patentee under-compensation is a likely possibility even with the power of an injunction.⁶⁴⁶

Golden criticizes Lemley and Shapiro's benchmark calculation because: 1) their royalty calculation takes into account bargaining skill, which has no relation to invention worth; 2) marginal per-unit value is a calculable value nullified by a redesign; 3) patent term length is neglected; 4) litigation costs are ignored; 5) their assumption that patentees are likely to have better financial data about infringer redesign costs, infringer customer desires, and profit margin for the infringing invention; and 6) it ignores the impact of a potential protracted litigation on the patentee's willingness to settle. All these factors lead to a benchmark which is likely to undercompensate holders, making a reasonable royalty award by courts a ceiling rather than as a floor required by U.S. law.⁶⁴⁷ Courts often use estimates, making it unlikely that courts can easily determine an accurate marginal per-unit value, essential in determining the benchmark rate as a damage award.⁶⁴⁸

Injunctive relief has historically been a remedy in patent law. Courts, politicians, and scholars should not be too swift in removing the injunctions as a remedy for patents or in shifting from a presumption for injunctive relief to a presumption against.⁶⁴⁹ David Vaver has suggested that removing the presumption for injunctive relief does not necessarily entail a presumption against injunctive relief and that courts may possibly make decisions with no presumption at all, as proposed by eBay. Permanent injunctions can not only prevent patent holders from being under-compensated but also provide a social benefit by encouraging private settlements between parties rather than forcing settlements in court.⁶⁵⁰ A liability based system would actually be meaningless because without an injunction there would be nothing to compel an infringer to

⁶⁴³ *Id.* at 2134-35.

⁶⁴⁴ *Id.* at 2132.

⁶⁴⁵ Golden, *Supra note* 433, at 2134 (patent litigation creates uncertainty about a patent's validity as well as creating a situation where exclusive licensing with another is difficult, limiting that patent holder's negotiating power with other potential licensees).

⁶⁴⁶ *Id.* at 2135.

⁶⁴⁷ *Id.* at 2140-42.

⁶⁴⁸ *Id.* at 2143-44

⁶⁴⁹ Golden, *Supra note* 433, at 2116.

⁶⁵⁰ *Id.*, at 2140.

negotiate a royalty.⁶⁵¹ This would move royalty negotiations to the courts rather than between the parties. It would also potentially create a downward spiral for royalty values since negotiated royalties would become rare, leaving a limited basis for comparison and leaving market value of an award as a cap.⁶⁵² Golden theorizes that if court awards were greater than market value, the infringer would stop using the patented invention; if court awards were less than the market value of the invention infringers would resort to the courts. Market value would act as a cap, limiting court awards and depressing royalties.⁶⁵³ This theory is largely based on the U.S. perspective where damage awards are to be no less than a reasonable royalty. In Canada and the U.K., a market-based royalty may be less of a floor and more of a “median fair-value” but Golden’s reasoning would still depress this value, theoretically lowering patent value. This view appears quite alarmist and presumes that courts are so tied down with precedent that they will not be able to make a case-by-case decision. Furthermore, if damages were created to not just compensate but also to penalize for “bad behavior” then damages could fill the void from remedies. The downward spiral proposed by commentators like Golden, presumes that a liability based system would not be changed to compensate for the lack of an injunction.

If a presumption against awarding injunctions is put in place for only certain patent holders that would essentially create a “working requirement” for patent owners if they want to receive injunctive relief. This creates a discriminatory environment that essentially allows courts to award compulsory licenses.⁶⁵⁴ Patent holders who directly compete with the infringer or holders who exclusively licensed their inventions to the infringer’s competitor would get the benefit of injunctive relief, while a holder who did neither would have to accept a compulsory license.⁶⁵⁵ However, the statutes in each jurisdiction do not necessarily require courts to treat all patent holders equally. In light of Lemley and Shapiro’s suggestion that negotiations with NPEs should take place under the threat of a compulsory license rather than an injunction, commentators argue that there would be no incentive for infringer to bargain in good faith.⁶⁵⁶ However, the cost of litigation, as well as the protracted nature of a patent trial and the patent

⁶⁵¹ *Id.* at 2139-40.

⁶⁵² Golden, *Supra note* 362, at 568-69.

⁶⁵³ *Id.* at 569.

⁶⁵⁴ Golden, *Supra note* 433, at 2147-48.

⁶⁵⁵ *Id.* at 2147-48.

⁶⁵⁶ *Id.* at 2152.

uncertainty that trial creates, may actually be a sufficient threat to compel negotiations. It may also be possible to award additional damages or to even award punitive damages for infringers who do not bargain in good faith.

Golden believes that the concern over combating patent trolls and other NPEs may be overblown.⁶⁵⁷ While it is a concern that NPEs might obtain high royalties, many firms hold patent portfolios and can often create private settlements through the threat of countersuit against noncompeting entities.⁶⁵⁸ Small research and development firms would also suffer if there were presumptions against injunctions since a common business practice is to license patented inventions until sufficient funds can be accumulated to start production or to use the patents as leverage to enter a market.⁶⁵⁹ The lack of an injunction as leverage may force R&D firms to use the courts to determine royalties and face the downward spiral of royalties. Large companies, who are the targets of trolls, are established companies capable of fending for themselves.⁶⁶⁰ Large companies likely do not need the protection that a presumption against royalties might grant them.

Lemley and Shapiro countered criticism from John Golden by noting that their benchmark calculation may not be applicable in all situations, but nonetheless several studies show that patentees are overcompensated when a holdup occurs.⁶⁶¹ Holdups are most likely to occur between a non-practicing patent owner and an infringing practicing firm. Furthermore, they point out that overcompensation is particularly high in situations where a firm independently develops an invention without knowing it was patented, resulting in a skewed social contribution by the patentee.⁶⁶²

In a further criticism of Lemley's and Shapiro's views on the holdup, J. Gregory Sidak points out that even if from an economic standpoint overcompensation is undesirable, the U.S. Supreme Court accepts that holdups occur and that a monopolist can charge as high a price as the

⁶⁵⁷ Golden, *Supra note 433*, at 2154.

⁶⁵⁸ *Id.* at 2154.

⁶⁵⁹ *Id.* at 2157

⁶⁶⁰ Golden, *Supra note 433*, at 2157.

⁶⁶¹ Lemley & Shapiro, *Supra note 3*, at 2166.

⁶⁶² *Id.* at 2166.

monopolist wants.⁶⁶³ Courts have noted the powerful impact of an injunction on negotiations and the potential for a holdup. However, empirical studies show that holdups and royalty stacking are less of a problem in practice.⁶⁶⁴ While holdup potential may be more severe for weak patents, it is odd to argue that valid patents are subject to overcharge, since there is no requirement for a patentee to charge only a reasonable royalty.⁶⁶⁵ U.S. courts are only required to award no less than a reasonable royalty but patent owners can ask for whatever price they choose. It is rare that a non-practicing entity will be able actually get any price demanded. Market factors will compel an infringer to stop negotiations and seek alternatives if the patent holder demands too high a price, with such a situation benefitting neither party. Even if negotiations take place under an injunction, the royalty may be higher than fair market value but a rational patent holder will ideally seek compensation that will be high enough so that the infringer can continue production and yet pay.

Sidak argues that performing a real option analysis of infringement indicates that weaker patent protection will lower investment into further research and development and limit innovation.⁶⁶⁶ The patent holder has a real option (the right to do something but not necessarily the obligation) once the patentee has sunk costs into an uncertain technology; while this option is also conferred on the infringer freely in the absence of injunctions.⁶⁶⁷ Thus infringers have the advantages of copying a patented invention without the burden of sunk costs of research and development.⁶⁶⁸ If an inventor cannot recover sunk costs, this will increase the risk for investors, making investment more costly for patentees and limiting research and development.⁶⁶⁹

The option indicates the infringer and the patentee have an incentive to wait and see whether further investment in the patented technology is desirable.⁶⁷⁰ There is an advantage if the cost of production and marketing is delayed until the technology can be determined to have

⁶⁶³ J. Gregory Sidak, *Holdup, Patent Stacking, and the Presumption of Injunctive relief For Patent Infringement: A Reply to Lemley and Shapiro*, 92 Minn. L. Rev. 714, 715, 718 (2008) (provided the monopoly is acquired lawfully and no improper actions were taken to maintain the monopoly). There are also anti-competition laws in place which can be used to blunt monopolist powers.

