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EX-POST LIABILITY RULES IN MODERN PATENT LAW

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LIST OF ABBREVIATIONS

ACTA	ANTI-COUNTERFEITING TRADE AGREEMENT
BIRPI	INTERNATIONAL BUREAUX FOR THE PROTECTION OF INTELLECTUAL PROPERTY
CAFC	U.S. COURT OF APPEALS FOR THE FEDERAL CIRCUIT
CC	(ITALIAN) CIVIL CODE
CPC	(ITALIAN) CIVIL PROCEDURAL CODE
CPI	(ITALIAN) INDUSTRIAL PROPERTY CODE
EPLA	EUROPEAN PATENT LITIGATION AGREEMENT
EPO	EUROPEAN PATENT OFFICE
GADI	GIURISPRUDENZA ANNOTATA DI DIRITTO INDUSTRIALE
GATT	GENERAL AGREEMENT ON TARIFFS AND TRADE
IP	INTELLECTUAL PROPERTY
PARIS CONVENTION	PARIS CONVENTION ON THE PROTECTION OF INDUSTRIAL
R&D	RESEARCH AND DEVELOPMENT
TRIPS	TRADE RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS
USPTO	UNITED STATES PATENT AND TRADEMARKS OFFICE
WIPO	WORLD INTELLECTUAL PROPERTY ORGANIZATION
WTO	WORLD TRADE ORGANIZATION

Ex-Post Liability Rules in Modern Patent Law

Rosa Castro Bernieri

INTRODUCTION

The patents' right to exclude

A patent grants a right to exclude others from using the patented invention, i.e. an *ius excludendi alios*. The patentee's right to exclude is also interpreted as allowing the patentee that alleges patent infringement to ask before a court not only damage compensation but also remedies that aim at stopping the infringing activity, mainly, injunctive relief.

In economic terms, the exclusiveness of patent rights is conceived as a necessary mechanism to ensure further innovation, facilitate further research and efficient market transactions on patent rights. In fact, patent laws have been largely justified by mainstream economic theories as a mechanism to provide innovation incentives by securing temporary exclusive rights for a limited period. During that period of exclusivity, patents produce a deadweight loss that is in theory compensated by the benefits of fostering further innovation. In addition it is often argued that patents facilitate the process of bargaining in the market for technologies; are a mechanism to render the results of R&D available to the public through patent documents and provide a signalling mechanism that facilitates raising financial resources for R&D companies. More controversial is the contention that broad patent rights on first innovations are an efficient mechanism to induce sequential innovation, an argument put forward by the prospecting theory of patent rights. Yet this theory and its following critiques have importantly highlighted the special problems surrounding most modern technologies that occur sequentially or incrementally rather than through breakthrough advancements.

The patent system indeed attempts to balance two goals that are often in tension: providing innovation incentives and allowing access to patented technologies. Innovation incentives attain efficient outcomes from a dynamic efficiency point of view by allowing the creation of new and improved technologies and products. From a static efficiency viewpoint a loss occurs during the life of a patent due to the fact that patented products are sold at a price higher than marginal cost. Access to technologies allows final users to enjoy the benefits of innovative products but it also permits producers of second innovations to use and develop further technologies. While access to patented technologies is often restricted to allow innovation incentives in a pure trade-off between static and dynamic efficiency goals, when innovation is

sequential, both the incentives of first and second innovators are implied in such trade-off.

Notwithstanding the exclusive nature of patents, economic studies have indeed provided compelling reasons to transform or to mitigate the exclusiveness of patents, at least under specific circumstances. In spite of the enormous contribution of economics to the analysis of patent law, the results of many studies, especially those in the context of incremental innovation remain largely contradictory. At the moment, no study can claim to offer a definite answer on the overall effects of patent's exclusivity and limitations of such exclusivity and most studies rely on highly restrictive assumptions. While the majority of results depend on variables that would have to be empirically ascertained, their assessment is often impossible or too costly.

Whereas the exclusiveness of patent rights is generally assumed by the legal and economic scholarship, patent laws have historically established limitations on the right to exclude. Among other mechanisms to limit the exclusiveness of patents, different laws have devised compulsory licensing provisions. A compulsory licensing provision allows the use of a patented technology without the authorization of the patent owner. While it is often argued that this practice might affect innovation incentives by diminishing the expected payoff from exclusivity, numerous critics have also been formulated and arguments put forward for the inclusion of limitations and exceptions on the patentees' right to exclude. A similar effect to that of compulsory licensing is obtained when a court deciding on patent infringement limits the relief granted to owners to damage compensation and refuses to issue an injunctive order. This might happen especially in Common Law countries where injunctive relief is conceived as a harsh remedy governed by equity principles and hence, the award of injunctions is subject to a factual examination.

Property and liability rules

The field of economic analysis of law has formulated a framework, which is suitable to study the effects of the patent's right to exclude and the design of limitations such as compulsory licensing provisions as well as the aforementioned limits on remedies available for patent owners. The categorization of entitlements into property and liability rules is able to capture such differences and yet to recognize the underlying similarities between different legal provisions that transform a right to exclude into a right to receive a monetary remuneration. Indeed, law and economics scholars have categorized compulsory licenses as a liability rule mechanism by which legal entitlements –in this case those awarded by patent law- are protected against the unauthorized use by others only through the payment of remuneration. Along with patent compulsory licenses, there are other patent doctrines and even the application of antitrust statutes which can convert the patentee's right

to exclude into a liability rule. Conversely, a property rule puts the owner in the position of deciding whether to allow the use by third parties.

Law and economics has also developed an important analysis with regards to the most important problems with the use of such liability rules, namely the possibility that the remuneration for patent holders might be too low and/or might not reflect the subjective value of the patent hence diminishing innovation incentives. Also, the case is often made that liability rules might diminish incentives for efficient negotiation over the use of patent rights. In addition, it is often posed that liability rules might create uncertainty surrounding the enforcement of patent rights, hence diminishing innovation incentives.

Indeed, different legal doctrines embedded in patent statutes and case law coinciding with economic reasoning, allow what the law and economics literature describes as a switch from a property to a liability rule. Theoretical discussions and case law have also highlighted the main justifications for this switch and the main problems associated with the administration of liability rules. Notwithstanding the prolific quantity of studies on this subject and their application to Intellectual Property (hereinafter IP) and patents, this literature has also yielded highly contradictory conclusions that range from calls to the unlimited use of property rules to a more or less limited role for liability rules in the patent field.

As predictable, the practice of compulsory licensing and other patent doctrines permitting similar effects remain highly controversial. In particular, disagreement about the use of these provisions has emerged during the negotiation of patent harmonization treaties from the Paris Convention to the TRIPS Agreement and including the recent wave of free trade agreements and bilateral investment agreements covering IP issues.

Justification for this research

Recent events have stimulated the debate on the exclusivity of patents and the use of property and liability rules to protect patent rights. A first motivation for these events is extrinsic to patent law and reflects the evolution of modern technologies towards highly complex and multi-component products. A second motivation for such recent events is often found in the uniformity of patent laws (one-size-fits-all) that might impede its adaptation to such complex technologies, especially as it regards the protection of the right to exclude. A third reason arises out of this increasingly complex landscape with the rigidity of patent law, a combination that is said to enhance the opportunities for patent strategic behavior. Instances of patent strategic behavior might comprise the acquisition of patents as well as their strategic use, enforcement and litigation.

However, many gaps and misunderstandings remain with respect to the use of liability rules in the patent field. Confusion has been nurtured by economic as well as legal studies. Economic studies have led to ambiguous conclusions with regard to the effects of different patent doctrines, especially in settings characterized by incremental and sequential innovations. Misunderstandings have also been stimulated due to the confinement of legal discussions to the TRIPS Agreement and the use of compulsory licensing provisions solely in the context of developing countries and the protection of public health. In addition, the law and economics literature has largely reduced the definition of patent liability rules to compulsory licensing provisions. The study of liability rules provisions has been furthermore limited to the U.S. prevailing view, which does not contain special compulsory licensing provisions for patents and which until very recently, considered such provisions as a “rarity”¹. As a result, most law and economics studies focusing on IP and patent liability rules mainly referred to statutory compulsory licenses which exist in copyright laws or to the presence of compulsory licensing provisions in countries outside of the U.S. as a “rarity” of general patent law.

This gap has started to be filled, firstly by the insights of scholarly work and most recently by the debate following the U.S. Supreme Court decision in the *eBay* case². In 2006, the U.S. Supreme Court decided, in the context of a specific litigation between patentee *MercExchange* and the *eBay* company, that in patent law cases, injunctive relief should be granted upon the same grounds required in other law fields. As a result, courts deciding patent law cases were requested to use a factual test that assesses the convenience of granting an injunctive order upon the particular circumstances of the case. Such factual test had been bypassed for a long time and patentees had enjoyed a privileged position in litigation due to the emergence of a presumption that once a patent was infringed, the patentee had suffered irreparable harm, a prerequisite for obtaining injunctive relief. The *eBay* case confronted the U.S. Supreme Court with a “new” reality of patent law, in which patents are used strategically in order to extract large settlements. In this new landscape, patents are not viewed as instruments that generate innovation incentives as legal and economic theory sustain but simply as “bargaining chips” that companies can commercialize but also employ as a “sword” to be used in litigation rather than a “shield” to protect valuable innovations³.

¹ See *Dawson Chem. Co. v. Rohm & Haas Co.*, 448 U.S. 176, 215 (1980) at 215, stating that: “compulsory licensing is a rarity in (the U.S.) our patent system”.

² *eBay Inc. v. Mercexchange*, 126 S. Ct. 1837 (2006).

³ See *MercExchange, L.L.C. v. eBay Inc.*, 500 F. Supp. 2d 556 (E.D. Va. 2007), which revised the case on remand in the light of the U.S. Supreme Court decision the court considered that: “Such consistent course of litigating or threatening litigation to obtain money damages by a company of two employees, the inventor of the patents, a former patent attorney, indicates that **MercExchange has utilized its patents as a sword to extract money rather than as a shield to protect its right to exclude or its market share,**

Applying the *eBay* precedent, an important number of decisions have denied injunctions for owners of valid and infringed patents, thus changing a “traditional” practice in the U.S. against any form of compulsory licensing or forced access to patented inventions. As a consequence, many scholars and political actors have questioned such move as a radical change. Some critics turned to property rights theory and the necessity of applying it to patent law. Yet others have taken the opportunity to remind of the differences between property and IP that justify a wider use of liability rules for IP rights.

Although this debate has not attained an equivalent impact in Europe, the “exclusivity aspect” of patents has been also recently put in evidence with regard to an alleged decline in the quality of patents as well as an increase in the number of cases reflecting potential strategic behavior practices and litigation from patentees. The European patent landscape is however, largely fragmented in spite of the European Patent Convention and the creation of an European Patent Office. Patents remain territorial rights throughout Europe and importantly, patent litigation is decentralized and pertains to the jurisdiction of each country in the absence of a Community Patent and a unified patent jurisdiction as foreseen in the project for a European Patent Litigation Agreement (hereinafter EPLA). Surprisingly, the problems surrounding the indiscriminate use of property rules to protect patents and the increasing impact of patent strategic behavior have been recently interpreted as plainly favoring the abovementioned projects for further patent harmonization. Clearly, the problem of this Thesis only refers to particular patent doctrines and provisions allowing non-authorized uses upon the payment of compensation. Nonetheless, a warning emerges from this analysis against potentially curtailing the use of such provisions and doctrines through forthcoming harmonization. As it will be highlighted in the analysis that follows, it is the design of such doctrines and provisions that might enable or restrain their appropriate use when such use is justified upon efficiency reasons and other public interest purposes.

Such recent discussions confirm that innovation, technological changes, groundbreaking decisions and proposals for reform call for a constant assessment of the patent system. While economics has largely contributed to the understanding of IP, its effects and the way in which policy levers⁴ shape

reputation, goodwill, or name recognition, as MercExchange appears to possess none of these” (emphasis added).

⁴ Policy levers refer to the design tools that policy makers have at their disposal to adjust patent or IP policy in general. This name was initially used by Pamela Samuelson & Suzanne Scotchmer, *The Law and Economics of Reverse Engineering*, 111 YALE L.J. 1575, 1581 (2002). See also Dan Burk & Mark Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1638–39 (2003).

innovators' incentives, the study of enforcement mechanisms, limitations and defenses, including compulsory licensing provisions and other patent liability rules have recently brought new perspectives to important national⁵ and international debates. Discussions on a patent reform in the U.S., European harmonization plans of a Community Patent and the EPLA as well as international debates within the WIPO⁶ and WTO have all acknowledged possible imbalances of the patent system as well as the potential role of liability rules. These debates need to be constructed on the basis of policy-oriented analysis, including the economic analysis of law, which in spite of being one out of different alternative approaches, is widely recognized in all negotiation forums. Indeed, while economic reasoning can either contradict or support other policy goals of public interest, it is growingly recognized as a fundamental tool to assess the costs, benefits and unintended effects of any patent reform on private parties and society, both at national and global forums of negotiation.

Research question

This Thesis aims at contributing with the debate surrounding the exclusiveness of patent rights. In this sense, the Thesis examines whether and in which specific cases is it efficient to transform the patentee's right to exclude into a right to receive remuneration, i.e. a liability rule. This question is both timely and controversial. Controversial, as it was already mentioned that the issue of property vs. liability rules in patent law has been historically debated with regards to the use of compulsory licensing provisions and more recently proposed in the context of liability rules used by courts crafting the remedies for patent infringement. Controversy also surrounds the consequences of this debate within the broader context of theoretical questions on the nature of IP rights and the advantages and disadvantages of applying property law insights to IP law, the justification for patent protection and the interface between rights and remedies, e.g. whether it is the right that determines the remedy or the

⁵ Carl Shapiro, *Injunctions, Hold-Up, and Patent Royalties* (Aug. 2006), available at <http://faculty.haas.berkeley.edu/SHAPIRO/royalties.pdf>, last accessed on August 10, 2009, stating, "the U.S. patent system is widely seen as out of balance". See also FEDERAL TRADE COMMISSION (OCTOBER, 2003), TO PROMOTE INNOVATION: THE PROPER BALANCE BETWEEN COMPETITION AND PATENT LAW AND POLICY, available at <http://www.ftc.gov/os/2003/10/innovationrpt.pdf> and NATIONAL ACADEMIES OF SCIENCE (2004), A PATENT SYSTEM FOR THE 21ST CENTURY, available at [http://www.nap.edu/books/0309089107/html.concerns about bad quality of patents issued by the Patent and Trademark Office](http://www.nap.edu/books/0309089107/html.concerns%20about%20bad%20quality%20of%20patents%20issued%20by%20the%20Patent%20and%20Trademark%20Office).

⁶ See WIPO, *Exclusions from patentable subject matter and exceptions and limitations to the rights* (SCP/13/3) Standing Committee on the Law of Patents, Thirteenth Session, Geneva, March 23 to 27, 2009, available at: http://www.wipo.int/edocs/mdocs/scp/en/scp_13/scp_13_3.pdf. See also the discussions related with the Proposal for a Development Agenda within the WIPO (2004), Harmonization of Substantive Patent Law (WIPO), available at www.wipo.int and the Final Report of the WHO Commission on Innovation, Intellectual Property and Public Health, available at: <http://www.who.int/intellectualproperty/en/>.

remedy that conceptualizes the right. From a policy-oriented perspective, the debate on the use of property and liability rules for patent protection is fundamental for the interpretation of limitations and exceptions in patent law, especially in the light of controversies regarding the interpretation of the TRIPS Agreement. This global Agreement set a minimum and global level of harmonization with regard to IP rights, including significant provisions on patent law; yet it left the possibility for countries to apply more rigorous standards within the limits set for by the same Agreement and also a significant space for a flexible application of its standards. Many obligations deriving from the TRIPS Agreement have been the object of diverging views and some of them, especially with regards to the limitations and exceptions to rights conferred, have confronted countries with problems of interpretation.

The research question of this Thesis is also timely, as the 2006 *eBay* decision by the U.S. Supreme Court, which arrived at the beginning of this research project, actually opened the possibility for the use of liability rules for patents in the U.S. As a consequence of the simple re-interpretation of a long-standing traditional principle of equity which governs the grant of injunctions, a major change in patent law followed this decision. Whereas the effects of post-*eBay* litigation are still unclear, this Thesis examines an important number of decisions granting and denying injunctive relief after a factual consideration by different U.S. courts⁷. This important patent policy change has occurred in the context of several other decisions by the U.S. Supreme Court, which have presumably aimed at restraining an increasingly protective trend initiated after the creation of the Court of Appeals for the Federal Circuit (hereinafter CAFC), which centralized the appeal of patent cases in the U.S.⁸. In a somehow surprising way, the U.S. Supreme Court has granted *certiorari* in several occasions during the last few years, and it has reiteratively compressed what was perceived as an unwarranted extension of patents rights. In several cases, the Supreme Court has asserted the importance of using standards rather than rigid rules as tools to interpret various patent doctrines⁹. Such decisions have been interpreted as redressing a lost balance in the U.S. patent system¹⁰.

At the same time, the European patent landscape is facing important challenges. Whereas the latest discussions have focused on the problems due to the fragmented system and the projects of harmonization, these debates confront the difficult task of harmonizing many substantive patent law

⁷ Decisions applying the *eBay* precedent were monitored since 2007, and a summary of the most important cases examined is contained in the Appendix of Chapter III.

⁸ See *infra* note 314.

⁹ See the *KSR* decision *infra* note 314, with regard to the non-obviousness standard and the *eBay* decision, *supra* note 2, with regard to the equitable standard to decide the grant of injunctions.

¹⁰ In addition, the CAFC has itself issued an important decision in the case of *Seagate*, see *infra* note 472 .

standards among European countries before proceeding to create a patent valid throughout the community and enforced by a centralized court.

The controversy of this Thesis involves also an important global dimension. At the international level, the question is mostly one of interpretation of the TRIPS Agreement with regard to the space allowed to the practice of compulsory licenses in their traditional way (Article 31 of the TRIPS Agreement) and to the possibility of denying injunctions for infringed patents and substituting a property rule with the protection through a liability rule (Article 44 of the TRIPS Agreement). In this context, the objectives set for by article 7 of the same Agreement suggest that such interpretation should be guided by the aforementioned balance between innovation incentives and access to innovations as well as suggest a primordial role for economic analysis in the interpretation of the Agreement¹¹:

“The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, **to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations**” (emphasis added).

Further harmonization at regional and global levels will have potential consequences in the context of social and economic welfare as well as economic development. Hence, it would be desirable that any such proposal be addressed in the light of a balanced patent system that takes into account all stakeholders. In this sense, this Thesis aspires at contributing towards such interpretation of the patent system.

Outline of the thesis

The structure of the Thesis proceeds as follows. The first chapter puts forward a general framework for liability rules in patent law, in a sense broader than that developed by previous research. For these purposes, the insights of the law and economics literature on property and liability rules are brought together with the literature on traditional compulsory licensing and the most recent use of patent liability rules contained in the law of remedies of common law countries.

¹¹ The interpretation of International Treaties is based upon the text of the Agreement as well as the preambles that might further clarify the intention of the contracting states. Nonetheless, it is usually argued that articles similar to article 7 of the Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, World Trade Organization Agreement, Annex 1C, available at: http://www.wto.org/english/tratop_e/trips_e/t_agm0_e.htm (hereinafter the TRIPS Agreement) do not contain operational rules.

Both property and liability rules are then analyzed in their efficiency outcomes both at a general level and in the specific IP and patent contexts. In this latter framework, property and liability rules are examined from both a substantive and remedies-based perspectives. Secondly, the chapter compares different types of liability rules sharing a similar rationale while differentiating these rules from systems that are justified upon different policy goals such as public interest. Thirdly, the theoretical framework of property and liability rules is confronted with the modern landscape of the patent system. A particular emphasis is given to the impact of remedies in current discussions about the alleged failure of patent systems to provide efficient incentives within a changing technological and economic landscape.

This critical review of previous literature and research aims at contributing to this dissertation and to further debates by describing the main insights that will guide the analysis in the next chapters and by identifying loopholes and empty spaces for scholarly contribution. The chapter mainly adds to current theoretical and policy debates by identifying several flaws in the property and liability rules literature as applied to patent law. Firstly, and in contrast with the profuse and long-standing presence of liability rules in patent law, this literature has often condemned its use based upon U.S. practices, which have, simultaneously changed in a dramatic way over the last years. Secondly, property and liability rules are often treated in the literature as complementary tools even in the property law field. In contrast, scholars have followed a rather different method in their application to IP and patent law. Thirdly, the chapter proposes a categorization of two different types of liability rules as a suitable framework to classify liability rules in the IP field, i.e. *ex-ante* and *ex-post* liability rules. Fourthly, the chapter suggests that in the light of the TRIPS Agreement, current patent law only admits or at least markedly favors the use of the *ex-post* type of liability rule.

The second chapter provides a historical view on the use of patent liability rules, focusing on the legal as well as the economic reasoning surrounding their use. The chapter discusses the origins of patent law and compulsory licensing provisions, the process of international patent harmonization and negotiations preceding and following the TRIPS Agreement from the perspective of the property and liability rules debate. According to the enhanced definition of patent liability rules provided in the first chapter, a discussion of the pertinent enforcement rules devised in the TRIPS Agreement, especially with regards to the issuance of injunctions and the possibility of substituting injunctions with damage compensation is also included. Secondly, the chapter analyzes the debates following the implementation of the TRIPS Agreement both with regards to compulsory licensing provisions and patent remedies. Thirdly, a brief overview of patent harmonization in Europe and the implementation of the Enforcement Directive pertaining to the property and liability rules debate are provided. Finally, a brief outline is provided on the different historical and

legal treatment of injunctions and damages in Civil law and Common law countries. This historical overview is important in order to understand both the origin of liability rules as a policy design mechanism to balance the goals of patent law with the protection of competition and the avoidance of strategic behavior as well as the evolution and implementation of different types of patent liability rules. History is also central to understanding the legal divergences and convergences in the use of remedies in general and their special evolution in patent law both in Civil law and Common law countries, which is further analyzed in the third chapter.

The third chapter aims at contributing to the debate about property and liability rules in patent law precisely by examining the use of *ex-post* liability rules administered by courts in three selected countries: the U.S., the U.K. and Italy. The chapter provides a comparative law and economics analysis of patent law provisions and case law allowing the switch from a property to a liability rule *ex-post*. The concept of *ex-post* liability rules serves to highlight the fact that, in spite of originating either in law provisions or in case law, all the rules examined are judicially-administered and taken on a case-by-case basis and thus resemble much more accurately the type of liability rules used in the entitlements literature, in comparison, for instance with *ex-ante* compulsory licenses. Moreover, the justification of such rules is often based on the need to avoid strategic behavior and bargaining collapse in the senses of the debate about property and liability rules, rather than on the impact, for instance, of high search costs.

Three particular cases are examined: 1) compulsory licensing provisions for lack of working¹²; 2) compulsory licensing provisions for a patent that depends on the use of a previously patented invention; and 3) damages substituting injunctive relief when this latter is denied after a judicial finding of validity and infringement of a patent, which is typically allowed by equitable doctrines of Common Law countries. The contrasting vision of Civil Law countries on the use of remedies, including injunctive relief is also discussed.

¹² The term “lack of working” or “failure to work” refers to the absence of exploitation or commercialization of a patented invention. The term is often used in relation with “local working” or “national working”, that is, a requirement by which the patentee is obliged to work her patent in the territory of the state granting patent protection or otherwise risk that the patent might be subjected to a compulsory license. In order to determine whether a patent is being sufficiently worked, some legislations also refer to whether their exploitation is able to meet consumer’s demand and moreover, some patent laws require that the public demand is met at reasonable prices. Article 5-A of the Paris Convention for the Protection of Industrial Property, Mar. 20, 1883, 828 U.N.T.S. 307 (revised at Brussels on Dec. 14, 1900, at Washington on June 2, 1911, at the Hague on Nov. 6, 1925, at London on June 2, 1934, at Lisbon on Oct. 31, 1958 and at Stockholm on July 14, 1967) in fact establishes that: “Each country of the Union shall have the right to take legislative measures providing for the grant of compulsory licenses to prevent the abuses which might result from the exercise of the exclusive rights conferred by the patent, for example, failure to work”.

The chapter finds that in spite of the new harmonized framework set up by the TRIPS Agreement, the conditions to opt for a liability rule diverge widely within national laws. However, in all the aforementioned cases, courts and agencies are allowed to opt for protecting a patent through an *ex post* liability rule and face similar obstacles in the application of a case by case reasoning. In addition, and as pointed out by the law and economics literature, calculating the compensation due to the patent holder and fostering efficient bargaining between the parties are important concerns in all the systems under study. The chapter also highlights how law and economics contributions have typically focused on U.S. law and practice, in noticeable contrast with the overly importance of international Treaties regulating substantive and enforcement patent law and the complex and diverse rules in place in different countries.

The fourth chapter aims at broadening such seemingly restricted view by applying the insights developed by the law and economics literature to the particular features of the selected patent systems and international framework discussed in the previous chapter. The chapter analyzes the standard models used by several law and economics scholars in order to study patent hold-ups and discusses their principal assumptions and results. Secondly, the chapter confronts such assumptions and results with the most important cases described in the previous chapter in order to discuss the grounds for using *ex post* liability rules in efficiency terms. Such grounds include the most recent discussions about patent hold-ups, the emergence of patent trolls and in general, of patent strategic behavior. The chapter proposes to broaden discussions on the grounds allowing the use of *ex-post* liability rules according to the experience about emerging practices of patent strategic behavior both in the U.S. and Europe.

The fifth chapter discusses the issue of calculating the appropriate compensation that substitutes a property rule, which is one of the most important critiques against the use of liability rules in patent law. The chapter discusses the theoretical insights about property and liability rules and applies them to the different options with regard to this calculation of such compensation. Afterwards, the chapter concludes by comparing the different available rules for patent protection in terms of costs and benefits.

The general conclusions of this Thesis are various and pertain to the legal as well as the law and economics field. Most of the conclusions and suggestions can be applied only to this specific research and hence to the analysis, in law and economic terms of the use of property and liability rules in patent law. However, some of the conclusions also refer to more general questions such as whether property law should be necessarily reflected in IP law or whether the object and aims of IP protection differ so importantly that the benefits of applying the insights of property law to IP law will be outweighed by the costs

of so doing. Such arguments were often made in the context of the *eBay* litigation against the curtailment of injunctive relief for patentees. However, the same arguments have led to contradictory calls for applying the insights developed in property rights law to IP and at the same time, a call against using general rules as the equitable evaluation of injunctions by judges in common law countries that also applied to tangible property. A closely related question, which is often posed at the intersection of Antitrust and IP law, is whether patent rights deserve a differential treatment. If the answer is affirmative, it is nevertheless debated whether such differential treatment should tilt towards more or less protection than that granted to other property. In answering this question, many analysts have rushed in concluding that to protect innovation incentives; patents should enjoy deference in the application of antitrust statutes. But such conclusions ignore the access side of the patent balance, so that in some cases, the application of antitrust law might affect innovation incentives but this might be nevertheless less costly than obstructing access to further innovation. In this sense, access does not only mean to diminish prices and to correct market failures in static efficiency terms but also the possibility for further innovators to use patents and continue the path towards scientific and technological progress, hence deriving potential gains to the market in terms of dynamic efficiency as well.

CHAPTER I

PROPERTY AND LIABILITY RULES: IMPLICATIONS FOR PATENT RIGHTS

1 Introduction

Patents are defined both in the legal and economic scholarship as exclusive rights¹³. Exclusivity has multiple consequences, *inter alia*, that any potential user must obtain previous consent from the patent owner, that the terms of such consent, including the price for using the patented invention, shall be fixed through voluntary negotiations and that in case of infringement, a patentee can solicit from a court, remedies that compensate for any non-authorized use but also such measures capable of stopping and avoiding future infringement as well as such remedies that put the patentee “back” in the position she enjoyed but for the infringement.

Patent laws have nevertheless persistently provided for the possibility to transform the right to exclude of patentees into a right to receive remuneration i.e. what the law and economics scholarship denominates a “liability rule”. Unsurprisingly, such regimes have been subject to an extensive and ongoing controversy. In this sense, patent law provides a unique environment to apply and test the –contentious- insights of the law and economics literature on entitlement protection. This branch of study focuses on the use of alternative remedies for the protection of “entitlements” illustrating the use of property and liability rules across all legal fields and suggesting that the choice between remedies should be guided by the presence and importance of transaction costs.

In fact, recent discussions in the patent field about the emergence and increasing impact of strategic patenting and litigation, which are evidenced in a set of broadly discussed case law and debates about patent reform and harmonization have all addressed the question of when –if ever- should the patentee’s right to exclude be transformed into a right to receive monetary compensation¹⁴.

¹³ See article 28 of the TRIPS Agreement, *supra* note 11.

¹⁴ For claims about the need of a Patent Reform in the U.S. see JAMES BESSEN & MICHAEL MEURER, *PATENT FAILURE: HOW JUDGES, BUREAUCRATS AND LAWYERS PUT INNOVATORS AT RISK*, Princeton University Press, 1-331(2008). For global discussions see WIPO, *The 45 Adopted Recommendations under the WIPO Development*

This chapter reviews the existing literature on the subject while attempting to put forward an alternative framework for understanding the use of liability rules in patent law. For these purposes, we bring together the insights developed with respect to traditional compulsory licenses as well as the most recent literature focusing on another type of liability rule in patent law based upon the law of remedies of common law countries. Both types of entitlement protection rules, i.e. property and liability rules are analyzed through their efficiency outcomes and from a dual –substantive and remedies based– perspective. Secondly we compare different types of liability rules sharing a similar rationale while differentiating them from systems that are justified upon different policy goals such as the public interest. Thirdly, the theoretical framework of property and liability rules is confronted to the modern landscape of the patent system. A particular emphasis is given to the impact of remedies in current discussions about the alleged failure of patent systems to provide efficient incentives within a changing technological and economic landscape. The aim is to build up a more coherent framework that can be applied to examine the effects of property and liability rules in patent cases.

The chapter is divided as follows. The second section introduces the economic approach to law as applied to patents and discusses the economic rationale of patent law making a distinction between the goals of substantive and enforcement law. Section three discusses the law and economics literature on property and liability rules and its main positive and normative insights. Section four introduces the property v. liability rules debate within the field of Intellectual Property (hereinafter IP) rights highlighting the common arguments for and against the use of liability rules in this field. Section five focuses on the use of liability rules in patent law. It applies the property and liability rules framework to currently debated issues in patent law, in order to identify the economic grounds for switching into liability rules and the main problems with the switch. The case is made, that as recently stated by the U.S. Supreme Court, the inherent economic function of patents has deeply changed. This, along with a global trend towards strengthening patent rights and diminishing the space for flexibilities, might require that a strong presumption favoring property rules in the patent context be weakened under certain circumstances.

Agenda, in WIPO about the Development Agenda, available at: <http://www.wipo.int/export/sites/www/ip-development/en/agenda/recommendations.pdf>, stating that “The WIPO Secretariat(...)should address in its working documents for norm-setting activities, as appropriate and as directed by Member States, issues such as: (a) safeguarding national implementation of intellectual property rules (b) links between intellectual property and competition (c) intellectual property -related transfer of technology (d) potential flexibilities, exceptions and limitations for Member States and (e) the possibility of additional special provisions for developing countries and LDCs. See also WIPO, *Exclusions From Patentable Subject Matter And Exceptions And Limitations To The Rights*, supra note 6.

2 Economics of Patent Protection

Economic analysis has played an important role in the IP field long before the emergence of the “law and economics” movement.¹⁵ In addition to the specific analysis of IP rights, the application of the insights of the economics of property rights into this field has been defended by several scholars¹⁶. Moreover, the economic analysis of patent law has experienced an exponential growth and increasing specialization with regard to the different subject areas as well as with respect to policy design and the specific legal or judicial doctrines that might play a role in such design.

In this sense, the growing importance of the “law and economics” or “economic analysis of law” movement has probably played an important role in such refinements. The economic approach to law can be defined as the application of economic theory -especially but not only of price theory- to evaluate the formation, structure, processes and impact of the law and legal institutions¹⁷. Price theory relies on the concepts of scarcity of resources and focuses on the problem of making choices in order to allocate such inherently scarce resources¹⁸. In making choices, individuals must assess each alternative in a presumably rational way, basing their decisions on the attempt to maximize benefits and minimize their costs. Whether they are trying to maximize utility, wealth or profits, the assumption is that individuals will generally make decisions in a rational way¹⁹.

¹⁵ WILLIAM LANDES AND RICHARD POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW*, Harvard University Press, (2003) at p. 1 arguing that the idea that IPRs might be needed to have incentives to create, dates from the Middle Ages in the Venetian Patent Act of 1474 and English Statute of Monopolies of 1624 among others, and referring discussions by Smith, Bentham, Mill, Pigou and Taussig and Plant around the 1930's. See Arnold Plant, *An Economic Theory concerning Patents for Inventions*, 1 *ECONOMICA* 30 (1934), reprinted in David Vaver (Editor), *Intellectual Property Rights, Critical Concepts in Law* (2006), Volume 3, at p. 45; arguing that “we are surely entitled, therefore, to attribute the existence of the patent law to a desire to stimulate invention”.

¹⁶ See LANDES AND POSNER, *supra* note 15, at p. 8, referring to the entitlements literature and arguing that: “this fundamental insight of the economic analysis of the common law is applicable to intellectual property and illustrates one of the themes of the book –that the economic principles that inform and explain property law can guide thinking about intellectual property as well”. See also Epstein, *infra* note 65 and accompanying text.

¹⁷ See CENTO VELJANOSKY, *ECONOMIC PRINCIPLES OF LAW*, Cambridge University Press (2007), at p. 19.

¹⁸ While price theory studies the interaction of units in the economy, including firms, consumers or individuals, its insights have been extended to analyze different concepts including the behavior of states within International Law.

¹⁹ See VELJANOSKY, *supra* note 18, explaining how rational choice theory relies at the same time on the assumptions of substitutability, meaning that goods can substitute one another at the margin; marginality which means that in any activity to obtain the maximum utility or profit, they must be allocated in a way that the marginal benefit from the last unit of a resource is equal to its marginal cost. However, behavioural law and economics studies have questioned the rationality of individuals, and especially of consumers. For an overview on this field see CASS SUSTEIN (ED.), *BEHAVIORAL LAW AND ECONOMICS*, Cambridge University Press, 2000.

While economics studies the choice of individuals and firms with regard to the allocation of resources, law can be regarded as a means of allocating rights or entitlements. Policy makers might want to achieve efficiency through the law, regulations and decisions. Furthermore, any law or judicial decision has effects on the incentives of individuals, firms and states. Hence, the economic approach to law considers law, including patent law, as a set of incentives. Whereas it is often said that economics uses an *ex ante* approach and conversely, law examines matters from an *ex post* view, it has been recently acknowledged that “many economic and legal problems arise from the temporal nature of economic activity and require a trade-off between *ex ante* and *ex post* efficiency”²⁰.

In spite of a growing consensus on the importance of evaluating the outcomes of legal rules and court decisions on efficiency grounds, the concept of efficiency is not as straightforward as it might seem at first sight²¹. Efficiency can be interpreted as requiring resources such as goods, services and entitlements to be allocated to the highest expected valued uses. In addition, efficiency relies on the concept of opportunity cost, i.e. the cost of using a resource defined as the return that such resource would have obtained in its best possible alternative use²².

But the concept of efficiency is often referred to, either in a static or in a dynamic context. In the light of the differences between allocative and dynamic efficiency, trade-offs might arise and in fact do often arise between these two perspectives. Static efficiency assumes a given level of technology and asks whether consumers and producers’ decisions take into account the real opportunity costs of resources. It comprises two different aspects; allocative efficiency, which is achieved when the price of the good equals its marginal cost²³ and productive efficiency, which entails that firms producing the goods are doing so at the minimum cost.

Dynamic efficiency takes into account how resources are used to expand production possibilities and capabilities, a process that is influenced by

²⁰ VELJANOSKY, p. 35, highlighting also how the “*ex ante* vs *ex post* distinction arises in the design and exploitation of IPRs” where the trade-off between *ex ante* dynamic efficiency and *ex post* allocative efficiency defines the IPRs trade-off.

²¹ See LANDES AND POSNER, *supra* note 15 arguing that efficiency is an objective concept whereas fairness is indefinite: “economics is complex and difficult but it is less complicated than legal doctrine and it can serve to unify different areas of the law”.

²² See Pierre Régibeau and Katharine Rockett, *IP and Competition Law: An Economic Approach*, p. 505-552, in *THE INTERFACE BETWEEN INTELLECTUAL PROPERTY RIGHTS AND COMPETITION POLICY*, Edited by Steven D. Anderman, Cambridge University Press, 2007 at p. 506.

²³ “As the cost of using a resource is equal to the benefits that it would have generated if it had been employed in another sector, the allocation of resources should be such that their marginal returns are equated across sectors”. See Régibeau and Rockett, *Ibid*, at p. 507

incentives to invest, Research and Development (hereinafter R&D) decisions, and innovation²⁴. The industrial organization literature highlights the contradictory effects and difficulty of aligning these concepts. When a new product is developed, it is often the case that the producer cannot appropriate all benefits the product creates for consumers so that a (non) appropriability effect might lead to insufficient investment incentives²⁵. New products, on the other hand, usually reduce the sales and profits of firms selling older products. Thus, a new product might impose losses on other firms which are not taken into account by the innovating firm and cause a business stealing effect that might lead to excessive investment²⁶. When these effects are aggregated across sectors, the result is that “even in the absence of any policy intervention, one would expect over-investment in some sectors and under-investment in others”²⁷.