⁶⁶⁴ *Id.* at 718.

⁶⁶⁵ *Id.* at 722.

⁶⁶⁶ *Id.* at 737-740.

⁶⁶⁷ Sidak, *Supra note* 663, at 732, 737.

⁶⁶⁸ *Id.*

⁶⁶⁹ *Id.* at 738.

⁶⁷⁰ *Id.* at 737-38.

commercial acceptance. Also, by not being first into the marketplace the potential exists to take advantage of mistakes made by first marketers.

Sidak further criticizes the Lemley and Shapiro model because it only examines factors that inflate royalties but ignores strong deflationary factors.⁶⁷¹ The model not only has inflationary flaws but actually indicates a downward bias in its benchmark for reasonable royalties.⁶⁷² Part of the downward bias results from not recognizing the patent holder's sunk costs in developing the invention, and by not recognizing the holder's incentive for potential future investment.⁶⁷³

Under the real option analysis of patents, Sidak estimated that an investment return should be above 200% of the sunk costs in order to recover those costs.⁶⁷⁴ Investing in any patent creates uncertainty about whether or not there will be an adequate investment return or any return at all.⁶⁷⁵ By delaying production investment the patentee and infringer can test the market.⁶⁷⁶ Infringement limits investment returns to recover sunk costs and limits incentive for further investment into R&D.⁶⁷⁷ Also, even if an invention will be successful, a patent holder will make less of a return commercially developing the technology than an infringer because the infringer does not have sunk costs.⁶⁷⁸

Sidak concludes that the holdup has no effect in many cases because many patents have little or no commercial value.⁶⁷⁹ These patents would likely have little holdup value as well. However, these patented inventions were still the product of research and development and were not valueless when developed.⁶⁸⁰ The Lemley and Shapiro model ignores the real option risk in their calculation, focusing on the strength of the patent and its probability of success in court.⁶⁸¹

⁶⁷¹ *Id.* at 732, 736.

⁶⁷² Sidak, *Supra* note 663, at 732.

⁶⁷³ *Id.* at 735.

⁶⁷⁴ *Id.* at 738-39.

⁶⁷⁵ *Id.* 739-40.

⁶⁷⁶ *Id.* at 740.

⁶⁷⁷ Sidak, *Supra* note 663, at 739.

⁶⁷⁸ *Id.* at 740.

⁶⁷⁹ *Id.* at 742.

⁶⁸⁰ *Id.* at 742.

⁶⁸¹ *Id.* at 743.

Despite the extensive debate between various academics over whether a holdup exists, all parties appear to have been somewhat vindicated by the recent GAO report on patent litigation. The report actually showed that awards given the NPE's were actually higher than the awards given to practicing entities.⁶⁸² While the report concluded that the awards were higher, it did not indicate that the awards were disproportionate or excessive.

Litigation Cost

Golden indicates that cost may be a greater factor in settlement rather than the threat of an injunction. Whether it is a greater reason for settlement is debatable, however comparing litigation costs versus the cost of remedy payments is a consideration. While cost is not a direct factor in the remedy, the costs must be borne in order to reach a remedy in all three jurisdictions.

Litigation costs are a significant issue for all entities in the United Kingdom, as the total cost of litigation is comparable to U.S. costs.⁶⁸³ In Canada, litigation is still an expensive endeavour.⁶⁸⁴ However, unlike the U.S. where each party pays its own costs, litigation costs are generally awarded to the winning side in Canada and England. This may not help with the initial litigation costs but a party with a strong chance of success can look forward to compensation for having to resolve issues through the courts. Cost apportionment is a general rule in Canadian and English courts but discretion to award costs resides with the courts and is not guaranteed.⁶⁸⁵ If litigation costs are significant, strengthening or weakening a court's power to grant equitable

⁶⁸² See Government Accountability Office *Supra note* 528, at p.26.

⁶⁸³ Kimberlee Weatherall, Elizabeth Webster, and Lionel Bently, *IP Enforcement in the UK and Beyond: A Literature Review*, Intellectual Property Research Institute of Australia, 37-43 (2009) <http://www.ipo.gov.uk/ipresearch-ipenforcement-200905.pdf> (last visited 09 Nov. 2011).

⁶⁸⁴ Matther L. Cutler, *International Patent Litigation Survey*, (2008 Harness, Dickey, & Pierce PLC) (This survey indicates that \$1 million CDN is not an unreasonable fee for litigation costs in Canada) http://blog.hdp.com/wp-content/uploads/2009/08/60549706_1.PDF (last visited August 1, 2012).

⁶⁸⁵ While the general rule to award costs applies in Canada, the proportion of the total cost which the winning party recovers is small, See Andrew M. Shaughnessy and Andrew E. Bernstein, *Patent Litigation: Choosing Between The United States And Canada*, The Metropolitan Corporate Counsel, (Feb 2005), <http://www.torlys.com/Publications/Documents/Publication%20PDFs/ARTech-51T.pdf> (last visited 09 Nov. 2011); Typically, the losing party in Canada will pay one-third of the legal costs of the winning party, Keith Bird, Donald H. MacOdrum, *Significant Differences Between Canadian and American Patent Law* (Part 2), (Fall 2008) <http://www.mcmillan.ca/Significant-Differences-Between-Canadian-and-American-Patent-Law-Part-2> (last visited Nov. 16, 2011); it also appears that English courts will scrutinize submitted court costs for proportionality and reasonableness, potentially limiting how much the loser pays, Nick Rudgard and Richard Kempner, *Taming the costs tiger - Court control of IP litigation costs* (May 2006), http://www.addleshawgoddard.com/asset_store/document/ip_publication_-_taming_the_costs_tiger_-_court_control_of_ip_litigation_costs_113950.pdf (last visited Nov. 16, 2011).

remedies will do nothing to curb alleged holdup situations.⁶⁸⁶ Golden argues that litigation costs may be more influential at driving infringers to settle in the case of weak patents, but an injunction is likely to be more effective when strong patents are involved.⁶⁸⁷ Litigation may be the largest potential cost for infringers and patentees alike, since litigation costs in the U.S. may run several million dollars for the average patent case and are comparably high in Canada and England.⁶⁸⁸ Litigation cost awards may not be nearly as helpful in the presence of a willing patent troll since both sides of a dispute will still have to pay their lawyers during the trial; and, only when a final decision has been rendered, will a party be compensated. Small companies and sole inventors still face high trial costs and may even face a double payout of legal fees for an unfavorable decision. Thus the threat of litigation rather than the threat of an injunction may initially be a bigger source of leverage.

High litigation costs are more likely to encourage settlements between parties while lower costs are likely to encourage litigation.⁶⁸⁹ However, higher costs are likely to limit access to the courts when the patent owner is a small entity with limited resources, while lower costs will increase access. Policy-makers face a balancing issue between allowing access to the courts and preventing excessive litigation. High costs create a market for patent sales to parties willing and able to sue. Tempering the effects of limited court access due to high litigation costs is a benefit that patent trolls give to small companies and sole inventors. In the U.S., the recent GAO report indicates that non-practicing entities have helped small inventors and even Universities cover the upfront cost of expensive litigation.⁶⁹⁰ Access to courts also encourages inventors to seek patents because they can see merits in the protections afforded by a patent. Patent trolls actually provide a benefit because they create a market for infringed or likely-to-be-infringed patents.

⁶⁸⁶ Golden, *Supra* note 433, at 2130.

⁶⁸⁷ *Id.* at 2131.