Furthermore, in order to decide whether a law or a legal reform under analysis would be efficient there are alternative thresholds that might be taken into account. Pareto efficiency, or the first best theory, asks for policy changes that will improve the benefits of one party without decreasing benefits for any involved party. However, under a Kaldor-Hicks approach, efficiency can also be attained when the benefits accrued to one party surpass any potential loss for another party so that –at least hypothetically- there could be compensation from the winners to the losers while gains are still achieved in terms of total surplus. This criterion, as we will discuss below, is of special importance in deciding between policies that affect both innovators and users but also in those affecting first and second innovators.

²⁴ See Regibeau and Rockett, *supra* note 22 at p. 507 arguing that “there is no universally accepted definition of dynamic efficiency” and proposing one that “relates to any kind of investment decision”.

²⁵ See JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION*, The MIT Press, (2001), at p. 391, describing that “socially, a monopolist has too low an incentive to introduce a new product, because he cannot fully appropriate the social surplus (unless he can price-discriminate perfectly)”.

²⁶ See Vincenzo Denicolo, *Do Patents over-compensate innovators?*, *Economic Policy*, VOLUME 22 ISSUE 52, Pages 679 – 729, explaining that “Another reason why the patentee’s reward may exceed what he contributed to society is business stealing. If before the innovation the industry comprises incumbents holding some market power, the innovator may be able to steal at least part of the rents previously earned by those incumbents”. See also JEAN TIROLE, *supra* note 25 at p. 399, explaining that the business-stealing effect within the context of patent races as “by increasing its R&D effort, a firm reduces the probability of its rival’s obtaining the patent, and a typical result is that firms engaged in a patent race overinvest in R&D (if we assume away the appropriability effect) and thus duplicate too much of the research effort”.

²⁷ Such differences between the private and public returns on investment can also result from public policy measures, first and foremost on the application of industrial property laws, including IPR and competition laws. See Régibau and Rockett, *supra* note 22 at p. 508.

2.1 The economic rationale of patents

Economic studies have advanced various utilitarian rationales for patent protection²⁸. The reward theory poses that IP rights, and specifically patent law, aims at giving incentives to innovate and thus, at encouraging investment in R&D activities. The general argument is that such incentives are necessary because information and knowledge-based products are public goods in an economic sense, which means that they are non-rival in their use and non-excludable in the absence of IPR laws²⁹. Since R&D activities entail sunk costs, absent patent protection, anyone could free-ride from another's invention³⁰. Since the process of inventing and developing innovative products is costly, incentives would be insufficient and there would be under-investment in R&D in the absence of appropriate incentive mechanisms³¹. The patent system is hence justified as providing the *ex-ante* incentives necessary for optimal investment in R&D while at the same time, it is acknowledged that patent rights cause a deadweight loss due to the temporary monopoly allowed under its span.

²⁸ Other non-utilitarian theories that justify Intellectual Property Rights based their assertions on diverse concepts such as natural rights, unjust enrichment, personhood concept, libertarian ideals, distributive justice goals, democratic, radical, and socialist and ecologist theories. See Peter Menell, *Intellectual Property: General Theories*, 1600 ENCYCLOPEDIA OF LAW AND ECONOMICS, available at: <http://encyclo.findlaw.com/1600book.pdf> at p. 156-163, discussing utilitarian and non-utilitarian theories.

²⁹ For the general concept of knowledge and information as public goods in the economic sense and the explanation of IPRs and patents as a mechanism to foster innovation incentives see SUZANNE SCOTCHMER, *INNOVATION AND INCENTIVES*, MIT Press (2004), at p. 31-32. For a general discussion on the economic theories of patent law see HAHN, ROBERT, *ECONOMICS OF INTELLECTUAL PROPERTY PROTECTION IN INTELLECTUAL PROPERTY RIGHTS IN FRONTIER INDUSTRIES: SOFTWARE AND BIOTECHNOLOGY*, AEI Brookings Joint Center for Regulatory Studies, Edited by Robert Hahn, at p. 14-16 and Peter Menell (2008), *supra* note 28.

³⁰ This argument entails that: 1) sunk costs are significant as to affect innovation incentives, which means they are significant in comparison with prospective profits from the innovation, i.e. sunk costs will affect the decision whether to invest in R&D, which fairly depends on the technological sector; and 2) that anyone can "read" on the innovation, in the sense of reverse engineering and being able to imitate in a way that free rides on the effort by innovators. This latter requirement would mean that secrecy is not an option or first-mover advantages are not significant. In fact, as we will explain below, these two factors diverge across different industries, affecting innovation incentives and the role of patents in varying degrees.

³¹ Economic studies also acknowledge the existence of alternative incentive mechanisms that coexist with IP rights (prizes, public-funded research), which have been deemed as potentially superior in specific cases such as life-saving drugs, drugs for neglected diseases and those mainly affecting poor countries. Since the focus of this Thesis is on the effects of specific patent doctrines in the design of optimal patent policy, we deliberately leave aside considerations about alternative incentive mechanisms. This choice is motivated on the one hand by the overwhelming presence of IP and patent rights in global and national laws and on the other hand by the necessity of confining the study within reasonable limits and is not meant to suggest that patents might or not be superior to other mechanisms under certain circumstances, even those similar to the ones presented in this study. For a general discussion on this matter see SCOTCHMER, *supra* note 29, p. 116.

Nevertheless, the causal relation between a stronger patent system and more innovation has been questioned in many industries. Reliance in patent rights seems to play its most significant role within the pharmaceutical, chemical and biotech sectors, where it is also said to be necessary in the light of the enormous costs of R&D and those related to screening efficacy of new products and obtaining their marketing approval³². Of course the subtle line of how much protection should the IP system give to right-holders is still imprecise. Paradoxically, the pharmaceutical and biotech sectors are involved in the production of potentially life-saving technologies; making patents more controversial exactly where they play a more fundamental role³³.

A second theory proposed to justify patents is the prospect theory, which sustains that patents are valuable because they facilitate efficient commercialization of technologies and hence provide a boost for follow-up innovation. The normative suggestion of this theory is that pioneers or first innovators should be granted broad and strong rights in order to foster subsequent development of technologies³⁴. The theory assumes that social and private interests of the patentees are aligned; however these statements are controversial since stronger patents or more patents can on the one hand facilitate licensing while on the other hand they might block or deter further development of technologies³⁵. Nonetheless, Kitch's prospect theory approaches this problem by relying on an optimistic view about licensing that has been put into doubt³⁶.

³² See Wesley M. Cohen, Richard R. Nelson & John P. Walsh, *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not)*, NATIONAL BUREAU OF ECONOMIC RESEARCH, Working Paper No. 7552 (2000), (finding find that firms protect the profits of their inventions through patents, secrecy, lead time advantages and the use of complementary marketing and manufacturing capabilities and that secrecy and lead time tend to be emphasized most heavily whereas patents are the least emphasized in most manufacturing industries, with the exception of and FREDERIC SCHERER, *THE ECONOMICS OF HUMAN GENE PATENTS*, 77 *Academic Medicine* 1348, 1353-54 (2002).

³³ As stated in supra note 31, some authors argue for the superiority of other incentive mechanisms to encourage R&D of live-saving drugs, especially those for neglected diseases. See also the WHO Report on the Commission on Innovation, Intellectual Property and Public Health, which specially emphasizes this problematic aspect of patent-driven incentives.

³⁴ See Edmund Kitch, *The Nature and Function of the Patent System*. 20 *JOURNAL OF LAW AND ECONOMICS*, N° 2 (1977):266.

³⁵ See SUZZANE SCOTCHMER, supra note 29, at p. 27-28, objecting that strong pioneer patents can pre-empt competition because prospectors might either avoid competition in the "innovation market" for second-generation products or avoid competition among second-generation innovators after the second-generation innovations exist and posing that the case for pioneer patents depends on whether the first innovation is costly, in which case the patent is indeed justified as a "reward". See also Robert Merges and Richard Nelson, *On the Complex Economics of Patent Scope*, *COLUMBIA LAW REVIEW*, VOL. 90, NO. 4, PP. 839-960, (1990), at p.916, discussing the limitations of the prospect theory' suggestion that broad scope should be preferred and highlighting that a broad patent might increase innovation incentives for pioneers however diminishing incentives "for others to stay in the invention game".

³⁶ See Peter Menell and Suzanne Scotchmer, *Intellectual Property*, IN *HANDBOOK OF LAW AND ECONOMICS*, VOL 1, ELSEVIER (M. POLINSKY AND S. SHAVELL EDS. 2007), at footnote 19, p. 26, arguing that Kitch was "the

A third justification of the IP system is to indicate the value of a firm. This signaling function is especially important with respect to patents and within industries where small firms play a key role³⁷ as it is the case with biotech start-ups which need to enter into alliances to complete their research projects and in general with new firms trying to gain access to financial markets.

All these economic rationales attempt to justify patent protection based upon the role of patents in shaping incentives to invest in R&D, innovate and develop innovations. Yet, a balanced reading of the theories suggests that patent law aims at providing optimal or sufficient incentives to innovate and not simply at maximizing the rewards for patentees. The justification of the patent system would be rather to “align innovation incentives with the innovator’s contribution, while keeping in mind collateral damage *ex post*”³⁸. Under an efficiency perspective, patent laws are justified precisely because the long term gains in dynamic efficiency terms must surpass the short term losses in static efficiency³⁹.

On the contrary, arguments in favor of allowing inventors to capture all gains from their inventions usually disregard the social costs of the patent system. Moreover, the increasing role of strategic reasons as a central motivation for pursuing and using patents stresses the importance of considering the net benefits of the patent system, either to justify patent rights in general, or more importantly, for the interpretation of specific patent doctrines in a reasonable way⁴⁰.

earliest, and perhaps most extreme, licensing optimist. See also the discussion below about cumulative innovation and incentives to hold-up, at *infra* notes 69-70 and accompanying text.

³⁷ Clarisa Long, *Patent Signals*, 69 U. CHI. L. REV. 625 (2002).

³⁸ See Thomas Cotter, *Patent Holdup, Patent Remedies, and Antitrust Responses* (Minnesota Legal Studies Research Paper No. 08-39, 2008), available at SSRN: <http://ssrn.com/abstract=1273293>, at p. 20. Contrast with Einer Elhauge, *Do Patent Holdup and Royalty Stacking lead to Systematically Excessive Royalties?* available at <http://ssrn.com/abstract=1139133> (July 22, 2008), quoted in Cotter which advances that an optimal system allows inventors to capture all gains from their inventions or risk providing insufficient incentives

³⁹ Economists compare the benefits and costs of alternative market structures by referring to the measures of total surplus, which corresponds to the sum of the consumer’s surplus and the producers’ surplus (“PS”). Nonetheless, there exists disagreement about whether it should be consumers’ surplus or total surplus that is to be protected from anti-competitive conduct. Similarly, patent law theories explain patents in terms of a tradeoff between dynamic and static efficiencies.

⁴⁰ See DOMINIQUE GUELLEC AND BRUNO VAN POTTELSBERGHE DE LA POTTERIE, *THE ECONOMICS OF THE EUROPEAN PATENT SYSTEM: IP POLICY FOR INNOVATION AND COMPETITION*, Oxford University Press, pp. 266, (2007) at p. 73-74, reviewing empirical studies on the reasons for patenting, economic value and performance of patents and concluding that: “patents are also taken for other reasons than simply avoiding to being copied, and it is to be expected that patents taken with these objectives in mind are much less socially beneficial than others”.

2.2 The economics of patent enforcement

To enforce means “to execute a particular law, writ, judgment or the collection of a debt or fine”⁴¹. In order to attain the aims of substantive patent law, enforcement law aims at providing suitable rules to prevent infringement or obtain remedies if infringement has occurred. It is commonly acknowledged that substantive rights are of little value in the absence of effective procedures for their enforcement⁴².

Legal studies approach infringement as the most common violation of a patent right, which affects the right to exclude and triggers the use of litigation⁴³. Many economic studies face the problem of understanding infringement given that at first sight, it seems that firms would always be better off by settling and avoiding litigation costs and thus, it is often difficult to explain in economic terms why disputes would ever arrive to courts⁴⁴. Moreover, economic studies also question why infringement would ever occur in equilibrium when parties know in advance whether remedies are weak or detection improbable, so that licensing would take place and parties will save on litigation costs⁴⁵.

However, patent litigation is prevalent and affects different industries in varying degrees. Additionally, the possibility of eroding profits through litigation might undermine innovation incentives and when asymmetries between small and large firms are significant, the market structure might importantly determine innovation incentives⁴⁶. On the other hand, recent studies also warn about the effect of rising litigation costs on innovation that arise because innovators might inadvertently infringe⁴⁷. Importantly, economic studies have also examined how much profit is dissipated through litigation as well as the prevalence of litigation according to industries and firm sizes and with respect to the value of innovations, concluding that litigation can largely affect the incentives set by substantive IPRs law:

“Given the cost and prevalence of litigation, we can conclude that it constitutes an important modification to the profitability of intellectual property rights, and one that differs across different types of firms and technologies”⁴⁸

⁴¹ See UNCTAD-ICTSD, *RESOURCE BOOK ON TRIPS AND DEVELOPMENT*, Cambridge University Press (2005), at p. 575, recalling the definition of enforcement given in the *Black’s Law Dictionary*, sixth edition, 1990, at p. 528

⁴² See *Ibid* at p. 634-635.

⁴³ See DONALD CHISUM ET AL. *PRINCIPLES OF PATENT LAW*, Foundation Press, New York, 3rd edition (2004) at p. 1284.

⁴⁴ See SCOTCHMER, *supra* note 29, at p. 201.

⁴⁵ *Ibid* at p. 201.

⁴⁶ *Ibid* p. 201.

⁴⁷ See BESSEN AND MEURER *supra* note 14 at p. 130.

⁴⁸ See SCOTCHMER, *supra* note 29, at p. 204.

In the context of litigation, remedies are fundamental to achieve the goals of compensating for past infringement and preventing future infringement. The rules designed to govern litigation procedures including the remedies available in cases of infringement are able to shape the incentives of parties involved in patent disputes but also to generally affect incentives to innovate and incentives to strategically use such rules. The choice of remedies, thus, from an efficiency perspective should reflect a balanced IP system: one that provides sufficient innovation incentives while keeping the costs of the system at its lowest.

2.3 The interface between substantive and enforcement patent law

The literature on entitlement protection focuses on the choice between alternative rules to protect a given entitlement. This choice often refers to the remedy that a court can grant to right holders in case of violation or infringement. Additionally, patent law has specific mechanisms embedded in substantive law that establish either a system of property rules or a system of liability rules, e.g. compulsory licenses.

Hence, in applying the insights of the entitlement literature to the case of patents, it is important to take into account both substantive and enforcement patent law. Moreover, it is important to examine the interaction between substantive and enforcement law in the light of the economic rationale of patents and hence, to examine the role and limits of each body of law. It is in this context that the question arises whether substantive law is the unique set of rules that aim at balancing innovation incentives and access to technologies. The alternative would be to consider that it is also desirable to strike a balance through enforcement law. These questions are especially important when substantive law is perceived to be unbalanced.

A widely held view in economic studies is that enforcement law should be applied in a “neutral” way that assumes that the substantive law of patents has already struck a balance between fostering innovation incentives and access to innovation⁴⁹. This view is often motivated by the application of property law to IP, with the consequence that once it is decided that a particular matter

⁴⁹ See Cotter, *supra* note 38, at p. 10, arguing that “courts applying patent remedies or antitrust doctrine should take substantive patent law as a given, meaning that in interpreting the law of patent remedies or antitrust doctrine they should attempt neither to subvert nor to enhance substantive patent law’s embedded incentive scheme”.

deserves protection, such protection should follow the logic of property, including the application of rules governing remedies⁵⁰.

Legal scholars who emphasize that patent balance is a competence of legislatures which a court should not attempt to modify but should rather take “as a given”⁵¹ also sustain that enforcement law should not attempt to alter the set of incentives as established in substantive law. Such position can also be found in countries such as the U.S. where many patent doctrines have been developed by courts⁵². Nonetheless, some authors arguing that courts should not attempt to strike a balance in patent policy through the use of enforcement law and specifically of remedies, have differentiated between damages as legal remedies and injunctions as an equitable relief:

“...To deploy the law of patent damages to correct for perceived flaws in judge-made substance would lack both transparency and candor; and, as is always a risk when courts resort to indirect methods of addressing a problem, may give rise to unintended consequences when the resulting modifications are applied in unexpected contexts. On other hand, nothing in substantive patent law requires that courts award injunctive relief to every prevailing patentee, regardless of consequences. To hold otherwise would elevate patents to a position of unique privilege in comparison with other forms of property”⁵³

Moreover, the view that problems with substantive patent law should not be dealt with the use of enforcement rules neglects two important points. The first is that patent strategic behavior and especially hold-ups probably arise not only

⁵⁰ See for instance LANDES AND POSNER, *supra* note 15 at p. 8, arguing that “once a judgment is made that a particular “parcel” of intellectual property should be owned, the standard analysis of remedial options is applicable”.

⁵¹ This view might be particularly influential in civil law countries where legislation is the primary source of law while judicial activity is often unbound by precedents and hence, the legal framework for remedies is perceived as more rigid and impeding, to a certain extent, the application of equity. See for instance, UGO MATTEI, *COMPARATIVE LAW AND ECONOMICS*, University of Michigan Press (1998), at p. 78, arguing that: “according to traditional comparative law doctrine, the civil law is mostly a codified system where the role of bureaucratically recruited judges is to interpret and apply a written body of statutes. Common law, conversely, consists mostly of case law where technocratic judges are concerned with finding the applicable rule within the body of law made up by legal precedents”. But see *ibid.*, at p. arguing against such commonly held view: “if we consider the role of case law, we find more convergence between modern civil law and common law. In practice, courts in civil law countries make law just as much as courts in common law countries (...)”.

⁵² In effect, even in a common law country as the U.S., the *eBay* decision, *supra* note 2 has been criticized on the grounds that it reflects an inappropriate judicial activism from the U.S. Supreme Court, in contradiction to prior precedent and legislation by the Congress. See Beckerman-Rodau, Andrew, *The Supreme Court Engages in Judicial Activism in Interpreting the Patent Law in eBay, Inc. v. MercExchange, L.L.C.*, *TULANE JOURNAL OF TECHNOLOGY & INTELLECTUAL PROPERTY*, VOL. 10, NO. 1, 2007, available at SSRN: <http://ssrn.com/abstract=1089537>. See also Burk and Lemley, *supra* note 4, highlighting the role of courts in delineating patent policy.

⁵³ See Cotter, *supra* note 38, at p. 11

because of defects of substantive law but also due to the inappropriateness of some enforcement rules as applied to the patent field. The second point is that, even if a problem might be caused by a wrong substantive law design, a solution would still be needed. Hence, in the absence of substantive law reform, it is valid to examine whether enforcement law and the law of remedies leave enough discretion to deal with problems that might originate in substantive patent law and yet affect the patent system as a whole.

An alternative is then to consider that patent law design occurs both at the level of substantive and enforcement rules. Obviously, there are multiple questions regarding the scope, if any, for a discretionary application of enforcement rules. This is especially the case with respect to remedies, both in common law countries but also in countries with civil law tradition, where no corresponding equitable doctrines for enforcement exist. The general question of whether courts could and should aim at striking the balance of a perceived unbalanced system through the use of enforcement rules entails several inter-related questions with regard to the interface between substantive and enforcement law. Firstly, it is important to examine the linkage between rights and remedies in the sense of whether the right determines the applicable remedy or the available remedy determines the type of right. This question necessarily requires a preliminary reflection on the aims of enforcement law.

Enforcement law could be either interpreted as guided by efficiency -in the sense of attaining a patent system that maximizes net benefits- or by cost-effectiveness -enforcing patent law at the minimum possible cost-. If guided by cost-effectiveness, patent enforcement rules would aim at reducing wrongful behavior, i.e., patent infringement at the lowest cost. Law and economics analysis, which is guided by efficiency, often sustains that the aims of enforcement law are to deter wrongful behavior⁵⁴. In addition, compensation is often cited both as a reflection of fairness concerns or as a goal complementary to deterrence. Such view, which often refers to public enforcement in the context of criminal law would be however incomplete in the case of patent law, since enforcement rules are never applied in a vacuum.

Even if the aim of patent enforcement rules is to reduce patent infringement, such reduction should not be in contradiction with the aims of patent policy in

⁵⁴ See Louis Kaplow and Steven Shavell, *Fairness versus Welfare: Notes on the Pareto Principle, Preferences, and Distributive Justice*. THE JOURNAL OF LEGAL STUDIES 32:1 (2003), at p. 292, arguing that "from the perspective of welfare economics, the central purpose of law enforcement is to reduce harmful activity. One way to accomplish this goal is through deterrence: the reduction in the commission of harmful acts through the threat of sanctions (...)" Economic analysis refers to public enforcement in the sense of publicly prosecuted crimes, which society wants to minimize. Private enforcement is conversely dependent upon the action of private parties that seek relief on the courts, as it is the case with most patent law cases.

general, but rather interpreted in the context of providing optimal incentives for innovation. Hence, when patent infringement is harmless or when it produces a social benefit that surpasses any potential loss, efficiency would require limitations on enforcement. Examples are in fact abundant in substantive patent law where private and non-commercial uses are exempted and measures such as compulsory licenses in cases of public interest also allow exceptions to patent infringement. But of course, the question on the interface between substantive and enforcement law is whether is it sufficient to have such exceptions in substantive law or whether enforcement rules should also be interpreted in the light of the objectives of patent law.

Scholars are divided with regards to this question as some authors assume that attempting to balance the patent system also through enforcement law would not be advisable⁵⁵ and some others argue in favor of keeping the balance both in substantive as well as enforcement patent law⁵⁶. Whereas the current international framework does not provide clear answers to such questions, especially as the answers might vary from country to country, article 41 of the TRIPS Agreement seems to favor a broader interpretation of the objectives of enforcement law in the light of the objectives of patent law in general:

“Members shall ensure that enforcement procedures as specified in this Part are available under their law so as to permit effective action against any act of infringement of intellectual property rights covered by this Agreement, including expeditious remedies to prevent infringements and remedies which constitute a deterrent to further infringements. **These procedures shall be applied in such a manner as to avoid the creation of barriers to legitimate trade and to provide for safeguards against their abuse**” (emphasis added)

With these premises, the following chapters examine the interface between substantive and enforcement patent law in more detail, focusing on the entitlements (patent rights) and how they are protected (remedies and other substantive rules referring to the property and liability rules debate). Such interface is described in the context of civil law and common law countries and explained through the application of law and economics insights in order to provide an answer to these questions both from a positive and a normative standpoint.

⁵⁵ See for instance, *infra* note 52 and accompanying text.

⁵⁶ See Michael W. Carroll, *Patent Injunctions and the Problem of Uniformity Cost*, VILLANOVA UNIVERSITY LEGAL WORKING PAPER SERIES, WORKING PAPER 82 (July 2007), available at: <http://law.bepress.com/villanovawps/papers/art82>, at p. 424 arguing that patent law is tailored through substantive and enforcement rules, including the availability of injunctions, in order to cope with the costs of uniformity of patent law, and highlighting how it is however impossible to perfectly tailor patent law on a case by case basis while arguing in favor of industry, technology and entity features that permit to develop guidelines for courts to decide in favor of a property or a liability rule.

3 Property Rules and Liability Rules

One of the most important contributions of the law and economics movement has been to recognize the importance of transaction costs, i.e., costs arising out of economic exchanges through the market mechanism. The theorem posed by Ronald Coase was that absent significant transaction costs, efficiency will be attained through bargaining in spite of the right's initial allocation⁵⁷. Hence, the necessary requirements for efficient exchanges are clearly defined property rights and zero or low transaction costs⁵⁸. Under the label "transaction costs" scholars have included the costs arising out of the market's price-mechanism, among others, the costs of finding the parties with whom to bargain, the costs of negotiating a deal -including the possibility of strategic bargaining, e.g. holdouts and hold-ups strategies- and the costs of enforcing and monitoring any subsequent arrangement⁵⁹.

⁵⁷ See Ronald Coase, *The Nature of the Firm* (1937), *ECONOMICA*, New Series, Vol. 4, No. 16 (Nov. 1937), pp. 386-405, at p.392: "We may sum up this section of the argument by saying that the operation of a market costs something and by forming an organisation and allowing some authority (an "entrepreneur") to direct the resources, certain marketing costs are saved". Although Coase did not use the name "transaction costs", he referred to the "costs of using the market mechanism", *ibid* at p. 403. See also Ronald Coase, *The problem of Social Cost* (1960), *JOURNAL OF LAW AND ECONOMICS*, 3, pp. 1-44, "Once the costs of carrying out market transactions are taken into account it is clear that such a rearrangement of rights will only be undertaken when the increase in the value of production consequent upon the rearrangement is greater than the costs which would be involved in bringing it about". Scholars, however, have diverse interpretations of "transaction costs", and whereas a strand of literature focuses on the role that transaction costs play in determining the distribution of property rights, broadly defined as all laws, rules and even social customs or organizations that generate incentives for behavior – a concept used by the "law and economics" and "new institutional economics" movements, i.e. studies following the insights of the Coase Theorem-another approach uses neoclassical economics and defines transaction costs in a narrow way that equals such costs to transportation charges or taxes. See Douglas Allen, *Transaction costs*, in *ENCYCLOPEDIA OF LAW AND ECONOMICS*, 0740, available at: <http://encyclo.findlaw.com/0740book.pdf>. In any case, transaction costs do not constitute losses to subtract from expected benefits, but rather refer to the costs that preclude the formation of an agreement.

⁵⁸ Several authors argue that clearly defined rights and zero transaction costs are in fact the two sides of the same coin. The idea is that in the absence of transaction costs, property rights would always be clearly defined. This follows from a broad definition of property rights as "the ability to freely exercise a choice over a good or service" and the conception of transaction costs as those related to "the ability to freely exercise a choice over a good or service". See Allen, *supra* note 57.

⁵⁹ "Transaction costs economics" is a study branch mainly developed by the studies of Oliver Williamson holds that the determinants of transaction costs are frequency, specificity, uncertainty, limited rationality, and opportunistic behavior. Different circumstances explain the choice between firms and markets as guided by the need of lowering transaction costs. This approach is based on the incompleteness of contracts that exposes parties making specific investments to holdups. Transaction cost economics investigate how different governance structures attempt to solve the problem of contract incompleteness. For a survey on the branch see Peter Klein. *New Institutional Economics*, 0530 *ENCYCLOPEDIA OF LAW AND ECONOMICS*. p. 467-468 at <http://users.ugent.be/~gdegeest/0530book.pdf>

Calabresi and Melamed⁶⁰ (hereinafter C&M) devised a categorization of legal entitlements into property and liability rules building upon the concept of transaction costs and the relative circumstances in which each rule prevails in law⁶¹. Protecting a right through a property rule means that nobody can use or acquire such right without prior permission from the owner and thus, that a previous negotiation must take place⁶². As a consequence, if an entitlement is protected through a property rule, a court asked to enforce such right in cases of unauthorized use or infringement, should issue a mandatory order to stop infringement; what is usually called an “injunctive order”⁶³.

Liability rules operate under a different mechanism that protects entitlements but permits non-authorized use or taking as long as the owner is compensated.

⁶⁰ See Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules and Inalienability: One View of The Cathedral*, 85 HARVARD LAW REV., 1972. Summing up the burgeoning literature on property and liability rules that began with the C&M article would go beyond the scope of this study. Hence, this section presents a brief summary of the propositions that directly affect the choice between property and liability rules in the area of patent law. For a survey on the property and liability rules literature see Matteo Rizzolli, *The Cathedral: An Economic Survey of Legal Remedies* (January 2008), available at SSRN: <http://ssrn.com/abstract=1092144>

⁶¹ A third instance of entitlements exists in the form of inalienable rights: those for which no trade is allowed. In the patent law field this category might point towards discussion about the (un) patentability of certain fields such as genes or living organisms. In spite of the importance of this discussion, this Thesis focuses on the alternative protection for alienable entitlements, that is, whether after the issuance of a patent, the right-holder should be protected through a right of exclusive or remunerative content. Nonetheless, policy levers that tackle the issues here discussed such as enforcement and exceptions in patent law, are in some instances related to those used to deal with inalienability of rights (patentability requirements) insofar as policy-makers also have to decide about the convenience of assigning or not a property right in the first place. In this sense, liability rules can be viewed as a middle ground solution between a full right (under a property rule) and no right (under an inalienability rule that would follow from a finding of invalidity or non-infringement).

⁶² C&M used the word “entitlement” to refer to any conflicting situation in which the State has to decide who shall prevail, i.e. who is entitled to prevail. Such decision is called of “first order” since it is the necessary premise for the actual enforcement. The “second order” decision regards the way of protecting the entitlement, e.g. through a property rule, a liability rule or an inalienability rule. Efficiency, they argued, “asks that we choose the set of entitlements which would lead to that allocation of resources which could not be improved in the sense that a further change would not so improve the condition of those who gained by it that they could compensate those who lost from it and still be better off than before”, that is, an application of the concept known as Pareto efficiency. See also Wesley Newcomb Hohfeld, *Some Fundamental Conceptions as Applied in Judicial Reasoning*, 23 YALE L. J. 16 (1913), classifying “jural relations” in rights, duties, privileges, no-rights, powers, immunities, liabilities and disabilities, each category having a co-related one. For instance, if X has a right against Y to stay out of his land that would mean that Y would have a duty towards X to stay out of that place. On the other hand, the right of X against Y to stay out of his land is accompanied by a privilege by X of entering the land. Interestingly, Hohfeld focused in the structure of entitlements without regard for their protection whereas C&M focused on remedies disregarding the structure of entitlements. In fact, C&M did not refer to the categorization of legal concepts devised by Hohfeld. See Shyamkrishna Balganes, *Demystifying the Right to Exclude: Of Property, Inviolability and Automatic Injunctions*, HARVARD JOURNAL OF LAW AND PUBLIC POLICY, Vol. 31, 2008 (U of Chicago, Public Law Working Paper No. 182) Available at SSRN: <http://ssrn.com/abstract=1016222>

⁶³ Such order to desist on infringement activity is often called “injunction” in English and “inibitoria” in Italian as well as “cease and desist orders”. See infra note 317 with regard to the terminology used in different jurisdictions.

Hence, the right to consensually and previously approve any unauthorized use, granting owners control over their rights is converted into a right to receive a monetary award, which grants no control but remunerates the owner. As a consequence, if an entitlement is protected through a liability rule it means that the relevant authority -whether a court or regulatory agency- would fix a compensation to be paid to the owner.

C&M described four different rules responding to two different factors; to whom the right is allocated and whether the right is protected through a property or a liability rule⁶⁴. An additional parameter that has been taken into consideration is which option, i.e. whether a “put” or a “call” is given to the entitled party. Under a “call”, the option is given to a party to take a thing under specific circumstances. A “put”, instead, gives the option to the entitled person to sell their right for a determined price. While both types of options are ordinarily present in market transactions, it is often claimed that legal rules are seldom developed as “puts” since liability rules are often adopted to counteract a monopoly position that might give raise to holdouts. In this sense, it is interpreted that whereas the owner of a non substitutable asset is in a monopoly position, the owner of money that is in the position of buying out the right is not⁶⁵. Nonetheless, several studies have attempted to apply the rationale of financial markets’ and the alternatives of puts and calls into different law fields, in what is called “optional law”⁶⁶.

⁶⁴ See Carol Rose, *The Shadow of The Cathedral*, 106 YALE L.J., 1997, 2175-2200, at p. 2179, explaining how rules 2 and 4, which are examples of liability rules, are equivalent to splitting the value between the parties whereas a property rule does not allow the division of the entitlement. Moreover, she argues that rule 2, represented by the case of *Boomer v. Atlantic Cement Co.*, poses the case of one single owner buying the right from a community whereas rule 4, represented by the case of *Spur Industries v. Del E. Webb Development Co.* illustrates the case of a community buying the right out from one single owner.

⁶⁵ See Richard Epstein, *A Clear View of The Cathedral: The Dominance of Property Rules*, 106 YALE L.J. 2091, 2093–96 (1997), at p. 2093-2094, explaining that “There is no reason to believe that if the holder of the asset is allowed to cash out safely from the transaction, he will foist the asset off on a party, arbitrarily chosen, that can make better use of it than he. Puts, therefore, are never imposed as a matter of law on strangers but are the outgrowth of consensual transactions over organized markets. As between strangers, liability rules, however sharply constrained, always take the form of calls: The person who has the cash can dictate that some asset be moved in his direction, where there is every reason to believe that he can make at least some intelligent use of it, perhaps better than his incumbent”

⁶⁶ See IAN AYRES, *OPTIONAL LAW: THE STRUCTURE OF LEGAL ENTITLEMENTS*, The University of Chicago Press (2005). See also Dan Burk, *Property Rules, Liability Rules and Molecular Futures: Bargaining in the Shadow of the Cathedral*, in GENE PATENTS AND CLEARING MODELS: FROM CONCEPTS TO CASES, Geertrui Van Overwalle, ed., Cambridge University Press, 2009; suggesting that a particular example of “puts” could be implemented in the case of a pharmaceutical research proposal for a library of receptors and ligands and citing that there is an example of a “put” system in the U.S. Statutory Invention Registration (SIR), which “allows inventors to publish enabling descriptions of an invention without receiving a patent, placing the invention into the public domain”. While this is a put that will be exercised at price of zero, particular examples could also be SSO’s commitments to license at RAND/FRAND or licenses of right.

Beyond its descriptive implications, the property and liability rules categorization has been highly influential and controversial at a normative level. C&M initially suggested that from an efficiency point of view, a property rule would be superior to a liability rule when transaction costs are low whereas a liability rule might be preferable when there are high transaction costs⁶⁷. The latter situation is frequently found in the presence of multiple relevant parties with whom interested parties should bargain, risks of strategic bargaining, including hold-ups and high monitoring or enforcement costs of any possible agreement. With low transaction costs, parties might bargain between themselves to achieve the most efficient allocation. Conversely, if there are high transaction costs, efficiency requires that the right is allocated to the highest-value user:

“Where transaction costs are high, the allocation of resources to their highest-valued uses is facilitated by denying property right holders an injunctive remedy against invasions of their rights and instead limiting them to a remedy in damages⁶⁸”

The problem of hold-outs has been typically used to justify takings of private property under the power of eminent domain⁶⁹. The emblematic example is a governmental taking of private properties for the development of a public interest project and where some of the involved owners whose property the government intends to take, might hold-out selling their properties in order to obtain a compensation that is higher than their true subjective valuation. A liability rule is logically justified in order to avoid the inefficiency of hold-outs, which are hence, the most common justification for eminent domain under a law-and-economics perspective under the application of the property and liability rules distinction.

In this sense a hold-out might arise whenever the owner of a property right in general, delays or refutes a transaction given that he or she is the only one authorized to voluntarily agree to any use or transfer. Likewise, a hold-up may be considered as a specific variant of holdouts, wherein specific investments

⁶⁷ C&M not only considered transaction costs and efficiency as normative thresholds but also discussed distributive concerns and notions of fairness that guide the choice between entitlement protection rules.

⁶⁸ RICHARD POSNER, *ECONOMIC ANALYSIS OF LAW* (1972), 1st Ed, Boston, Little Brown, p. 29.

⁶⁹ See Thomas Miceli & Kathleen Segerson, *Takings*, in *ENCYCLOPEDIA OF LAW AND ECONOMICS*, available at <http://encyclo.findlaw.com/6200book.pdf> at p. 330, claiming that “when the government is assembling a large amount of land to build a public project like a highway, individual owners whose land is necessary for the project acquire monopoly power in their dealing with the government. That is, they can **hold out for prices in excess of their true (subjective) valuation** of the land given that it would be costly, once the project is begun, for the government to seek alternative locations” (emphasis added). Although the terms hold-out and hold-up are often used interchangeably, in the context of patents the literature refers mostly to hold-ups.

have been made and are considered as sunk costs, so that a trading partner is susceptible of being held-up by its counterpart in a bilateral monopoly due to such specific investments⁷⁰.

Subsequent work has suggested different extensions and criticized these basic statements. To start with, the property and liability rules literature attempts to bring together dissimilar fields of law as property, contract and torts under the unifying concept of entitlement protection rules but there is still disagreement among scholars about the convenience of extending normative suggestions from one field to the other⁷¹.

Moreover, the underlying concept of transaction costs encompasses different types of costs that might be more or less relevant within different contexts. A typical categorization of transaction costs distinguishes between costs due to the number of parties and difficulty of *ex-ante* negotiating on the one hand and

⁷⁰ See Richard Epstein, *supra* note 65 at p. 2092 explaining that “because property rules give one person the sole and absolute power over the use and disposition of a given thing, it follows that its owner may **hold out for as much as he pleases before selling the thing in question**” (emphasis added). He argues that “The standard practice in virtually all legal systems assumes the dominance of property rules over liability rules, except under those circumstances **where some serious holdout problem is created because circumstances limit each side to a single trading partner. In these cases of necessity**, the holdout problem could prove enormous, so that the strong protection of a property rule is relaxed. One person may be allowed to take the property of another upon payment of compensation, but only in a constrained institutional setting that limits the cases in which that right can be exercised and supervises the payment of compensation for it” (emphasis added). Whereas hold-outs, as Epstein explains might only create problems under special circumstances that limit “each side to a single trading partner”, this will always be the case in a hold-up, which could be viewed as a type of hold-out where parties are in a bilateral-monopoly due to their specific investments, and it is thus a case calling for some type of intervention. See also Yeon-Koo Che & József Sákovics, *Hold-ups* in *THE NEW PALGRAVE DICTIONARY OF ECONOMICS*, Second Edition (2008), Edited by Steven N. Durlauf and Lawrence E. Blume), explaining that “hold up arises when part of the return on an agent’s relationship-specific investment is ex post expropriable by his trading partner”.