⁶⁸⁸ Bessen and Meurer, *Supra* note 277, at 132. See also Coury, 12 Fordham Intell. Prop. Media & Ent. L.J. at 1106-07, where the author gathered data from the early 1990's indicating that legal fees alone amount to several hundred thousand dollars and will often run into the millions for protracted suits in the U.S.; See also Government Accountability Office *Supra* note 528, at p. 26 (Patent cases in the U.S. can cost between \$650,000 and \$5 million depending on the risk involved).

⁶⁸⁹ See Weatherall, Webster, and Bently, at 37-43; See also Sivaramjani Thambisetty, *SMEs and Patent Litigation: Policy Based Evidence Making?*, E.I.P.R. 2010, 32(4), 143-145 (2010).

⁶⁹⁰ See Government Accountability Office, *Supra* note 528, at p.35.

In the U.K. the existence of the Patent County Courts and a small-claims track within the Patent County Court have attempted to alleviate some of the access to justice burdens.⁶⁹¹ These courts have simplified procedures but they also have limitations on the monetary size of damages (although there is leeway when it comes to complete remedies). These courts may help the small inventor with small damages, but it will not help small inventors with potentially large damages. Nonetheless, a similar “small claims” edition of patent courts or streamlined procedures with capped damages within a regular court may be a potential solution to reduce litigation costs in Canada and the U.S. for many inventors. While these courts may provide access, they may also create more litigation due to lowered costs and may increase nuisance suits.

High litigation costs can create a nuisance settlement situation, one in which a settlement is paid to make the issue disappear rather than to resolve infringement through the courts. This is something that not only trolls have taken advantage of. It is also something that large companies with aggressive patent portfolio management divisions have used. Sir Robin Jacob has opined that contingency fee suits which remove litigation costs from patent owners may be a significant driver for patent litigation and troll-like behavior.⁶⁹² Often, the suit will involve a patent that may not actually be infringed or that may only be marginally infringed. The availability of nuisance settlements encourages patent accumulation, but innovation encouragement is highly questionable. The nuisance threat neither promotes innovation nor does it promote innovation commercialization, but it does create an incentive for small companies and sole inventors to patent and enforce their patents.

A patent infringement suit will generally involve a claim that there is infringement along with an invalidity defense. Only if the patent is deemed valid and infringed will the court proceed to determine a remedy. Validity and infringement determination can be a protracted and costly affair.

There are multiple issues involved when examining litigation costs. Access to the courts must be balanced against increasing use of the courts to settle disputes. Another consideration is that companies with large resources are using their financial or legal expertise as a form of

⁶⁹¹ See *The Patents County Court guide*, HM Courts and Tribunal Services Guide (December 2012) <http://www.justice.gov.uk/downloads/courts/patents-court/patents-court-guide.pdf>

⁶⁹² Jacob, *Supra* note 359.

blackmail to force other companies into settlements. Lowering legal costs may remove threats from alleged trolls, but even reasonable costs can escalate when a company with an aggressive portfolio management division threatens a smaller company with infringing several hundred patents.

Nuisance settlements may actually aid small inventors by creating a market for their patents. A small inventor may not be able to commercialize his patented innovation, but he may be able to recover any research and development costs and even profits if he sells to someone capable of making infringement claims against alleged infringers. It is the high cost of fighting a patent infringement claim that makes nuisance suits potentially profitable. Alleged infringers are willing to settle to avoid litigation costs. However, while this tactic may benefit small inventors, it is also used by both IBM and Intellectual Ventures.

Economic Considerations for Damages and Remedies

Scholars who apply an economic analysis to patent systems fall within an ideological spectrum. On one end of the spectrum are the pure property rights supporters; on the other end are the liability rule supporters. The property rights movement naturally advocates a system where strong property rights are applied to intellectual property. Adherents believe strong property rights are better suited to a free-market system and to personal liberty ideals, because they encourage parties in an infringement dispute to negotiate between themselves in order to come to an agreement. When an injunction is granted, the parties are forced to decide on the value of property through negotiations and not through outside intervention. Pure liability rules actually allow infringement but will compensate the infringed party based on an objective standard enforced by an outside regulatory or judicial party. Advocates of liability rules argue that economic considerations support returning the patentee to the position she would have occupied but-for the infringement because it achieves the goals of the patent system by promoting invention and increasing disclosure while still allowing competition and consumer benefits through lower costs.⁶⁹³

Current property rights supporters lean towards protecting the inventor while liability rules supporters tend to lean towards compensating inventors while also limiting harm to infringers. Property advocates believe that a liability based system will lead to compulsory

⁶⁹³ Blair & Cotter, *Supra note 4*, at 45.

licenses which will undercompensate patent owners, discourage future R&D investment, and lead to less innovation. Liability rule supporters indicate that property rules are also inadequate because they may overcompensate patent owners while potentially choking follow-on innovation and stifling R&D investment. Both groups have economic models that mention follow-on innovation and R&D investment, but their models are only marginally supported by empirical data.⁶⁹⁴ How much patents encourage innovation is questionable, but the data, nonetheless, indicates that startups use patents to gain investors. Actual impact on follow-on inventors and the public are not really considered or are a distant, secondary concern in theoretical models. Both property and liability rules assume that an entitlement to the fruits of an innovation exists in the patent grant as part of the incentive.

In both the property and the liability arguments, the stated main goal of the patent system is assumed to be innovation. However, innovation is just one goal and the debate often ignores other goals. The debate between the two extremes also focuses on how the patent owner and infringer will behave but ignores or minimizes the significance of other stakeholders. The question being asked during these debates is whether a patent owner will be more likely to invest in the innovative process if there are strong or if there are weak property rights. The underlying thinking is that society will benefit if the innovator is convinced to increase investment in the innovative process and to make public, through patenting, the results of the innovation investment. The other stated goals of the patent system are either not part of the consideration or are only peripherally considered. Social benefits seem to be assumed merely by the increased innovation and publication of inventions. However, social benefits are rarely a direct consideration in economic analysis and often that analysis does not extend to commercialization, non-practice entities beyond trolls, strategic behavior, job creation, consumer benefits, or the impact of increased patent liquidity.

Innovation is not an end in itself but is a step towards commercialization. It cannot be assumed that incentives to innovate will ultimately lead to commercialization. This is especially true since there has been an increase in strategic behavior, patent-only transactions, and rent-seeking. It is not that these transactions are necessarily bad or detrimental to the patent system, but there has been a proliferation of such transactions which use the property rights of a patent

⁶⁹⁴ See Graham, Merges, Samuelson, and Sichelman, *Supra note* 506, at 1255.

but fail to commercialize the underlying innovation or fail to encourage follow-on innovation. This requires analysis that looks beyond the patent owner and the infringer only.

Another concern within the property/liability debate is the patent troll. Some believe that the patent troll is actually beneficial to the system while others try to show that trolls will destroy the patent system. Analysts fail to recognize that there are separate categories of patent owners and the debate seems to conflate all owners into one group while keeping trolls as a separate group. Small, medium, and large companies that put their patents into practice each have different motivations to patent. Trolls, licensing companies, and portfolio management companies also have different motivations to patent. Finally, the particular industry in which the patent owner is involved will also affect inventor behavior. Of course, there may be categories of patent owners other than the ones noted above. In addition there may also be an overlap between the categories, as well as no explicit dividing line between the categories. As has been shown, the patent owners in each category can also be NPEs or even trolls. Patent enforcement ability will also affect the approach an entity takes to manage its patent holdings. These categories make economic considerations more complicated, and there are significant differences that merit consideration when remedies are examined under the goals of the patent system.

When the categories and patenting motivations are considered, many assumptions made in determining economic validity to support a particular remedy rule seem flawed. Strategic considerations further complicate economic analysis, making absolute remedy determination difficult and even undesirable based on the reasons for creating a patent system. Judicial flexibility may be desirable in tailoring remedies to compensate for the harm, while still maintaining patent system goals.

Recent concerns about NPEs have raised questions about the property/liability ideological divide and its impact on the goals of the patent system. As has been indicated by Landers, there is also the issue of liquid patents, patents traded for their property rights but not for the underlying innovation. Economic analysis of remedies and patent enforcement by NPEs has raised concerns that inventors who do not commercialize their patented inventions yet still enforce their patents may be detrimental to the patent system. Scholars in the U.S. note the lack of a working requirement but there is tension between the patent system goal of encouraging commercialization and the right to dispose of property as the owner sees fit. While there is a

loophole in Canadian and U.K. law which creates a limited working requirement, there have been considerable complaints in both countries about access by companies trying to take advantage of this section of patent law. The tension between property rights and patent system goals seems to exist in all three jurisdictions. Nonetheless, commercialization has clearly become something that U.S. courts are willing to consider when granting a remedy.

NPEs also raise questions about the appropriate compensation an innocent infringement should pay. While the NPE may have been first to patent the innovation, the innovation clearly did not aid the innocent infringer and resulted in duplicated effort. Such results call into question the innovative nature of the patent, the motivation provided by the patent, and the benefits patenting provides for follow-on inventors. This is an economic waste which calls into question the notice provided by the patent grant and any litigation to resolve the dispute. General consensus seems to indicate that research is not necessarily wasted even if there is duplication. However, from an economic standpoint, there is waste because two inventors have expended resources towards the same goal but only one has reaped the benefits, while the other has expended resources for no gain. Economic waste may be a consideration that should be in the purview of lawmakers rather than courts, but it illustrates some of the economic inefficiencies that exist in an absolute property system. While it is likely that an innocent infringer or independent developer will have their work considered by the court when remedies are determined, the U.K. has actually codified compensation limitations due to innocent infringement.

Examining economic efficiency is admirable but it cannot offer insight unless all stakeholders and system goals are considered. Unfortunately, not all inventors are the same. Access to patents, patent protection, the courts, and remedies are not the same for all inventors. Furthermore, strategic use of patents that skew economic models is assumed to happen infrequently, and some models ignore it. Despite commercialization being a stated goal, there is a reluctance to encourage working requirements because it is assumed that anyone willing to use the patented innovation will pay reasonable consideration to gain access, while a property owner will best understand how to use his property. Nonetheless, a combined system of property and liability rules, as exists right now, along with judicial flexibility, are better suited to allow courts to maintain the goals of the patent system – encouraging innovation by creating an incentive,

limiting strategic behavior through limiting exclusion powers, and encouraging commercialization by granting damages in lieu of injunctions when non-practicing entities are involved. The current system may be far from perfect but removing tools from the judicial remedy arsenal only serves to limit the flexibility courts have in resolving extremely fact-dependent disputes. Patent disputes rarely fall into a one-size-fits-all resolution.

There is also the issue of litigation costs which is a factor (along with an ultimate injunction), in encouraging alleged infringers to agree to patent-owner licensing demands. Given the high litigation costs in all three jurisdictions, especially when viewed in relation to potential awards in each jurisdiction, this should also factor into the debate on remedy systems. Litigation is a necessary step in order to receive the ultimate remedy in an infringement situation. High costs are what encourage predatory practices by aggressive portfolio management firms.

Within patent law, there are many supporters who lean to one side or the other but few who preach an absolute property or liability approach. There appears to be recognition that patents are different from other property and require different treatment. However, there is also recognition that current liability elements of patent remedies may not only lead to unfair, inadequate, and potentially inaccurate results but also may create great difficulties for the courts. To that end, there has been considerable analysis to find more accurate remedies that reflect real damages or real harm rather than approximations currently in use. Complete accuracy is not really necessary, although its lack poses difficulties to the courts. The laws in all three jurisdictions call for reasonable royalties, or for mere royalty payments, and not completely, objectively determined, exact royalties.

The current system of property rights combined with remedies, including damages, injunctions, and profits, has been in place in all three jurisdictions for a long time. All three have employed a combination of property and liability remedies. All three jurisdictions are market economies with a strong sense of property rights. The next section will detail the remedies in all three jurisdictions but with an eye towards all stakeholders. Some of the limitations of remedy analysis will also be discussed in the next section, followed by a proposal of potential systemic changes to better address some of the issues within the current system. Addressing these issues is an attempt to find ways to encourage commercialization.

Commentary and Critique

While Lemley and Shapiro should be applauded for their efforts to establish a benchmark and to quantify the impact that trolling behavior has on the patent system, their theory has significant flaws as pointed out by both Golden and Sidak. Lemley and Shapiro highlighted the effect a presumption towards awarding injunctions can have on the patent system, especially when non-practicing entities are the patent owners. They focused heavily on practicing and competing entities to show how infringers are affected by injunction remedies, but they included information on non-practicing entities as well. As Golden points out, they failed to distinguish between different types of NPEs when calling for damages in lieu of an injunction for all non-practicing entities. Nonetheless, Golden and Sidak call for approaches that presume an injunction award, even if the patent owner is a non-practicing entity, again without examining distinctions. In their stated positions, there are several flawed assumptions which seem to make their models and critiques valid; but they are so only within their limited scope and because they ignore externalities to their assumptions.

Each of these commentators looks at the patent system as having the purpose of encouraging innovation. While this is true, this is just one of many reasons why a country establishes a patent system. In creating their economic models they failed to examine other purposes behind establishing a patent system. There is also an assumption by Sidak and Golden that a patent owner, motivated to innovate by a potential patent grant, will market the innovation after obtaining a patent, secure in the knowledge that the right to exclude will prevent others from practicing the innovation.

The patent system is also established to protect interested parties. Each of these commentators examines only relations between the patent owner and the infringer. They ignore follow-on inventors, investors and the public. Additional studies have shown that, even among patent owners, there are a plethora of reasons for obtaining a patent, of which motivation to innovate is one of the lesser reasons.

Some of the economic models used to gauge the effectiveness of remedies will be examined in this section. All models currently have limitations. To ensure accuracy, any economic model should apply many more factors than are currently used. In this section, remedies which have been shown to exist in the three jurisdictions will be revisited. This will be

followed by an examination of the impact of these remedies on the interested parties when a patent owner is an NPE. The examination will also look at factors in the remedy process that will encourage or discourage settlement.

Patent owners are an extremely varied group. An owner can be an individual operating out of his garage or a corporation the size of Apple.⁶⁹⁵ A patent owner is not necessarily the inventor of the underlying innovation. The owner may be using the underlying innovation or the owner may be accumulating patents for licensing or other purposes. There are also universities and R&D companies that do not actually make or commercialize the underlying innovation but merely sell or license the patent to others. There are companies that practice some of their patents but accumulate other patents as part of their offensive or defensive strategies to gain further revenue. Companies, like IBM, which have created subsidiary companies to manage their patent portfolios. Some of these groups may actually be trolls. Yet there are still other motivations for obtaining a patent that do not involve practicing the innovation. These groups were mentioned in chapter III and - other than companies that actually practice the innovation in a particular geographic region - they are non-practicing entities.

Each of these groups has the right to enforce the patent against an infringer. However, the motivation to enforce may vary. Practicing entities either have put in the time and effort to develop the innovation or have paid to purchase a license or the patent. These entities have also invested in commercializing the innovation. The successful practicing entity actually achieves all of the goals of the patent system. They publish information about their innovation, allowing follow-on inventors to examine the innovation. They make something that benefits or is desired by consumers.⁶⁹⁶ Since consumers are willing to buy and the company continues to produce goods, it is presumed that the company is making a profit. The profit is compensating the owner for the expended resources and generating a reward for the innovation. Investors are also presumably sharing in the profits generated as compensation for their investment. The higher costs for the duration of the patent may have a social detriment, but it is part of the price of maintaining a patent system. On the whole, this system encourages innovation and brings the

⁶⁹⁵ Apple is currently worth approximately \$600 billion USD, <http://www.google.com/finance?q=aapl> (September 1, 2012).

⁶⁹⁶ Benefitting consumers is intended to mean that there is consumer demand for the innovation or subsequent product and consumers are willing to purchase it.

innovation into the marketplace. Practicing companies are likely to enforce their patents against competitors, but this will also depend on how aggressive its patent management department is.