⁷¹ There are plenty of difficulties in this unifying exercise. For instance, see Rose, *supra* note, 64, criticizing the choice of using examples from the property field including the *Boomer* case (*Boomer v. Atlantic Cement Co.*, 257 N.E.2d 870, N.Y. (1970)) in the work by C&M but also in the subsequent work by Ian Ayres and Eric Talley, *Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Coasean Trade*, 104 *YALE L.J.* 1027 (1995) and Kaplow and Shavell, *infra* note 76, on the grounds that it obscures their arguments. According to Rose, the work of C&M had in mind a setting of accident law whereas Ayres and Talley developed their insights with respect to contract law and Kaplow and Shavell also probably worked in the “shadows” of accident law. This Thesis focuses only on the problems inherent to the IP and more specifically the patent field; however, at least some scholars have highlighted how the different logic of tort and property law was reflected differently in the statutes of unfair competition, patent and copyright law as well as the subsequent expansion of rights and remedies towards the logic of property law and the consequences of such mixed logic. In this sense, see Mark Lemley, *The Surprising Virtues of Treating Trade Secrets as IP Rights*, *STANFORD LAW REVIEW*, VOL 61:311, at p. 312, arguing that “courts, lawyers, scholars and treatise writers argue over whether trade secrets are a creature of contract, of tort, of property, or even of criminal law”. See also *infra* note 92.

costs due to strategic bargaining, including hold-ups and hold-outs on the other⁷².

An important corollary of the C&M framework is that property rules need less “collective intervention” from authorities such as courts, regulatory agencies or even legislators. In order to set a property rule, all authorities need to do is to allocate the right and protect it. Conversely, for a liability rule to work out, authorities shall allocate the right and also determine the compensation⁷³.

Economic studies on entitlements soon pointed out how any system of liability rules would entail significant assessment costs since authorities need to set the compensation of the right and can easily incur into errors in the process of assessment. As a consequence of the difficulty and costliness of such assessment, authorities could be induced to avoid the calculation of subjective values and to concentrate on the objective value of entitlements with the consequent risk that such assessment would under-compensate right holders and produce significant errors⁷⁴.

The evident presence of administrative costs and errors has been used to criticize any preference for a system of liability rules justified upon high transaction costs. The argument is that even if transaction costs are high, those

⁷² See e.g., Rose, *supra* note 64 (dividing transaction costs into type I and type II, which correspond to these two groups of costs). See also Mark Lemley & Philip Weiser, *Should Property or Liability Rules Govern Information?* 85 TEXAS LAW REVIEW, 4, March 2007, p. 783-841, at p. 787, (adopting a similar categorization of transaction costs while arguing that the strategic use of injunctions is a particular transaction cost that “reflects the fact that certain conditions –including legal certainty–can increase the value of an entitlement and make a holdout strategy rational”). See also Rizzolli, *supra* note 60, referring the main contributions in the property and liability rules literature according to the type of transaction costs considered and the normative suggestions. Search costs are considered by C&M who argue for liability rules. Strategic bargaining costs are considered by Lucian Bebchuk, *Property Rights and Liability Rules: The Ex Ante View of the Cathedral*, MICHIGAN LAW REVIEW, 100(3), 601-39 (2001), who argues for property rules. James Krier and Stewart Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 NEW YORK UNIVERSITY LAW REVIEW, 440-483 (1995), argue for put-options liability rules whereas Ayres and Talley, *supra* note 71 argue for liability rules. Administrative costs of litigation are considered among others by Smith, *infra* note 92, arguing for property rules and by Kaplow and Shavell, *infra* note 76, arguing for liability rules. Enforcement costs are analyzed by Smith *infra* note 92 and Keith Hylton, *Property Rules and Liability Rules, Once Again*, REVIEW OF LAW & ECONOMICS, Vol. 2, 2, p. 137-191 (2006) who argue in favor of property rules and by Richard Brooks, *The Relative Burden of Determining Property Rules and Liability Rules: Broken Elevators in the Cathedral*, 97 NW. U. L. REV. 267, 289–90 (2003), who argues for liability rules. Rent seeking through multiple takings is examined by Kaplow and Shavell, *ibid* and Epstein *supra* note 65, who argue for property rules. Finally, denormalization costs, i.e. any expenditure made in anticipation of a possible taking are assessed by Hylton, *ibid*, who argues in favor of property rules.

⁷³ However, in the following sections we will show how the case might be different with IPR’s –and in general, with rights that have unclear boundaries– since in these cases, a court applying a property rule, has to identify the right and delimit it in order to avoid that a property rule might extend towards a non-protected entitlement. Such activity also entails a significant –although different type– of collective intervention, or else risk to fail on efficiency terms.

⁷⁴ See also Krier and Schwab, *supra* note 72 and Hylton *supra* note 72.

costs must be compared against the costs incurred by authorities when calculating the compensation before suggesting any departure from a property rule⁷⁵.

Yet, some scholars argue that liability rules have the effect of harnessing information and can thus minimize information costs for courts. This would be possible because under a liability rule the court would only have to determine the damage to the victim, whereas in a property rule framework, courts will also have to know the prevention cost to the injurer⁷⁶. Because liability rules entail a comparison of costs and benefits they oblige parties to compare their opportunity costs to an amount of damages representing the judge's best estimate of them⁷⁷. As a consequence, the proposition that property rules should be preferred when transaction costs are low has also been questioned⁷⁸.

Other scholars, however, have contended that property rules are superior to liability rules because, at least when it pertains to property, an "exclusionary strategy" generates informational advantages, based on the lower *ex-ante* transaction costs of establishing property rights⁷⁹. A similar view sustains that valuation problems associated with liability rules which can lead to under-compensation, make of property rules a superior option, by outweighing any potential cost from strategic behavior⁸⁰. In addition, it has been pointed out, that under some circumstances, a comparative evaluation as required under property rules can be easier than absolute valuation under liability rules⁸¹.

⁷⁵ Ibid. See also Mitchell Polinsky, *Resolving Nuisance Disputes: The Simple Economics of Injunctive and Damage Remedies*, 32 Stanford Law Review, 1075-1111, (1980), at p. 1111. See also Michael Krauss, *Property vs. Liability rules*, in ENCYCLOPEDIA OF LAW AND ECONOMICS, available at: <http://encyclo.findlaw.com/3800book.pdf>

⁷⁶ See Kaplow and Shavell, *Property Rules and Liability Rules: An Economic Analysis*, 109 HARVARD LAW REVIEW, 713, arguing that, under a property rule, the court would have to determine the cost of prevention and the victim's damage and allocate the right to the intruder, only if the cost of prevention was higher than the damage, whereas under a liability rule, all the court has to know is the amount of damage. The authors make a distinction between "takings" (where property rules are superior due to the possibility of mutual reciprocal takings) and "externalities" (where liability rules will be superior).

⁷⁷ But see Krauss, *supra* note 75, at p. 780-790, saying that authors following the Austrian approach, for instance question the fact that authorities might discover information more efficiently (least costly) than the market. Moreover, in the light of the indeterminacy of choosing between property and liability rules on efficiency grounds, some scholars propose to base the choice on other criterion, such as justice.

⁷⁸ See Kaplow and Shavell *supra* note 76, at p. 718, claiming that: "In addition, we will cast doubt on the belief that property rules are best when transaction costs are low."

⁷⁹ See Krier & Schwab *supra* note 72 at 459-64 arguing for property rules when administrative costs are high and citing Smith, at 685-86 (suggesting variable measurement costs may favor property rules). See also Hylton, *supra* note 72, arguing that even if transaction costs are high, property rules are still superior to liability rules when right holders' valuations are greater than potential takers. But see, e.g., Kaplow & Shavell, *supra* note 76, at 729, 750-51 (arguing that information about average harm can be developed at low cost and that information required for property rules is costly).

⁸⁰ See Epstein, *supra* note 65.

⁸¹ See Brooks *supra* note 72.

Although the main normative implication of C&M is that in the presence of high transaction costs, bargaining would potentially breakdown⁸², scholars disagree about the magnitude of the problem in several areas and furthermore, there is theoretical disagreement about whether liability rules might help avoiding such breakdown or whether bargaining failures might be better solve under the shadow of a property rule.

For instance, some scholars have argued that liability rules encourage two-way trading, which is the possibility to put an option in order to buy again an entitlement whereas property rules only allow one-way trading⁸³. Yet other scholars have highlighted that even if the choice of legal rules does not matter for efficiency purposes when *ex-post* bargaining is possible, the choice has important distributive consequences, which at the same time affect the *ex-ante* decisions of the parties and hence also efficiency⁸⁴.

3.1 Property Rules and Liability Rules in IP

The property and liability rules framework has also been functional to numerous discussions in the IP field. However plentiful, the insights developed to assess property and liability rules in IP are yet insufficient in contrast with the complexities of laws and judicial practice. Moreover, the majority of economic studies have focused on common law and particularly in U.S. law, hence missing the opportunity from comparing alternative rules.

Given the enormous importance of economic analysis within the study of IP, the literature has tended to specialize and focus on multiple narrow subjects⁸⁵. In this sense, the choice between property and liability rules can be understood as one out of many policy levers that contributes shaping the incentives for actors in a given industry or group of industries. Economists define the optimal design of the IP system as a “mix” of these inter-related policy-levers and tend to highlight for instance, how the use of such policy levers may transform the generality of patent statutes into a more industry-specific scheme⁸⁶. Often,

⁸² See Hylton, *supra* note 72, at p. 142, explaining that bargaining failure is costly “because it results in forgone opportunities for both parties to enhance their welfare”.

⁸³ See Ayres & Talley, *supra* note 71.

⁸⁴ See Bebchuk, *supra* note 72.

⁸⁵ See Menell *supra* note 28 and Menell and Scotchmer *supra* note 36, explaining that during the 1900’s the economic analysis of IP tended to focus on the overall effects of IP, patents or copyrights whereas the literature initiated with the studies by Nordhaus and most recent literature has focused on narrow and more specialized issues of law design, and specific laws of patents, copyrights or trademarks.

⁸⁶ See Burk and Lemley, *supra* note 4, referring to “policy levers” as described by Pamela Samuelson & Suzanne Scotchmer, *The Law and Economics of Reverse Engineering*, 111 YALE L.J. 1575, 1581 (2002).

however, such specific design of the policy levers is not necessarily the most efficient one⁸⁷.

However, a puzzling result has followed such transposition, which might derive from a theoretical disagreement about the nature of IP rights. In spite of the important influence of economic analysis in IP even before the works of “law and economics” scholars, IP rights are still viewed by a great amount of scholars –including in law and economics- as granting owners a right, which in case of infringement must be protected through remedies typical of property law⁸⁸. This reasoning is often defended even in the context of sequential innovation or potentially severe bargaining collapse, instances in which it would be expected for economic studies to generally favor the application of Coase’s view of reciprocal externalities and C&M’s bilateral consideration of entitlement protection rules⁸⁹.

The overwhelming presence of economic analysis in IP law is at least in contradiction with the view –shared by many legal scholars- of IP entitlements as property rights protected only through property rules insofar as the latter view would limit the insights of economic studies that suggest the use of alternative protection rules according to the transaction costs and other similar considerations. A likely explanation for the contradictory presence of economics in IP law yet the “dominant” view of IP entitlements as property rights could be due to the “special” rationale of IP protection as a mechanism of producing innovation incentives. However, such answer is unconvincing at least for three reasons. The first reason is that the infringer-owner dichotomy, typically found in scholarly comments is often unclear, especially in the case of sequential innovation and unclear IP rights. An infringer can at the same time be an innovator and infringement does not always occur willfully but is sometimes the result of failures in the patent system⁹⁰. Secondly, whereas an *ex-ante* explanation for IP rights is compelling, it is typically based on a trade-off between *ex-ante* and *ex-post* efficiency put forward to justify IP rights. Thus, in spite of the importance of innovation incentives, IP systems need to balance

⁸⁷ Ibid. p. 5.

⁸⁸ See for instance, Epstein *supra* note 65 and Kieff *infra* note 124.

⁸⁹ One of the path-breaking ideas advanced by Coase was to conceive that externalities are reciprocal in nature and hence, in the case of pollution, either the polluter could have the “right” to pollute or the other party could have the “right” to be free of pollution. C&M added to the decision on how to allocate the right, a further possibility of choosing between two types of rules, forming a matrix with four different rules.

⁹⁰ See BESSEN AND MEURER *supra* note 14, arguing that the patent system fails in giving proper notice of the boundaries of patent rights. See also Lemley & Weiser *supra* note 72 making a similar argument in the context of information rights, mostly protected through copyrights where uncertain boundaries give rise to similar problems of delineation.

both *ex-ante* and *ex-post* considerations⁹¹. Thirdly, if there is a legal field where entitlements are not so clearly defined as to call for clear rules for protection, it is precisely the IP field. In the following section, these considerations will be particularly applied to the patent law field.

The most likely reason for such disagreement may come from the underlying controversy surrounding the nature of IP rights, a patched body of laws with dissimilar origins and heterogeneous functions, contents and performance. Patents, for instance, differ from copyrights, trademarks and unfair competition laws in functions, content of rules and the performance of the system in innovation and competition⁹². Whether patents are or should be assimilated to property law is not a completely resolved query.

3.1.1 *Descriptive studies*

It is often argued that with a few exceptions, property rules are the preferred choice for patent rights, that unfair competition laws give in many cases a right to be compensated and most copyright statutes around the world rely on property rules while containing specific liability rules⁹³. A preliminary observation is that –as described by the property and liability rules literature for the case of torts, property and contracts- both types of rules co-exist within the IP field in varying degrees.

However, studies are not unanimous in interpreting the prevalence and importance of property and liability rules in IP. Some studies highlight that property rules prevail in “property rights” contexts and hence, in IP⁹⁴.

⁹¹ But see LANDES AND POSNER, *supra* note 15, at p. 11, arguing that most economic scholars have tend to oversimplify the problem of IP law to the tradeoff of incentives versus access with the consequence that the “continuity between physical and intellectual property” is obscured.

⁹² See Henry Smith, *Intellectual Property as Property*, YALE LAW JOURNAL 116:1742, 2007, explaining the origin of IP in unfair competition laws and the differences between copyrights and patents upon information costs of delineation and enforcement of exclusion rights while differentiating between governance strategies that prevail in copyrights law and exclusion strategies that dominate patent law.

⁹³ Several law and economic studies have addressed the prevalence of property rules or liability rules in IP laws with results largely varying according to the different legal systems and fields under study. See in general, ROGER BLAIR AND THOMAS COTTER, *INTELLECTUAL PROPERTY: ECONOMIC AND LEGAL DIMENSIONS OF RIGHTS AND REMEDIES*, Cambridge University Press, 2005 at p. 38-40, referring to liability rules in diverse IPRs while claiming that “intellectual property law in general prefers property rules to liability rules and that -if the premises upon which the intellectual property system is based are sound – a rebuttable presumption in favor of property rules probably makes more sense than would a presumption favoring liability rules”. See also Clarisa Long, *Information Costs in Patent and Copyright*, 90 VIRGINIA LAW REVIEW (April 2004, Number 2) 465-548, at p. 469, referring to the “strictly exclusionary nature of the patent entitlement, unbroken by legal privileges or liability rules”. For an analysis about unfair competition see ANSELM KAMPERMAN, *UNFAIR COMPETITION LAW*, Oxford University Press, 1977, at chapter 3, “The economics of pre-emption and the abuse of a dominant position, at p. 97 ss.

⁹⁴ See Henry Smith, *Property and Property Rules*. NEW YORK UNIVERSITY LAW REVIEW, Vol. 79, pp. 1719-1798, 2004, available at SSRN: <http://ssrn.com/abstract=638723>, (pointing out, that in spite of the fact that

However, it is important to mention that, firstly, in the context of property and liability rules and remedies literature, the notion of “property right” comprises different entitlements, not only property law⁹⁵ and secondly, in the context of IP law, scholars have been increasingly divided as to whether IP is “property” and to what extent rules designing for tangible property should be applied to IP rights⁹⁶.

3.1.1.1 Compulsory licenses

Notwithstanding the discussion about the prevalence of one type of rule or the other, the most common type of liability rules used in IP rights are compulsory licensing provisions. Under a compulsory license, the IP right, which is traditionally conceived as a right to exclude, is transformed in a right to receive compensation. Compulsory licenses, can be applied to different IP rights, might be designed in different ways and might be regulated by statutes or subject to case-by-case analysis as well as are justified upon different reasons. As a result, their economic effects might widely diverge according to these differences.

Compulsory licenses can be classified according to multiple criteria. Based upon their justification, a compulsory license system might aim at (1) maintaining a healthy state of competition in the market⁹⁷; or (2) be based on

property rules are more abundant in statutes and practice, academics are inclined towards liability rules). See also Hylton, *supra* note 72 and Epstein *supra* note 65.

⁹⁵ See Balganesch *supra* note 62, at p. 609-610, footnotes 59-60 and accompanying text arguing that the entitlement literature contributed to shift away the focus from the concept of rights to the concept of remedies in the sense that property is not defined with respect to *in rem* rights or to ownership attributes but rather to the protection through a property rule.

⁹⁶ See Mark Lemley, *Property, Intellectual Property, and Free Riding*. TEXAS LAW REVIEW, Vol. 83, p. 1031, 2005 Available at SSRN: <http://ssrn.com/abstract=582602>; arguing that the term intellectual property is quite recent, since it is probably traced to the foundation of the World Intellectual Property Organization (WIPO) by the United Nations in 1967, although there are some previous references in older literature. Such name suggest that such different area areas of protection such as copyrights, patents but also trademarks, geographical indications, industrial designs, layout designs and trade secrecy belong to the realm of property rights. For the view of IP as property rights, see Epstein *supra* note 65⁶⁵ and *infra* note 131. For the contrary view see Lemley & Weiser, *supra* note 72, stating: “The founding vision of intellectual property (IP) viewed owners of governmentally conferred rights—in patent and copyright—as the beneficiaries of a government license and as entitled only to remedies sufficient to encourage innovation”. Among other critics, they highlight how this ‘law’ doesn’t take into account the difference between non-rival and rival entitlements and thus, the inherent difference between knowledge and information and other tangible (mainly real) property.

⁹⁷ See Anthony Taubman, *Rethinking Trips: ‘Adequate Remuneration’ For Non-Voluntary Patent Licensing*, 11 J. INT’L ECON. L. 927-970; discussing the use of such distinction during the Uruguay Round of negotiations and sustaining that: “Both forms of intervention override the exclusive rights under a patent, and thus constrain the commercial interest in the leverage in the marketplace afforded by exclusivity. But within national legal systems, they may have different legal bases, different administrative or judicial forms, and different economic dynamics, even though they overlap conceptually and are both intended to advance the public interest”.

overriding reasons of public interest, public non-commercial purposes and governmental uses⁹⁸. Such distinction was already reflected in the Paris Convention, which addressed the first type of compulsory licenses whereas it left to national members the regulation of cases where public interest justifies the use compulsory licenses⁹⁹. Of course, in the long run, all types of compulsory licenses tend to be justified as advancing the public interest. Yet, some compulsory licenses favor the public interest by creating static efficiency gains, whereas others are supposed to protect competition also by protecting dynamic efficiency gains, which in turn would presumably advance the public interest.

Compulsory licenses based upon assuring a healthy competition in the market can also be read in transaction cost terms. They can be furthermore sub-divided on the basis of whether they are justified on high transaction costs due to (1) the complexity of relations, i.e. when there are many involved parties or it is too costly to monitor or clear the rights¹⁰⁰; and (2) when transaction costs are due to the probability of strategic behavior and risk of hold-ups¹⁰¹. In the first group we can place the copyright statutory licenses which are usually grounded on the high costs of clearing and monitoring the rights whereas in the second group we may include compulsory licenses for failure to work a patent or for dependent patents¹⁰².

Compulsory licensing provisions found in copyright statutes¹⁰³ are in fact the provisions most widely covered by law and economics discussions. In fact,

⁹⁸ Compulsory licenses based upon public interest concerns allow government use, crown use or public non-commercial uses and are subject to great discretion, especially with regards to the definition of "public interest". Nonetheless they are currently subject to the requirements of the TRIPS Agreement, supra note 11, and especially of article 31 of the same, which establishes the requirements for compulsory licenses, also exempting the requisite of making prior efforts to obtain authorization from the right holder on reasonable commercial terms in cases of "national emergency or other circumstances of extreme urgency or in cases of public non-commercial use". In addition, the TRIPS Agreement provided several safeguards for the use of public interest based compulsory licenses, which were also clarified in the Doha Declaration (*Doha Declaration on the TRIPS Agreement and Public Health*, WT/MIN(01)/DEC/2, adopted on 14 November 2001, clarifying: that "the TRIPS Agreement does not and should not prevent members from taking measures to protect public health"; and that countries have the right, *inter alia*: "to grant compulsory licences and the freedom to determine the grounds upon which such licences are granted"; and to determine what constitutes a national emergency or other circumstances of extreme urgency"). See Friedrich-Karl Beier, *Exclusive Rights, Statutory Licenses and Compulsory Licenses in Patent and Utility Model Law*, IIC 1999, Heft 3, p. 261, discussing compulsory licenses in member States of the EU and citing cases of licenses based upon concerns of national defense, the environment, work's safety and health.

⁹⁹ See Article 5-A of the Paris Convention for the Protection of Industrial Property, supra note 12.

¹⁰⁰ Type I transaction costs, see supra note 72.

¹⁰¹ Type II transaction costs, see supra note 72.

¹⁰² For the concept of "failure to work" a patent see supra note 12.

¹⁰³ See Tim Wu, *Copyright's Communications Policy*. MICHIGAN LAW REVIEW, Vol. 103, p. 278, November 2004. Available at SSRN: <http://ssrn.com/abstract=532882>, explaining liability rules in copyrights law "through a model of conflict that sees law emerging as a political reaction to changes in relative prices resulting from technological change" and analyzing the following compulsory licensing provisions in U.S.

most insights on IP liability rules have been developed with this specific type of licenses in mind, due to the fact that studies are typically based on U.S. law, where other compulsory licenses for patents were absent, at least until recently.

Conversely, we can place the provisions that address the failure to work a patented technology by a patentee on the second category of compulsory licenses. These provisions have been described as a historical “leftover from the early days of the patent system and industrialization” in the sense that in their origin they were mainly motivated by protectionism¹⁰⁴. However, this type of provisions are still important as the current debate surrounding the use of liability rules for patents centers on the question whether a patentee should ever be compelled to work her invention¹⁰⁵. So even though non-working provisions were historically rooted in protectionism; with the implementation of the TRIPS Agreement, a possible reading of these compulsory licensing provisions is that the Agreement requires that a patent is not being worked - under an “absolute” or “global” standard- meaning that the patented technology is not being worked at all for a compulsory license to apply. This could be a possible interpretation of the prohibition of discrimination with regards to the place in which the patented technology is produced that is established in article 27 of the TRIPS Agreement as well as the fact that national

copyright law; Title 17 of the U.S. law includes compulsory licenses for: *secondary transmissions*, requiring re-broadcasters to pay a fixed fee for a license to rebroadcast copyrighted materials (section 111); *digital audio transmission/webcasting license*, which requires Internet “radio stations” to pay a statutory fee in order to rebroadcast copyrighted materials (section 114); *the mechanical license* which allows anyone wanting to record a composed song to pay a fixed fee to the composer and also allows recording of “cover” versions of famous songs (section 115); *the Jukebox negotiated licenses*, which mandates negotiation for the licenses to play sound recordings of non-dramatic musical works on jukeboxes (section 116); *the Public broadcast license* for the use of published non-dramatic musical works and published pictorial, graphic, and sculptural works in connection with non-commercial broadcasting (section 118); *the Satellite retransmissions of television signals*, which is similar to 111, but applies to satellite rebroadcast of content both from broadcasters and from cable operators (section 119); *Satellite retransmissions of television signals into local markets*, which grants satellite re-broadcasters a free compulsory license for local broadcasting, provided they agree to carry all television broadcast stations located within the local market (section 122).

¹⁰⁴ See infra note 204 and accompanying text.

¹⁰⁵ See Friedrich-Karl Beier supra note, 98 at p. 262, suggesting that “Compelling a patent holder to manufacture each protected product in every country, irrespective of the dimensions of the market concerned and the existence of the remaining framework conditions for economically sensible production or licensed production, would be utterly contrary to economic reason and to the principle of the international division of labor”. But compare for instance, Beier ibid at p. 263-264; highlighting how the U.S. or Germany, have “traditionally rejected the national obligation to work patents and the concept of compulsory licensing”; with Amir Attaran and Paul Champ, *Patent Rights and Local Working Under the WTO TRIPS Agreement: An Analysis of the U.S.-Brazil Patent Dispute*. YALE JOURNAL OF INTERNATIONAL LAW, Vol. 27, p. 365, available at SSRN: <http://ssrn.com/abstract=348660>; at p. 366 and accompanying footnotes, quoting from several sources that by 1968, with the exception of the U.S. and the Soviet Union, all industrialized countries had had local working requirements, few countries changed their laws afterwards with this respect and by 1997, only the Netherlands and Switzerland had introduced some changes after the agreement with respect to local working requirements.

market needs could also be satisfied through importation¹⁰⁶. As they currently stand, these compulsory licenses might sort out bargaining problems due to type II transaction costs. Another compulsory licensing provision aiming at solving a potential blocking is the one established for the case of patented technologies that might infringe on a previous patent, i.e. dependent patents¹⁰⁷.

A second possible categorization between compulsory licenses divides those (1) certainly designed *ex-ante*, in the sense that a regulation, for instance, statutes, provide for a uniform application in all cases, and sometimes even for the due compensation; and (2) compulsory licenses which are tailored *ex-post*, meaning that the grounds for granting a license and the royalty will be assessed *ex post* and on a case-by-case basis¹⁰⁸.

Table 1. IP liability rules: Before and after the TRIPS Agreement

Liability rule	Before the TRIPS	After the TRIPS
Ex ante	Patents Copyrights	Copyrights
Ex post	Patents Copyrights	Patents Copyrights

Hence, another possible classification of compulsory licenses is based upon the IP right involved. We already mentioned the different cases of patent and copyright patents. Whereas compulsory licenses are not permitted for trademarks¹⁰⁹, they might be used for other IP rights, such as design right. This

¹⁰⁶ See article 27 of the TRIPS Agreement, establishing that patent protection: “shall be available and patent rights enjoyable without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced”. See also *infra* note 264 and accompanying text.

¹⁰⁷ The TRIPS Agreement established in article 31, that in these cases, “(i) the invention claimed in the second patent shall involve an important technical advance of considerable economic significance in relation to the invention claimed in the first patent; (ii) the owner of the first patent shall be entitled to a cross-licence on reasonable terms to use the invention claimed in the second patent; and (iii) the use authorized in respect of the first patent shall be non-assignable except with the assignment of the second patent. Examples of such compulsory licenses include the Italian Code of Industrial Property in article 71 and the *Directive 98/44/EC of The European Parliament and of the Council of 6 July 1998 on the Legal Protection of Biotechnological Inventions*, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1998:213:0013:0021:EN:PDF>, which establishes in article 12. 1, that a breeder can request a compulsory license when she cannot acquire or exploit a plant variety without infringing a prior patent. For other examples see Appendix.

¹⁰⁸ See Burk, *supra* note 66, making the point that any property or liability rules regime might be “determined by clear *ex ante* rules, or it may be determined *ex post*, after a taking, according to flexible standards”. It is important to notice how this consideration opens the possibility of applying the insights of the economic literature on standards v. rules to different IP liability rules. Nonetheless, the TRIPS Article 31 mandates that patent compulsory licenses are subject to the requirement any such authorization “shall be considered on its individual merits”, hence it seems that any compulsory license for patents would fall under this category –perhaps with the exception of public based compulsory licenses which we left aside for the moment- whereas the *ex-ante* category will mainly involve copyright statutory licenses.

¹⁰⁹ See article 21 of the TRIPS Agreement stating that: “Members may determine conditions on the licensing and assignment of trademarks, it being understood that the compulsory licensing of trademarks

is the case with design rights covering spare parts, which are subject, in some countries to a remunerative right as opposed to a right to exclude others¹¹⁰.

Another possible way of classifying compulsory licenses asks whether it arises from a limitation or exception provision included in substantive law or whether it is the outcome of the law governing remedies, which pertains to the area of enforcement. In spite of the large amount of literature on the use of liability rules in IP, studies had largely ignored until recently these types of liability rules based upon remedies law. In addition, most of the economics literature on remedies had focused on the economics of damage calculation and much less on the choice of substituting injunctions with damages¹¹¹.

shall not be permitted". Nonetheless, trademark law provides for the possibility of establishing exceptions to the rights conferred to trademarks owners as stated by article 17 of the same Agreement: "Members may provide limited exceptions to the rights conferred by a trademark, such as fair use of descriptive terms, provided that such exceptions take account of the legitimate interests of the owner of the trademark and of third parties" as well as requires, to a different extent, according with the legislation, the use of marks, now regulated by article 19 of the same Agreement: "if use is required to maintain a registration, the registration may be cancelled only after an uninterrupted period of at least three years of non-use, unless valid reasons based on the existence of obstacles to such use are shown by the trademark owner. Circumstances arising independently of the will of the owner of the trademark which constitute an obstacle to the use of the trademark, such as import restrictions on or other government requirements for goods or services protected by the trademark, shall be recognized as valid reasons for non-use".

¹¹⁰A particular problem of competition is posed in the so-called aftermarket or markets for spare parts (a spare part is a part that serves to repair a complex product so as to restore its original look). Here, a primary market might exist which is competitive, yet, due to network effects and sunk costs, customers of the primary market might be locked-into the secondary market. In this latter, the owner of a patented technology, design right or copyright, could charge higher prices or refuse or insufficiently supply the products, undermining competition and also causing harm to consumers. The European Directive 98/71/EEC of the European Parliament and of the Council of 13 October 1998 on the legal protection of designs refers to a complex product as one that is composed of multiple parts: "which can be replaced permitting disassembly and reassembly of the product", a definition that is particularly important for the car industry but also for other industries in which it is necessary to replace parts of the complex product. See ROGER VAN DEN BERGH AND PETER CAMASASCA, *EUROPEAN COMPETITION LAW AND ECONOMICS: A COMPARATIVE PERSPECTIVE*, Antwerpen: Intersentia, 2001, describing that: "the essence of an aftermarket arises in those cases where a consumer, having chosen a specific brand at one point in time, may find it costly later on to switch to other brands". With regard to the production of spare parts for cars, two important cases have addressed the problem of a dominant position acquired through a design right: 5 October 1988, C-238/87 (Volvo), [1988] E.C.R. p. 6211 and Case 53/87 (Maxicar/Renault), [1988] E.C.R. The Directive 98/71/EC established a transitional provision in Article 14 which allows Member States to maintain their previously existing provisions relating to the use of the design of a component part used for the purpose of the repair of a complex product so as to restore its original appearance and such provisions may only be reformed if the purpose is to liberalise the market for such parts, the so-called "repair clause". This problem might be solved through a liability rule regime for the rights covering products in a secondary market, so that a competitive market might emerge also in this market. See also the Proposal for a Directive of the European Parliament and of the Council amending Directive 98/71/EC on the legal protection of designs, COM (2004) 582 final. See also *infra* note 522.

¹¹¹ Most studies analyze the economics of damages rules focusing on damages as complements of injunctive relief. See e.g. BLAIR AND COTTER *supra* note 93, explaining that in U.S. law, patent and copyright owners are granted the greater between lost profits or a reasonable royalty for the unauthorized use of their works through a complex calculation, involving hypothetical answers about how markets would have evolved had infringement not taken place.

This has recently changed, in particular after the 2006 U.S. Supreme Court decision in the case of *eBay*¹¹², which asserted that injunctions are an equitable remedy that should be granted or denied according to the specific circumstances of each patent law case and which also has had repercussions for copyrights and trademarks. Interestingly, the Supreme Court advised district courts to apply a four-factor test that balances the equities of the case in order to decide whether to protect a patent through an injunction (the paradigmatic property rule remedy). While such test centers around whether harm might be repaired, whether it might be substituted by monetary remedies and which party will suffer greater harms, the fourth aspect of the test asks about the public interest and whether this would be served or disserved by an injunctive remedy, hence mandating an analysis combining efficiency and public interest considerations in each particular case¹¹³.

Finally, another possible category of patent liability rules might be in place outside of the patent system, as a result of the application of antitrust law, when a firm is obliged to license its IP rights, a rationale, however, that also responds to the restoration of healthy competition in the market.

Table 2: categorization of patent compulsory licenses

Grounds of classification	Type of compulsory license	Relevant agreement or law
Justification	Public interest	TRIPS
	Competition	TRIPS/ National or EC Antitrust laws
Patent law	Limitation (substantive law)	TRIPS and National patent laws
	Remedies (enforcement law)	Equity
Justification on transaction costs	<i>Ex-ante</i> (information costs)	Copyright laws
	<i>Ex-post</i> (bargaining costs)	Patent laws
Field of law	Patent law	TRIPS
	Antitrust law	National or EC Antitrust laws

In spite of a landscape in which different types of liability rules exist in IP law and have been analyzed by scholars with dissimilar results one clear fact that

¹¹² See *eBay Inc. v. Mercexchange*, supra note 2.

¹¹³ Some scholars and court decisions have referred to the differences between a compulsory license and a decision denying injunctive relief. See *Paice v. Toyota*, concurring opinion. Under a law and economic lens it is however quite clear that in any case the denial of injunctive relief where the infringer is allowed to continue the infringement if it pays damages calculated by the court is a liability rule.

emerges is that liability-rules have had a longstanding presence in IP laws. This presence has occurred mainly in the form of compulsory licensing provisions, which have played an important historical role as well as remain the focus of much scholar and policy-making attention, revitalized after the signature of the TRIPS Agreement. Less precision surrounds the implications of applying the property and liability rules discussion to the IP field and the consequences in terms of understanding the main grounds suggested by economic theory to switch to a liability rule, i.e. transaction costs, as well as the main critiques formulated against the use of liability rules.

3.1.2 Critics against IP Liability Rules

One of the most significant discussions of the entitlement literature for the IP field is probably the one centering on administrative and error costs that pertain to the application of a liability rules system. IP liability rules schemes have been criticized –and property rules praised– because of the inherent problems of valuating assets by courts. The argument is often put forward that IP rights are even more difficult and costly to value than other assets¹¹⁴.

“Whereas authors have highlighted, in the context of general studies, that liability rules have a potential information-facilitating effect, the case has been made that bargaining over the valuation of IP rights would only be possible if rights are protected through property rules.”¹¹⁵

This argument is reinforced by the above mentioned fact that liability rules in IP have been mainly studied with reference to statutory licenses for copyrights and related rights implemented by legislatures and widely differing from the C&M framework. Whereas compulsory licensing regimes for blocking or dependent patents might better reflect the type of reasoning of C&M in the sense of foreseeing the possibility of a bargaining breakdown due to important transaction costs¹¹⁶, the fact that such regimes were absent in U.S. patent law,

¹¹⁴ See Robert Merges, *Contracting into liability rules: Intellectual Property Rights and Collective Rights Organizations* 84 CALIF. L. REV. 1293 (1996), available at: <http://www.law.berkeley.edu/institutes/bclt/pubs/merges/contract.htm#FN62>, arguing that “In light of the peculiar nature of intellectual property, the only way to get parties truly to bargain over the valuation of intellectual property rights is to make them into property rule entitlements”.

¹¹⁵ See Merges, *ibid.*

¹¹⁶ See Merges, *ibid.*, citing the French Patent Law, *Law No. 68-1 (1968), amended by Law No. 90-1052 (1990)*, IN 3 WORLD INTELLECTUAL PROPERTY ORGANIZATION, *INDUSTRIAL PROPERTY LAWS AND TREATIES*, 32-41 (1980 & Supp. 1991); *Japanese Laws Relating to Industrial Property*, PUBLISHED BY THE JAPANESE GROUP OF AIPPI, 1988 Revision, Articles 83(1) and 93; *Patent Law No. 121 (1959)*, amended by Law No. 27 (1987) in 4 WORLD INTELLECTUAL PROPERTY ORGANIZATION, *INDUSTRIAL PROPERTY LAWS AND TREATIES* (1980 & Supp. 1991). See also Walter, *Compulsory Licenses in Respect to Dependent Patents Under the Law of Switzerland and other European States*, 21 INT’L REV. INDUS. PROP. & COPYRIGHT L. 532, 533 (1990); Patents Act of the Kingdom of the Netherlands (1910), amended by The Act of the Kingdom of the Netherlands (1987) (Rijkssoctrooiwet)

has lead most law and economics scholars to focus on copyright statutory licenses established *ex ante*¹¹⁷.