Licensing starts the process in which the patent is treated as property and may be separate from the underlying innovation. Licensors who allow another to practice the innovation in exchange for royalty payments may be working to meet the goals of the patent system. For the time and effort expended in creating the innovation the licensor receives compensation through either a royalty or sale. The practicing entity that purchased the right to make or use the innovation is presumably making a profit from selling goods to consumers. Consumers are also benefitting because they are interested in purchasing the good from the maker. Licensing entities will usually enforce their patents to pursue royalties and not necessarily to prevent others from practicing their innovations.

In the above two cases, infringement is actually detrimental to the patent owner and any potential licensees. The economics of how infringement affects patent owners has been documented and losses are quantifiable and compensable through lost profits or an account of profits. There is a greyer area where a patent owner is trying to commercialize an innovation but is unable to do so because of infringement. Damage quantification in the form of lost profits or an account of profits becomes more complicated depending on the stage of commercialization. The lost profits suffered during the initial commercialization attempts will be small but as the patent owner becomes better able to produce and sell goods and services that use the innovation, the lost profits will increase. An account of profits has generally been unavailable to non-practicing entities. Nonetheless, it is a desirable and substantial remedy. Whether a patentee will be able to convince a court of a sufficient degree of innovation practice, to qualify for the remedy, will likely be fact determinative. Thus it is possible that a court will grant lost profits based on the ill-gotten gains theory; but, depending on a company's progress towards commercialization, a reasonable royalty and an injunction may be awarded instead.

The problem lies in situations where the patent owner is non-practicing. While the laws in each of the three jurisdictions provide for compensation upon infringement, the question of whether the remedy is to compensate for the wrong should be asked by the court before proceeding with the remedy. Proportion is a hallmark of the commonwealth remedy system and compensation is a motivation of the remedy system in all three jurisdictions. Despite the

availability of multiple remedies in each patent system, courts should be examining proportion when a non-practicing entity is involved. Compensation is, after all, a stated policy in each jurisdiction. A further consideration is the impact granting an injunction has on the other interested parties versus granting an alternative remedy in lieu of an injunction.

An injunction would remove the infringing good or process from the marketplace. It is likely that an infringer would agree to a license before the good is removed from the marketplace, but that is only if the negotiated royalty makes using the infringing good feasible. It may be hard to argue that this is a holdup, especially since a valid patent is being infringed; but this reasoning merely looks at the patent owner and infringer. If the patent owner and the infringer are the only ones considered, an injunction would be the most effective remedy. But the patent system has other stakeholders. Even if one argues that other stakeholders have implicitly agreed through the laws to award property rights to patent owners, each of the three systems has limits on those rights. These rights are limited either directly through the statutes or indirectly through the courts. An absolute right to an injunction in all circumstances is questionable given the limited nature of the patent right.

If one examines patent disputes through the Calabresi/Melamed economic model, the transaction costs may be enormous. However, in applying their method, transactions costs must be defined. If transaction costs include the legal costs of defining boundaries, validity, and infringement, it will be extremely high. Such high costs entail a liability remedy. However, if the transaction costs are calculated once the court decides the dispute, they will be relatively small. If transaction costs do not include the cost of litigation then a property remedy will clearly be more suitable.

Removing the innovation from the marketplace will have a negative impact on consumers. Even if the innovation remains in the marketplace, consumers will have to pay increased prices for the good or service, regardless of whether a royalty is negotiated in the face of an injunction or in lieu of an injunction. It is assumed that a royalty rate negotiated with an injunction looming will be greater than one granted by a court. However, despite the fears of Golden and Sidak, a reasonable royalty does not mean a negligible royalty. A downward royalty spiral is far from certain. The dearth of non-practicing entities receiving a final decision, including damages, in English and Canadian courts indicates that parties are far more willing to

negotiate a royalty than to let the courts decide their royalty rate. This behavior is also evident in the U.S. where there have been court decisions involving non-practicing entities. There are very few relative to the total number of infringement suits. Canadian courts have also shown a willingness to grant a royalty premium when awarding a royalty in lieu of an injunction, even in the case where one company was a non-practicing entity.⁶⁹⁷ In England, the dearth of cases would indicate that parties are agreeing to a royalty outside the courts or courts are granting injunctions. There is also no indication that court-awarded royalties involving non-practicing entities in the U.S. have been lower than what could have been achieved through negotiations.

It is clear in cases like *eBay v. MercExchange* or *RIM v. NTP*, that a patent owner would have received a greater royalty payment with a looming injunction than through pre-decision negotiations or possibly even through court awards; but these are exceptional situations where a very large company would face complete business shutdown. A holdup may not be the case if smaller companies are involved or a complete business shutdown is not imminent. However, these two U.S. court decisions also show that court discretion can play a significant role in deciding whether to grant an injunction, especially if other interests are involved. In *RIM v. NTP*, the impact on consumers did nothing to sway the judge's injunction decision. In *eBay v. MercExchange*, the court, however, took into account the enormous potential impact a complete business shutdown would have on consumers. In both cases, the patent owner was looking to maximize royalty payments. Neither case was a moral issue over subject matter or a desire to compete.

The issue comes down to whether a patent owner should be entitled to a court-decided award that may amount to a lot of money or to an award that is for a negotiated sum of money. The court should ask the question of whether an injunction is justified, especially given that the patent owner is generally looking for monetary compensation. As stated, the negotiated award for more money is far from certain. An argument could be made that a patent owner should receive every possible cent of compensation for his innovation. But this argument becomes less compelling when consumers will be greatly affected or when a patent is purchased with the intent of squeezing every penny of royalty payments from an unwitting infringer. Arguments for compensating patent owners for the expense of innovation or research to purchase a patent to the

⁶⁹⁷ *Unilever v. Proctor & Gamble*, [1993] F.C.J. No. 117.

full value of the patent ignore the fact that development costs have little or no bearing on the full value of a patent. Furthermore, when the goals of the patent system are considered, will such compensation encourage innovation or commercialization? As was pointed out by Landers, Landes, and Posner, a system that encourages injunctions provides encouragement to innovation but not necessarily the incentive to commercialize. Should a patent owner prevent an independent inventor from using an innovation merely because the owner holds a patent?

The difficulties faced by an inventor in creating an innovation which can be patented were documented earlier, as were difficulties in commercializing the innovation. The protection granted by a patent was intended as a means of compensation and even of reward for R&D efforts. The purpose of a patent system is to encourage innovation by providing a limited monopoly. However, the Berkeley Study has shown that there are several other reasons why someone would seek a patent. Furthermore, the study found that the incentive to innovate and commercialize was found to actually be quite small. This is not encouraging when commercialization is a stated goal of the patent system. This also considerably blunts the arguments of Golden and Sidak who claim that innovation will be decimated unless patent owners are granted an injunction.

The Berkeley Study was made in the U.S. with the U.S. patentee in mind, but the reasons for making a patent application are likely to apply as well in Canada and the U.K. Furthermore, the strategic aspect of patent use is likely to increase because firms with patents in multiple jurisdictions have a greater number of fora for litigation.⁶⁹⁸ There has actually been a decrease in the number patent applications and grants in the U.K. Patent Office but that is likely because of the increase in applications through the European Patent office and the increased integration of the European patent market.⁶⁹⁹ That has not necessarily decreased enforcement or court activity

⁶⁹⁸ A good example is the current battle between Apple and Samsung. The companies are currently suing each other in the U.S., South Korea, and Europe. See Jung-Ah Lee, Samsung, Apple Building Up 4G Patents As Courtroom Battle Escalates, DOW JONES NEWSWIRES <http://www.nasdaq.com/article/samsung-apple-building-up-4g-patents-as-courtroom-battle-escalates-20120911-01389> (last visited 12-September, 2012).