In fact, such rules widely differ from the political economy explanations that some scholars put forward for other liability rules regimes and authors have indeed recognized the potential role of liability rules to prevent a bargaining breakdown¹¹⁸. Yet, many scholars insist on the intrinsic difference between IP and other assets to conclude that an important problem surrounds the valuation of any IP asset that almost always surpasses any risk and cost of bargaining failure and proposing that neither a legislature-made nor a court-tailored liability rule regime might work better than a property rule:

“the costs of strategic bargaining are far different from the costs of transactions in markets where multiple IPRs are needed as inputs. Input markets are notable especially for the repeated costs of locating right holders and negotiating individual licenses. And, with respect to these negotiations, the single most difficult issue -- and hence the most costly to resolve -- is the valuation of each unique IPR”¹¹⁹.

In the following sections and chapters we will test such a general assertion in the context of patent law also challenging the assumption that valuation costs and errors will always surpass any potential cost from bargaining breakdowns. In particular, this chapter confronts the problem of patent valuation with the general context of bargaining problems in sequential and multi-component innovations. The following chapters also touch upon specific cases and problems surrounding the use of different rules by courts as an alternative to strong property rules, including for the valuation of infringed patents.

Another focal point of disagreement regards the effects of entitlement protection rules on efficient bargaining. In the IP context proponents of both

34, in 5 WORLD INTELLECTUAL PROPERTY ORGANIZATION, INDUSTRIAL PROPERTY LAWS AND TREATIES (1980 & Supp. 1991); New Zealand Patent Act, 46, 51 (1953), in BROWN & GRANT, THE LAW OF INTELLECTUAL PROPERTY IN NEW ZEALAND 6.67 (1989).

¹¹⁷ See Merges, *ibid*, arguing that: “While the legislative liability rules described above are inferior to property rules, one might nonetheless argue that the legislature should have implemented a judicially-administered liability rule, consistent with the teachings of Calabresi and Melamed. Such rules can be found in certain corners of foreign intellectual property systems, such as “blocking patents.” In some countries, the holder of an improvement (or “subservient”) patent has the right to license a pioneering (or “dominant”) patent if a license is necessary to implement the improvement (footnotes omitted)”

¹¹⁸ See Merges, *ibid*, referring to the possibility of “bargaining breakdown” that might occur through first (pioneer) and second (improver) negotiations for a license and to the role that a liability rule might play in preventing a social welfare loss that could follow such bargaining breakdown.

¹¹⁹ *Ibid*, arguing that it might be the case that a “court-based liability rule” could be thought as a “third-best solution”, that is, after property rights and after statutory compulsory licenses since the first two alternatives might better deal with the problem of the volume of transactions.

liability rules and property rules have based their arguments upon the effects of a rule on incentives to bargain, arguing from *ex ante* or *ex post* perspectives¹²⁰.

Scholars approaching remedies from an *ex ante* perspective focus on the effects of entitlement protection rules on deterring infringement and in setting the terms of *ex ante* licensing¹²¹. Under this perspective, the terms of a license that a potential licensee or a potential infringer accepts, would depend on the rule that would apply if infringement takes place. Moreover, bargaining under the threat of one or other rule differently affects the division of profits between a potential licensor and a potential licensee¹²².

From an *ex post* point of view, other studies consider whether property rules, mainly in the form of injunctions, are more or less likely than judicially determined damages (liability) in order to encourage efficient bargaining. From the *ex post* perspective, these studies followed the main insights of the general property v. liability rules framework, which holds that property rules (injunctions) may be preferred when transaction costs of exchange are low and the costs of assessing violations of rights by courts are high¹²³. Nonetheless, a usual argument in the IP context is that a property rule facilitates bargaining between the parties whereas under a liability rule, a potential infringer would have diminished incentives to bargain *ex-ante*¹²⁴. This argument is moreover

¹²⁰ See Menell and Scotchmer, *supra* note 36.

¹²¹ See Menell and Scotchmer, *ibid*, at p. 19, arguing that these “set of arguments are not concerned with what would happen in the out-of-equilibrium event of infringement, but focus instead on how potential remedies affect equilibrium profits and the *ex ante* incentives for R&D”.

¹²² See also Mark Shankerman and Suzanne Scotchmer, *Damages and Injunctions in Protecting Intellectual Property*, RAND JOURNAL OF ECONOMICS, 32:1, 199-220 (2001), studying the choice between injunctions and damage compensation and focusing on rules for damage calculation and the role of property rules and liability rules in setting the threat points for parties bargaining in the biotechnology sector, specifically with regards to research tools. A relevant assumption of this study is efficient *ex-ante* bargaining and the conclusion is that if infringement leads to profit-eroding competition between the infringer and right holder, a wide range of remedies will deter infringement, at least for stand-alone innovations, and are therefore equivalent from an *ex ante* point of view. This does not necessarily apply, instead, in the case of research tools where infringement does not dissipate profit. Given the role of IP in the division of surplus and the incentives for private bargaining between early innovators and follow-on improvers they conclude that for the case of research tools neither rule deters infringement, yet a credible threat of infringement can benefit the patent holder. The study also interestingly points out that future economic research should aim at bridging the gap in studies assuming optimal *ex-ante* bargaining and those departing from bargaining failure (anti-commons), e.g. making the bargain process endogenous and analyzing how different rules affect the bargaining outcomes.

¹²³ See BLAIR AND COTTER, *supra* note 93. But see Ian Ayres and Paul Klemperer, *Limiting Patentees’ Market Power Without Reducing Innovation Incentives: The Perverse Benefits of Uncertainty and Non-Injunctive Remedies*, MICHIGAN LAW REVIEW, VOL. 97, 985, (1999), arguing, that “soft” remedies, which do not actually restore the proprietary price, can be socially beneficial because they increase consumers’ surplus without impinging much on profit, at least for small price reductions.

¹²⁴ See Scott Kieff, *On Coordinating Transactions in Information: A Response to Smith’s Delineating Entitlements in Information*, 117 YALE L.J. POCKET PART 101 (2007) and Scott Kieff, *Coordination, Property, and Intellectual Property: An Unconventional Approach to Anticompetitive Effects and Downstream Access*, 56 EMORY L.J. 327 (2006).

linked or used as a premise for arguing in favor of property rules that allow market players to organize themselves around contractual liability rules.

3.1.3 *Privately organized liability rules*

Several scholars have linked the problem of high transaction costs or a high likelihood of bargaining breakdown to the emergence of privately negotiated arrangements that create contractually based liability rules in order to solve such problems within the patents and the copyright areas. With such evidence, some studies argue for the use of market-arranged transactions and suggest that such arrangements would presumably be fostered by strong property rules:

“The organizations studied in this Article present what might seem to be a paradox in light of the literature on entitlements: they produce what appear to users as liability rules, but which are actually based on IPRs -- quintessential property rule entitlements”¹²⁵

These market-based arrangements arise because of the need of lowering transaction costs between users. The typical examples are collective organizations of copyrights, but a similar argument might be applied to clearinghouses and to patent pools¹²⁶. In spite of the organizational differences, the most distinctive features of such arrangements is that they create a mechanism similar to a liability rule, which is collectively organized by its members instead of administered by a court or regulatory agency¹²⁷. Although such mechanisms seems to solve a variety of problems, potential instances of strategic behavior might arise among its members and the organizations themselves have been occasionally accused of harming competition¹²⁸.

¹²⁵ See Merges, *supra* note 114.

¹²⁶ See Robert Merges, *Institutions for intellectual property transactions: The case of patent pools*, in EXPANDING THE BOUNDARIES OF INTELLECTUAL PROPERTY INNOVATION POLICY FOR THE KNOWLEDGE SOCIETY (Dreyfuss, Zimmerman and First, eds. 2001), Oxford University Press, New York, 123–165.

¹²⁷ See Merges *ibid*, explaining that “In other words, the property rule entitlements granted at the outset actually lead to a liability rule-like regime, though one based on collective valuation by firms, rather than by an arm of government”. For an application to the biotechnological area see VAN OVERWALLE, G. (ED.), GENE PATENTS AND COLLABORATIVE LICENSING MODELS. PATENT POOLS, CLEARINGHOUSES, OPEN SOURCE MODELS AND LIABILITY REGIMES, Cambridge, Cambridge University Press, 2009.

¹²⁸ See Ariel Katz, *The Potential Demise of Another Natural Monopoly: Rethinking the Collective Administration of Performing Rights* (2005). *Journal of Competition Law and Economics*, Vol. 1, No. 3, 2005; criticizing the justification of performing rights organizations on a natural monopolies (and transaction costs) explanation and suggesting that there are less costly alternatives for competition.

4 Property and Liability Rules in Patent Law

Scholars have largely acknowledged that patent rights are mainly protected through property rules¹²⁹. The underlying logic is that patents are conceived as granting a right to exclude –and not any right to use an invention- which makes them analogous to property rights¹³⁰. This correspondence of patents to exclusive rights has led to envisage patents as property and to the consequent application of the logic and legal conceptions of property in land to the patent realm¹³¹, which has nevertheless been criticized¹³². The quarrel originates from a disagreement about the nature of the patent right and hence, of the remedies used to protect the underlying right. In spite of the controversy, even the most representative critics against assimilation of patents to property in land have recognized the importance of property rules to protect patent entitlements as well as argued for the use of liability rules clearly defined and efficiently administered¹³³.

Hence, even if patents are widely discussed by both legal and economic scholars as exclusive rights, liability rules have been used since the inception of patent law, mostly in the form of compulsory licensing regimes. Nonetheless, the use of liability rules through the laws of remedies, i.e. when injunctive relief is denied for an infringed patent, had not received enough attention until recently –after the *eBay* case-.

For these reasons, the most widely discussed regime of liability rules, namely compulsory licenses has been justified by law and economics scholars upon the presence of high transaction costs¹³⁴. However, compulsory licenses are neither the only type of liability rules used in IP law nor are transaction costs their distinctive explanation. Transaction costs serve also to explain other doctrines

¹²⁹ See Burk and Lemley, *supra* note 4, at p. 168, arguing that “patent rights are exclusive rights that fit the classic formulation of a “property rule”; however clarifying that this was due to the prevailing judicial practice of granting injunctions after any infringement case and predicting that such course of matter could change as it had already happened with preliminary injunctions and with copyright cases.

¹³⁰ See CHISUM *supra* note 43, explaining that “a patent gives an inventor the *right to exclude*. A patent does *not* give the inventor the positive right to make, use, or sell the invention.”). See also Adam Mossoff, *Exclusion and Exclusive Use in Patent Law*, HARVARD JOURNAL OF LAW AND TECHNOLOGY, Vol. 22, No. 2, 2009 (George Mason Law & Economics Research Paper No. 08-49, August 19, 2008), available at SSRN: <http://ssrn.com/abstract=1239182>

¹³¹ See Epstein, Richard, *The Disintegration of Intellectual Property* (August 29, 2008). U OF CHICAGO LAW & ECONOMICS, OLIN WORKING PAPER NO. 423, available at SSRN: <http://ssrn.com/abstract=1236273>

¹³² See Lemley & Weiser *supra* note 72.

¹³³ *Ibid.*

¹³⁴ See Robert Merges, *Of Property Rules, Coase and intellectual Property*, p. 2669, 94 COLUM. L. REV., 2655, 2667 (1994), stating that “The conventional justification (for) compulsory licensing provisions (relies) on the basis of transaction costs”.

such as fair use in copyright law¹³⁵ or prior user rights in patent law, two mechanisms that have been described as zero price liability rules¹³⁶. Compulsory licenses, on the other hand, have been in place for a long period of time, justified on multiple grounds such as static efficiency, fairness, free trade and protectionist measures for national industries.

As a result of the prevailing practice of U.S. courts favoring property rules for a long period of time as well as the absence of equivalent compulsory licensing mechanisms, a significant part of the patent literature has been biased against the use of liability rules for patents. Such bias is not even confined to the convenience –on efficiency or other terms- of liability rules in patent law, but has furthermore produced a mainstream view that suggest the absence and irrelevance of liability rules systems in patent law¹³⁷.

4.1 The case against liability rules for patent rights

The majority of studies criticizing the use of liability rules for patents are based upon arguments similar to those described for the general IP case. The first main critic is that optimal compensation is too difficult to assess due to information costs and the likelihood that courts and agencies would systematically err in their appreciation of the patent's value¹³⁸. As a consequence of these errors and because courts would allegedly under-compensate right holders, incentives to innovate would be undermined. However, it is not completely clear whether courts systematically under or over-reward in actual patent cases¹³⁹.

Secondly, a branch of literature argues against the use of liability rules for patents from the perspective of bargaining incentives. For these authors, patents have a value for the commercialization of innovations which would be

¹³⁵ The fair use doctrine in copyright law allows the use of a fair quantity of copyrighted material without infringing copyright (17 U.S.C. §107).

¹³⁶ See Burk, *supra* note 66, at p. 12, mentioning the equivalence of prior user rights to compulsory licenses at "zero" price. See also Wendy Gordon, *Fair Use as Market Failure: A Structural and Economic Analysis of the Betamax Case and its Predecessors*, COLUMBIA LAW REVIEW 82:1600-1655 (1982); explaining fair use as the answer to significant transaction costs.

¹³⁷ See U.S. decision in the case of *Dawson Chem. Co. v. Rohm & Haas Co.*, *supra* note 1.

¹³⁸ See Epstein *supra* note 65.

¹³⁹ See Henkel, Joachim and Reitzig, Markus G., *Patent Sharks and the Sustainability of Value Destruction Strategies* (September 2007), available at SSRN: <http://ssrn.com/abstract=985602>, claiming that the patent system systematically over-rewards patent owners creating an incentive for patent trolls to proliferate. But see Shankerman and Scotchmer, *supra* note 122, finding that the lost profit/reasonable royalty rule can be too low that the threat of injunction can improve the first innovator's bargaining position and thus his incentives to develop research tools (their main assumption is that licensing takes place frictionless and thus IP will not stifle development of downstream products).

dissipated if the patent is subject to a liability rule¹⁴⁰ Although authors arguing for strong property rules in order to allow efficient negotiation of patents and the emergence of privately negotiated schemes such as patent pools and clearinghouses tend to acknowledge the difficulties and transaction costs in diverse industrial sectors, they commonly consider that such problems are less frequent than other pro-liability rules authors tend to describe.

In this sense, it could be argued that scholars in favor and against the use of liability rules in patent cases hold controversial views with regard to the importance of transaction costs and the frequency of bargaining breakdowns as well as about the costs associated with administering a liability rule –mainly information and error costs- relative to the costs of property rights, especially under uncertain boundaries.

The following sections attempt to address some gaps of the existing literature. Firstly, a more complete picture of the use and relative importance of liability rules in patent law emerges by putting together the literature on *ex-post* and *ex-ante* liability rules used to address high transaction costs, strategic behavior and hold-ups in patent cases. Secondly, the costs of property rules, which have been largely neglected until quite recently in comparison to the purported costs of a liability rules system are also analyzed.

4.2 The case for patent liability rules: transaction costs

Even though the classic law-and-economics justification for the use of liability rules is based upon transaction costs¹⁴¹ the concept of transaction costs is not unanimous. Furthermore, the market for patented technologies and hence its inherent costs, have particular features that deserve discussion. In fact, a functioning market is a necessary prerequisite for the efficient use of patented technologies, especially with regard to the cases of complementary, sequential and incremental innovations. Conversely, empirical studies have pointed towards unrealized benefits in several technology markets and identified transaction costs as a significant obstacle for their development¹⁴².

¹⁴⁰ See Kieff *supra* note 124 and Smith *supra* notes 92 and 94.

¹⁴¹ For the definition of transaction costs see *supra* notes 57, 58 and 59, pointing out how different costs of fulfilling an arrangement encompass the cost of searching the parties with whom to bargain, the costs of bargaining and the costs of monitoring and enforcing any achieved bargain.

¹⁴² See E.U. Commission, D.G. Internal Market Study on evaluating the knowledge economy: *What are patents actually worth? Pat-Val EU survey: The value of patents for today's economy and society*, Tender n° MARKT/2004/09/E, Lot 2, Final Report, (23rd July, 2006), available at http://ec.europa.eu/internal_market/indprop/docs/patent/studies/final_report_lot2_en.pdf, referring that “that the willing-to-but-not-licensed patents are not less valuable than the actually licensed patents. This rules out that they are minor patents that were not licensed because they were less important or less usable. The main alternative hypothesis is that *transaction costs in technology trade* have impeded the

To understand the importance and complexity of bargaining in the context of patent law, it is useful to refer to the different role of sequential and incremental innovation within diverse industries. Economic analysis of patents has distinguished between the cases of (1) stand-alone innovations which have a value in spite of follow-on developments or improvements and (2) cumulative innovation, where innovations also have a value as inputs of further progress and innovations. In both cases, economic analysis centers on investigating a mix of policy levers, including their actual application by courts and hence, the enforcement dimension, in order to determine the profits granted to innovators by the IP system, which subject to the demand for the innovative product would set the incentives for innovators. In addition to designing laws that grant the optimal profits for innovators, when it comes to sequential innovation, policy-levers also have the daunting task of balancing the incentives of first and second innovators¹⁴³.

Studies show the complexity of tailoring patent policy under sequential innovation. Moreover, some studies focusing on certain features of patent law produce results that might either be unrealistic or cannot be adjusted by policy-makers, as for instance, the duration of patents¹⁴⁴. Furthermore, the assumptions about licensing are crucial for almost all economic models and scholars are largely divided over their view on the likelihood that licensing will

technology transfer, a hypothesis consistent with other studies on the matter". See also the Gower's Report, at p. arguing that While big firms seem to be better able to cope with the transactional obstacles to license they are less likely to do so; whereas smaller firms can be better able to license-out but have more difficulty in bargaining over and actually license their technologies. Licensing can also be costly and difficult due to the significant asymmetries between firms, as it is the case, for instance, in the biotech sector.

¹⁴³ The results of different economic studies are ambiguous as to which is the most efficient solution for problem of setting optimal incentives to innovate. See Robert Hahn, *An Overview of Economics of Intellectual Property Rights*, in INTELLECTUAL PROPERTY RIGHTS IN FRONTIER INDUSTRIES. ECONOMICS OF INTELLECTUAL PROPERTY PROTECTION, at p. 17-20 comparing Scotchmer who argues that whereas a broad patent solves this first problem it could lead to incentive problems for sequential innovators; Gallini who suggests that patent length and scope could be used to prevent duplicative research (while longer patents encourage imitation, broad patents of finite duration might discourage imitation and encourage pioneering research); Green and Scotchmer who argue that patents should last longer when sequential research is not concentrated in one firm; and Shapiro who highlights the problem of overlapping patents (thickets) and hold-ups and while he argues that the problem of complements could be solved through cooperation, policy is needed to solve the problem of hold-ups, problems that are especially relevant for new industries such as information technology and biotechnology.

¹⁴⁴ For instance, the duration of patent protection, which is fixed under the TRIPS Agreement and most national laws in 20 years, and the possibility of varying the scope of patent protection, which imposes multiple and contradictory effects. See Nelson and Merges, *supra* note 35, at p. 840, making the claim –in 1990- that "most theoretical writing on patents is directed toward issues that as a practical matter are considered largely settled. For example, several economists have explored the question of optimal patent duration".

take place smoothly¹⁴⁵. Although some studies assume that bargaining will take place in many instances, some empirical studies point towards the limitations of assuming efficient *ex ante* bargaining in a significant number of cases so as to rule out problems related with the negotiation processes¹⁴⁶.

Although economic studies have significantly advanced towards a better understanding of the complex interaction of legal doctrines in setting the incentives for innovation as well as the specificities of sequential innovation, divergent views subsist on the economics of incremental innovation, which have largely produced conflicting policy recommendations for the use of liability or property rules¹⁴⁷.

4.2.1 *Strategic Behavior and patent hold-ups*

A variant of the general problems of strategic behavior, hold-outs and hold-ups described above for the general case of any right protected through a property rule can occur in the specific context of modern technologies. Several scholars have increasingly expressed concerns about the growing magnitude of strategic behavior by firms who file patents and litigate them in a strategic way and the impact of such strategies in the adequate functioning of the patent system¹⁴⁸. Similarly, the *eBay* decision by the U.S. Supreme Court highlighted the potential impact of the strategic use of injunctive relief in patent infringement cases¹⁴⁹.

Strategic behavior refers to the idea that a firm will take a decision according to the belief that the firm has about how the other firms would behave. This broad concept encompasses all kind of strategies that firms might adopt with regards to whether, how, and how much to patent; and how to use their patent(s), including decisions regarding the filing of applications, licensing and litigation¹⁵⁰.

¹⁴⁵ See for instance Menell and Scotchmer, *supra* note 36, at p. 26, arguing that “the literature draws widely differing conclusions about the optimal way to organize the rights of sequential innovations, largely because authors make different assumptions about when and whether licenses will be made, and who can be party to the negotiation”.

¹⁴⁶ See the EU PATVAL in footnote 34.

¹⁴⁷ See for instance, Cotter, *supra* note 38, arguing that the divergent opinions about hold-ups can be explained through divergent beliefs on the economics of patent improvement and how incremental innovation functions and suggesting that the question whether patent hold-ups should be considered or not as a market failure should be based on the insights of the economics of patent improvements.

¹⁴⁸ See James Bessen, *Patent Thickets: Strategic Patenting of Complex Technologies* (March 2003), available at SSRN: <http://ssrn.com/abstract=327760> and Bruno Van Pottelsberghe de la Potterie, and Nicolas Van Zeebroeck, *Filing Strategies and Patent Value* (May 2008), Vol., pp. 2008, available at SSRN: <http://ssrn.com/abstract=1143184>, describing patent filing strategies.

¹⁴⁹ See *eBay Inc. v. Mercexchange*, *supra* note 2.

¹⁵⁰ See BESSEN AND MEURER, *supra* note 4.

Both the literature and policy discussions have described the strategies of firms patenting technologies for “defensive” or “offensive” purposes. In these cases firms respond to –unintended– incentives created by patent law, e.g. to keep competitors out of their market or to permit the firm’s survival in a market. Whereas it is arguable that in such cases patent law is performing its role of fostering innovation incentives, both strategies create specific problems.

The first problem is that of negotiating through patent “thickets” or “clusters”¹⁵¹ which arises when each firm engages in an arms-race in technological area¹⁵². As a result, firms file patents not because they foresee any actual reward for any investment but rather to use them as “bargaining chips” with other firms. In these cases, a firm might file many patents while not exploiting them, because it needs to hold a certain number of patents in order to negotiate cross-licenses with other firms.

In many cases, firms might engage in cross-licensing schemes allowing others to use their technologies as long as other firms allow them to do the same, a cooperative solution that would avoid any bargaining problem. However, it is dubious that such situation is preferable to the absence of defensive patenting. Although the burden to society of having too many patents protecting a great number of technologies might be difficult to measure, it is easy to see that in such scenario, some firms might be refrained from using technologies in order to improve them or to come up with new products because of the presence of “patent thickets”.

Secondly, the defensive strategy might be transformed into an offensive strategy due to several reasons. For instance, a firm might be exposed to the *ex post* risk of hold ups by a patent on a technology¹⁵³. This could happen under a

¹⁵¹ According to Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting*, in Jaffe, A., Lerner, J., Stern, S. (Eds), *INNOVATION POLICY AND THE ECONOMY*, MIT Press for the NBER, Cambridge, MA, 1; 119-50, a patent thicket is: “a dense web of overlapping intellectual property rights that a company must hack its way through in order to actually commercialize a new technology”. See also EU Communication from the Commission, *infra* note 361, explaining that “one commonly applied strategy is filing numerous patents for the same medicine (forming so called “patent clusters” or “patent thickets”)”.

¹⁵² See Barr R., *Testimony at the US Federal Trade Commission/Department of Justice Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy*, UNIVERSITY OF CALIFORNIA AT BERKELEY, (28 February 2002) at pp. 675–7, referring that: “Patents have not been a positive force in stimulating innovation at Cisco. . . . Everything we have done to create new products would have been done even if we could not obtain patents on the innovations and inventions contained in these products... The only practical response to this problem of unintentional and sometimes unavoidable patent infringement is to file hundreds of patents each year ourselves, so that we can have something to bring to the table in cross-licensing negotiations”.

¹⁵³ See Barr, *ibid*, at pp. 679–80, arguing that “If we are accused of infringement by a patent holder who does not make and sell products, or who sells in much smaller volume than we do, our patents do not have sufficient value to the other party to deter a lawsuit or reduce the amount of money demanded by the other company”.

'prisoner's dilemma' scenario that arises when many firms pursue patents under a defensive rationale and, due to several reasons, bargaining collapses¹⁵⁴. Whereas all firms would be better off if they did not pursue any patent, cooperation might fail and firms might end up trapped in a patent thicket, hence under a prisoner's dilemma picture. Moreover, the equilibrium of licensing-in and licensing-out of any system based upon cross-licenses could break due to the participation of firms that own patents but are not interested in licensing-in any other patented technology. This is the case of the so-called "patent trolls", but could also be the case of owners of patents on another technological area¹⁵⁵.

What we can suggest is that social losses can arise, not only when bargaining fails because some parties in the "game" do not have anything to lose by adopting a litigation strategy but also and more generally whenever the patent system gives –unintended– incentives by permitting frivolous patenting and different filing strategies¹⁵⁶.

4.2.2 Patent Hold-ups

The problem of patent hold-up typically arises when a patent is only one out of many components in a technology and the patentee takes advantage of the fact that the alleged infringer has already made some costs –which are hence sunk costs– asking for a payment that is higher than the value of her patent. This case has been characterized as a patent hold-up, a variant of the more general hold-up referred by the law and economics literature. However, the definition and impact of hold-ups in the classic law and economics literature is highly debated¹⁵⁷ and as it should be expected, its application to the patent field is also controversial:

¹⁵⁴ See Cohen, Nelson & Walsh, *supra* note 32 at p. 28, referring that probably the "patent portfolio races observed in these industries reflect excessive patenting from a social welfare perspective (as would typify a Prisoners' Dilemma-like situation), and are thus raising the cost of innovation unduly".

¹⁵⁵ Patent trolls have been often defined as patentees that do not only abstain from using their patents but rather wait until someone "infringes" and use litigation and the threat of litigation and injunctions to actively enforce their patents. See *infra* note 716.

¹⁵⁶ See Chapter IV *infra*, analysing the incentives for patent strategic behaviour and hold-ups.

¹⁵⁷ See the previous section discussing the general hold-up problem and in particular see Oliver E. Williamson, *The Economic Institutions Of Capitalism: Firms, Markets, Relational Contracting* 52-56 (1985); Sanford J. Grossman & Oliver D. Hart, *The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration*, 94 J. POL. ECON. 691, 692, 716-18 (1986), arguing that the risk of *ex post* opportunism, along with bounded rationality and asset specificity, may produce that suppliers ask for higher prices, in the absence of mechanisms suitable to reduce opportunism. For critics on the application of liability rules for the problem of hold-ups see Kieff *supra* note 124, arguing for strong property rights which facilitate the coordination between parties efficient bargaining and Henry E. Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 YALE L.J. 1742 (2007), arguing that the optimal tradeoff between coordination benefits and access costs is a question for empirical research. See also Cotter, *supra* note 38,

“The hold-up problem pertains to problems of relationship-specific investment, whereas the hold-up contemplated here pertains to standards specific investment. The hold-up problem indicates the prospect of under-investment in collaborations in which parties must sink investments that are specific to the collaboration, investments that may be costly to redeploy or have a significantly lower value if redeployed outside of the collaboration. The potential for one party to hold up another party that has sunk investments specific to the relationship may discourage that other party from investing efficiently in the collaboration in the first place”¹⁵⁸

In these cases we can argue that the patent is being used strategically to extract a surplus that goes beyond its value. This can happen under the threat to shutdown a manufacturing system for a product by a court’ injunction and is fostered by the presence of firms ‘specializing’ in pursuing or buying patents to engage in such “rent seeking”, a situation also described by the U.S. Supreme Court in the *eBay* decision. A recent work analyzing patent hold-ups in the context of patent and antitrust cases claims that hold-ups impose static efficiency losses that are not justified by increases in dynamic and moreover, dynamic efficiency losses might emerge because of the reduction in the incentives to develop follow-on innovation giving rise to a potential market failure¹⁵⁹.

In the typical model studied by economic scholars, the infringer develops a product which uses a patented technology. Whereas the case is similar across all studies, there are important assumptions with regard to whether the invention can be easily invented around, whether infringement happens inadvertently, willfully or in between, and how costly is to redesign a non-infringing alternative¹⁶⁰.

Whether hold-ups are indeed a market failure, which is the impact of such practices and whether any regulatory response should follow, are however, contentious issues undergoing wide debate. First, there is disagreement about

citing and discussing the above mentioned studies and arguing that liability rules should play a role in overcoming holdout problems, even if subject to numerous caveats.

¹⁵⁸ See U.S. DEPARTMENT OF JUSTICE AND THE FEDERAL TRADE COMMISSION, ANTITRUST ENFORCEMENT AND INTELLECTUAL PROPERTY RIGHTS (April 2007), available at: <http://www.ftc.gov/reports/innovation/P040101PromotingInnovationandCompetitionrpt0704.pdf> at footnote 11, p. 35 defining hold-ups in the context of SSO’s and patent standards.

¹⁵⁹ See Cotter, *supra* note 38, at p. 12, defining holdups with respect to static and dynamic efficiency losses and arguing that in both cases, losses might be enhanced by the Cournot complements or double marginalization.

¹⁶⁰ Vincenzo Denicolo et al., *Revisiting injunctive relief: Interpreting eBay in high-tech industries with non-practicing patent holders*, JOURNAL OF COMPETITION LAW AND ECONOMICS 4 (3), 571-608. See also discussion in Chapter IV below.

whether holdups constitute a market failure¹⁶¹. Secondly, the incidence of holdups and their practical significance is also object of controversy¹⁶². Finally, another important controversy surrounds the estimation of the royalty benchmark that can determine when a patentee is “extracting” a quantity above the true value of its technology by means of a holdup¹⁶³ and hence, whether patentees engaging in such strategy are over-rewarded¹⁶⁴.

5 The Modern Patent Landscape

The natural question that follows is whether any of these problems are new or special in the patent field, or whether the traditionally conceived rules, with a strong preference for property rule protection might suffice to cope with such problems. In this sense, it is often said that new technological sectors such as

¹⁶¹ See Mark Lemley & Carl Shapiro, *Reply: Patent Holdup and Royalty Stacking*, TEXAS LAW REVIEW, Vol. 85, 2007, available at SSRN: <http://ssrn.com/abstract=1005727>, arguing that “holdup is recognized as a form of market failure that leads to inefficiency, primarily by discouraging what would otherwise be socially desirable investments. An enormous literature explores holdup as a market dysfunction, typically emphasizing the ways in which private firms can manage their affairs to avoid holdup or mitigate its effects”.

¹⁶² Compare for instance Mark Lemley and Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, (2007) at p. 1996-99 with Gregory Sidak, *Holdup, Royalty Stacking and the Presumption of Injunctive Relief for Patent Infringement: A Reply to Lemley and Shapiro*, 92 MINN.L.REV. 714 (2008) and Damien Gerardin, Anne Layne-Farrar, & A. Jorge Padilla, *The Complements Problem within Standard Setting: Assessing the Evidence on Royalty Stacking*, 14 BOSTON UNIV. J. SCI. & TECH. L. 144 (2008)

¹⁶³ See Lemley and Shapiro, *ibid*, at p. 1996-99; arguing that such benchmark is $\beta\theta v$, with β representing the patentee’s bargaining power with respect to the user; θ the probability that the patent is valid and infringed and v the per-unit value of the patent in comparison to the next best alternative, with the possibility that an “automatic right to injunctive relief” systematically over-rewards patentees of component technologies. But see Elhauge, *supra* note 38, referring that the correct benchmark should be θv and as a consequence, over-reward would only ensue in the case of “strong surprise patents”, and when “the fixed costs of a redesign exceed the expected value of the patent, taking into account the odds that the patent claim will be found invalid” whereas for “weak surprise patents” only when “lost profits from the lag time to redesign plus the fixed cost of a redesign exceed the value of the patent without any discount for its possible invalidity”; and with non-surprise patents only if $\beta > \theta$. See also discussion in chapter IV below.

¹⁶⁴ See Cottter, *supra* note 38, referring that Elhauge finds that there is asymmetry of information because patent validity related information is publicly available while information about the infringer’s expected profit from the use of the patented technology is not and as a consequence of this asymmetry the Lemley & Shapiro model estimates too high a royalty that would be agreed in the shadow of injunctions. Elhauge also argues that the model L&S model “understates the true optimal benchmark for royalties” and “overstates predicted royalties from the threat of injunctive relief” while posing that most realistically, a study should assume “(1) that firms negotiate a series of patents when they make a multi-component product, (2) that firms using the patents have information about their operations that patent holders lack; or (3) that demand is not constant”. Furthermore, he argues that the model by Lemley and Shapiro “mistakenly concludes that measuring damages using past negotiated royalties increases overcompensation, when in fact it increases under-compensation” and shows also that “royalties are even more likely to be undercompensatory to the extent juries are inaccurate in measuring damages, whether their inaccuracies are systematic or balanced, which is another important reason not to shift from injunctive relief to damages” adding that “even if their holdup model were correct when there is both an upstream patent monopoly and a downstream product monopoly, it does not apply when either market level is competitive. See also discussion in chapter IV below.

information technologies and biotechnologies diverge in important ways from innovative industries in the past¹⁶⁵. Whereas the paradigmatic patent at the time of the Paris Convention was granted for a mechanical innovation, new technologies have important new features. Probably the most important change for our discussion is that most patent nowadays construct over numerous previous patents and products involve many patented technologies¹⁶⁶.

The debate about whether and to what extent is the law able to adapt to changes in technology has accompanied patent law since its inception. This idea has permeated the debate about patent hold-ups and the justification for “new types” of liability rules, although it is not necessarily shared by the majority¹⁶⁷. While economic theory suggests different solutions according to the patents’ value and market structure, the patent system is usually described as “one-size-fits all”. Moreover, the burden of creating specially-tailored statutes for each industry could probably outweigh any gains and give rise to rent-seeking behavior. While law is constructed in this rather uniform way, legal doctrines, courts and antitrust agencies’ interpretations have in fact made patent law more in tune with these differences¹⁶⁸. One possibility of achieving a differentiated application is precisely the use of property and liability rules and especially from a remedies-based perspective, which would permit courts to balance distorted incentives, especially in extreme cases.

¹⁶⁵ See Lemley & Weiser, supra note 72, at p. 797 arguing that “the patent system is designed with a paradigm invention in mind –a new device or machine covered by a single patent. Historically, this paradigm was a fairly accurate portrayal of the typical patent” and citing also from John R. Allison & Mark Lemley, *The Growing Complexity of the United States Patent System*, 82 B.U.L. REV. 77,93, tbl. 1, 2002, that argues that most patents in the U.S. were granted until quite recently for mechanical innovations. But see John Golden, *Patent Trolls’ and Patent Remedies*. 85 TEXAS LAW REVIEW, p. 2111 (2007), available at SSRN: <http://ssrn.com/abstract=991698>, arguing that “As John Duffy points out, approval of the application of patent law to mere “improvements” of overall devices or processes—inventions whose “point of novelty” in Lemley and Shapiro’s terms presumably involves something less than the creation of a whole new product or process—had been explicit since at least the late eighteenth century”. Here it is probably important to point out the difference between mechanical innovations, which have in fact existed since long ago and more abstract technologies including software and business method patents. Whereas cumulative innovation has indeed existed since long ago, component and “complex industries” are a new feature of today’s patent system. See also Harhoff et al., *Final Report, The Strategic Use of Patents and its Implications for Enterprise and Competition Policies*, TENDER FOR N° ENTR/05/82 (July 8, 2007), available at: <http://www.en.inno-tec.bwl.uni-muenchen.de/research/proj/laufendeprojekte/patents/stratpat2007.pdf>.

¹⁶⁶ See Lemley & Weiser, supra note 72, at p. 797, citing from Ted Sabet, *Nanotechnology Innovation and the Patent Thicket: Which IP Policies Promote Growth?* 15 ALB. L. J. SCI. & TECH. 477, 495-503, 2005 and referring the problem that arose in the 1920’s during the emergence of the radio industry while posing that nevertheless, such problems are more frequent in our days. See also chapter IV below referring to data from different industries including the pharmaceutical sector.

¹⁶⁷ See Richard Epstein, *Steady the Course: Property Rights in Genetic Material* (U Chicago Law & Economics, Olin Working Paper No. 152, March 2003), available at SSRN: <http://ssrn.com/abstract=317101>; arguing that all-or-nothing regimes -in this case either “full patent protection” under a strong property rule or the absence of patents- can accomplish first best solutions.

¹⁶⁸ See Burk and Lemley, supra note 72.

In fact, the issue of property and liability rules has emerged in several inter-related discussions that either extend or overlap with the discussion about transaction costs, strategic behavior and hold-ups, which are here proposed as the economic justification for liability rules in patent law. The following section describes these discussions while relating them to the general research question of this Thesis on the efficiency of different protection rules for patents.

5.1 Multi-Parties Negotiation: the Anti-Commons

Mainstream studies on the economics of property rights pose that private property rights emerge due to changes in technology that make the benefits from having new rights surpass the cost of delineating and enforcing such rights¹⁶⁹. This view often serves to explain the extension of patent rights over new subject matter, and in their several dimensions of duration, scope and enforcement¹⁷⁰. However, the economics of property rights have also highlighted the benefits and costs of using alternative institutions to regulate the use of property. Property can actually be held in common with everyone having access to the resource and although rival goods held in common might give rise to a tragedy, public goods such as knowledge and information are non rival in consumption¹⁷¹.