⁶⁹⁹ The U.K. has increased the number of patent applications and grants in patent offices around the world over the past decade and that number exceeds applications and grants by Canadian companies. See WIPO Patent Statistics, Patent grants by country of origin and by office (1995-2010) http://www.wipo.int/export/sites/www/ipstats/en/statistics/patents/xls/wipo_pat_grant_by_origin_office_table.xls and WIPO Patent Statistics, Patent grants by patent office (1883-2010) by resident and non-resident, http://www.wipo.int/export/sites/www/ipstats/en/statistics/patents/xls/wipo_pat_grant_from_1883_table.xls (last visited 10 September, 2012).

in England because of the nature of the European market.⁷⁰⁰ In Canada, there has been a steady increase in both patent applications and grants.⁷⁰¹ Both the U.K. and Canadian patent Office applications and grants are few compared to patent application and grants in the U.S Patent and Trademark Office.⁷⁰² The general increase in patents issued in Canada and the potential ability for a patentee to sue U.K. companies in U.K. court for infringement in other E.U. jurisdictions (assuming there is no validity dispute) make Canada and England potentially susceptible to strategic behavior. Other reasons to seek a patent, as indicated by the study, would also seem to apply in Canada and the U.K. The scale may be smaller than in the U.S. but each of the reasons are likely to remain valid in Canada and the U.K. Alleged trolls have already tested the courts.

Since neither jurisdiction has yet accumulated a significant number of final decisions involving non-practicing entities, it is still difficult to examine how courts would manage the remedy. It is likely that both courts would grant a reasonable royalty for damages, but it is not clear that an injunction would be denied by either court. Both jurisdictions have indicated that there is a presumption to award one. There is a clear judicial analysis which must be performed when deciding on an injunction, and there is a clear burden shifting between each step. In England, the test can be adjusted by the court based on the facts; but there are no clear examples that would involve trolls or troll-like behavior. Canadian courts have a less clear test to follow, but they have a lot of flexibility when it comes to awarding an injunction. *Unilever v. Proctor & Gamble* involved two competitors; but, for the purposes of that particular case, Unilever was a non-practicing entity. Unilever's move was clearly strategic; and, while the court granted damages in lieu of an injunction, they also highlighted the exceptional circumstances that led to the decision. The court was quite clear that, without the exceptional circumstances, they would have granted an injunction.

Economic analysis of patent remedies brings some insights but there are severe flaws in models proposed by several scholars. Whether the economic analysis includes a benchmark and

⁷⁰⁰ Validity in Europe is decided by the court in the jurisdiction in which the patent was issued. A U.K. court would have jurisdiction to hear an infringement dispute so long as the infringer was based in the U.K. and there was no dispute to patent validity, regardless of where the infringement took place in Europe.

⁷⁰¹ See *Supra* note 699, WIPO Patent Statistics, Patent grants by patent office (1883-2010) by resident and non-resident

⁷⁰² See *Supra* note 699, WIPO Patent Statistics, Patent grants by patent office (1883-2010) by resident and non-resident (*The combined English and Canadian patent offices issue roughly 10% of the patent of the patents that the US Patent and Trademark Office issues*).

a call to eliminate injunctions or an absolute property view that demands injunctions, neither reflects the current reality. These models clearly do not account for the variety of NPE business models operating today. These economic models are incapable of supporting an absolute justification for either a property or liability based solution. Without more examples involving non-practicing entities using the courts, it is mere speculation how courts should approach injunction grants. However, these incomplete economic results can also be an opportunity for law-makers to be proactive in limiting some of patent system issues.

Conclusion

The goals of the patent system include encouraging innovation, investment, commercialization, and follow-on inventions. These goals are pursued through a balancing of social benefits and social costs. In attempts to balance benefits and costs, innovators are granted certain rights with a patent grant that entail legal protection. The protection given to inventors comes in the form of a property right to exclude other users for a limited period. Property rights in a patent granted to an innovator are part of the patent laws of Canada, the U.K., and the U.S.A. Recently, the balance of costs and benefits of the granted rights has been questioned as transactions involving just the patents, separate from the underlying innovation, have been multiplying. There has been an increase in non-practicing entities using patent rights not only as a means of excluding competition while commercializing an innovation but also for strategic reasons designed to maximize profits. Maximizing profits is a perfectly legitimate pursuit but not when the spirit of the patent laws and the goals of the system are being undermined in the process.

Non-practicing entities have proliferated, and in their wake nuisance suits, cross-licensing, and other offensive and defensive business strategies used by all sizes and manners of companies. None of these practices are illegal, but they do pose concerns for future innovation as they tend to involve patent-only transactions without concern for the underlying innovation. With the increase in patent applications and grants, obtaining the rights associated with a patent grant has become an increasing reason for transactions rather than the innovation. In fact, it is questionable whether these transactions actually do anything to encourage innovation. These transactions also do not necessarily involve either innovation or commercialization and may actually stifle efforts to market goods and services.

Trade in patents for patent rights has led to an increase in litigation, nuisance suits, and licensing fees. Again, these may not necessarily be detrimental to the system, but a connection between litigation costs and nuisance settlements exists. High litigation costs are also a consideration because these costs only exist if parties to a patent infringement suit want courts to settle a dispute. While it may seem self-evident, a legal remedy will not exist unless parties are willing to go through the legal process. However, parties may be willing to settle disputes if the

licensing costs are lower than the potential legal costs of protracted litigation to determine patent validity and infringement.

Patent quality has only been mentioned insofar as it related to patent troll strategies. Fischer and Henkel noted that business strategies where companies purchase patents for enforcement purposes require higher quality patents. However, there is enough anecdotal evidence in the U.S. to suggest that more questionable patents, or paper patents, are being obtained by companies who use the threat of lawsuits to obtain nuisance settlements. Patent office grants are presumed valid, but validity is not conclusively determined until the patent has been examined by the courts. Both quality patents and questionable patents are accumulated strategically by companies in both an offensive and a defensive manner. This is in addition to strategies used by alleged patent trolls. There is also evidence that large companies are accumulating patents in various jurisdictions for strategic use against competitors.

In the U.S., the volume of patent-only transactions has raised questions about treating all patent owners equally and about the power of remedies available to owners enforcing their patents. Scholars have attempted to justify remedy approaches through a law and economics analysis of remedy impact. While the conclusions and slippery slope arguments raised by such scholars may be questionable, their investigations helped pave the way towards a re-evaluation of how remedies have been awarded to patent owners. This remedy analysis has also raised questions about how incentives created through patent rights and subsequent remedies help achieve the goals of the patent system.

In Canada and the U.K., there has been less evidence and less concern about patent trolls. While trolls have entered the marketplace and have attempted to use the legal system to develop their business models, it is still not clear whether they have entered the marketplace in numbers comparable to the U.S. figures. It is also not clear what impact such a small number of trolls will have. However, the U.K. is a potential forum for lawsuits over the increasing number of patents issued by the European Patent Office. In Canada the sharp increase both in patent application filings and in patent grants creates a potential forum for nuisance suits and for strategic suits by multinational corporations in strategic battles with competitors.

Legal scholars in the U.S. have turned to remedy analysis in an effort to make suggestions within the existing patent framework which may curb patent trolling behavior. Such work has had an influence on the Supreme Court in its eBay v. MercExchange decision. The eBay v. MercExchange case has been much discussed because it potentially limited remedies available to non-practicing entities. However, while the decision may have caused a stir in the U.S., it merely reasserted the equitable nature of an injunction grant in a patent case. The decision forced courts to perform a legal analysis balancing the remedy impact on the parties in dispute before granting an injunction. Rather than grant an injunction upon a finding of infringement, courts were instructed to balance the harms to the parties and the public to see whether an injunction should be awarded.