¹⁶⁹ See Harold Demsetz, *Toward a Theory of Property Rights*, *THE AMERICAN ECONOMIC REVIEW*, VOL. 57, NO. 2, PAPERS AND PROCEEDINGS OF THE SEVENTY-NINTH ANNUAL MEETING OF THE AMERICAN ECONOMIC ASSOCIATION. (May, 1967), pp. 347-359.

¹⁷⁰ While Demsetz is said to propose an optimistic reading that explains the emergence of any new property right in terms of cost-minimization, the “pessimistic” school usually relies on a public choice explanation based upon interest groups lobbying for favorable legislation and the resulting potential for rent-seeking.

¹⁷¹ See Garret Hardin, *The Tragedy of the Commons*, *SCIENCE* 162, 1243 (1968), available at: <http://www.sciencemag.org/sciext/sotp/pdfs/162-3859-1243.pdf>, describing the problem of the commons, which arises where many agents have a right to use a resource but none has a right to exclude. As a consequence each agent will use that resource to maximize its private utility and the level of use chosen by each agent will be greater than the social optimum, thus creating a negative externality. See also Paul David, *A tragedy of the Public Knowledge ‘Commons’?* *GLOBAL SCIENCE, INTELLECTUAL PROPERTY AND THE DIGITAL TECHNOLOGY BOOMERANG*, available at: <http://siepr.stanford.edu/papers/pdf/00-02.pdf>, explaining several purported solutions to the underuse of IP protected assets include the “open source” and its application to the biotech sector under a commons usage. However, the open source movement that has balanced the exclusiveness of IP protection in the software field is based on specific circumstances of this latter. While open source holds a fundamental role in preserving the knowledge commons it has important shortcomings given the great amount of investment that firms must undertake to develop an end-use product. See *The Economist*, *Open, but not as usual* (Mar 16th 2006), stating that “as open-source models move beyond software into other businesses, their limitations are becoming apparent” and see Suzanne Scotchmer, *Open Source Software: the new Intellectual Property Paradigm* (2006), NBER WORKING PAPER SERIES. P. 27-30, arguing that the importance of an “open” and “commons” paradigm might be greater in areas where IP incentives are weak; such as neglected diseases where potential buyers are too poor, when ease of copying decreases the value of protection or when licensing is precluded by high transaction costs.

It has been recently argued that the increasing privatization of IP rights, and the increasing trend of patenting several technologies, also related to basic research has led to an over-fragmentation of rights. The tragedy of the anti-commons - which has found special applications in the patent biotechnology field¹⁷² arises when many agents hold a right to exclude but none has a privilege to use. As a result, the resource will be under-used and the excessive proliferation of rights - probably due to a low threshold for patentability - might lead to over-investment¹⁷³. When technologies are complementary to each other, that means, that they yield a higher value when used together or when many complementary inputs are necessary to develop a product, precisely as it happens with many modern technologies.

The empirical evidence on the emergence of anti-commons property is controversial¹⁷⁴, although studies suggest that there is a potential and growing risk, especially in fields such as genetic testing¹⁷⁵. Thus, there are indications of an under-use problem, sometimes described as anti-commons and other times used in slightly different meanings that might nevertheless get worse as the biotechnology industry evolves.

The problems of under-use under the anti-commons theory, suggest that some type of middle-ground solution might deserve attention. In this context,

¹⁷² For the general theory of anti commons see Michael Heller *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets* (1998), HARVARD LAW REV, N. 3, 111, 621-688; for an application to the biomedical sector and patenting see Michael Heller and Rebecca Eisenberg, *Can Patents Deter Innovation? The anticommons in Biomedical Research*. SCIENCE 280, 5364 (1 May 1998); both explaining how the tragedy of anti commons results in resources being prone to underuse because multiple owners on upstream technologies have a right to exclude use by others and none has a privilege to use the resources.

¹⁷³ Over-rewarding might give raise to rent-seeking activities where an agent engaging in patenting of certain technologies is not socially beneficial.

¹⁷⁴ Compare Scott Stern and Fiona Murray, *Do Formal Intellectual Property Rights Hinder the Free Flow of Scientific Knowledge? An Empirical Test of the Anti-Commons Hypothesis*, NBER WORKING PAPER SERIES, VOL. w11465, 2005, available at: <http://ssrn.com/abstract=755701>, finding an anti-commons effect in citation rates after a patent is granted, with Walsh, Arora and Cohen, *Working Through the Patent Problem*, SCIENCE: VOL. 299. NO. 5609, (14 February 2003), at p. 1021 performed a survey among researchers and found that the IP system doesn't preclude sequential innovation (researchers use interpret the research exemption in a broader way or simply infringe). See David, supra note 171, criticizing the methodological grounds of the Walsh study, among other reasons because of the ways in which the questions are posed that do not allow much room for researchers to express results otherwise. Furthermore, the Walsh study highlights severe problems related to patentability of research tools while distinguishing them from the anti-commons concept whereas Heller and Eisenberg refer to both problems under an anti-commons label.

¹⁷⁵ Several institutions have undertaken efforts to study and tackle this issue; the OECD has issued guidelines on licensing of genetic technologies. See OECD. GUIDELINES FOR THE LICENSING OF GENETIC INVENTIONS (2006), available at: <http://www.oecd.org/dataoecd/39/38/36198812.pdf>, referring that in a 2002 workshop the conclusion was that the IP system applied to genetic inventions did not have a systematic breakdown in licensing, although specific concerns were made, especially regarding access to diagnostic tests. See also the GUIDELINES BY THE U.S. NATIONAL INSTITUTES OF HEALTH (NIH) AND THE NATIONAL RESEARCH COUNCIL, (similarly acknowledging these problems and recommending non-exclusive licensing, trusting however in market-based solutions.

limitations to exclusive rights that go beyond the traditional limits for all property rights such as public interest and necessity might be justified. Whereas patent rights are given in spite of the fact that they will produce some under-use -which is still deemed to be socially efficient when balanced with the benefits of encouraging more innovation- exclusionary rights on products that have potential applications can lead to more under-use than optimal. Moreover, excessive fragmentation of property -the core of the anti-commons concept- is usually described as an irreversible process due to the surmounting transaction costs of re-uniting such dispersed assets¹⁷⁶.

The anti-commons literature has also described the problem of royalty stacking, which refers to multiple right holders in a complex technology each asking for a payment (royalty) probably in the light of a holdout power and the result that holds when such royalties must be aggregated. In the end, royalty stacking as well as holdouts preclude use because it would not be profitable to pay such an amount to use the associated technologies¹⁷⁷.

Although authors have used different frameworks to describe similar and inter-related phenomena -anti-commons, hold-outs, hold-ups and royalty stacking- a noteworthy fact is that under any of these cases, the changing landscape of innovation has led to question the current patent system. Moreover, under such special situations, courts can hardly assume an optimal design of the substantive IP or patent law. Therefore, the question is noticeably asked *ex-post*, usually by antitrust authorities or courts about to what extent it is desirable to intervene and fixed that substantive law.

5.2 Network externalities

Network externalities arise in markets where the use of a product by one consumer increases the value that other users obtain from the product¹⁷⁸. The illustrative example is communication networks, in which the user can establish contact with other users of the network and adding an additional user increases the value that others might derive. Externalities can occur directly, as in the first case described, or indirectly, when the utility of the users of a network, for instance, an operating system, increases because the developers of application

¹⁷⁶ See Francesco Parisi, *Entropy in Property*, AMERICAN JOURNAL OF COMPARATIVE LAW, VOL. 50, NO. 3, PP. 595-632.

¹⁷⁷ Douglas Lichtman, *Patent Holdouts and the Standard-Setting Process*, U CHICAGO LAW AND ECONOMICS, OLIN WORKING PAPER NO. 292 (2006), available at SSRN: <http://ssrn.com/abstract=902646> (arguing that: "some resources actually come into efficient use precisely because there are so many patent holders who each can plausibly veto a particular party's use"). See also Elhauge, *supra* note 38, arguing that Lemley and Shapiro fail to demonstrate that royalty stacking causes royalties above an efficient level and that instead, it tends to produce royalties that are at or below the optimal rate.

¹⁷⁸ See Menell *supra* note 28, at p. 141-142, citing and explaining the main studies with regard to network externalities and IP rights.

programs will produce more software for the operating systems that are most vastly used.

With the development of information and communication technologies, network externalities have increasingly acquired a major role in current economies. The presence of network externalities has various important economic consequences. One question relates to the desirability of setting up standards that enable products “to speak with each other”, i.e. compatible standards¹⁷⁹. The other question, directly related to this study refers to the effects of patent protection in industries featuring network externalities¹⁸⁰. Some authors argue for a stronger standard for patent protection in order to give incentives to the adoption of standardized interfaces¹⁸¹. However, compulsory licenses may be justified in particular circumstances to enable the full realization of network externalities and to solve the problems of lock-in¹⁸².

5.3 Uncertainty over rights

Most scholars assume that property rights are clearly defined. However, when the property right’s boundaries are unclear, the costs of protecting a right with a property rule might be as high as protecting it through a liability rule. This is because the property rule should be designed to cover only the right and to avoid enjoining non-infringing uses. Such possibility exists in real property but is much more prevalent in the IP field, especially in patent law, where boundaries are frequently unclear.

Whereas the examination of property rights in land is a well functioning system –“the process of examining property rights to land is routinely provided by a

¹⁷⁹ See *ibid*, at p. 142, citing Katz and Shapiro, 1985a, who argue that a new entrant to a market might adopt a noncompatible product standard even though their adoption of a compatible standard would increase social welfare. This behavior is driven by possible strategic advantages of not enhancing the desirability of the rivals’ products to consumers valuing standardization; but also Farrell and Saloner, 1985 showing a countervailing dynamic whereby the developers of improved standards may be unable to attract consumers because of the high switching costs to shift to the new standard.

¹⁸⁰ *Ibid*, at p. 142, citing previous work by Menell that shows how intellectual property protection has important implications for the dynamics of network externalities by affecting the extent to which competitors can establish proprietary standards.

¹⁸¹ *Ibid*, citing from Menell, 1987, who argued that “in markets featuring strong network externalities, the threshold for intellectual property protection should be higher than in traditional market settings so as to foster the adoption of standardized interfaces”

¹⁸² *Ibid* at p. 142. See also Dreyfuss, Rochelle, Unique Works/Unique Challenges at the Intellectual Property/Competition Law Interface. EUROPEAN COMPETITION LAW ANNUAL 2005 - THE INTERCATION BETWEEN COMPETITION LAW AND INTELLECTUAL PROPERTY LAW, Claus-Dieter Ehlermann and Isabela Atanasiu, eds. (Hart Publishing, Oxford, 2005), analyzing the problem that emerges when products are “unique” either because they “naturally” as it occurs with segments of DNA which must be used in order to develop further technologies and might not be substituted by any other such product, or because they have become “de facto” standards, as it happens when there are lock-in and network effects.

robust market that combines title examination with title insurance"- the same process is cumbersome for patents:

"typically, the risk of infringement that remains after a competent patent review is so unpredictable that it is virtually uninsurable. Similarly, uncertainty about scope and validity undermine the market for patent enforcement insurance"¹⁸³.

This result is due to the combination of fuzzy and unpredictable boundaries; a failure in the system of public access to boundary information; lack of use of a requirement of possession and the scope of rights and the patent flood:

"if we use a broader definition of "troll" that includes all sorts of patentees who opportunistically take advantage of poor patent notice to assert patents against unsuspecting firms, then troll-like behavior might be a more important explanation. Indeed, if patent notice is poor, then all sorts of patent owners might quite reasonably assert patents more broadly than they deserve. But then it is more appropriate to attribute the surge in litigation to poor patent notice, not to trolls per se"¹⁸⁴.

5.4 Patent quality problems

Poor quality patents may result from inadequate review of prior art during examination, poorly drafted claims, or lax standards (the height of the non-obviousness threshold). They may undermine economic efficiency¹⁸⁵ by restraining competition, raising transaction costs, and increasing litigation without promoting innovation.

A proliferation of poor quality patents can choke entry and cumulative innovation. Ensuring quality patents, however, comes at a cost and hence, it is important to consider the relation between problems of patent notice and patent quality with the strategic use of patents and whether an *ex ante* or an *ex post* solution is to be preferred, especially from an efficiency standpoint. With this regard, several studies have addressed the problems related to the costs of patent examination from the perspective of the administrative costs as well as the social and private costs and benefits involved in such activity.

¹⁸³ See BESSEN AND MEURER, note 14, at p. 51.

¹⁸⁴ See BESSEN AND MEURER, *ibid*, at p. 17. See also Lemley and Weiser, *supra* note 72.

¹⁸⁵ See Menell and Scotchmer *supra* note 36 at p. 35

6 Conclusions

The literature on entitlements has greatly contributed to the understanding of the interaction between rights and remedies. From an efficiency-based perspective the choice of an entitlement protection rule is based on multiple considerations, including the difficulty or easiness of bargaining in the market and the incidence of transaction costs. In this sense, this chapter set up the framework for analyzing the use of liability rules in patent law by bringing together the insights of the entitlement literature and the economic analysis of IP and patent law.

Modern patent law is facing severe challenges due to the overly complexity of innovations, especially in sequential and cumulative settings. It is often argued that firms are increasingly using patents for strategic purposes and engaging in costly litigation with the consequent risk of diminishing innovation incentives, especially for sequential innovators.

Within this changing landscape, the controversy between property and liability rules has been addressed as a possible way out of some specific problems, especially due to strategic behavior of patentees and patent hold-ups. This chapter sought to review the literature regarding these problems in order to highlight possible misunderstandings. Among the findings are some interpretations on the use of property and liability rules in IP and patent law - mostly reflecting a view where the nature of the right dictates the nature of the remedy- which are in contrast with the conception of property and liability rules as alternative rules advanced by the entitlement literature.

In addition, authors arguing for the use or maintenance of strong property rules for patents have tended to apply an incomplete picture of the existing liability rules for patent law, mostly due to a limited focus on U.S. law. This restricted view could be enriched with a comparative analysis of other systems outside the U.S. and by bringing together insights from the literature constructing on substantive law with the most recent literature discussing remedies-based liability rules, which is the object of the next chapter. Whereas this chapter sought to analyze the economic arguments advanced by the law and economics literature for and against the use of liability rules in patent law, the following chapters will assess the main insights from economic studies against historical evidence and the legal context, including the most recent decisions addressing similar problems.

CHAPTER II

EX-POST LIABILITY RULES: A HISTORICAL VIEW

“Law wants inventions to be worked...It is only through working that inventions are indeed turned into advantages for the public, lack of working would only cause protection to retard its general use and to preclude the progress that could derive from them”¹⁸⁶.

1 Introduction

This chapter examines the historical evolution of patent liability rules, including compulsory licensing provisions and other forms of non-authorized access to patented inventions, e.g. when the award of injunctive relief is subject to equity considerations. Whereas the next chapter focuses on the legal aspects of these types of patent liability rules, the limits between the two chapters, as the limits between historical and legal analysis are arbitrary. In effect, many historical arguments will directly be reflected in the legal provisions examined in next chapter whereas the historical overview of this chapter will certainly touch upon important insights from the legal perspective. A further arbitrary choice was to focus this chapter on the overview of *ex-post* liability rules from an international perspective whereas the next chapter analyzes the particularities of each country under study.

The chapter proceeds as follows. The second section briefly describes early patent times as they reflect different justifications for patent protection – economic and non-economic- as well as a search for balance between different policy goals. The section particularly reviews the origin of compulsory licensing

¹⁸⁶ TULLIO ASCARELLI, *TEORIA DEI BENI IMMATERIALI* (1960, Dott. A. Giuffrè Editore, Milano), p. 619, free translation: (“Il diritto vuole che l’invenzione venga attuata...E solo attraverso la sua attuazione che l’invenzione invero si risolve in vantaggio per la comunità, ché se essa potesse non venire attuata, la tutela concessa servirebbe solo a ritardarne la generale utilizzazione e allora proprio a precludere quel progresso che potrebbe derivare dall’attuazione dell’invenzione ...”).

during the patent abolitionist movement during the XIX century which culminated in patent harmonization processes and specifically on the Paris Convention for the Protection of Industrial Property. The third section reviews the antecedents and the process of patent harmonization that lead to the TRIPS Agreement and also discusses the main provisions regarding *ex-post* liability rules for patents there contained. The fourth section discusses the post-TRIPS landscape and some of the multiple controversies generated by the adoption of substantive and enforcement patent law standards as they refer to patent liability rules. The fifth section reviews the landscape of patent remedies outside patent law with the aim of searching for spaces affecting or permitting the use of patent liability rules in civil law and common law countries. A brief overview of the European patent landscape is separately provided in order to discuss the specific context of European harmonization with respect to patent substantive and enforcement standards.

2 Compulsory Licensing In International History

2.1 Early patent times

Since their inception, IP laws have attempted to pursue a balance between diverse driving forces. Industries were flourishing and innovators rewarded by means other than patents, at least until the 1400's, when the use of patents extended across the mining and maritime districts of Venice and Germany¹⁸⁷. However, the growing abuses of patents and privileges granted by governors prompted the need for statutes or decrees restricting the issuance of patents, primary to new inventions. Statutes soon started to establish other limits and requirements with regards to the duration of the patent as well as with respect to examination, granting and in general, the protection of inventions¹⁸⁸. However, these first statutes were limited in scope and patents were more

¹⁸⁷ See Frank Prager, *Historic Background and Foundation of American Patent Law*, THE AMERICAN JOURNAL OF LEGAL HISTORY, VOL. 5, p. 309-310. See also Fritz Machlup and Edith Penrose, *The Patent controversy in the Nineteenth Century*, THE JOURNAL OF ECONOMIC HISTORY, VOLUME X AND SUPPLEMENT, May 1950, N° I, at p. 2, explaining that: ("apart from its expression in statute form, the patent system is not chiefly an English creation. It was developing simultaneously in several countries at about the same time, though not at the same rate").

¹⁸⁸ Ibid, p. 310. See also PENROSE, THE ECONOMICS OF THE INTERNATIONAL PATENT SYSTEM, Johns Hopkins University Studies in Historical and Political Science, 1951, at p. 4-6, explaining how the failure of James I to regulate monopoly grants according to the common law made it necessary to enact 1623 Statute of Monopolies, since: "the granting of patents for the encouragement of industry and the public welfare was a recognized part of the royal prerogative; the creation of monopolies in opposition to the public interest and without any "consideration passing to the public" was in violation of the common law". Hence, many patents granted by the Queen were illegal because they violated common law, which caused a tension between the Crown and the Commons, also reflected in the case of *Darcy v. Allin*, deciding in 1602 that "under the common law exclusive grants to exercise a trade for private gain are against the "liberty and benefit of the subjects" and against the common law".

directly recognized by customary or common law¹⁸⁹. This situation soon led to the important question -still reflected in contemporary research- of whether patents could be justified as an inherently owned reward to inventors or as an incentive to encourage the science and arts. Closely related was the problem of whether patent rights were equitable in nature or could be assimilated to "property"¹⁹⁰.

Hence, in their origin, patent statutes were an attempt to control the excesses of arbitrary privileges, i.e. they acted as competition law¹⁹¹. In fact, the English Statute of Monopolies of 1623, allowed the granting of patents "to the true and first inventor and inventors of such manufactures, which others at the time of making such letters patents and grants shall not use, so as also **they be not contrary to the law nor mischievous to the State, by raising prices of commodities at home or hurt of trade, or generally inconvenient**" (emphasis added)¹⁹².

The mismatch between the origin of patent rights and their mainstream justification has important consequences with regards to how patent rights "should" be protected and yet, it is often ignored. The history of IP shows an early and widespread use of several tools to curb the possibility of abuses and over-extensions of monopolies. For instance, a mandatory remuneration system was used in the privilege granted in 1460 by the Venetian Senate to German national Jacobus de Valperga on a water pump invention, which extended for all his life but was subject to an obligation of licensing to whoever offered "reasonable royalties". Although this practice remained largely isolated¹⁹³, patent statutes around the world tended to preserve certain rights to the State in

¹⁸⁹ Ibid, p. 313.

¹⁹⁰ See Ibid, at p. 314, arguing that "In various parts of the world, notably including for instance France, society gave increasing approval, during the eighteenth century, to the view that the rights of authors and inventors rest on customary law, the continent equivalent of common law -not basically on statutes or codes (a creation of later times), and certainly not on royal grants (in spite of surviving formalities)" and arguing that "a common law right is likely to be implemented and interpreted more liberally"...

¹⁹¹ See MACHLUP AND PENROSE, supra note 187, p. 2, arguing that "If some conclusion might be inferred is not, at least not only, that the patent system evolved in order to provide exclusive rights to inventors but rather that it did in order to contain and rationalize the grant of previously abused privileges". See also Taubman, supra note 97, arguing that "the roots of patent law lie in the law of competition and protection of the freedom to ply one's trade. The English Statute of Monopolies, frequently cited as a foundational patent statute, is in essence competition law, aimed at harmful monopolies and illegitimate restraints on trade based 'upon misinformation and untrue pretences of public good' while identifying patents of invention as legitimate exceptions to a general rule against monopolies".

¹⁹² See PENROSE, supra note 187, at p. 7, arguing that "This Statute of Monopolies has been called the Magna Charta of the rights of inventors, not because it originated patent protection of inventors but because it was the first general law of a modern state to lay down the principle that only a "first and true inventor" should be granted a monopoly patent".

¹⁹³ ERICH KAUFER, THE ECONOMICS OF THE PATENT SYSTEM, Harwood Academic Publishers GmbH, V. 30, 1989, at p. 4.

as an attempt to balance incentives to innovate and access to new knowledge, especially by local inventors¹⁹⁴.

2.2 The first compulsory licensing provisions

Allowing nationals to use and adapt new technologies developed by foreigners was a primordial concern of early patent statutes¹⁹⁵. In fact, since their inception, different national patent systems included obligations to “work” the invention, which were understood as compelling patentees to produce nationally or locally¹⁹⁶. Afterwards, such requirements were more generally used in order to support the development of national industries.¹⁹⁷ However, compulsory licenses were a latecomer in the arsenal of tools used to balance the public and private benefits of patents¹⁹⁸. Although the origin of compulsory licenses is debated and generally linked to the patent controversy of the nineteenth century; an earlier antecedent actually arose during the discussion of a proposal for amendment to the U.S. patent law of 1790 by the U.S. Senate:

“And be it further enacted, that **whenever the grantee of such patent shall neglect to offer for sale** within the United States a sufficient number of any

¹⁹⁴ See PENROSE, supra note 187, at p. 162 arguing that “in order to ensure that any conflict between the private interest of the patentee and the “public” in whose interest the laws were allegedly established is not always resolved in favor of the former, most governments have reserved the right under certain circumstances either to revoke the patent or to permit others to use the invention patented, this altering the right granted from that of an exclusive monopoly in the use of the invention to a right to receive royalties for its use”. The case of Britain is mentioned since “early letters patent contained provisions for the cancellation of the grant if it was found to be “prejudicial or inconvenient to the realm”, ibid at p. 163.

¹⁹⁵ See also Zorina Khan, *Intellectual Property and Economic Development: Lessons from American and European History*, Study Paper 1a, Commission on Intellectual Property Rights, available at: at p. 11, arguing that interpretation of the “first and true inventor” included individuals importing inventions created abroad, which probes that “the primary emphasis of this feature of the patent grant was on diffusion, rather than on incentives for creativity”.

¹⁹⁶ See PENROSE, supra note 187, at p. 137-138 arguing that “the theory that all patent should be worked within the country that granted them arose when the encouragement of industrialization was the chief aim of the patent system. Patents were granted because countries wished to develop their natural resources, and to increase their supply of technicians and skilled labor, and the number and variety of their manufacturing concerns. The purpose was the immediate establishment of a new industry. The question was not one of “rights of inventors” but of industrial development, and so long as each grant was in fact a special act of grace of the sovereign, there was usually a direct understanding that the obligation of the patentee was to put a specific innovation into effect (...) Hulme shows that in England “the undertaking to work the grant constituted the essential consideration of the early monopoly system”. Ibid at p. 139 “The idea that the patent was granted on consideration that a new industry be established or a new art put into practice was for all practical purposes abandoned without statutory change and was not to become important again until the beginning of the 20th century”.

¹⁹⁷ See Michael Halewood, *Regulating Patent Holders: Local Working Requirements And Compulsory Licences At International Law*, OSGOODE HALL LAW JOURNAL, Vol. 35 NO. 2 at p. referring how working provisions were already incorporated for instance in the Venetian Patent Act of 1474, the English Statute of Monopolies in 1623, U.S. and French statutes.

¹⁹⁸ See PENROSE, supra note 187, at p. 163, arguing that “while the right to revoke the patent has always been a recognized right of the state, the power to issue a compulsory license is apparently of relatively recent origin”.

such Manufacture, Engine, Machine, Art or Device, or any improvement therein or **shall sell the same at a price beyond what may be judged an adequate compensation**, the Supreme Court of the U.S. or any two justices thereof...on complaint made to them in writing...are...authorized to inquire...into the justness of the said complaint; and if the same be found to be true, to take sufficient recognizance and security of the grantee...that he...within such reasonable time as the Court of Justices shall prescribe, offer for sale within the U.S. a sufficient number of such Manufacture, Engine, Machine, Art, or Device or Improvement therein, **at such reasonable prices as the said Court or Justices shall on due consideration affix**; and if the grantee...**shall neglect or refuse to give security as aforesaid, the said Court of Justices are hereby authorized to grant to the complainant a full and ample license** to make, construct and vend such Manufacture, Engine, Machine, Art, or Device, or improvement..."¹⁹⁹ (emphasis added).

Whereas such proposal was rejected, it can still be considered the first reference to compulsory licenses of patents which supposedly borrowed from the copyright laws of some of the States of the Union. But compulsory licensing was actually incorporated in several national patent laws only after the controversy of the XIX century. The anti-patent or abolitionist movement emerged in Europe during the 1800's, following the free trade thoughts inspired by Adam Smith, which opposed tariffs and privileges including patents. At that time, patents were seen by many as barriers to free trade²⁰⁰. Patent abolitionism was especially influential in Austria, Prussia and the U.K. while it similarly prevented the adoption of patent legislation in the Netherlands and Switzerland²⁰¹.

¹⁹⁹ See PENROSE, *supra* note 187, at p. 166, quoting the proposed amendment which was reproduced in Record of the Proceedings in congress Relating to the First Patent and Copyright Laws, printed by the Patent Office Society, 1940, with an introductory note by P.J. Federico.

²⁰⁰ See KAUFER, *supra* note 193, at p. 8, explaining how in Austria and in Prussia, "monopoly privileges had been established in many trades as the nineteenth century dawned. There, as in the western European lands, they were widely disliked as misuses of royal prerogative. This association between patents and monopoly privileges gave birth to an energetic anti-patent movement". *Ibid* at p. 9 arguing that "Tension rose as Prussia began to dominate policy among the German territories. In 1806, after its defeat by Napoleon, Prussia instituted reforms under which a new kind of civil servant, nourished inter alia on the ideas of Adam Smith, gained power. The Prussian government pushed for free trade among the German territories, and as remnants of mercantilist policy, patents were seen as a barrier to free trade. By 1862, all tariffs had been abolished inside Germany. In that same year, a free trade treaty with France marked the high point of the free trade movement's influence. The Prussian government argued concurrently that all patent laws in the German territories should be abolished". But see Menell, *supra* note 28, noticing that Adam Smith "while generally critical of monopoly power as detrimental to the operation of the 'invisible hand', nonetheless justified the need for limited monopolies to promote innovation and commerce requiring substantial up-front investments and risk".

²⁰¹ See Khan, *supra* note 195, at p. 29, explaining how the abolitionist movement was, for a short period of time "strong enough to obtain support in favour of dismantling the patent system in countries such as England, and in 1863 the Congress of German Economists declared "patents of invention are injurious to

Nevertheless, it could be argued that similar economic thoughts were used to support both countries adopting patent protection as well as those opposing patents. The ultimate goal of most countries was in any case to protect their national industries, although this was done through different means. For instance, Britain made use of compulsory working provisions to protect its industries from foreign competitors²⁰² and many countries limited the possibility that foreigners could obtain patents in the same way as nationals or conditioned their patents to national or local working provisions. In fact, it is argued that both protectionist and free traders welcomed the new compulsory licensing provisions: while “protectionists” interpreted the move as a “great protectionist idea”; “free traders” found that the introduction of “compulsory licensing” as a measure aiming at enhancing free trade²⁰³.

Hence, it could be argued that free trade and protectionism were walking side by side with regard to compulsory licensing and that such mechanism was viewed either as a way to promote or to react against protectionist measures²⁰⁴. Several circumstances related with the oscillation of countries between protectionist and free trade measures are pointed out as having converged to originate compulsory licensing provisions. Firstly, the rapid evolution of the German territories and especially of Prussia, from agricultural states to industrialized nations during the 1850 and 1870²⁰⁵. Secondly, the increasing importance of world exhibitions, which created the need to protect the inventions to be exhibited and the compromise achieved in the light of the 1873 Vienna exhibition, where the patent congress proposed to introduce compulsory licensing principles in national patent laws, hence undermining the objection that patents were to be considered only as “mercantilist monopoly privileges²⁰⁶. Thirdly, the lack of consistency in the free trade movement in Prussia²⁰⁷. And finally, the fact that 1873 set also the beginning of a worldwide

common welfare.” The movement achieved its greatest victory in Holland, which repealed its patent legislation in 1869”

²⁰² See PENROSE, *supra* note 187, at p. 140, referring that: “Even Britain, the home of the free traders, became alarmed at the use of foreign patents and inserted a compulsory working provision in her patent law. The industry most affected was the chemical industry and the competition most feared was German; but other industries joined the chemical industry in requesting compulsory working. It was pointed out that nearly half the patents granted in Britain were granted to foreigners and it was alleged that these patents had “completely wiped out” many British industries”.

²⁰³ See PENROSE, *ibid*, at p. 140.

²⁰⁴ See KAUFER, *supra* note 193, at p. 9 explaining how Austria adopted a development policy in order to favor its national industry but that also the adoption of a free trade area was a tactic used by Prussia to exclude Austria from the German union.

²⁰⁵ *Ibid* at p. 9.

²⁰⁶ *Ibid* at p. 9.

²⁰⁷ *Ibid* at p. 9, explaining the creation of a German free trade area as a political tactic used by Prussia for excluding Austria from the German union, given that Austria had adopted a strongly protectionist

depression that facilitated a movement against free trade and embracing protectionist movements where tariffs and patents played an important role.

The increasing participation of the –then- developing countries in world exhibitions, and especially the pressure of American inventors willing to go to the Vienna exhibition of 1873 only if protection for their technologies was assured by the German authorities, were among the reasons that prompted the need for harmonized patent standards. Following negotiations, patent protection was given to foreign patents under strict compulsory licensing provisions, a compromise that protected national industries while providing some flexibility to allow the use of patented technologies by local inventors²⁰⁸. After 1873, and also as a result of the world economic depression, which reinforced protectionist trends, patents were largely used together with tariffs in order to protect national industries. Still it is worth recalling that, at least for some scholars, the absence of patent protection was essential for the successful development of some national industries²⁰⁹. More in general, the adoption of compulsory licensing provisions is viewed as a compromise between no protection of patents and full protection through a right to exclude²¹⁰.

These trends evidence the importance of national self-interest, along with –and probably even more important than- the desire to protect the rights of inventors or to foster scientific progress as motivations for enacting and curbing patent protection. The reaction against and the final defeat of the abolitionist movement was followed by pressures to adopt an international patent regime that could also control for excesses such as the automatic forfeiture or revocation of patents in cases of failure to work inventions locally. This was an important incentive for endorsing the Paris Convention for the Protection of Industrial Property of 1883, which finally prohibited the automatic forfeiture of patents in case of lack of working, although it affirmed the obligation of patentees to work their patents locally where such requirement existed in national law.

development policy under the Habsburg monarchy. This also explains that after achieving the goal of excluding Austria, the free trade movement lost momentum.

²⁰⁸ Ibid. p. 8-9.

²⁰⁹ This is for example the case of Switzerland, which excluded protection for the pharmaceutical and chemical industries during the years when these were developing. See Khan, *supra* note 195, at p.29 “it was only in response to international pressures that Switzerland adopted measures to recognize patent rights”.

²¹⁰ See PENROSE, *supra* note 187, at p. 167, explaining that such compromise arose “between the patent advocates and the anti-patent, free trade group who opposed the entire patent system because of the restrictions it placed on the freedom of trade”; and also quoting the work of R. BECK VON MANAGETTA, *DAS NEUE OSTERREICHISCHE-PATENT-RECHT* (Wien, 1897) at p. 17, that attributed “the defeat of the anti-patent movement in Germany to the compromise on the idea of compulsory licensing”. See also *ibid* at p. 164 explaining that “the continental writers for the most part traced its origin to the controversy about patents in the middle of the 19th century”.

Nonetheless, compulsory licensing²¹¹ was not included in the 1883 Paris Convention but only introduced in the 1925 Hague Revision as a means to restrict the use of patent forfeiture in the cases of failure to work or other “abuses which might result from the exclusive rights conferred by the patent”. This reform prohibited countries from imposing forfeiture unless they had first attempted to remedy the “abuse” through the grant of a compulsory license, hence recognizing failure to work as an “abuse” of international patent law but introducing a less harsh measure as compulsory licensing.

Following the Convention, countries identified other abuses that justified compulsory licensing and also included in their national laws other grounds different than abuse. This was the case with compulsory licensing provisions motivated by the “public interest” and their specific variants of “national emergency” or “public health” issues²¹² as well as compulsory licenses for dependent patents. A particular provision was adopted for instance in Germany, which allowed for the use of compulsory licenses, subject to the condition that the “public interest” necessitated such measure²¹³. In the period preceding the TRIPS Agreement, the enactment of national laws was subject to wide discretion as the interpretation of possible abuses and the same notions of public interest, as well as other grounds for the use of compulsory licenses was left wide opened in the words of the Paris Convention.

A glimpse into history shows that failure to work has been considered a potential “abuse” of patent protection while local or national working had been deemed as a requirement for patentees during a long period of patent history and at least until the TRIPS agreement. Indeed, until the early 1990s, almost every country in the world (except for the U.S.) had local working requirements and the desire of achieving a compromise with this regard was an important reason of the adoption of compulsory licensing. Whereas one of the most important principles laid down by the Paris Convention was non-

²¹¹ For the general concept and categories of compulsory licenses, see Section 3.1.1.1 of Chapter I.

²¹² See GEORG BODENHAUSEN, *GUIDE TO THE APPLICATION OF THE PARIS CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY AS REVISED AT STOCKHOLM IN 1967*, BIRPI (WIPO Publication N° 611 (E), Geneva: 1968), at p. 70, arguing that: “The member States are therefore free to provide analogous or different measures, for example, compulsory licenses on conditions other than those indicated in paragraph (4), in other cases where the public interest is deemed to require such measures. This may be the case when patents concern vital interests of the country in the fields of military security or public health or in the case of so-called ‘dependent patents’”.

²¹³ See Gianna Julian-Arnold, *International Compulsory Licensing: The Rationales and the Reality*, 33 *IDEA: J.L. & Tech.* 349 (1993), citing provisions previous to the TRIPS Agreement and HARACOGLOU IRINA, *COMPETITION LAW AND PATENTS: A FOLLOW-ON INNOVATION PERSPECTIVE IN THE BIOPHARMACEUTICAL INDUSTRY*, (Edward Elgar Publishing, 2008), at p. 66, Table 3.2, citing “European National Provisions for compulsory licensing and on the experimental use exemption”. See also Compulsory licensing provisions in Latin American countries at: <http://www.managingip.com/Article.aspx?ArticleID=1321873>

discrimination between nationals from members of the Union, provisions requiring local working could discriminate against foreign patents which are the most likely to be worked abroad, hence giving rise to a *de facto* discrimination²¹⁴. Economists soon recognized that a compulsory license provision for working failure might also create such *de facto* discrimination resembling the rough effects of compulsory working²¹⁵ while being an inefficient and incomplete way of dealing with the general problem of the costs of patenting²¹⁶. In addition, many criticisms against compulsory licenses were soon centered on the problem of calculating a reasonable royalty payment that we will discuss below.

2.3 Origins of the principal national patent systems

2.3.1 U.K.

As it was described above, the UK patent system had an early origin in the first common law developments which latter ended in the enactment of the 1624 Statute of Monopolies. Several features of the UK patent system were soon object of debate such as the high cost and limited access to patent protection²¹⁷ as well as the uncertain application of patent doctrines which lead to the belief that patents could not be considered as “settled unless the patent had been contested in court with a favourable outcome”²¹⁸. Such uncertain landscape along with unclear rules with regard to licenses and assignments was probably

²¹⁴ See PENROSE, at p. 169.

²¹⁵ The welfare effects of either a face or a *de facto* discrimination have been analyzed for long. See for instance, PENROSE, at p. 170 explaining that “this sound like a compulsory working requirement, which we found in the last chapter was an early, and indeed primitive, approach to the problem of reducing the costs to an economy of granting foreign patents. Compulsory working is not only ineffective but does not directly attack the real source of the cost of foreign patents to an economy –the restrictions placed on the use of new techniques...”.

²¹⁶ Ibid at p. 170, “But if the sole criterion for revocation or compulsory licensing is whether the patent is worked domestically, the provision is too wide and at the same time, too narrow. It is too wide because, in itself, the working of a patent in the country granting it is not necessarily desirable; it is too narrow because the patentee’s failure to work is only one-and probably the least- of the costs of granting foreign patents”.

²¹⁷ The significant barriers in terms of costs to apply for patents have been discussed by scholars and even reflected in more general literature work (Charles Dickens in “A poor’s man tale of a patent”). See Khan, supra note 195, at p. 11. See also Works of Jeremy Bentham, cited in Moureen Coulter, Property in Ideas, p. 76, describing the costly process that an inventor should face to obtain patent protection as “a tax levied upon ingenuity”.

²¹⁸ See Khan, *ibid*, at p. 12. A similar argument has been recently the object of modern critics in studies considering patents as probabilistic rights, that is, rights which value depends on the probabilities that it will survive challenges of validity, see for instance, Lemley and Shapiro, *infra* note 608. However, the claim made during the 1800’s in the UK referred most directly to the fact that many patent doctrines were often interpreted in arbitrary ways.

the cause of a limited commercialization of patents during that period²¹⁹ and also gave rise to various attempts at reforming the system²²⁰.

In fact, one of the first patent “reform movements” occurred in England “chiefly because of complaints that the procedure for obtaining a patent was expensive, clumsy and uncertain”²²¹. Such reasons responded to concerns by interest groups of inventors. However, patent reform ignited a counter-movement that rapidly spread throughout England and abroad and in fact, the UK was particularly receptive and active in the patent controversy that took place during the XIX century.

By the year 1870, innovation in Britain lagged behind the U.S. in terms of innovation and number of patents and a number of factors converged to make possible a major patent reform in 1883. The reform simplified certain procedures, introduced the possibility of opposition to patents and importantly, it also enshrined compulsory licensing provisions for the first time.

As already discussed above, patents were conceived as a due reward for inventors which was however to be limited in a way that it did not harm trade or become an unreasonable monopoly. In this sense, the 1883 Act conceived compulsory licensing as a “limitation of the patent right to safeguard its reasonableness”²²². Compulsory licenses were established for the following situations in which the patentee was considered to have “defaulted” the patent system (i) when the patent was not worked in the United Kingdom; (ii) when reasonable requirements of the public could not be supplied; (iii) when someone was prevented from using an invention to the best advantage; and (iv) in cases of Crown use, that is, use by the Crown and its agents without the authorization of the patentee²²³.

Compulsory licenses for non-working were included to substitute earlier working provisions as well as to attain a compromise between the anti-patent movement as well as pro-patent interests²²⁴. Moreover, this substitution

²¹⁹ See Khan, *supra* note 195, at p. 13, arguing that “it is therefore not surprising that the market for patent rights seems to have been somewhat limited, and even in the year after the 1852 reforms only 273 assignments and licences were recorded as the law required”.

²²⁰ See Khan *ibid*, at p. 13. In 1852 the patent reform bill included an examination system that was afterwards eliminated. The 1883 patent act included a limited examination to ensure the invention was patentable and described whereas only in 1950, the UK system included an examination of novelty.

²²¹ See MACHLUP AND PENROSE, *supra* note 187, at p. 3.

²²² See Oliver Brand, *The Dawn of Compulsory Licensing*, I.P.Q. 2007, 2, 216-235.

²²³ *Ibid* at p. 218.

²²⁴ *Ibid*, at p. 219, arguing that: “the adoption of compulsory licensing of patents for non-working in subs.(a) of s.22 of the 1883 Act has to be seen against a wider background as a climax of three interwoven developments: the decline of compulsory working, the need for a compromise with the anti-patent free trade movement, and a sudden call for protectionism in late Victorian Britain”.

reflected a gradual change that took place with regards to the consideration in exchange for patent protection. At the beginning of the patent statute, it was widely understood that patents were monopolies granted in order to encourage new inventions and thus, the written disclosure of the invention was not required, a *quid pro quo* of the granting of patent rights was the working of the invention²²⁵.

Later on, the specification or written disclosure of inventions was imposed as the consideration in exchange for the grant of patent rights, a change that was also facilitated by the perception that compulsory working was an inefficient measure²²⁶. This change of consideration for patent rights was accompanied by the gradual transformation in the conception of patents from privileges to property rights²²⁷. As a consequence of conceiving patents as a property rights, courts were increasingly hesitant in compelling patentees to work their inventions²²⁸. By 1829, it was debated whether to sanction non-working with the revocation of patents, as it happened in other countries or whether to compel patentees that did not work their inventions to license them²²⁹. But compulsory licensing was still not accepted at that time. It is interesting to recall the pressure exercised by engineer John Farey in favor of using the equitable nature of injunctions in order to deny this remedy and limit relief to nominal damages in cases in which the patentee did not worked her invention²³⁰.

²²⁵ Ibid at p. 219 "In the early seventeenth century, the Crown granted monopolies for inventions by favour to encourage the introduction of new methods of manufacture within the realm. Neither a specification nor a written disclosure of the invention was required as "consideration" of the patentee for obtaining his or her grant. Instead, as we learn from *Darcy v Allyn and The Clothworkers of Ipswich* case, the patentee had to "work" the new invention within the country --alternatively to employ and educate native artisans in the working of the invention ("apprenticeship clauses"). This was common practice in Europe at the time. In England, the patentee bound himself to work his invention in the recitals of his grant. Breaching such a promise-- as he would know--was deceiving the monarch, which would render the grant void".

²²⁶ Ibid at p. 220-221.

²²⁷ See *ibid*, at p. 221, arguing that: "The effect of this "change of consideration" was compounded by the second event. In the late eighteenth century the patent grant transformed from a privilege to a property right", See also *Arkwright v Nigthingale* [CP 1785] Dav. Pat. Cas. 37.

²²⁸ Ibid, explaining that both a change in consideration of patents as well as a change in their own conception as property, made courts to be "increasingly reluctant to require a patentee to work his or her invention, especially when after the Napoleonic Wars the rules of patent law became obscured by confusion. Witnesses before the 1829 Select Committee were uncertain whether English law compelled patentees to work their inventions".

²²⁹ Ibid at p. 221, explaining that: "the 1829 committee contemplated nullity as remedy for non-working of the invention, finding support in the patent laws of the leading countries of the age--including France, England's principal economic and military rival but remained inconclusive. As a complementary scheme, the committee suggested to compel patentees, who granted licences at all, to license the public without distinction".

²³⁰ Ibid, at p. 221, referring how John Farey, an influential engineer p. 557-559: "gave extensive evidence, in common with other witnesses recommended relying on the efficiency of the existing practice of the courts rather than compelling the patentee to work or to license. The courts would--up to the enactment of the 1883 Act award only nominal damages for the violation of a patent that was not being worked and would

In addition to these changes, the influence of copyright provisions on compulsory licenses was possible due to the gradual disappearance of compulsory working provisions as well as the growing importance of the free trade movement that was soon used by patent abolitionists to argue against patent protection. The victory of patent supporters was however negotiated, upon the arousal of compulsory licensing provisions. According to scholars on patent history, it was the confluence of “the decline of compulsory working in Britain”, “the rise of compulsory licensing as an alternative” but also of the diminishing trust in “common law and equity for non-working”²³¹ that made the introduction of compulsory licensing provisions by the 1883 Act possible. However, compulsory licenses in the 1883 Act were very limited, only to be applied for patents granted after that year and the Act was soon repealed in 1902²³².

So, at the time of the negotiations of the Congress of Vienna in 1873, the possibility of enshrining compulsory licensing provisions had already been discussed by the U.K. Parliament. The Vienna Congress, which is considered to have settled the dispute between abolitionists and supporters of patent protection during the XIX century patent controversy, adopted an indefinite resolution authorizing the use of compulsory licenses²³³:

“... it is advisable to establish regulations, according to which the patentee should be compelled, in cases in which the public interest may require it, to allow the use of his invention to all responsible applicants, for an adequate compensation.”²³⁴

Although the origins of compulsory licensing provisions been largely associated with the anti patent movement, as it was discussed in the previous

not award the equitable remedy of an **injunction**, because the non-working or refusal to license others would render the patentees hands “unclean” ”.

²³¹ Ibid at p. 225 “That changed shortly thereafter, when the courts did not exercise their discretion concerning **injunctions** and damages any longer and the free trade movement rose to dominance”, especially after *Hopkinson v St James* [1893] 10 R.P.C. 46 at 62.

²³² Ibid referring only two cases accounted with respect to non-working: *Continental Gas Glühlicht, etc., Petition* [1898] 15 R.P.C. 727; *Levinstein's Petition* [1898] 15 R.P.C. 732 (742) and two other cases that were based on the ground that the reasonable requirements of the public were not being met: *Hulton & Bleakley's Petition* [1898] 15 R.P.C. 749; *Barlett's Patent* [1899] 16 R.P.C. 641.

²³³ Ibid, at p. 225, explaining that “The proponents carried the day with compulsory licensing playing a vital role: two German academics, Klostermann and Langen--well aware of the British reflections on compulsory licensing as well as the corresponding ones of the German lobby group “Patentschutzverein” - led the congress against some initial resistance of the American delegation”.

²³⁴ Ibid, at footnote 83, quoting from HILDEBRANDT, *THE INTERNATIONAL PATENT CONGRESS IN VIENNA, 1873* (Simpkin, Marshall & Co., London, 1875), p.41.

section, some scholars argue that it was protectionism, supported also by British Delegates, which rather pressure for the adoption of this measure:

“Ironically, it was not the free trade movement that had called so vocally for compulsory licensing in case of non-working, which finally brought it into the British statute books, but rather the exact opposite. The British delegates to the Vienna Congress secretly admitted that it was the growing domestic call for protectionism, which convinced them to support compulsory licensing for non-working”²³⁵.

Compulsory licenses were latter strengthened under the introduction of licenses of right in 1919. The reason was allegedly the “fear that foreign inventors might injure British industry by refusing to grant other manufacturers the right to use their patent”²³⁶. However, it is also important to add that patent protection was excluded for chemical products, during the period from 1919 to 1949, purportedly to “counter the threat posed by the superior German chemical industry” and meanwhile, “licenses of right enabled British manufacturers to compel foreign patentees to permit the use of their patents on pharmaceuticals and food products”, until the next reform in 1977.

2.3.2 U.S.

The U.S. has probably one of the most successful and influential patent systems in the world not only in terms of numbers of patents issued but also in terms of achieving to an important degree –at least until quite recently- proper incentives for inventiveness²³⁷. The U.S. firstly established a Patent Act in 1790 based upon the Constitutional mandate of promoting the progress of the science and the arts. Although the justification for granting patents was based upon similar goals to the U.K., the U.S. system differed in the important concept of the consideration given in exchange of patent grants. It was implied that in consideration for patents, the benefit received by the public followed from the disclosure of the innovation and hence, the justification of creating exclusive rights was to allow inventors to profit from their inventions²³⁸. The system has

²³⁵ See Brand, *supra* note 222, at p. 226.

²³⁶ See Khan, *supra* note 195, explaining that in 1907, patentees manufacturing outside the country were required also to produce nationally.

²³⁷ See *Ibid*, at p. 20. See also A PATENT SYSTEM FOR THE 21ST CENTURY, STEPHEN MERRILL, RICHARD LEVIN, AND MARK MYERS, EDS., (Committee on Intellectual Property Rights in the Knowledge-Based Economy, National Research Council: 2004) at p. 8, explaining that “Since its creation more than 200 years ago, the U.S. patent system has played an important role in stimulating technological innovation by providing legal protection to inventions of every description and by disseminating useful technical information about them”.

²³⁸ See *Whitney et al. v. Emmett et al.*, 29 F. Cas. 1074; 1831 “With the constitution, the English statute and the adjudication upon it before them, Congress have declared the intention of the law to be to promote the

been considered by many scholars as modern and differing in many important respects from other previously existing system as well as supported by a judicial system that endeavored to solve complex questions under an economically oriented approach and with the goals of promoting economic growth and social welfare²³⁹.

One of the most important and distinguishing characteristics of the system was the early presence of examination of patents with a policy of checks and balances as well as mechanisms to constraint the ability of examiners to act arbitrarily, including the prohibition for them to apply for patents. The U.S. patent law allowed the possibility to apply for a patent for the "first and true inventor", but the requirement of novelty was interpreted in the sense of requiring inventions to be original in the entire world and not only in the U.S.²⁴⁰. During a period that extended until 1861, patent rights were available for U.S. citizens and foreigners upon different fees and hence the treatment was at times discriminatory but it was early replaced by the 1861 which declared patent rights available to all applicants on the same basis without regard to their nationality²⁴¹

Another important feature of the U.S. patent system was its low patent fees and hence the desire that inventors could apply for patents at reasonable prices. These features are said to produced a system that was "transparent and predictable"²⁴². Accompanied with the publication of annual lists of granted patents, the system was characterized by the diffusion of information²⁴³.

progress of the useful arts by the benefits granted to inventors; not by those accruing to the public, after the patent had expired, as in England. This is most evident from their imposing as conditions, that the invention must be new to all the world, and the patentee be a citizen of the United States. If public benefit had been the sole object, it was immaterial where the invention originated, or by whom invented; but being for the benefit of the patentee, the meritorious cause was invention, not importation, and the benefit was not extended to foreigners, in which respects the law had been otherwise settled in England". See also Khan, *supra* note 195, at p. 22-23 "The American patent system was based on the presumption that social welfare coincided with the individual welfare of inventors. Accordingly, legislators emphatically rejected restrictions on the rights of American inventors. However, the 1832 and 1836 laws stipulated that foreigners had to exploit their patented invention within eighteen months. These clauses seem to have been interpreted by the courts in a fairly liberal fashion, since alien patentees "need not prove that they hawked the patented improvement to obtain a market for it, or that they endeavored to sell it to any person, but that it rested upon those who sought to defeat the patent to prove that the plaintiffs neglected or refused to sell the patented invention for reasonable prices when application was made to them to purchase."

²³⁹ *Ibid*, at p. 20-21.

²⁴⁰ *Ibid*, at p. 22, explaining how: "unlike in England, the phrase was used literally, to grant patents for inventions that were original in the world, not simply within U.S. borders"

²⁴¹ *Ibid* at p. 22-23.

²⁴² *Ibid*, at p. 23.

²⁴³ *Ibid* at p. 22.

Finally, and as it will be often highlighted in this Thesis, the U.S. patent system has only rarely used working requirements or compulsory licensing provisions for the failure to exploit a patented invention. For instance, between 1836 and 1932, U.S. laws required foreign patentees to exploit their patented inventions within eighteen months. Nonetheless, these provisions seemed to have been interpreted quite narrowly by courts and then to have disappeared from latter patent law reforms. This narrow exceptions to the rights of patent owners have been explained as responding to a view of social welfare that coincides with the private welfare of inventors, in the sense that the benefit from inventors will translate in the progress of the science and the arts, which would warned against establishing restrictions upon the private rights of inventors²⁴⁴.

2.3.3 *France*

This brief account of the main features of the French patent system responds to the need of referring to several distinguishing characteristics of this system which were also transplanted in other jurisdictions. In general terms, and comparing it with the U.S. system, the French patent system preceding the French revolution co-existed with a large variety of other rewards and incentives beyond patents²⁴⁵. With respect to the patent grants and their scope, the system relied on a case-by-case approach that undermining predictability and certainty often responded to other non-economic reasons. This permitted on the one hand to apply equity considerations for the patent grants and the fees asked for patents, for instance, if an inventor was poor, but on the other hand it also allowed arbitrary decisions with respect to such grants.

After the French Revolution, the patent laws of 1791, amended in 1800 and 1844 were aimed at abolishing the prerogatives under the old regime and declared “the natural right of the inventor to obtain property rights in patents”. Nonetheless, patent scholars have highlighted that the recognition of a natural right to inventors did not necessarily mean a complete break with mercantilist policies used in the past²⁴⁶. For instance, French patent legislation prohibited until 1844 that an inventor could attempt to obtain a patent on the same invention abroad. However, the system allowed for the existence of patents of importation, which gave the possibility that the first to introduce an invention patented abroad could enjoy a similar natural right as if it were the patentee of such invention. In addition, fees continued to be relatively high even after the

²⁴⁴ Ibid at p. 24.

²⁴⁵ Ibid at p. 14.

²⁴⁶ Ibid at p. 16.

1791 legislation and case-by-case reasoning as well as arbitrary decisions have been also accounted after such reform.

With regard to the specification of the patents, the French system was also based upon the belief of a bargain happening between the State that grants the patent and the patentee having to disclose her invention in a way that allows another person skilled in the art to replicate that invention. Nonetheless, in the absence of provisions for the publication of the description of patents, it is said that such statutory clause was dead letter²⁴⁷.

Finally, and of great importance for this analysis, the French patent system established working requirements on the basis that “it would be injurious to society at large, to allow any one individual to cramp the efforts and attempts of more industrious inventors by obtaining a patent upon which he did not intend to work”²⁴⁸.

2.3.4 Germany

As it was previously referred, the German Empire was importantly involved in the controversy of the XIX century about patents. Such debates reflected an internal tension between the Empire, whereby for instance, Alsace-Lorraine favored the French patent system and other states such as Hamburg and Bremen did not provide for any patent protection at all. In 1877, a national patent act unified the patent system, creating a centralized procedure for the grant of patents²⁴⁹.

The German patent policy is said to have given incentives for economic growth and innovation, targeting such effects within specific industries and mixing a policy of granting patent rights for some inventions and for instance, avoiding patent protection for food, pharmaceutical and chemical products while providing for the possibility of process patents in such areas. The publication of patent information, including the claims and specifications of patent documents was an important feature that contributed to the diffusion of knowledge. The German patent fees were high in order to avoid incentives for patenting trivial inventions. In general, it is argued that the German patent system differentiate from the U.S. system in that, on average, there were fewer patent grants of higher quality.²⁵⁰

²⁴⁷ Ibid at p. 17.

²⁴⁸ Ibid at p. 16, quoting from Antoine Perpigna, *The French Law and Practice of Patents for Inventions, Improvements and Importations* (1852), at p. 29.

²⁴⁹ Ibid at p. 19.

²⁵⁰ Ibid at p. 19-20.

Finally, and with respect to this analysis, the German patent system provided for the possibility of working requirements. This meant that a patent could be revoked after three years elapsed, if such patent was not being worked or if the owner refused to grant licenses for the use of the patented invention that was considered in the public interest and also in the case where the invention was mainly used outside Germany, although in most cases a compulsory license was deemed as sufficient to remedy the above mentioned circumstances.

Table 3: Comparative historical overview

	US	UK	FRANCE	GERMANY
Patent policies	Incentives to inventors	The public benefits when patent expires	Justice and natural rights	1877 Diffusion and innovation of specific industries
Who could patent?	U.S. citizens (up to 1861)	N/A	N/A	N/A
Patents of importation	No	Yes	Yes	N/A
Novelty	Global	National	N/A	N/A
Fees	Moderate, only to cover administrative expenses, consideration for patents is disclosure	High	High	High to prevent trivial inventions
Working requirements	No; Only on foreigners (1832-1836)	Yes	Yes	Yes
Compulsory Licenses for non-working	No	Yes 1883		Yes
Patent Notice	Clear	Not clear	Statutory but dead letter	Publish claims and specification before granting
Patent Examination	A primary feature since 1790	Not properly until 1905	Not until late	Initially examined by consultants; examiners became permanent employees of the Patent Office in 1891
Commercialization	More than 9000 per year (1870's)	Only 273 after 1852 Reform	Cumbersome due to uncertain rights	

Source: Zorina Khan and own elaboration

3 *Ex post* liability rules in the TRIPS Agreement

The Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement is the outcome of multilateral negotiations that took place during the Uruguay Round of negotiations on the General Agreement on Tariffs and Trade (GATT)²⁵¹. In 1994, the Marrakech Agreement Establishing the World Trade Organization (WTO), which complemented the 1947 GATT and created an institutional body, the WTO as well as achieved liberalization in other areas apart from trade in goods. Before the entry into force of the Marrakech Agreement and its important Annexes, to which the TRIPS Agreement is part as Annex 1C, the GATT system did not establish IP provision with the narrow exceptions explained below. The most important international instruments before the TRIPS, were the Paris Convention for the Protection of Industrial Property and the Berne Convention on Literary and Artistic Works, administered by the International Bureaux for the Protection of Intellectual Property (known for its acronym in French BIRPI) and which was substituted by the WIPO.

As the result of long and controversial negotiations, the TRIPS Agreement laid down minimum substantive and enforcement standards for the multilateral harmonization of IP rights. Nonetheless, the Agreement left the possibility for countries to use several exceptions and limitations to the standards there established as well as provisions open for the interpretation of each national law. These spaces where multilateral harmonization was not completely achieved and which are often mentioned as a potential flexibility for the implementation of the Agreement include the possibility of using *ex post* liability rules. This possibility derives either from the highly debated framework of articles 30 and 31 or from the spaces left by the enforcement section and especially by article 44, which deals with injunctive relief. The following section examines the reasons that motivated the negotiation of the TRIPS Agreement and its final design with a focus on these provisions.

²⁵¹ The GATT is a trade liberalization Agreement coming into force in 1947 and signed by 23 countries, which contained tariff concessions and rules aiming to prevent the frustration of such concessions by means of restrictive trade measures. The contracting parties were involved in the efforts by the United Nations Economic and Social Council in 1946 to agreed upon an International Trade Organization (ITO) that would work along with the other post-War economic agencies (International Monetary Fund and the International Bank for Reconstruction - later the World Bank). See World Trade Organization *Fiftieth Anniversary Of The Multilateral Trading System-Press Brief*". http://www.wto.org/english/thewto_e/minist_e/min96_e/chrono.htm, retrieved on 15-12-2009. On January 1, 1995, the World Trade Organization Agreement entered into force, complementing the 1947 GATT with further trade concessions as wells as with new areas of trade liberalization, namely trade in services covered by the General Agreement on Trade in Services (GATS), the Trade-Related Investment Measures (TRIMS) and the TRIPS Agreement.

Besides attempting to set up a comprehensive set of global minimum standards of protection for all IP rights, one of the most fundamental changes introduced by the TRIPS Agreement was bringing IP into the Dispute Settlement of the WTO, as this latter was perceived as a "more effective" forum for the protection and enforcement of rights²⁵². Before the TRIPS Agreement, the GATT did not directly regulate IP and the few references to IP actually addressed the clash between free trade which was GATT's main guiding principle on the one hand, and IP as exclusive rights that restrict competition but are justified on a dynamic or long run perspective on the other hand²⁵³. A few relevant provisions with this respect were Article IX which was limited to marks of origin; a general exception to the GATT principle of free trade in place for patents, trademarks, copyrights and prevention of deceptive practices in Article XX (d)²⁵⁴ and other general provisions applied to different fields as well as to IP²⁵⁵. In the words of TRIPS and IP expert, Daniel Gervais:

"By and large, however, intellectual property was basically considered in the GATT context as an "acceptable obstacle to free trade, at least until the Tokio Round. During that Round, held between 1973 and 1979, trade in counterfeit (trademark) goods had started to emerge as a serious issue. Attempts to agree common rules to stop trade in counterfeit goods failed at the end of that Round but efforts to include a specific discipline within the GATT framework continued. Invoking their right to protect intellectual property under Article XX(d), a number of contracting parties prepared an "Agreement on Measures to

²⁵² See DANIEL GERVAIS. *THE TRIPS AGREEMENT: DRAFTING HISTORY AND ANALYSIS*. (1998, Sweet & Maxwell), explaining that the process bringing IP to the WTO framework has been described as an example of forum shifting, a strategy put forward to substitute the WIPO with the WTO, due to this latter's enhanced probabilities of enforcement through the mechanisms of dispute settlement and retaliation. Another – complementary- explanation of the occurrence of the TRIPS was the possibility that arose during the negotiations of the Uruguay Round, of combining different areas for trade concessions. This strategy, known as "trade linkage" is said to have facilitated reaching consensus among countries with widely divergent views on IP due to concessions obtained in exchange in other negotiation areas. For a concept of trade linkage see Andrew Guzman, *A Compliance-Based Theory of International Law*, 90 CAL. L. REV. 1823 (2002).

²⁵³ For instance, article XX(d) of the GATT allowed parties to adopt and enforce measures aiming at ensuring compliance with its own laws, provided they were not inconsistent with the Agreement, and "including those relating to the protection of patents, trademarks, copyrights and the prevention of deceptive practices"

²⁵⁴ See GERVAIS, *supra* note 252, arguing that this "general exception" to the GATT principle of promoting free trade was invoked in two disputes brought before GATT panels. The exception was used in the case of United States-Imports of Certain Automotive Spring Assemblies, the first patent infringement case in GATT history. The panel concluded that patent protection was an area in which contracting parties could take measures which otherwise would not be in conformity with their GATT obligations"

²⁵⁵ Article III requiring national treatment and protection of domestic production was arguably applicable to IP before the TRIPS. See GERVAIS, *ibid*, arguing that this article applied to products, not to persons; articles XXII and XXIII related to consultations and dispute settlement, and XII(3)(c)(iii) and XVIII(10) which could be applied when import restrictions prevent a trademark owner from meeting the use requirement to maintain its right.

Discourage the Importation of Counterfeit Goods", a draft of which was circulated in 1979 and 1984"²⁵⁶.

A decision of the Ministerial Declaration on November 29, 1982 set up consultations with the WIPO in order to analyze the trade related aspects of trade in counterfeit goods. In this decision, the GATT Council received a mandate to analyze such questions, decide on the appropriateness of measures in the context of the GATT and if judged appropriate, to propose the modalities of such action. During 1984, a group of trade experts was set up with the intention to examine the consolidated Secretariat documentation, assisted by an expert nominated to the WIPO Governing Bodies²⁵⁷. At that time, negotiations still focused on an initial proposal which only mentioned international trade related aspects of IP²⁵⁸. Indeed, the document that launched the Uruguay negotiations stated:

"Negotiations shall aim to develop a multilateral framework of principles rules and disciplines dealing with international trade in counterfeit goods, taking into account work already undertaken in GATT"²⁵⁹.

Such a restricted mandate was in line with the notion of international trade related aspects of IP. However, the same document expressed that "negotiations shall aim to clarify GATT provisions and elaborate as appropriate new rules and disciplines". It was indeed the second part of this phrase, which allowed the entrance of a thorough and elaborated set of IP rules within the GATT –now the WTO- framework. As Daniel Gervais has explained:

"One could thus say that the entire TRIPS Agreement, with the possible exception of enforcement provisions destined to curb trade in illicit goods (which had been previously envisaged in GATT) rests on the final words on the first paragraph: "and elaborate as appropriate new rules and disciplines". Even there, a limitation was added, by using the words "as appropriate" although, upon reflection, appropriateness was such a subjective criterion in this context that it was not a real restriction to the negotiators' brief".

²⁵⁶ Ibid.

²⁵⁷ Ibid, explaining that at the fortieth Session in November of 1984, such group of experts was set up, marking the intention of seriously negotiate an IP Agreement. The group of Experts on Trade in Counterfeit Goods met on six occasions in 1985 and presented its report on October 9, 1995. See documents L/5878 and the Secretariat note dated January 10, 1985, MDF/W/19.

²⁵⁸ The process of negotiations during the Uruguay Round is available through several documents, starting from the drafts of "an Agreement on Measures to Discourage the Importation of Counterfeit Goods" referred as L/4817 and L/5382 and draft which circulated between 1979 and 1984 following a failure to agree on common rules to address these issues during the Tokyo Round.

²⁵⁹ Document MIN.DEC of September 20, 1986, pp. 7-8

During the contentious process of negotiations that followed, several clashing issues emerged. Among them, compulsory licenses, one out of the available mechanisms to balance the growing protection to IP rights with other national and economic interests posed a challenge for the final Agreement. Many controversial issues were of a North-South nature, although conflict was also present due to the different legal traditions, for instance, between the U.S. and countries of continental Europe²⁶⁰.

3.1 Article 31 of the TRIPS Agreement

The title of article 31 of the TRIPS Agreement, which refers to “other use without the authorization of the right holder” already reflects its debated nature and the intent of differentiating the use of compulsory licenses from other exceptions established by article 30²⁶¹. Prior to the TRIPS Agreement, the use of compulsory licenses was regulated at the international level by the Paris Convention. Yet, the controversy generated by the use of compulsory licenses was allegedly one of the main reasons that triggered discussions on the TRIPS Agreement, given the existent divergences between countries and the pressure of developing countries to revise the Paris Convention²⁶².

The final text of article 31 established several important requirements for compulsory licensing provisions, including the need to give adequate compensation for the patent owner, that prior efforts to obtain a license on reasonable commercial terms take place before any compulsory license is issued

²⁶⁰ See GERVAIS, *supra* note 252, arguing that: “Compulsory licensing of patents was already at centre stage. Brazil and Korea argued in favour of compulsory licensing while Austria and Hong Kong pleaded for restrictions, arguing that procedures should include judicial review and provide for a limitation to the domestic market (limiting exports of material produced under a compulsory license), non-exclusivity (allowing other licenses to be granted) and appropriate compensation for the right holder whose industrial property right was subject to the compulsory license”.

²⁶¹ See UNCTAD-ICSTD, *supra* note 41 at p. 462, indicating that the title reflects “the effort by the drafters to distinguish between “limited exceptions” that are authorized under Article 30, and compulsory licensing authorized under Article 31. Article 31 (compulsory licensing) addresses the interests of patent holders in particular cases – a compulsory licence is directed to an identified patent and authorized party – while Article 30 exceptions may involve legislation of more general effect on patent holders and authorized parties”. Still, many scholars are of the opinion that a compulsory licensing system should comply both with article 30 and 31. Conversely, the case-by-case nature and other limitations put forward by article 31 to compulsory licensing would make it redundant to subject any such regime also to the discipline of article 30.

²⁶² *Ibid*, explaining the pressure put forward by developing countries during negotiations on the revision of the Paris Convention and their demand for a “new International Economic Order” which included greater access to technology; “These negotiations broke down in 1982, in significant part because of competing demands concerning compulsory licensing. The failure of these negotiations convinced industry interests that they would not succeed in solving what they viewed as the “intellectual property problem” at WIPO. This led to a refocusing of IPR efforts towards the GATT”.

and that the use of licenses be limited predominantly to the domestic market²⁶³. The last two requirements might be waived by member states when compulsory licenses are applied as a remedy to correct anti-competitive practices which have been determined after judicial or administrative procedures. The need to engage into prior efforts to obtain authorization might also be waived in the case of national emergencies or circumstances of extreme urgency or cases of public non-commercial use.

As discussed below, the grounds for granting compulsory licenses as well the interpretation with regard to the requirements of article 31 is far from settled and their application in practice continues to raise great controversy. Moreover, with the coming into force of the TRIPS Agreement, it could be argued that discrimination is now definitely banned and working requirements could only be imposed at a global level, meaning that a patent sufficiently worked in one member country of the WTO shall be deemed to be sufficiently worked in any country²⁶⁴. However, it is important to recall that the Paris Convention still remains in force and has also been incorporated into the TRIPS Agreement²⁶⁵, hence amplifying the number of signatory countries while maintaining the possibility of having working requirements and compulsory licenses to remedy non-working, as long as national laws provide for these measures²⁶⁶.

Furthermore, non-working as a ground for compulsory licensing remains important for several reasons. Although it is only one out of many possible

²⁶³ The complete requirements of Article 31 that: non-authorized uses should be considered on their individual merits; the proposed user should have made prior efforts to obtain authorization in reasonable commercial terms; the scope and duration of authorization is limited for the purposes authorized; the license is non-exclusive and non-assignable; the license is predominantly for the supply of the domestic market; the license is conditioned to be terminated when the circumstances that originated the authorization cease; adequate remuneration is paid; and decisions regarding the legality of authorization and the remuneration are subject to judicial or independent review. In addition, for compulsory licenses granted in order to allow the exploitation of a patent which is dependent upon a previous innovation: the second innovation must involve an important technical advance of considerable economic importance; the owner of the first (dominant) patent shall be entitled to a cross-license on reasonable terms and uses authorized with respect to the first patent shall be non-assignable except if assigned with the second patent.

²⁶⁴ This interpretation is based upon article 27 of the TRIPS Agreement, establishing that patents “shall be available and patent rights enjoyable without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced”. See also *supra* note 106 and accompanying text.

²⁶⁵ Article 2 of the TRIPS Agreement establishes that “In respect of Parts II, III and IV of this Agreement, Members shall comply with Articles 1 through 12, and Article 19, of the Paris Convention (1967)”

²⁶⁶ On May 30, 2000, the U.S. requested consultations with regard to provisions in Brazil’s patent law, which established working requirements conducive to the possible application of compulsory licenses and it was afterwards joined by the EC. The U.S. requested a Panel to be established on January 9, 2001. See Brazil, Measures Affecting Patent Protection, Request for the Establishment of a Panel by the U.S., WT/DS199/3, available at: http://docsonline.wto.org/gen_home.asp. Nonetheless, the U.S. withdrew its request and notified that a mutually agreed solution had been reached on July 19, 2001. See also Attaran and Champ, *supra* note 105.

grounds, this form of patent abuse has exercised an enormous influence in other compulsory licensing regimes as well as being the object of much criticism. Secondly, and as we mentioned, non-working could now be evaluated in global terms and hence, represent a case of patent abuse similar to patent suppression. In fact, one relevant aspect discussed in the *eBay* as well as other cases was precisely whether patentees should ever be obliged to work their patents. In a post-TRIPS world, the value of a compulsory licensing for non-working cases could be precisely to impede that patented technologies remain idle, whereas it could hardly be supportive of national in discrimination of foreign firms²⁶⁷:

“A major issue in a case such as that brought by the United States against Brazil is whether Article 27.1 was intended to prohibit WTO Members from adopting and implementing local working requirements, and effectively to supersede the Paris Convention rule. The negotiating history of TRIPS indicates that Members differed strongly on the issue of local working. Several delegations favoured a direct prohibition of local working requirements, but TRIPS did not incorporate a direct prohibition. Instead, it says that patent rights shall be enjoyable without discrimination as to whether goods are locally produced or imported. Under the jurisprudence of *EC-Canada*, this leaves room for local working requirements adopted for *bona fide* (i.e., non-discriminatory) purposes”²⁶⁸

Although no case has so far directly addressed article 31 of the TRIPS Agreement, in the *EC-Canada*, a panel addressed the scope of a limited exception under article 30 finding that while such article recognized that the extent of patent rights would need to be balanced, the limiting conditions forth by the article signified that the intention was not “to bring about what would be equivalent to a renegotiation of the basic balance of the Agreement”²⁶⁹.

²⁶⁷ Arguable exceptions are the provisions admitting compulsory licenses when national or domestic needs are not met, however, this case could be considered as preserving the interest of the public rather than as a protectionist measure.

²⁶⁸ THE WTO DISPUTE SETTLEMENT SYSTEM: 1995-2003, FEDERICO ORTINO AND ERNST-ULRICH PETERMANN EDS., (Kluwer Law International, 2004) at p. 440.

²⁶⁹ See Canada – Protection of Pharmaceutical Products, WT/DS114/R, 17 March 2000 (*EC-Canada*) case, at paragraph 7.26. See also *Ibid* at p. 7.45, addressing the interpretation of article 30 of the TRIPS Agreement and concluding, among other things, that the exception contained in the Canadian law, which included the activities of seeking product approval in foreign countries could be considered as a “limited exception”: “the exception is ‘limited’ because of the narrow scope of its curtailment of Article 28.1 rights. As long as the exception is confined to conduct needed to comply with the requirements of the regulatory approval process, the extent of the acts unauthorized by the right holder that are permitted by it will be small and narrowly bounded”.

3.2 Article 44 of the TRIPS Agreement

Enforcement provisions were almost nonexistent in internationally harmonized IP before the TRIPS Agreement and still, the standards achieved by the TRIPS are comparatively few in comparison with substantive law. The fact that enforcement rules, including remedies, widely diverge among countries, created some difficulty during the Uruguay Round of Negotiations that settled the TRIPS Agreement. However, it is said that difficulties were relatively easier to overcome in comparison with the obstacles faced during negotiations of substantive standards²⁷⁰. This was a predictable outcome as the TRIPS, in spite of setting for the first time multilateral rules dealing with enforcement has maintained a vague language that favors open standards over rigid rules²⁷¹. This, however, does not necessarily mean that harmonization of enforcement IP and patent law will not continue as it is part of an undergoing process²⁷².

Remedies are a fundamental piece of enforcement law and the TRIPS Agreement provides that member states shall make injunctions and damages available, among others measures for patent infringement cases²⁷³. Although the title of Article 44 refers to injunctions, this concept does not have a uniform meaning across different legal traditions, as it will be explained with greater detail in the sections examining national practices. Hence, negotiators preferred

²⁷⁰ See UNCTAD-ICTSD, *supra* note 41, at p. 579 referring: “The comparatively uncontroversial nature of the negotiations stood in contrast to the fact that significant differences in enforcement rules existed amongst legal systems and national laws, and that many developing countries participating in the negotiations actually lacked the infrastructure and resources to apply higher standards for the enforcement of IPRs”. See also DANIEL GERVAIS, *THE TRIPS AGREEMENT: DRAFTING HISTORY AND ANALYSIS*, (3rd edition, Sweet & Maxwell, 2008), at p. 440-441, referring that “the two principal stumbling blocks during the TRIPS discussions were the ironing out of differences amongst legal systems and the need to take account of many developing countries’ availability of resources”. Article 41(5) is said to address this latter concern by establishing that “this part does not create any obligation to put in place a judicial system for the enforcement of intellectual property rights distinct from that of the enforcement of law in general...” whereas the concern about maintaining the own legal traditions embedded in procedural rules, including remedies, was tackled through the avoidance of specific remedies in particular cases.