Current remedies available in Canada, the U.K., and the U.S. include injunctions and likely damages, in an effort to compensate the infringed party. In lieu of damages, patent owners in Canada and the U.K. may seek an account of profits to recover wrongfully obtained profits from the infringer. An account of profits is considered a property rule remedy in these two jurisdictions while damages are considered liability rule remedies. Injunctions and an account of profits are considered equitable remedies, with discretion to award either one or both lying with the courts. In the vast majority of disputes in all three jurisdictions, courts will likely grant an injunction because there is a clear policy reason for it, but the court must nonetheless perform a fact-dependent, balancing of convenience examination. There has been some debate about presumptions when deciding whether to award an injunction, but the court is nevertheless required to determine whether the remedy is appropriate. Despite the equitable nature of an account for profits, English courts view it as an extraordinary remedy while Canadian courts still seem to favor it. Nonetheless, an account for profits, like an injunction, requires courts to see whether the remedy is appropriate. While injunctions and an account for profits may be preferred by patent owners, and many legal scholars, these remedies still lie within judicial discretion and depend on the facts facing the court.

Injunctions have been a standard remedy for all types of patent owners in all three jurisdictions once courts found infringement. However, damages have been calculated differently based on whether the patent owner was practicing the innovation. In Canada and the U.K. an account of profits is generally not available for NPEs or, if granted, the remedy is calculated

differently. Thus monetary compensation for patent holders depends on whether an innovation is practiced. In all three jurisdictions, if a patent owner was practicing her patent, she would be entitled to lost profits as compensation for damages. However, this remedy is not available to non-practicing entities. NPEs are eligible to receive a royalty instead. Even if a practicing entity claims lost profit damages, the patent holder would have to show that she could have made the sales tied to the lost profits claim before she would be entitled to the remedy. Otherwise the patent holder would only be entitled to a royalty for those sales. While an account for profits is not part of damages, it is a remedy which English and Canadian courts have not made available to NPEs. English courts have stated that the profits an NPE would have made were royalties, and thus the account for profits becomes a reasonable royalty assessment. Courts already have created distinctions in the type of remedy available for different types of entities, adjusting remedies with the facts presented.

Courts in all three jurisdictions generally separate damages from validity and infringement hearings, indicating a preference to give the parties a chance to agree on their own terms rather than to have the court decide the remedy. Allowing the parties to come to their own agreement concerning patent boundaries and infringement eliminates considerable uncertainty. Courts step in to award remedies if the parties cannot agree. A judicial remedy will likely include an injunction along with damages for prior infringement. Future compensation for continued innovation use will rely on an agreement between the parties and may actually be independent of any court decision. While the injunction tends to be a standard part of the remedy process, with little regard for the type of patent holder, monetary compensation will vary according to whether the holder practices the patented innovation or not. Monetary compensation will also vary with the holder's production capabilities. Whereas the court creates a distinction in compensation between practicing and non-practicing entities, an injunction greatly skews compensation in favor of the patent holder. This is especially true if the infringer would like to continue using the innovation. An infringer who is faced with a complete business shutdown due to an injunction is likely to agree to a patent holder's demands for future royalties.

Some commentators have indicated that an injunction can amount to a holdup or blackmail. Other commentators have countered that since the right to exclude comes with a patent grant, the holder of a valid patent should be able to enforce that right, regardless of the

business reasons for enforcing that right. While this second group of commentators rightly indicates that an injunction is a valid remedy which has traditionally been awarded, there are many considerations beyond tradition which a court can take into account when making its decision. The discretionary nature of equitable remedies allows the court to examine several factors before granting an injunction. This is not to say that an injunction should be abandoned as a remedy but that courts are perfectly capable of discerning business models, motives, and intentions when it is necessary to tailor compensatory remedies. Furthermore, the Patent Acts of all three jurisdictions indicate that injunctions are just one remedy and not the only remedy.

Economic analysis has put forward several propositions to attempt to discern whether injunctions are an essential component of the patent system or whether alternative remedies are better suited. While the current scholarly economic analysis of patent remedies has shown itself to be either incomplete or tied to an ideological perspective, the debate still illustrates some issues which exist when establishing a patent system and what goals are addressed by the current system. Innovation and efficiency are two major assumptions of economic scholars. The efficiency aspect depends on transaction costs involved in a general property transaction, but some analysts have adapted this to intellectual property. Given the complexities of a patent (and the necessity of having courts determine validity, boundaries, and infringement), efficient remedies will depend on what point of the dispute process is used to start examining transaction costs. If boundaries, validity, and infringement are part of the transaction costs that need to be determined by a court, then it may be more efficient to impose a liability rule, or damages in lieu of an injunction. However, if boundaries, validity, and infringement are not considered part of the transaction cost in determining patent value but are merely a precursor to a transaction cost that involves value determination, then a property rule in the form of an injunction is a more suitable remedy. The innovation aspect relies on the incentives given to an innovator. It is unclear, despite various models, whether an inventor requires an absolute right to exclude as incentive to invest in the innovation process. It is also unclear whether rights that would allow an inventor to obtain full economic value for a patent are necessary to encourage innovation; and it is far from certain that profit falling short of full economic value would discourage innovation. Limited empirical data indicates that startups do not depend on patent protections for their incentive to innovate, but there is also an indication that there are multiple reasons to patent. It is not clear whether larger companies would require the right to exclude, through patent protection,

before they would invest in R&D. The only conclusion is that current economic models ignore several goals of a patent system, focusing on only certain aspects that often support ideological positions. These economic models provide conflicting legal justifications. For a more accurate economic analysis, the other goals of the system need to be included, as do inventor motivations to patent.

As stated previously, the goals of a patent system are to benefit society through encouraging innovation, commercialization, follow-on invention, and investment by providing incentives to inventors while limiting the social costs of inventor encouragements and system administration. Injunctions are a valid but not necessary remedy according to the laws of all three jurisdictions. Given the power of the injunction, it is questionable whether the goals of the patent system are furthered every time an injunction is granted. The laws also provide for damages or an account for profits to provide additional compensation to the patent owner, if necessary, or even to provide compensation in lieu of an injunction. This gives the courts considerable leeway to adjust remedies as needed, based on the facts. Courts can also make decisions in line with the goals of the system. In all three systems, the remedies are intended to compensate the patent owner and not to punish the infringer. Analysis that suggests patent owners are being overcompensated by patent remedies is questionable, but it is also clear that compensation determined by the court rather than through an agreement between the parties in dispute is far from the undercompensation predicted by critics of liability rules. The current remedies which the courts in all three jurisdictions apply are easily balanced in light of the system goals.

Another reason for allowing courts leeway is because the right held by a patentee is not necessarily tied to a particular remedy. Entities have different motivations to obtain a patent, not all of which involve practicing the innovation. These motivations will vary with the size of the patent-owning company, the technology involved, and the business model. Offensive and defensive strategies, as well as investment gathering strategies, may be used to prevent competition while marketing an innovation. Other business models often involve gathering licensing revenue from companies that are currently practicing the innovation or plan to practice the underlying innovation. However, there are business models that involve gathering licensing revenues even though the underlying innovation will not be practiced by either the licensor or

licensee. There is also a growing patent trade among both big and small companies, involving patents being purchased for enforcement purposes against others. However, just because a business model is viable does not mean that a company using that model should receive all possible remedies when only some remedies will suffice to compensate the party. If a patent owner is looking for monetary compensation, the nature of the compensation in a patent dispute may become very fact dependent and will require court intervention to protect the public. It does not follow that just because a right exists a particular remedy will be necessary to support that right. Courts are generally able to handle remedies for complicated sales calculations. If parties resort to the courts to determine a patent dispute, then courts should be allowed to award an appropriate remedy.

The call to require that courts award an injunction in all disputes because the property right allows it becomes difficult to justify in all situations. In the case of eBay or RIM, the patent holder may have the right to exclude; but a remedy involving an injunction becomes difficult to justify if the parties genuinely disagreed on infringement and an injunction award will result in a potential remedy completely out of proportion with initial licensing demands. In both the eBay and RIM decisions, a system-wide exclusion of infringing technology would have effectively shut down multi-billion dollar businesses heavily relied on by the public. Some will argue that these companies should just have paid the initial licensing demands. Others will point out that a valid patent holder is entitled to an injunction, specifically because a patent is property that entitles the holder to a property remedy. Others note that all three jurisdictions have voiced great objections to compulsory licenses. These are all valid points. But is difficult to justify a property remedy in all situations, particularly when the remedy is an equitable one and other equitable or legal remedies exist. The courts in all three jurisdictions have been reluctant to grant windfalls to patent owners as well.

While there has been a general reluctance to move away from granting an injunction as a standard patent remedy, in all three jurisdictions there have been situations where courts have exercised their discretion. U.K. courts have shown a willingness to consider alternatives to an injunction in exceptional situations, even if competing companies are involved. Canadian courts have awarded damages in lieu of an injunction for an NPE. U.S. courts have been more willing to grant damages in lieu of an injunction, but it has been in situations where the patent holder is

an NPE. While NPEs are not a new phenomenon, unforeseen business models have begun to take shape, using patents in unforeseen manners. The rise in alternative business models that use patents in ways similar to tradable commodities in the U.S. has caused great concern, particularly because of the separation of patent from its underlying innovation. There are companies which accumulate patents as part of a patent-enforcement business. The nascent auction markets have facilitated these practices. Large companies have created subsidiaries whose assets consist of the parent company's patent portfolio and whose sole purpose is to aggressively enforce its patents. These business practices may not have moved to Canada and the U.K. in significant numbers but attempts have been made. Whether NPE practices grow is another question, but the courts should be prepared to deal with some of the issues faced by U.S. courts.

It has been argued that given the search tools available in all three jurisdictions, there is no excuse to be unaware of the existence of a patent. There is some merit to this argument but it is also not feasible to expect every potential inventor, product user, or developer to perform an in-depth search before moving towards a new area of research. The sheer volume of research and innovation being performed in each of the three jurisdictions makes it very difficult to perform a search every time. Even if a search is performed, it is often difficult for inventors to determine whether their area of research actually falls within the language claimed by a patent. RIM and eBay had genuine disputes with NTP and MercExchange respectively, over infringement. Furthermore, not all inventors have the luxury of receiving legal opinions prior to commencing research and development. Small companies and sole inventors can easily fail to find an infringing patent given the esoteric language used to draft a patent. Large companies with dedicated patent departments may have a greater ability to perform a search; but it may not be practicable for even dedicated patent departments to search for infringement for every possible area of research, design, or method within a large company. This is not to say that companies, big or small, should not make an attempt to search for a patent: but given the proliferation of patent applications and grants, it may be difficult to effectively determine whether a technology infringes before making R&D investments. Furthermore, even upon notice from a patent holder about infringement, it is possible that there will be a difference of opinion about infringement.

Non-practicing entities are here to stay and the variety of business models will continue to grow as long as there is a potential for profit from patent ownership and as long as there are demands for services provided by many non-practicing entities. While courts should have flexibility to award remedies to patent holders and courts should consider the goals of the patent system when granting remedies, there are limitations to the effectiveness of a court's ability to grant remedies that encourage the goals of the patent system. If a right is infringed, the remedy for the infringement can only be awarded by agreement between the parties or through access to the courts. If there is no agreement, then the parties will resort to the courts. For a court to be able to award a remedy there must be access to the courts. It is the cost of court access which has given rise to business methods exploiting high litigation costs. Nuisance settlements are outside the power of the courts since settlements are reached long before the full dispute reaches the court.

The high cost of enforcing a patent through the courts is why business models such as patent trolling have managed to find patents to enforce relatively cheaply. The high costs are also a reason for their business success. These high litigation costs and the ultimate uncertainty of a court decision have often encouraged parties to settle before a final decision has been made. Many companies will often perform either a formal or informal cost-benefit analysis to determine whether it is cheaper to pay royalty demands or go to court. Such analyses have also encouraged aggressive patent enforcement by companies with large portfolios, particularly against smaller companies, because the cost of defending a suit, whether valid or not, against a portfolio consisting of thousands of patents is cost-prohibitive relative to a settlement payment. Success through the nuisance model has encouraged large companies to spin-off their portfolios into patent enforcement companies or subsidiaries. While businesses are finding success using such tactics, these practices are not necessarily encouraging innovation and are certainly not helping to commercialize the innovation. Given that patent rights have not necessarily been the encouraging force behind many startup companies, there is some question regarding the effectiveness of the current systems and even the ability of remedies to influence such practices. There is also a question of whether patents act as an encouraging force for large companies.

Patent troll profitability is greatest if a temporary injunction is awarded during the trial. Infringer business disruption is maximized and the infringers are most willing to meet the

demands in this situation. However it is rare that courts in all three jurisdictions will grant injunctions to non-practicing entities prior to determining validity and infringement. Once courts have decided that infringement exists, infringers are almost always willing to meet the demands of a patent holder if a permanent injunction threatens. If an infringer faces damages in lieu of an injunction, the willingness to settle will depend on the uncertainty of the court award for damages and the desire for parties to avoid a perceived compulsory license. Arguments that suggest that non-practicing entities will die away if injunctions are removed as a potential award are speculative. Business models will continue as long as there are profits to be made. That is, as long as royalty awards to non-practicing entities are not nominal or insignificant, allowing for sizeable profits above and beyond the amounts paid for the invention. The search for profitability through trolling tactics will encourage greater patent search expertise to find unexploited patents. It may also lead to patent troll business strategies that attempt to gauge profitability potential, by taking into account litigation risk in relation to the spread between the patent sale price and potential remedy awards. In situations where a patent is unexploited and owned by a sole inventor or small company, such patents may actually be obtained relatively cheaply and can result in large profits regardless of whether royalties have been calculated by the courts or through negotiations under pressure of a looming injunction.

A business strategy which has not been examined but which also exploits high litigation costs is one in which a large company fails to perform searches, relying on high litigation costs to minimize patent infringement suits. Such a strategy, combined with a settlement pool calculated into operating costs, may actually be a cheaper solution to litigation. However, such a strategy will still require a team of patent lawyers who can evaluate infringement claims and still use the threat of a court battle to minimize nuisance claims. This strategy will still require vigilance when it comes to patent infringement disputes with competitors and other large companies. More empirical studies should be conducted to determine the viability of strategies and the use of patents.

Judicial remedies have their limitations, particularly when limited access to the courts precludes many disputes from actually reaching judges. It has been shown that changes to remedies can have an impact on certain business strategies but those changes seem to have limited only certain extreme behavior. Since there are profits to be made even if judges award

damages in lieu of an injunction, patent trolling practices continue. Other business models have also sprouted to take advantage of high litigation costs and patent accumulation. These business models seem to be achieving profits, but there are still questions about whether these businesses are resulting in a net social benefit.

Several factors which were not considered in this work should be examined in future studies involving patent systems in Canada and the U.S. In the U.K., study of its ties to the European Union should include an examination of factors that are Europe wide. Increases in patent application volume and patent grant volume have led to a race for patents between competitors for cross-licensing royalty supremacy and for strategic supremacy. This volume has led to questions about patent quality due to patent office resource limitations. The limited ability of patent examiners to thoroughly examine patent applications raises questions about whether a patent is actually valid and whether a patented innovation is obvious in light of existing innovations. Furthermore, the volume has raised questions about patentable subject matter related to business methods, software, bio-chemistry and other areas. A deeper examination of patent business strategies also raises questions about the system. All of these factors may actually lead to greater patent exploitation but less actual innovation exploitation.

In Canada and the U.K., only a limited number of cases involving non-practicing entities have come before the courts. However, there are indications that non-practicing business models are testing the marketplace in both countries. Non-practicing entities include sole inventors, trolls, patent holding companies, and even large companies. The situation in the U.S. should be closely watched by Canadian and U.K. courts and legislators so that the intended goals of the patent system can be maintained in light of changing business strategies and models.

In the U.S. non-practicing entities have been active market participants for some time. It seems that all manner and sizes of companies are finding new ways to exploit patents and the patent system rather than exploiting the innovations on which the patents are based. Clearly there are profits to be made through the patents themselves. However, given that such profits were not necessarily anticipated by those who created the current U.S. Patent Act, especially in light of the goals which a patent system is supposed to achieve, it may be time to reconsider the system goals or to reconsider the system itself in light of current goals.

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