²⁷¹ See GERVAIS, *supra* note 270, at p. 441, highlighting the use of open-standards in the TRIPS section on remedies that he defines as “empowerment norms” requiring authorities to have the authority of ordering certain remedies, including damages and injunctions.

²⁷² See next section below. See also *infra* note 290 and accompanying text with regards to the proposal of ACTA.

²⁷³ Articles 41 to 61 contain the enforcement rules that countries shall implement in the context of remedies, including the obligation to provide for expeditious remedies to prevent infringement and remedies which constitute a deterrent to further infringements (article 41); among others, injunctions (article 44) and damages (Article 45). A balance with the general objectives of the GATT and the TRIPS Agreement is embedded in the provision that enforcement procedures should avoid the creation of barriers to legitimate trade and provide safeguards against such abuse (Article 41.1) without forcing countries into “any obligation to put in place a judicial system for the enforcement of intellectual property rights distinct from that for the enforcement of law in general”. Likewise, the preamble of the TRIPS mentions that countries recognize the need for new rules concerning “c) the provision of effective and appropriate means for the enforcement of trade-related intellectual property rights, **taking into account differences in national legal systems**” (emphasis added).

to define the scope of the measure in article 44 (1) as "an order to desist from an infringement". Article 44 establishes the obligation to provide the judiciary with authority to award injunctions, *inter alia*, to prevent the entrance "into the channels of commerce in their jurisdiction of imported goods that involve the infringement of an intellectual property right, immediately after customs clearance of such goods"²⁷⁴. The TRIPS provisions on enforcement are generally applicable rules, in spite of the fact that the original motivation of the Agreement was to solve specific IP problems related to international exchanges²⁷⁵. Hence, the phrase "*inter alia*" used in article 44 serves to highlight that importation of infringing goods is only one out of many cases in which injunctive relief could be granted.

The article applies to infringing activities that have started, since otherwise the infringer could not desist, and hence it does not refer to provisional or preliminary injunctions, which are found in article 50 (1) and aim at preventing further damage by infringing activities but rather to final or permanent injunctions. The article also provides that for "innocent infringement", such measure should not necessarily be available.

Throughout the TRIPS negotiations, the availability of injunctive relief was highlighted as an important tool to deter infringement²⁷⁶. Due to the fact that the TRIPS Agreement does not require countries to award punitive damages and has a relatively flexible approach towards criminal sanctions, scholars have largely considered that the deterrent effect of injunctions plays a central role in patent enforcement²⁷⁷. However, article 44 states only that "judicial authorities shall have the authority" to grant injunctive relief. The question remains in which cases and under which circumstances could judicial authorities deny such remedy²⁷⁸.

Beyond this minimum level, there is a wide scope for implementation of the article and hence, for the discretionary grant of injunctions by courts. Article 44 (2), moreover, introduces the possibility of denying injunctions and links this case to the more classic framework of compulsory licenses established in article 31:

²⁷⁴ Article 44 of the TRIPS Agreement makes reference to "injunctions" in the title of the article and then refers to an "order" for a party "to desist from an infringement".

²⁷⁵ See GERVAIS, *supra* note 270 at p. 450.

²⁷⁶ See Heath, *infra* note 397.

²⁷⁷ *Ibid.*

²⁷⁸ See GERVAIS, *supra* note 270, arguing that this phrase "sets the level of the obligation imposed on WTO Members: judicial authorities must have the power to order the measures specified".

“(2) Notwithstanding the other provisions of this Part and provided that the provisions of Part II specifically addressing use by governments, or by third parties authorized by a government, without the authorization of the right holder are complied with, Members may limit the remedies available against such use to payment of remuneration in accordance with subparagraph (h) of Article 31. In other cases, the remedies under this Part shall apply or, where these remedies are inconsistent with a Member’s law, declaratory judgments and adequate compensation shall be available”.

This paragraph was the result of discussion between developing and developed countries. The most salient feature it presents is the use of the word "adequate" remuneration, which is not common within the IP field and is only used in article 48 and 45 (adequate damages) and distinct from the standards of "reasonable" and "just" or "appropriate" compensation²⁷⁹. However neither of these standards would necessarily be simpler to interpret²⁸⁰.

4 A post-TRIPS landscape

The ratification of the TRIPS Agreement was followed by widespread discussions about the scope for compulsory licenses, principally with respect to the problems faced by developing and least developed countries, which had to adapt their IP laws to the minimum –yet higher to previously existing– standards developed by the Agreement. Closely related to this discussion was the possible use of the "flexibility" left by the same Agreement in order to incorporate limitations and exceptions into national laws that could guarantee a national implementation suitable to each country’s level of development²⁸¹. The debate specially focused on whether compulsory licenses could still be used after the TRIPS Agreement and in which term. A matter of particular concern was that some developing and least developed countries lacked the manufacture capabilities to produce nationally, so that in case they resort to compulsory licenses, the limitation of paragraph (f) of article 31 of the TRIPS Agreement establishing that "(f) any such use shall be authorized

²⁷⁹ See GERVAIS, *supra* note 270, at p. 205-206 and accompanying footnotes, arguing that: "While it is used in many articles of the GATT, only once it refers to appropriate compensation (Article XXVIII(4) (d), where the expression "adequate compensatory adjustment", is used in relation to balance of payments (BOPS).

²⁸⁰ See Taubman, *supra* note 97, analyzing the different standards for remuneration and compensation of right holders as provided for by various International Law fields.

²⁸¹ With regard to the problem of implementing the TRIPS Agreement in developing and least developed countries as well as the effects of IP protection on economic development see Commission on Intellectual Property Rights, *Integrating Intellectual Property Rights and Development Policy, Final Report*, UK Commission on Intellectual Property Rights, London (2002), available at: http://www.iprcommission.org/graphic/documents/final_report.htm. See also INTELLECTUAL PROPERTY AND DEVELOPMENT: LESSONS FROM RECENT ECONOMIC RESEARCH, CARSTEN FINK AND KEITH MASKUS EDS. (World Bank and Oxford University Press, 2005).

predominantly for the supply of the domestic market of the Member authorizing such use” could in fact hinder the use of compulsory licensing. This is because in case these countries authorize the use of a patented technology under a compulsory license, they would not be able to manufacture the product(s).

These concerns and the lack of understanding about whether compulsory licensing could still be used are of special importance with respect to pharmaceutical patents which often clash with public health debates. In fact it was in this field that a crisis originated with the enactment of a patent law in South Africa in 1997, entitling the government to issue compulsory licenses and allowing parallel imports in order to face the health crisis related with the spread of AIDS and the high cost of patented drugs used for the treatment of this disease²⁸². On February 1998, a group of 39 pharmaceutical companies initiated a lawsuit against the government of South Africa challenging its “Medicines and Related Substances Act”, which in its Amendment 15(c) allowed for such compulsory licensing and parallel import provisions to be applied to pharmaceuticals. However, in 2001, after an intense international campaign on the issue of patents and public health, the pharmaceutical companies abandoned their cases. The surmounting pressure generated by this case, created momentum for the claims of developing and least developed countries, which led to a Declaration during the Doha Ministerial Conference with respect to the issue of public health and IP regulation.

A paradox has taken place after the enactment of the TRIPS Agreement with regards to the interpretation of exceptions, grounds and limits for using compulsory licenses and especially with respect to the uncertain and diverging views as to their potential use to protect public interest. In fact, whereas at the multilateral level, this controversy has been increasingly addressed in multiple forums, such as the WTO²⁸³, the World Health Organization²⁸⁴, the WIPO²⁸⁵, and other international organizations along with the participation of Non-Governmental Organizations (NGOs); at the bilateral and regional level, TRIPS-plus standards have been approved through presumably non-transparent

²⁸² See Carlos Correa, Investment Protection in Bilateral and Free Trade Agreements: Implications for the Granting of Compulsory Licenses, 26 Michigan Journal of International Law 331, 333 (2004), at p. 13.

²⁸³ See the Doha Declaration, available at: http://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_trips_e.htm and the Cancun Declaration, available at: http://www.wto.org/english/tratop_e/trips_e/implem_para6_e.html

²⁸⁴ SEE THE WORLD HEALTH ORGANIZATION COMMISSION ON INNOVATION, INTELLECTUAL PROPERTY AND PUBLIC HEALTH, FINAL REPORT (2007) Available at: <http://www.who.int/intellectualproperty/report/en/index.html>

²⁸⁵ See discussions related with the Proposal for a Development Agenda within the WIPO, 2004. Available at <http://www.wipo.int/ip-development/en/agenda>

negotiations²⁸⁶. An important but still uncertain part of this movement is the increase in number of investment agreements addressing IP through TRIPS-plus standards as well as the application of investment protection to IP rights. This trend could contradict the efforts taking place in multilateral organizations and in various other forums to facilitate the involvement of civil society in IP-related decision-making to thereby address such issues from a multifaceted viewpoint and thus create a more balanced IP rights system.

This paradox is also illustrated by the developments subsequent to the Doha Declaration, which created a transitory exception for compulsory licenses issued by countries lacking manufacture capabilities that was later incorporated in the first amendment –still to be enacted- of the TRIPS Agreement²⁸⁷. However, the system, which still exists on a transitory way, and which could be widely used by developing and least developed countries, has only been used once. The only notification on the use of the TRIPS exception mechanism has been made by Rwanda, a country that was however, not obliged to notify since it is a least developed country²⁸⁸.

The deficient use of such a complicated and controversial system might be interpreted on the one hand as a failure, based upon arguments similar to those raised with respect to the lack of use of compulsory licenses in general. The counter argument often made is that any such system has important bargaining effects. For instance, countries such as Brazil have reiteratively used threats to issue compulsory licenses for different drugs and then they have negotiated for better prices with the involved pharmaceutical companies. However it would seem that only a few privileged countries could benefit of such bargaining position that allows them to make a credible threat. It is in this sense that the exception for countries lacking manufacturing capacity should improve their position. Nevertheless, it is also necessary to have an exporting country willing to use the system, in some cases at the cost of amending their own laws²⁸⁹.

²⁸⁶ See David Vivas-Eugui, *Regional and Bilateral Agreements and a TRIPS-plus World: The Free Trade Area of the Americas (FTAA)* (July 2003), available at: <http://www.quino.org/geneva/pdf/economic/Issues/FTAs-TRIPS-plus-English.pdf>, at p. 6, defining TRIPS-plus Agreements as “commitments that go beyond what is already included or consolidated in the TRIPS Agreement” and explaining that such commitments may consist on: (1) the protection of a new area of IPRs; (2) the implementation of a more extensive standard; and (3) the elimination of an option for Members under the TRIPS Agreement by which such member could provided for a lower level of protection. See also *ibid* at p. 15 referring to the problem of undemocratic and non-transparent negotiations of the prospected FTAA and the U.S.-Chile FTA.

²⁸⁷ See decision WT/L/641, on the Amendment of the TRIPS Agreement, 6 December 2005, available at: http://www.wto.org/english/tratop_e/trips_e/wtl641_e.htm

²⁸⁸ See the text of the notification of importing country Rwanda, available at: http://www.wto.org/english/tratop_e/trips_e/public_health_notif_import_e.htm. See also the text of the notification by exporter country Canada, the solely to have given such communication so far, available at: http://www.wto.org/english/tratop_e/trips_e/public_health_notif_export_e.htm

²⁸⁹ A threat needs to be serious and credible in order to trigger a process of negotiation, which would probably be the case when the country has a large market and the capacity to manufacture. Examples

In parallel, and although most patent enforcement issues remain subject to national law, there is a surmounting pressure to agree on more harmonized and rigid standards²⁹⁰. While recent proposals might suggest that a global or a multilateral treaty could be achieved soon, the desirability of higher harmonized standards is uncertain -especially in the light of the problems that the *eBay* case in the U.S. and other discussions have evidenced-. In Europe, a similar controversy as to whether it would be desirable to agree upon higher harmonized standards for IP and patent enforcement surrounded the negotiations of the European Enforcement Directive and it has also been raised with respect to the negotiations on a community patent and the EPLA²⁹¹.

In brief, discussions on the use of compulsory licenses on the one hand and enforcement on the other have continued to occupy a central place even after the enactment of the TRIPS Agreement. Yet discussions have largely focused on a public interest dimension narrowly conceived as protecting public health in emergency cases. Public interest might be also affected through the blocking of innovation by patent strategic behavior, with some cases reflecting anti-competitive pursuits while some others directly offending the balances entrenched in patent law.

5 Remedies for patent infringement

Remedies are part of procedural law, and in many cases pertain to general procedural laws rather than to IP or patent statutes. Nevertheless, a “special” treatment has often been offered to IP rights, with ambiguous consequences, at least from an efficiency viewpoint. In opposition to the history of compulsory

include the controversial move of Thailand when it issued compulsory licenses on various drugs, including one for a heart disease (arguably not an emergency case), giving rise to a wide discussion on many legal subtleties of the interpretation of article 31 of the TRIPS Agreement. On precedent occasions, Brazil has also issued compulsory licenses and threats of issuing compulsory licenses that have subsequently led to renegotiations of the prices of medicines for AIDS treatment, showing a potentially welfare-enhancing effect of a credible threat to apply a liability rule. For an overview of these and other compulsory licenses see James Love, *Recent examples of Compulsory licenses on patents*. KEI RESEARCH NOTE 2007:2, available at www.keionline.org. The examples of Brazil and Thailand could show that a serious threat in the international context is regrettably linked to the manufacturing capacity of the country and other factors which might not induce such countries that are probably most in need to use this system.

²⁹⁰ See the recent efforts on the negotiation of Anti-Counterfeiting Trade Agreement ACTA by the G-8 members. This move has, however been criticized, among other reasons for the lack of transparency in negotiations. Although there are not available official texts, several organizations have published presumptive drafts. See <http://ipjustice.org/wp/wp-content/uploads/ACTA-discussion-paper-1.pdf>

²⁹¹ See Marco Ricolfi, *The Proposed IP Enforcement Directive: Tough on Legitimate Competitors, Weak Against Pirates*, ITALIAN INTELLECTUAL PROPERTY, Giuffrè, 2004/1 arguing that the proposed Directive “fails to draw the most crucial of the distinctions relevant for designing optimal deterrence in the field of IP infringements, the distinction between pirates and legitimate competitors”. See also Cornish et al., *infra* note 366.

licensing, patent remedies and hence, the possibility that courts choose between a property and a liability rule in patent infringement cases, has predominantly remained subject to national law, even after the TRIPS Agreement. This section briefly discusses the common origin of the rule for equitable relief in the U.K. and the U.S. that permits to substitute injunctions –the quintessential property rule remedy- with damages. Then, the historical origins of the legal equivalents to property rules remedies in civil law countries, taking the example of Italy, which is shared –with some differences- by countries with a similar law tradition are described. A description of the most important historical developments of the law of remedies is however, only possible by making reference to the specific legal systems of different countries, something that is developed in more detail in the subsequent chapter.

The goal of remedies and enforcement law are fundamentally alike throughout countries, i.e., to provide for a relief in case of infringement and to enforce or to act the principles expressed in substantive law. This apparently simple goal can be nevertheless achieved through rather different ways. Another question that emerges several times along this study is whether and to which extent can the “law of remedies” alter or attempt to re-adjust any balance pursued in substantive –patent- law. These aspects also imply the question of whether patent remedies should be different and in which sense they should differ from ordinary procedural law. As stated by a legal scholar from the U.S. that accounts for the history of remedies in order to find a modern proposition of this body of law:

“The law of remedies is trans substantive, meaning that it cuts across other areas of substantive law. Remedies must be adjusted as necessary to take account of substantive policy goals, but remedies scholars start from a base of broadly applicable remedial principles. There is no reason to have a different law of damages, or a different law of injunctions, for each cause of action, as though we had never abandoned the writ system”²⁹².

5.1 Common law countries

Common law countries have a particular approach toward remedies that allows wider discretion to choose between a property and a liability rule. In fact, the most recent developments towards the use of liability rules for patents have taken place in the U.S. where injunctions are considered an equitable remedy

²⁹² Douglas Laycock, *How Remedies Became a Field: a History*, 27 REVIEW OF LITIGATION 161 (Winter 2008), 161-267, at p. 165.

due to the historical division between common law and equity courts²⁹³. In their origin, common law courts were only competent to award damages providing retrospective compensation for past wrongs. Consequently, cases involving continuing wrongs posed the need for additional relief. It was precisely this restriction of common law courts that created the necessity for courts of equity. Conversely, courts of equity were able to give prospective relief through the grant of injunctions or specific performance but they could not award damages²⁹⁴.

Such contradiction, however, ended with the enactment of the Common Law Procedure Act in 1854, which gave courts of common law a limited power to grant equitable relief as well as damages and finally with the Chancery Amendment Act 1858 -also known as Lord Cairns' Act- which empowered the Court of Chancery, and by extension, other similar courts, to award damages:

“In all cases in which the Court of Chancery has jurisdiction to entertain an application for an injunction against a breach of any covenant, contract, or agreement, or against the commission or continuance of any wrongful act, or for the specific performance of any covenant, contract, or agreement, it shall be lawful for the same Court, if it shall think fit, to award damages to the party injured, **either in addition to or in substitution for such injunction or specific performance**; and such damages may be assessed **in such manner as the Court shall direct**”²⁹⁵ (emphasis added)

Thus, the wording of Section 2 of Lord Cairns' Act not only enabled courts to award damages as a retrospective remedy and injunctions to restrain unlawful conduct in the future but also allowed them to award damages instead of an injunction, i.e., granting courts the discretionary power to award or deny injunctive relief²⁹⁶. The most important reason that courts initially considered to

²⁹³ See FRANCIS HILLIARD, *THE LAW OF INJUNCTIONS*, (Law Publications of Kay and Brothers: 1852), at p. 1, defining an injunction “as a prohibitory writ, specially prayed for by a bill in which the plaintiff’s title is set forth, restraining a person from committing or doing an act...which appears to be against equity and conscience”. See also *Jaggard v Sawyer* [1995] 2 All ER 189, Court of Appeal, 18 July 1994 at p. 1, classifying injunctions as mandatory which “require the defendant to observe a legal obligation or undo the effects of a past breach of legal obligation” or negative which “would restrain a defendant from committing breaches of legal obligation in future”.

²⁹⁴ Ibid.

²⁹⁵ See the Chancery Amendment Act 1858. Whereas the Common Law Procedure Act 1854 gave common law courts some power to award equitable remedies, the Chancery Amendment Act 1858 gave the Chancellor the power to grant damages in addition to, or in substitution for, an injunction or a decree of specific performance.

²⁹⁶ See *Jaggard v Sawyer*, supra note 293, quoting from Jolowicz, *Damages in Equity - A Study of Lord Cairns' Act* CLJ 224, 1975, who argued that “Despite the repeal of Lord Cairns' Act, it has never been doubted that the jurisdiction thereby conferred on the Court of Chancery is exercisable by the High Court and by county courts”.

award of permanent injunctions was the inadequacy of other remedies available at law²⁹⁷. Whereas injunctions were firstly directed towards the protection of property, the concept of property rights rapidly evolved to encompass business interests and rights including personal and business reputation. Since it was a remedy of equity, judges had extensive discretion to award injunctive relief but limits were soon established through the development of –binding- precedents in order to avoid abuse of discretion²⁹⁸.

The U.S. transposed these principles from the U.K. in a sequential process with the intervention of the Constitution, the Congress and the Courts²⁹⁹. The Constitution gave Congress the authority to create Federal Courts and the Congress then enacted the Judiciary Act of 1789, which created Federal Courts granting them original jurisdiction in common law or equity suits although limiting the use of equity to those cases where there was no “plain, adequate and complete remedy”³⁰⁰. In parallel, the U.S. Congress also enacted the Patent Act of 1790, which granted to “petitioner or petitioners, his, her or their heirs, administrators or assigns for any term not exceeding fourteen years, the sole and exclusive right and liberty of making, constructing, using and vending to others to be used, the said invention or discovery”³⁰¹ as well as remedies for patent infringement³⁰².

The current U.S. Patent Act establishes a general requirement that patentees shall have remedies for patent infringement³⁰³. According to the Patent Act,

²⁹⁷ See *London and Blackwall Ry. C. Cross* (1886), 31 Ch. D. 354 at 369, where Judge Lindley affirmed that “the very first principle of injunction laws is that prima facie you do not obtain injunctions to restrain actionable wrongs, for which damages are the proper remedy”, quoted in ALDO FRIGNANI, *L’INJUNCTION NELLA COMMON LAW E L’INIBITORIA NEL DIRITTO ITALIANO*, Milano, Giuffrè (1974), at p. 145.

²⁹⁸ See *Doherty v. Allman* (1878), 3 App. Cas. 309, p. 728-729, quoted in FRIGNANI supra note 297, at p. 156

²⁹⁹ See *Robinson v. Campbell*, 16 U.S. 3 Wheat. 212 212 (1818), available at: <http://supreme.justia.com/us/16/212/case.html>, which ruled that “the remedies in the courts of the United States at common law and in equity are to be not according to the practice of state courts, but according to the principles of common law and, equity, as distinguished and defined in that country from which we derive our knowledge of those principles”.

³⁰⁰ See Tomas Gomez-Arostegui, *Prospective Compensation in Lieu of a Final Injunction in Patent and Copyright Cases*, *FORDHAM LAW REVIEW* VOL. 78. (2009), available at <http://ssrn.com/abstract=1355464>

³⁰¹ See the U.S. Patent Act of 1790, available at: http://en.wikisource.org/wiki/Patent_Act_of_1790. See also the current 35 U.S.C. 154(a)(1); U.S. Patent Act as modified in 1952 and granting patentees the “right to exclude others from making, using, offering for sale, or selling the invention throughout the United States”.

³⁰² Section 4 of the 1790 U.S. Patent Act established that “if any person or persons shall devise, make, construct, use, employ, or vend within these United States, any art, manufacture, engine, machine or device, or any invention or improvement upon (...) without the consent of the patentee or patentees (...) every person so offending, shall forfeit and pay to the said patentee or patentees, his, her or their executors, administrators or assigns such damages as shall be assessed by a jury, and moreover shall forfeit to the person aggrieved, the thing or things so devised, made, constructed, used, employed or vended, contrary to the true intent of this act, which may be recovered in an action on the case founded on this act”.

³⁰³ 35 U.S.C. 281.

damages should be “adequate to compensate for the infringement” at least corresponding to a reasonable royalty for the use made of the invention by the infringer and may, in appropriate cases, be multiplied up to three times³⁰⁴. Injunctions were enshrined as a remedy for patent infringement since 1819³⁰⁵. However, initially injunctions were unavailable if the parties in litigation were from the same State³⁰⁶. Since then, U.S. law has reiteratively empowered courts with the possibility to grant injunctions³⁰⁷.

With time, U.S. courts granted injunctions in patent infringement cases upon varying grounds, e.g. the necessity of avoiding repeated actions for each infringement³⁰⁸, the conception of rights and remedies as intrinsically linked and the “exclusive”³⁰⁹ and “property” nature of patents³¹⁰. A more “economically based” justification based upon the error and information costs that courts would have to face were they to attempt substituting market bargaining outcomes in the calculation of damages has been more recently

³⁰⁴ 35 U.S.C. 284. Moreover, successful plaintiffs are entitled to recover their costs and “in exceptional cases,” may recover reasonable attorney fees, 35 U.S.C. 285.

³⁰⁵ Act of Feb. 15, 1819, ch. 19, 3 Stat. 481 (providing that the federal courts adjudicating patent disputes “shall have authority to grant injunctions according to the course and principles of courts of equity.”). Injunctions were included as a possible remedy for patent infringement in The Patent Act of 1836, ch. 357, § 17, 5 Stat. 117 (“courts shall have power, upon bill in equity filed by any party aggrieved...to grant injunctions, according to the course and principles of courts of equity”); Patent Act of 1870, ch. 230, § 55, 16 Stat. 206 (“the court shall have power, upon bill in equity filed by any party aggrieved, to grant injunctions according to the course and principles of courts of equity”); Patent Act of 1897, ch. 391, § 6, 29 Stat. 694 (“The several courts vested with jurisdiction of cases arising under the patent laws shall have power to grant injunctions according to the course and principles of equity, to prevent the violation of any right secured by patent, on such terms as the court may deem reasonable.”); Patent Act of 1922, ch. 58, § 8, 42 Stat. 392 (same); Patent Act of 1946, ch. 726, 60 Stat. 778. See U.S. Brief *eBay vs. MercExchange*, op cit, at p. But see U.S. Brief for respondent in *eBay vs. MercExchange* at p. 22, explaining that “Although the Patent Acts of 1790 and 1793 did not explicitly authorize federal courts to issue injunctions in cases where they exercised subject matter jurisdiction arising under the patent laws, state equity courts could hear and issue injunctions in patent cases (until 1870), as could federal courts, sitting in diversity, on the “equity (...) side”

³⁰⁶ See CHISUM supra note 43, quoting from William C. Robinson, *The Law of Patents for Useful Inventions*, § 1082-83 (1890).

³⁰⁷ Currently, the Patent Act 1952 (35 U.S.C. 283) establishes that: “The several courts having jurisdiction of cases under this title may grant injunctions in accordance with the principles of equity to prevent the violation of any right secured by patent, on such terms as the court deems reasonable”.

³⁰⁸ See *Motte v. Bennett*, 17 F. Cas. 909, 910-11 (C.C. D.S.C. 1849), ruling that (“the inventor...might be ruined by the necessity of perpetual litigation, without ever being able to have a final establishment of his rights”).

³⁰⁹ See *Continental Paper Bag co. v. Eastern Paper Bag Co.*, 210 U.S. 405, 423-25, 430 (1908), “**the inventor is one who has discovered something of value. It is his absolute property.** He may withhold a knowledge from the public...From the character of the right of the patentee we may judge of his remedies. It hardly needs to be pointed out that the right can only retain its attribute of exclusiveness by a prevention of its violation...” (**emphasis added**).

³¹⁰ *Matter of Mahurkar Double Lumen Hemodialysis Catheter Patent Litig.*, 831, F. Supp. 1354, 1397 (N.D. III. 1993), *aff'd*, 71; “the injunction creates a property right and leads to negotiations between the parties”.
-substitute with a court decision -

adopted³¹¹.

In spite of the varied interpretations with respect to the aims of injunctive relief, courts converged in a rather uniform reading of the adequacy of issuing injunctions after final determinations of infringement³¹². Such view continually narrowed the factual considerations of traditional equity courts into the assertion that injunctions should follow any finding of infringement which threatens to continue, a criterion similar to that applied in Italy and the UK, as described below. Such convergence in the application and interpretation of patent standards and the increasingly protective interpretation seems to have especially followed the creation of the Court of Appeals for the Federal Circuit in 1982³¹³. It is in this context that we might include the practice of automatic grant of injunctions, which was in place until 2006 when the U.S. Supreme Court decided on the *eBay* case³¹⁴.

5.2 Civil Law countries

The historical path of IP rights protection and of civil remedies in general, differs widely in civil law countries such as Italy with respect to common law countries. Even the linguistic terms use to describe the rights, their content and

³¹¹ Ibid, asserting that: "A private outcome of these negotiations whether they end in a license at a particular royalty or in the exclusion of an infringer from the market – is much preferable to a judicial guesstimate about what a royalty should be"

³¹² See CHISUM supra note 43, chapter 10 "Remedies".

³¹³ See Rochelle Dreyfuss, *In Search of Institutional Identity: The Federal Circuit Comes of Age* (August 14, 2008). BERKELEY TECHNOLOGY LAW JOURNAL, VOL 23, 787 (2008), available at SSRN: <http://ssrn.com/abstract=1226432>, explaining the reasons that lead to the institution of the CAFC, among others, the perceived need for a specialized and more exactly a centralized court that could manage and improve the quality of decisions in the patent area and quoting also the opinions raised during the discussions preceding the establishment of the CAFC in *Court of Appeals for the Federal Circuit: Hearings Before the Subcomm. on Courts, Civil Liberties and the Administration of Justice of the H. Comm. on the Judiciary, 97TH CONG.*, 42-43 (1981).

³¹⁴ Ibid, at p. 765, referring to a "reversing trend" that has occurred during the last few years where several important decisions of the US Supreme Court have signalled a disagreement with the position of the CAFC: "Perhaps most damning, the Supreme Court's unprecedented activity in the patent arena indicates that it too is concerned about the Federal Circuit's performance". Among such decisions are: *MedImmune, Inc. v. Genentech, Inc.*, 127 S. Ct. 764 (2007), *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007), *Microsoft Corp. v. AT&T Corp.*, 127 S. Ct. 1746 (2007) and *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) reversing the CAFC decision; *eBay, Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006); *Illinois Tool Works, Inc. v. Indep. Ink, Inc.*, 547 U.S. 28 (2006) and *Merck KGaA v. Integra Lifesciences I, Ltd.*, 545 U.S. 193 (2005) vacating the CAFC decision; *Lab. Corp. of Am. v. Metabolite Labs., Inc.*, 548 U.S. 124 (2006), with a writ of certiorari dismissed as improvidently granted and a dissenting opinion by Justice Breyer; and *Quanta Computer, Inc. v. LG Elec., Inc.*, 555 U.S. , 128 S. Ct. 2109 (2008), reversing the CAFC decision and expanding the application of the exhaustion or first sale doctrine. Probably the most important and widely discussed decisions have been *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) at p. 1730, where the Supreme Court rejected the rigid approach of the CAFC in interpreting the non-obviousness standard as be "inconsistent with § 103 and this Court's precedents"; *MedImmune, Inc. v. Genentech, Inc.*, 127 S. Ct. 764 (2007) where the Supreme Court also reversed the position adopted by the CAFC, which denied standing for declaratory actions to patent licensee's and the *eBay* decision which is thoroughly throughout this Thesis.

nature, remedies and actions are hardly equivalent. For instance, scholars of civil law countries have largely focused on the concept of *diritti soggettivi* - a concept that could be hardly translated as individual or subjective rights, or roughly approximated to the concept of “entitlements”³¹⁵- in order to determine the remedies available to different rights. Furthermore, the independent study of rights and remedies and the pre-eminence of the former over the latter, has allegedly lead to comprise under the label of *diritti soggettivi*, such rights protected either by property rules, liability rules and even rights lacking any type of protection³¹⁶. Likewise, the term *inibitoria* -understood as a remedy or a decision that bans or puts an end to infringing activities³¹⁷- differs in important ways from its common law counterpart, the injunction, mainly because it does

³¹⁵ A first difficulty in this comparative analysis regards the term “diritto soggettivo”, which is often translated either as subjective, individual or absolute right but might be more exactly described as the *facultas agendi*, which is the right, as opposed to the “diritto oggettivo” or *norma agendi*, which consist on the law. This is because, conversely to what happens in other languages where both terms tend to coincide (Italian “diritto”, Spanish “derecho”, German “recht” and Latin “ius”), both terms (right and law) are separate in English. Nonetheless, none of these terms completely grasps the meaning of the term, which is also complicated by the fact that there are several different meanings of “diritto soggettivo” and for this reason the term will be often referred to in Italian. Moreover, the enormous discussion surrounding the concept of “diritti soggettivi” falls out of the scope of this Thesis, especially when we take into account that the property and liability rules categories do not need the underlying right to be defined as a subjective right in order to apply. In one of its multiple meanings, a subjective right is understood as a right granting the owner the possibility of obtaining an order to stop the interference or infringement of her right, for others it is equivalent to the entitlement to a right. See UGO MATTEI, TUTELA INIBITORIA E TUTELA RISARCITORIA, CONTRIBUTO ALLA TEORIA DEI DIRITTI SUI BENI, Giuffrè, 1987, at p. 248 on the concept of subjective rights and at p. 253, disagreeing on the equivalence between “diritto soggettivo” and entitlement: a “subjective right” is in fact, in the European tradition, a paradigm of two different reactions of the legal system, as “tutela reale” (with the consequent application of a property rule) and “tutela aquiliana (with the consequential application of a liability rule). For these reasons, the concept of subjective right cannot be usefully applied to study conflicts between different property rights owners, given that in these cases, all property right owners are obviously entitled to such “subjective right” (free translation of the original text: “il diritto soggettivo e, infatti, nella tradizione europea, paradigma di due reazioni dell’ordinamento assai differenti fra loro come la tutela reale (conseguenza: property rule) e la tutela aquiliana (conseguenza: liability rule), cosa che non lo rende utilizzabile nello studio del conflitto fra proprietari contrapposti entrambi, ovviamente, titolari di diritti soggettivi”).

³¹⁶ See MATTEI, *ibid*, at p. 252 arguing that the reiterative use of the concept of *diritti soggettivi* has led to neglect the concrete method of protection for such rights and as a result the entitlement of rights is considered as irrelevant, due to the fact that in many cases no specific advantage follows from the ownership of rights (free translation of the original text: “Per molto tempo l’aver descritto il sistema come fondato sull’iscrizione di diritti soggettivi ha comportato la disattenzione per il concreto modello di tutela, cosa che ha reso del tutto irrilevante per un soggetto sapersi titolare o meno di un diritto, visto che alla qualificazione non consegue, in molti casi, alcuno specifico vantaggio”); and at p 247 arguing that the concept of absolute rights, characteristic of Continental Law countries, does not permit to differentiate between property rules (*tutela reale*) and liability rules (*tutela aquiliana*), given that it does not devote any attention for the remedy.

³¹⁷ See FRIGNANI *supra* note 297, at p. 242, mentioning the interchangeable use of the terms “azione inibitoria”, “inibitoria”, “interdizione” and “azione in cessazione” and defining all of them as a final decision aiming at stopping an activity or a situation that violates another’s right, or stopping the continuation or even the beginning of such situation; (free translation of the original text: “l’inibitoria che noi studiamo e una sentenza di condanna, mirante a far cessare un’attività o uno stato lesivo del diritto altrui, o a inibire la continuazione o anche solo la commissione di tali atti”).

not encompass all the possible orders that a common law judge might act through an injunctive order³¹⁸.

Therefore, legal analysis in civil law countries has focused much more on the study of rights rather than on remedies³¹⁹. Remedies have instead occupied a central role in common law countries, probably due to the direct influence of Roman law that was perpetuated in countries that did not go through a process of codification³²⁰. Several scholars have highlighted how Roman Law was much more focused on the actions and remedies rather than on creating individual rights³²¹ and how common law was especially influenced by the establishment

³¹⁸ See UGO MATTEI, *supra* note 315, at p. 257, arguing that even though the *inibitoria* could be negative or mandatory, an injunction has a variable content which is able to adapt to the particular circumstance, hence covering a more varied set of potential cases, which in the Italian system, are instead tackled through different legal institutions or doctrines. As a result, whereas it is easy to recognize a property rule in the injunction, this cannot be done with regard to the “*inibitoria*” (free translation of the original text: “(l’injunction) si sostanzia in un ordine dal contenuto variabile secondo lo scopo che e necessario raggiungere. In tal modo e idonea a coprire situazioni cui, nel sistema italiano, presiedono una pluralita di diversi istituti. Mentre quindi era possibile sostenere che il paradigma positivo della property rule si riscontra nell’injunction, altrettanto non sarebbe corretto fare riguardo all’inibitoria nella indagine sul sistema italiano”). However, the *inibitoria*, which we is often translated as injunction, should not to be confused with the term “*ingiunzione*”, which is a special procedure used to execute a debt and established by articles 633 ss. of the Italian Civil Procedure Code or with the “*inibitoria processuale*”, which is used to suspend the provisory execution and established by article 351 of the Italian Procedural Code.

³¹⁹ See UGO MATTEI, *supra* note 52 at p. 251, arguing that such attention for the remedy was conversely absent from the European legal tradition, whereby the “*diritti soggettivi*” were never conceived as a decentralized instrument for decisions and consequently, the concrete content of the rights has been never grasped, (free translation of the original text: “L’ attenzione per il remedy e viceversa mancata nella tradizione europea. I diritti soggettivi non sono mai stati pensati come strumento di decentramento per le decisioni, e conseguentemente, non si e mai giunti ad un contenuto concreto dei diritti stessi”).

³²⁰ See ADOLFO DI MAJO, *LA TUTELA CIVILE DEI DIRITTI*, (2nd Ed. Giuffre, 1993), at p. 64, explaining that the Roman Law tradition was perpetuated in the Common Law system, which did not experience the phenomenon of codification. Until the nineteenth century, English law was characterized by a rigid system of typical actions (forms of action), which were almost real “molds” within which the claims of individuals (each action) had to fit, and whereby each action was characterized by a its own discipline and procedure (eg. the real action in defense of real property as well as the action of debt which occurs whenever someone had a sum of money to other one, (free translation of the original text: “L’impianto del sistema Romanistico si e perpetuato com’è noto, nei sistemi di Common Law ossia in quei sistemi che non hanno conosciuto il fenomeno della codificazione. Fino al diciannovesimo secolo il diritto inglese era contraddistinto da un sistema rigido di azioni tipiche (forms of action), quasi dei veri e propri «stampi» entro i quali dovevano essere «calate» le pretese dei soggetti, ciascuna (azione) caratterizzata da una sua propria disciplina e procedura (ad es. la real action a difesa della real property cosi come l’action of Debt che ricorreva ogni qualvolta taluno doveva una somma di danaro ad altri...)”).

³²¹ See DI MAJO, *supra* note 320, at p. 64 explaining that the well-known maxim “*ubi jus ibi remedium*” might be easily transformed in that of “*ubi jus ibi remedium*” “... in old legal systems (eg. Roman Law), individual rights were laid down from the various remedies (...) For instance, the property concept in Roman Law, whereby an individual could be recognized as the owner of a property was deducted from the typical remedy of *legis actio sacraments* (...) In this sense, Roman law did not recognized a protection for property rights in abstract, (free translation of the original text: “Il brocardo notissimo “*ubi jus ibi remedium* potrebbe essere con facilità capovolto in quello “*ubi remedium ibi jus*”...In ordinamenti del passato (ad es. In quello romanistico), la enunciazione dei diritti del singolo si e andata formando in via di derivazione dai vari rimedi, prima privati e poi giudiziali, previsti a tutela di determinati interessi. Nel diritto romano ad es. La tutela dell’interesse del singolo ad essere riconosciuto quale dominus di un bene

of a rigid number of forms of actions, each one following its own procedures and formalities³²². With time, such formalities were softened but their effect still endures on a legal reasoning that conceives rights as the result and not the premise of remedies³²³.

Conversely, countries with a civil law tradition lived an early process of transformation, especially with the work of the glossators that gave precedence to rights and little attention to remedies³²⁴. The glossators interpreted the categories of actions *in rem* and actions *in personam* as deriving the categories of *diritti reali e diritti di credito* so that different actions to protect rights transmuted into categories of rights³²⁵ and in fact, the categories of *tutela reale* and *tutela personale* are more directly related to the type of right –*reale* or *personale*- rather than the type of remedy granted.

Nevertheless, the remedy of *inibitoria* has a remote antecedent in the *actio negatoria* of Roman law, through which the owner could obtain protection against disturbances on her possession. In fact, the term *negatoria* is still used to refer to the *inibitoria* in order to highlight its origin rooted in Roman law and probably also the equivalence between *negatoria* and *inibitoria*³²⁶. In addition to

veniva desunto da quel rimedio tipico di tutela che era la legis actio sacramenti...Il diritto romano non conosceva una enunciazione della proprietà in astratto”).

³²² See *ibid*, at p. 70, applying the same arguments to the process of codification in France.

³²³ *Ibid* at p. 65, arguing that even though the *forms of action* disappeared from substantive English Law, the system kept an important track of them. In this system, the configuration of abstract claims, that is, of “diritti soggettivi”, is the result and not the premise of the different type of typical and atypical remedies that the system provides; (free translation of the original text: “the remedies for protection, and typical or atypical, which administers the system and widening or “anche con la scomparsa del sistema delle *forms of action* il diritto sostanziale inglese ha mantenuto tracce non indifferenti di esso. In esso la configurazione di astratte pretese ossia di diritti soggettivi e il risultato, non la premessa, dei rimedi di tutele, *tipici e/o atipici*, che il sistema somministra”).

³²⁴ See MATTEI, *supra* note 315, at p. 250 quoting from Lawson-Markesinis, *TORTIOUS LIABILITY FOR UNINTENTIONAL HARM IN THE COMMON LAW AND IN THE CIVIL LAW*, Cambridge, 1982, at p. 37 which puts forward the argument that the evolution from an approach based upon the remedies (*legis actions*) to a substantial approach had initiated in the Civil Law system in the historical period which coincided with the work of the post-glossators and which was completed by the work of the Natural Law school, (free translation of the original text: “l’evoluzione da un approccio remediale (*legis actions*) ad uno sostanziale sarebbe iniziato nei sistemi di civil law nel periodo coincidente con l’opera dei post glossatori e sarebbe stato complete con la classificazione dei giusnaturalisti”). See also DI MAJO, *supra* note 320, arguing that the *right* and the *remedy* lost contact in the Civil Law tradition and as a consequence a trend emerged that focused on the right. Conversely, this trend is absent from the Common Law tradition, (free translation of the original text: “perso il contatto fra *right* e *remedy* e fiorita una tendenza a declamare sui *rights*; tale tendenza e assente nella tradizione del common law”).

³²⁵ See *Ibid*, at p. 73.

³²⁶ See FRIGNANI *supra* note 297, at p. 242. See also Cristina Rapisarda Sassoon, *Profili della tutela inibitoria atipica nell’esperienza germanica*, *RIVISTA DI DIRITTO PROCESSUALE*, VOL. 38 (1983), p. 93-129, at p. 101, explaining that this configuration is highly correlated to the azione *negatoria* against the violation of a property right as it was extended throughout the experience of the Common Law, where, as it is well-known, distance was taken from the Roman Law tradition of the *negatoria servitutis* in order to embrace with this action, any interference against a property right that would not fall under the *rivendica*. This

the *negatoria*, which served to protect a property right from disturbances, its counterpart within Roman Law, the *actio confessoria*, allowed the owner of an easement to assert her right against the owner³²⁷.

5.2.1 *Creation of rights and choice of remedies*

Except for the abovementioned differences with the common law injunction, the *inibitoria* still confers protection through a property rule. Hence, some scholars have justified the use of the *inibitoria* as the proper remedy for absolute rights that is, for rights valid *erga omnes* and granting their owner a *ius excludendi alios*³²⁸. In more general terms it is also argued that such vision would *a priori* set the remedy according to the right ascribing to remedies only a secondary and instrumental role with respect to the right itself³²⁹. Finally, it has

correlation is mainly due to the fact that the *negatoria* was codified in this ample acception in § 1004 del B.G.B., (free translation of the original text “questa configurazione e strettamente correlata alla azione *negatoria* contro la violazione del diritto di proprieta cosi come era venuta estendendosi nel corso dell’esperienza del diritto comune, ove come, noto, ci si era allontanati dal modello romanistico tradizionale della *negatoria servitutis*, per abbracciare, con questa azione, ogni interferenza al diritto di proprieta, che non trovasse gia sulla sua strada la reazione della rivendica. Tale correlazione e da imputarsi in maniera principale al fatto che la *negatoria* venne codificata in questa ampia estensione al § 1004 del B.G.B.”. Ibid, concluding that, a historical consequence of these developments, is that the requirement of damage was not necessary when the holder is protected through a property rule and conversely, only prove of the infringing behavior is enough to obtain such protection.

³²⁷ This aspect resembles the bi-directional nature of disturbances highlighted in Coase and C&M reasoning, which refers to the fact that any situation can be analyzed both from the perspective of the plaintiff and from that of the defendant and hence the right that would be protected through a liability or a property rule can be allocated to either one of the parties. Roman Law already provided for a remedy suitable for either party to protect her right.

³²⁸ See Cristina Rapisarda Sassoon, *Voce Inibitoria, DIGESTO DELLE DISCIPLINE PRIVATISTICHE, SEZIONE CIVILE, IX, UTET, Quarta Edizione*, at p. 484 arguing that the link between the protection through the “*inibitoria*” and absolute rights was already affirmed implicitly under the 1865 Civil Code. Faced with the absence of legal provisions on the admissibility of the *actio negatoria* for the property right holder, the majority of legal scholars were in favor of granting it on the basis of art. 439 of the Civil Code, even though this latter refer explicitly only to the action of *rivendica*, based upon the exclusive nature of property rights. In this way, the conception of the *inibitoria* as the protection of the *ius excludendi*, which is implicit in the structure of absolute rights made its way, (free translation of the original text: “Il collegamento tra la tutela *inibitoria* e i diritti assoluti era gia stato implicitamente affermato sotto il vigore del codice civile del 1865. Di fronte al silenzio della legge sull’ammissibilita di un’*actio negatoria* del proprietario, la maggioranza degli interpreti si mostro infatti favorevole a concederla sul fondamento dell’art 439 c.c., che pur si riferiva espressamente alla sola azione di *revindica*, sul presupposto del carattere esclusivo del diritto di proprieta. Si era gia fatta strada, in questo modo, la concezione dell’*inibitoria* come proiezione processuale dello *ius excludendi* implicito nella struttura del diritto assoluto...”).

³²⁹ See Rapisarda, *ibid*, at p. 485, arguing that this approach is on the one hand outdated, given that it assigns a secondary and instrumental role to the protection of the right and on the other hand it is methodologically wrong since it theoretically deduces the protection from an *a priori* definition of the right, (free translation of the original text: “(...) da un lato storicamente superato, poiche attribuisce alla tutela un ruolo secondario e strumentale rispetto alla titolarita del diritto protetto, e dall’altro lato metodologicamente scorretto, poiche desume astrattamente la tutela da una definizione *a priori* delle situazioni giuridiche protette”).

been also pointed out that such rigid conception could thwart the adaptation of remedies to emergent needs³³⁰.

The current Italian Civil Code provides for actions as *rivendicazione* and *negatoria* that, in the absence of unified principles, have to be interpreted by the judges always by reference to the underlying rights³³¹. In addition, the provisional measures established by article 700 of the Code of Civil Procedure, present a particular case, since the categorization of rights as absolute or relative can in principle only be given by law³³² whereas such provisional measures applicable to all civil law litigation have been widely extended by judicial interpretation³³³. In fact, the provisional measures of article 700 of the Code of Civil Procedure have been considered by scholars as an equivalent to common law injunctions³³⁴. The importance of this legal provision has surpassed the initial intention of the legislator and has –perhaps improperly– been extended to cases in which a petition for a preliminary measure hides the need for a prompt final decision³³⁵.

³³⁰ See Rapisarda, *ibid*, at p. 485 arguing that the conception of the *inibitoria* as the protection for absolute rights hardly allows the remedy to be adapted to the demands of protection that progressively emerge with time, (free translation of the original text: “la concezione dell’inibitoria come tutela dei diritti assoluti rende difficilmente adattabile il rimedio alle esigenze di tutela progressivamente emergenti”).

³³¹ See DI MAJO, *supra* note 320, at p. 66, arguing that differently than in the past, this discipline is currently interpreted by judges in a case-by-case basis giving rise to atypical remedies created by the method known as “diritto pretorio”.

³³² See DI MAJO, *ibid*, at p. 12, arguing that in Common Law countries, remedies are chosen by judicial decisions whereas in Civil Law countries, this decision is made by the legislative branch, which is in charge of attributing rights, a fact that helps explaining why the protection of rights in Common Law countries is expressed through remedies and not through rights, (free translation of the original text: “Nel sistema di Common Law il giudizio di rilevanza degli interessi che si intendono proteggere è dato dai giudici e ciò in occasione della concessione del rimedio mentre, nel sistema di Civil Law, questo giudizio promana dal legislatore ed ha la veste, si è detto, della norma attributiva di diritti. Il che dovrebbe spiegare la ragione per cui, nel sistema di Common Law, la forma di protezione dell’interesse è espressa in termini di rimedi e non di diritti”).

³³³ See *Ibid* at p. 67, arguing that judges have often come up with rights and the qualification as *diritti soggettivi* in order to guarantee a protection for certain rights, as it happened for instance with the right to a personal identity.

³³⁴ See MATTEI, *supra* note 315 at p. 260, referring to article 700 of the Civil Procedural Code, which has been recently examined by judges and scholars and has progressively assumed a role in practice that can make it assimilable to the Common Law injunction.

³³⁵ See MATTEI, *ibid* at p. 261, referring the use of this article even outside of the context of provisional measures and with the aim of obtaining a property rule precisely in those cases where it is most doubtful that this would be convenient, (free translation of the original text: “E ormai notorio che quest’articolo viene utilizzato sempre più al di fuori dallo schema interlocutorio, allo scopo di ottenere la formalizzazione di un property right proprio in quei casi in cui l’assetto è più dubbio”); and at p. 264, concluding that from a functional point of view –which often prevails in comparative law studies– it is legitimate to draw analogies between the injunction and the action provided by art. 700 of the Code of Civil Procedure, (free translation of the original text: “da un punto di vista funzionale, appare più che legittimo, in un’analisi comparativa, evidenziare, come è stato fatto, l’analogia fra la injunction e l’azione ex art. 700 c.p.c.”. See also AIELLO, GIACOBBE, PREDEN, GUIDA AI PROVVEDIMENTI DI URGENZA, Milano, 1982, at p. 299 ss, arguing that it is well-known between practitioners of the industrial law field that, hiding behind the scheme of provisory measures, plaintiffs are really seeking a final measure or remedy for the

Likewise, the use of final orders of *inibitoria* in the industrial property³³⁶ realm has followed both legislative action and judicial interpretation³³⁷. Scholars have provided, among others, two explanations for the supremacy of the *azione inibitoria* for industrial property rights that seem compatible to one another. The first is the the need of protection which is said to be particularly important in this field due to the nature of the rights, that is, a rights-centered explanation and a second explanation is based upon the influence of foreign laws where similar rules have flourished³³⁸.

5.2.2 *The inibitoria in the Industrial property context*

Since the availability of the *inibitoria* has been mostly decided from the perspective of the category of right protected it is important to point out that IP rights including patents, have been mostly considered among continental Europe countries as absolute rights³³⁹. This conception corresponds to the prevailing justification of IP rights proposed from different perspectives that combine economic as well as well as non-economic rationales³⁴⁰. In fact, the industrial laws of continental Europe were influenced by theories justifying the

protection of their rights, (free translation of the original text: “chiunque abbia un minimo di esperienza del sistema di relazioni industriali sa benissimo che qui, occultandosi dietro lo schema formale di un sistema cautelare in via di anticipazione, il ricorrente cerca in realta di soddisfare un’esigenza di tutela definitiva”).

³³⁶ The reference to industrial property follows the choice of the Italian Legislator which grouped all intellectual property rights with the exception of copyrights and related rights into a sole Code of Industrial Property in 2005. This choice has been criticized especially because it does not follow the latest trend marked by the TRIPS Agreement of including all intellectual property rights categories together.

³³⁷ Previous laws also provided for this remedy, including article 83 of the (R.D. 29 giugno 1939, n. 1127, Testo delle disposizioni legislative in materia di brevetti per invenzioni industriali for patents; and article 66 of the Regio decreto 21 giugno 1942, n. 929, Testo delle disposizioni legislative in materia di marchi registrati for trademarks).

³³⁸ See FRIGNANI supra note 297, at p. 300, referring that the debated nature of industrial property rights and quoting authoritative authors such as: Franceschelli, *Struttura monopolistica degli istituti di diritto industriale*, in Riv. Dir. Ind., 1956, I, p. 137 (as monopoly rights); ASCARELLI, *TEORIA DELLA CONCORRENZA* (developing a competition based theory); ROTONDI, *DIRITTO INDUSTRIALE*, pp. 95, 112 ss., 194 ss. 311 (denying the autonomy of trademarks and considering these as accessories to the rights of the firm’owner). Frignani argues that such scholarly debate do not seem to lead to any practical consequence with respect to the means of protection for which it is necessary to refer to the law and quoting as supportive the decisions of several courts which basically base their arguments on the conception of intellectual creations as intangible rights.

³³⁹ See ASCARELLI, supra note 186, at p. 317.

³⁴⁰ See ASCARELLI, supra note 186 at p. 305, arguing that it is necessary to identify the right over the intangible good with the patrimonial or economic right whereas the moral rights belong to the general protection belonging to each individual and also existing with respect to intellectual creations, (free translation of the original text: “ritengo invece necessario identificare il diritto sul bene immateriale in quello patrimoniale, mentre la generale tutela morale di ogni soggetto per ogni sua azione e poi invocabile anche per gli atti di creazione intellettuale (...).E appunto questa speciale disciplina (che poi segna, a mio avviso, una sicura superiorita della tradizione dell’Europa continentale, rispetto a quella angloamericana) che, in sostanza, si vuole indicare facendo capo all’esistenza di un diritto morale”).

granting of IP rights as a means to appropriate the fruits of one's labor³⁴¹ as well as those based upon the necessity of giving incentives for the progress of the science and the arts. Probably as a consequence, rights have been largely conceived as absolute and at the same time limited under an apparent contradiction that is however understandable in the light of the public interest³⁴². The public interest requires that incentives are in place for progress yet at the same time calls for limiting the exclusive rights not only in terms of duration but also and importantly through requirements such as the actual working of inventions and the remedies granted in cases of infringement of such rights³⁴³.

The interest that the legislator seems to protect in creating such absolute rights is the public interest to foster innovation and progress which might benefit from the fact that the inventor profits from her invention³⁴⁴. This vision of rights over intellectual creations as absolute is at the same time a limited approach, which is compatible with the view that IP rights might be substituted or complemented with other reward mechanisms as prizes and public financing and also transformed into a right to receive remuneration as it happens precisely under compulsory licensing provisions³⁴⁵. In particular, compulsory

³⁴¹ See *Ibid*, p. 305 ss, referring to the theory developed by Locke and which can also be found in the 1776 Virginia Declaration of Rights. A critique of Lockes' theories is found in ASCARELLI, *ibidd*, at p. 305, arguing that Locke only presents a iusnaturalist point of view, which apart from its historical value with respect to abolishing a system of arbitrary privileges has the defect of defending a natural right, which is out of historical context, (free translation of the original text: "non fa che presentare un'istanza giusnaturalista che –a parte il grandissimo valore che le si deve riconoscere sul terreno storico quale arma che venne usata per far venir meno un sistema di privilegi discrezionalmente concessi dall'autorita- ha il vizio di ogni istanza giusnaturalista e cioe quello di postulare un diritto fuori della storia del quale quello storicamente attuato non sarebbe che uno specchio").

³⁴² *Ibid*, at p. 307, arguing that the ultimate justification of any type of protection is always the public interest, which serve sto justify the existence of an absolute right to use these intellectual creations.

³⁴³ ASCARELLI, *supra* note 186 at p. 308 the problem that legislators have with regard to absolute rights to use intellectual creations shall always refer on the one hand to the need of protection and on the other hand to the limits that should be given to that protection, in order to attain the goals of fostering progress, which justifies such protection, **and precisely the remedies granted against the infringement of such rights**, (free translation of the original text: "il problema legislativo in temi di diritti assoluti all'utilizzazione di creazioni intellettuali deve far sempre capo, da un lato a una tutela e dall'altro pero ai limiti che a questa devono porsi, perchè venga raggiunta quella finalita di progresso che poi giustifica la tutela, onde appunto le sanzioni poi a volte dettate per la mancata attuazione della creazione intellettuale" (emphasis added)

³⁴⁴ See ASCARELLI, *supra* note 186, at p. 309, describing the content of this absolute right as entitling the owner with probability of profit from the use of the intellectual creation.

³⁴⁵ *Ibid*, at p. 311, arguing that defining the interest protected by the absolute right to use intangible goods in the probability of profit from the use of the intangible goods explains how the exclusive right of use can sometimes substitute a prize by the state (. . .) or how the absolute right could consist on remuneration obtained from the users (...). In the above mentioned considerations we can also find an explanation for the recognition of an absolute right reconciled with a compulsory licensing for use, (free translation of the original text: "L'identificazione dell'interesse tutelato dal diritto assoluto di utilizzazione dei beni immateriali in quello della probabilita di guadagno realizzabile nell'utilizzazione della creazione tutelata, spiega poi come al diritto esclusivo di utilizzazione possa a volte sostituirsi un premio da parte dello stato

licensing has been considered as an important policy tool to handle the accumulation of protected inventions that can interfere with a competitive structure of the market and retard progress³⁴⁶. This “balanced” view on the interface between competition and IP rights reflects indeed an early attempt to balance the conflicting interests involved in these two legal disciplines³⁴⁷.

The absoluteness of IP rights and especially of patents –even within the above described limits- and their exclusive nature –*ius excludendi alios*-, naturally led to their conceptual approximation with the legal theory of property³⁴⁸, under a view that departed from the English and U.S. traditions of considering IP as monopolies or privileges³⁴⁹. Under a property conception of the intellectual creations, the infringement is actually banned with respect to the right itself, that is as a good, which can be the object of property rights and not with respect to the activities that are pursued by infringers³⁵⁰. At the same time, however, scholars recognized how the conception of property could allow a level of protection higher than necessary³⁵¹ and hence warned against any attempt to

(...) o come il diritto assoluto possa concernere, anziché l'utilizzazione, un compenso da parte degli utenti (...). Egualmente ritroviamo nella considerazione anteriore la spiegazione del come il riconoscimento di un diritto assoluto possa essere conciliato con l'obbligatorietà di licenze per l'utilizzazione”).

³⁴⁶ Ibid, at p. 312 highlighting how the concentration intellectual property rights, especially in the hands of a few, can accentuate the problem of monopolies and how such problem might risk to block progress precisely in a discipline that is supposed to foster it; whereas the problem might necessitate solutions as the use of compulsory licenses to any interested party.

³⁴⁷ It is indeed interesting to highlight how this view coincides with current explanations based upon dynamic efficiency that seek to approximate the goals of competition law and IP law.

³⁴⁸ See ASCARELLI, *supra* note 186, at p. 318, explaining how rights over intellectual creations had been approximated to property rights since the intangible goods were identified as the good over which the owner could enjoy ownership.

³⁴⁹ Ibid at p. 318-319, arguing that this was indeed the argument advanced by the same historical claim on continental Europe of a discipline of absolute rights to use of intellectual creations, overcoming on the French tradition (...) the ambiguity still present in the law of the United States. This framework has been indeed affirmed, precisely in contrast to a system of monopolies and privileges claiming the freedom for to market access and competition and against which the absolute right of authors of intellectual creations was precisely based on objective grounds namely on the existence of an independent and individualized good (free translation of the original text, (free translation of the original text: “E stata questa invero la tesi avanzata con la stessa affermazione storica sul continente europeo di una disciplina dei diritti assoluti all'utilizzazione di creazioni intellettuali, superandosi, nella tradizione francese (e in connessione, noteremo trattando del diritto d'autore, con la formazione di una intellettualità laica perciò rivendicante la «sua proprietà») l'ambiguità tutt'ora presente nel diritto degli Stati Uniti. Questa disciplina si è invero affermata appunto in contrasto con un sistema di monopoli e privilegi rivendicando la libertà d'accesso al mercato e di concorrenza, libertà nei cui confronti il diritto assoluto degli autori di creazioni intellettuali veniva fondato appunto su presupposti oggettivi e cioè sull'esistenza di un bene autonomo e individualizzato”).

³⁵⁰ Ibid, at p. 320, arguing the object of a monopoly right is an activity whereas an absolute right over intellectual creations is always referred to the intangible good.

³⁵¹ Ibid, at p. 322, arguing that this transformation is characterized on the one hand by a higher protection of the right holder who will be protected against any use of the good by anyone else regardless of the subjective possibility of having suffered any damage, and on the other hand by the identification of a safe criterion of delimitation of the right, (free translation of the original text: “Questo passaggio si traduce da un lato in una maggiore tutela del titolare del diritto che sarà così protetto in relazione a qualsiasi

disregard the underlying –and ultimate– public interest purpose of IP right protection³⁵². In a sense, it is however, contradictory, how the “property” thesis has been defended on grounds similar than the critics now posed against it³⁵³. It would seem that defining the right as a monopoly or as property might be irrelevant and what matters are the consequences deriving from either proposition in terms of patent design³⁵⁴. In fact, Italian scholar Ascarelli, while defending the “property” approach nevertheless recognized that defining IP rights as property would not necessarily mean the absence of limits given that it is the structure of IP that resembles property whereas its function is inherently conditioned to the attainment of public interest purposes³⁵⁵. Moreover, the recognition that the object of IP protection differs from tangible property³⁵⁶ and

utilizzazione del bene, a chiunque altro preclusa e indipendentemente da esame di requisiti soggettivi dell'altrui comportamento o di possibilità di danno, dall'altro nell'identificazione di un sicuro criterio di delimitazione del diritto stesso”).

³⁵² Ibid, at p. 323, defending the theory of property as an important evolution in the justification of this discipline but nevertheless highlighting that an important distinguishing feature of the angloamerican system is the ultimate justification upon the progress of the sciences and the arts.

³⁵³ See ASCARELLI, supra note 186, at p. 323 arguing that this demonstrates the inappropriateness of making use of the monopoly to explain these rights. In fact, the reference to monopoly entails a general prohibition of carrying out activities with respect to such monopoly whereas the theory of intangible rights accentuates the general freedom to exercise any economic activity and with an exceptional prohibition with carrying out the activities with regard to the owner of a right (...) the theory of monopoly emphasizes an exceptional right to use instead of an exceptional prohibition, something that is explained by the origin of the discipline which aimed at abolishing a general system of monopolies instead than affirming a general principle of freedom, but it is currently improper, (free translation of the original text: “Questo aspetto (...) torna tuttavia proprio a dimostrare l'infelicità del ricorso allo schema del monopolio (...). Invero il richiamo al monopolio presuppone un generale divieto di esercizio di una attività nei cui confronti allora si pone una eccezionale libertà della stessa; la disciplina dei beni immateriali si coordina invece con una generale libertà di esercizio di attività (...) e con un eccezionale divieto di detto esercizio in casi determinati nei confronti di chi non sia il titolare del diritto (...) parlando di monopolio si finisce per porre l'accento su una eccezionale facoltà, anziché su un eccezionale divieto, ciò che riesce spiegabile tenendo presente l'origine dell'istituto (sorto piuttosto in connessione con l'abolizione di un generale sistema di monopolio, anziché con l'affermazione di un generale principio di libertà), ma attualmente invece incongruo”).

³⁵⁴ Ibid, at p. 325, criticizing the property theory advanced by French scholars on the grounds that in spite of using the logic of property it makes reference to the a right over the market, hence reproducing the rationale of IP as monopolies, (free translation of the original text: “E il rimprovero che, a mio avviso, può muoversi alla dottrina francese ora dominante che, nel conciliare il tradizionale ricorso francese alla proprietà con gli aspetti funzionali della disciplina, fa poi capo alla configurazione dei diritti sui beni immateriali come diritti alla clientela (...) In sostanza la tesi del diritto alla clientela non fa che riprodurre, in termini di proprietà, quella del diritto di monopolio”).

³⁵⁵ Ibid, at p. 324, distinguishing between the functional and structural aspects, whereby the legal discipline of intangible goods legal belongs to competition law and hence is functionally related to the protection of the probability of profit from the market; whereas structurally, such exclusive rights can be framed under the discipline of property rights understood as absolute rights over a good.

³⁵⁶ Ibid, at p. 325 ss., highlighting the important difference between tangible and intangible goods, which is rightly grasped in the concept of economic “public goods”. In this sense, Ascarelli already sustained that the conception of absolute rights over intangible goods is an indication of the formal characteristics of the right but should lead to neglect the differences between tangible goods and intellectual creations, (free translation of the original text: “Il ricorso alla proprietà nella configurazione del diritto assoluto di utilizzazione sui beni immateriali (...) al quale si è fatto capo in queste pagine vuole invero indicare solo le

that excesses might derive from the “property” logic applied to IP rights, is sensible to modern patent controversies. Two important consequences were in fact put forward early on, by Italian scholars. The first is that IP can be also protected through appropriate compensation³⁵⁷ and the second is that even under the label “absolute”, IP rights are limited in various important ways³⁵⁸. Scholars such as Ascarelli warned on the perils of identifying IP rights with “property” and forget about the intrinsic nature of intellectual creations, which differently to tangible property, can be the object of simultaneous enjoyment³⁵⁹, as it is now the standard argument with respect to IP rights as public goods in the economic sense.

caratteristiche formali del diritto; non deve far dimenticare la differenza e anzi la contrapposizione tra cose materiali (e energie) da un lato e creazioni intellettuali dall’altro”).

³⁵⁷ See ASCARELLI, *supra* note 186, at p. 331, explaining how these absolute rights to exclude could be substituted by a compensation whereby such right to receive a compensation would be nevertheless an absolute right.

³⁵⁸ *Ibid* at p. 333, explaining that the law protects only certain types of intellectual creations; and then it grants a right only over such intellectual creation in an specified and individualized manner, in contrast with property rights over tangible goods which are appropriable by nature and such individual character that tangible goods is taken into account by the law rather than created by the law, (free translation of the original text: “il diritto cioè si preoccupa da un lato della tutelabilità di alcuni tipi (e solo alcuni tipi) di creazioni intellettuali; si preoccupa poi dell’individuazione di quel bene specificato che solo può essere oggetto di diritto assoluto (non potendo il diritto assoluto avere per oggetto che un bene individualizzato, specificato) e ciò in contrasto con quanto avviene per cose materiali (...) nei cui confronti da un lato il diritto parte da una generale appropriabilità (...) dall’altro prende atto della individuazione naturalistica della cosa, anziché disciplinare normativamente lo stesso procedimento di individualizzazione del bene singolo”).

³⁵⁹ *Ibid* at p. 334-335: (“Il pericolo della formulazione corrente circa l’identificazione del diritto sui beni immateriali con la «proprietà» ... così come quello del ricorso alla tutela del lavoro quale giustificazione della disciplina o quello dell’identificazione della disciplina dei beni immateriali con una tutela della clientela, e sempre quello di dimenticare la natura delle creazioni intellettuali, creazioni dell’uomo suscettibile di solidale godimento come strumento di un’attività e non cose preesistenti e godibili sono in funzione di una ripartizione; di dimenticare così anche come non sia la semplice sussistenza di una creazione intellettuale che ne giustifica la tutela”). See *ibid* at p. 335, arguing that neither the mere existence of intellectual creations (as postulated by the property theory) nor an absolute right over the fruits of one’s labor (as postulated by the labor theory), can justify the creation of exclusive rights (...) it is only on the public interest that such exclusive rights might be ultimately justified and it is precisely because of the public interest that none absolute right could be recognized because otherwise the cultural and technical progress could be blocked, (free translation of the original text: “Non è infatti la semplice esistenza della creazione intellettuale che ne giustifica un diritto di esclusiva utilizzazione (come finisce per postulare nella formulazione corrente la teoria della proprietà), o un diritto assoluto a compenso verso chiunque la utilizzi (come finisce per postulare la teoria che fa capo al lavoro)...e solo in quanto il diritto assoluto trovi una sua giustificazione ultima nel pubblico interesse che esso può essere riconosciuto, e nei riguardi delle creazioni intellettuali il pubblico interesse esclude appunto il riconoscimento di un diritto assoluto su qualunque creazione intellettuale (...) perché nell’uno e nell’altro caso verrebbe pericolosamente irrigidita la struttura economica e frenato il progresso culturale e tecnico”). This reasoning is similar to the arguments recently developed for instance by Lemley and Weiser, *supra* note 72.

5.3 The European landscape with respect to IP remedies

This section provides a brief overview of the European landscape with regard to the enforcement of IP rights, focusing on patents and on hence, on the few harmonized standards with regard to the enforcement of patents at the European level. In spite of the entry into force of the European Patent Convention³⁶⁰ and the existence of a European Patent Office, the patent landscape in Europe remains primordialially national and fragmented³⁶¹. The EU Enforcement Directive harmonized various aspects of IP rights enforcement within the European Member States³⁶² and was justified upon the need to ensure the effective application of substantive IP rights, which were at the same time viewed as having paramount importance for the development of the internal market³⁶³. Among the pointed reasons were, that in spite of the TRIPS Agreement, considerable differences in enforcement subsisted between Member States:

“It emerges from the consultations held by the Commission on this question that, in the Member States, and despite the TRIPS Agreement, there are still major disparities as regards the means of enforcing intellectual property rights. For instance, the arrangements for applying provisional measures, which are used in particular to preserve evidence, the calculation of damages, or the arrangements for applying injunctions, vary widely from one Member State to another”³⁶⁴.

The recitals of the Directive pointed out that disparity in IP enforcement in different member states weakens substantive IP rights and prejudices the achievement of the internal market by causing a loss of confidence in the market and decreasing investments in innovation and creativity. In addition, the presence of organized crime and the impact of piracy and counterfeiting were deemed as a potential threat to the internal market. The Directive thus, set up the goal of approximating the laws of member states in order to ensure “a high, equivalent and homogeneous” level of IP rights protection in the internal

³⁶⁰ See the EUROPEAN PATENT CONVENTION, 13th edition entered into force on the 13th of December, 2007, available at: <http://www.epo.org/patents/law/legal-texts/epc.html>

³⁶¹ For an overview of the IP harmonization at the European level with respect to Industrial Property Rights, see Communication From The Commission To The European Parliament, The Council And The European Economic And Social Committee, *An Industrial Property Rights Strategy For Europe*, available at: http://ec.europa.eu/internal_market/indprop/docs/rights/communication_en.pdf

³⁶² Directive 2004/48/EC of the European Parliament and of the Council of 29 April of 2004, on the Enforcement of Intellectual Property Rights, official text available at: http://eur-lex.europa.eu/pri/en/oj/dat/2004/l_195/l_19520040602en00160025.pdf, hereinafter the Enforcement Directive.

³⁶³ See the Directive 2004/48/EC, at L 195-16 paragraphs 1 to 5

³⁶⁴ Directive 2004/48/EC, *Ibid*, at L 195-17, recital 7.

market³⁶⁵. However, critics have pointed out that the rules should have better tackled piracy and counterfeiting activities while providing less harsh remedies for instance, in the cases of unintentional infringement³⁶⁶.

Nevertheless, the Directive acknowledged the need to take into due account the specific characteristics of each case, with regard to the measures, procedures and remedies to be applied, therefore recognizing exceptions for the application of remedies in cases of unintentional or non-commercial scale infringement³⁶⁷ as well as the application of rules of competition and in particular, articles 81 and 82 of the EC Treaty³⁶⁸. In particular, the Directive cites the possibility for Member States to provide for pecuniary compensation as an alternative remedy to injunctions and other corrective remedies in cases of unintentional infringement³⁶⁹. Hence, the general spirit of the Directive was to encompass all IP rights and to ensure an effective IP rights substantive protection in spite of the recognized differences among member states³⁷⁰.

Among other features, the Directive requires EU Member States to provide the courts with the possibility of issuing injunctions³⁷¹. The wording of the Directive is similar to Article 44 of the TRIPS Agreement in that it mandates countries to make injunctive relief available but does not make such choice mandatory in all instances³⁷². As a consequence, the important differences that exist in the national legislation of member states with regard to the use of

³⁶⁵ See recital 10 at p. L 195-17

³⁶⁶ See William Cornish et al., *Procedures and remedies for enforcing IPRs: the European commission's proposed Directive* (2003), E.I.P.R. 2003, 25(10), 447-449, criticizing the PROPOSAL FOR A DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL ON MEASURES AND PROCEDURES TO ENSURE THE ENFORCEMENT OF INTELLECTUAL PROPERTY RIGHTS: COM (2003) 46 FINAL, January 30, 2003 because it unduly established special rules for all type of infringements, even if the proposal was initially justified upon the fight against piracy and counterfeiting and doubting about the effectiveness of introducing procedural measures while warning about the increasing fragmentation that could result from establishing a specific body of IP-specific rules. See also Ricolfi, supra note 291.

³⁶⁷ See recitals 13 and 17 at p. L 195-17

³⁶⁸ See recital 12 at p. L 195-17

³⁶⁹ See recital 25 at p. L 195-18 adding however, that such possibility shall not apply when the infringing activities also ("constitute an infringement of law other than intellectual property law or would be likely to harm consumers").

³⁷⁰ See recital 13 at p. L195-17 "It is necessary to define the scope of this Directive as widely as possible in order to encompass all the intellectual property rights covered by Community provisions in this field and/or by the national law of the Member State concerned. Nevertheless, that requirement does not affect the possibility, on the part of those Member States which so wish, to extend, for internal purposes, the provisions of this Directive to include acts involving unfair competition, including parasitic copies, or similar activities"

³⁷¹ DIRECTIVE 2004/48/EC, Ibid, at L 195-23, article 11, ruling that "Member States shall ensure that, where a judicial decision is taken finding an infringement of an intellectual property right, the judicial authorities **may issue against the infringer an injunction** aimed at prohibiting the continuation of the infringement" (emphasis added).

³⁷² Article 44 of the TRIPS establishes that the "judicial authorities shall have the authority to order a party to desist from an infringement..."

permanent injunctions seem compatible with both the TRIPS Agreement and the European Enforcement Directive.

Even though the Enforcement Directive applies to all IP rights, the general landscape of substantive and enforcement law remains highly fragmented according to the divergent degrees of harmonization of each right. For instance, community regulations are in place in the fields of trademarks and industrial designs, which create a uniform regime. The situation is in contrast with the patent area, where harmonization is still to come.

Hence, in order to fully interpret the current European harmonized rules with respect to IP rights enforcement, it is necessary to distinguish between community rights and, as it is the case with patents, national rights. It is in this light that a recent decision taken by the Court of Justice of the European Communities, concerning a community trademark, should be read³⁷³. The Court tilted in favor of injunctive relief, based upon the interpretation of Article 98(1) of the Community Trade mark Regulation³⁷⁴, which regulates the issuance of injunctions by establishing that:

“1. Where a Community trade mark court finds that the defendant has infringed or threatened to infringe a Community trade mark, it shall, **unless there are special reasons** for not doing so, issue an order prohibiting the defendant from proceeding with the acts which infringed or would infringe the Community trade mark. It shall also take such measures in accordance with its national law as are aimed at ensuring that this prohibition is complied with” (emphasis added).

The court, in considering the interpretation of “special reasons”, ruled that: “the mere fact that the risk of further infringement or threatened infringement of a Community trade mark is not obvious or is otherwise merely limited does not constitute a special reason for a Community trade mark court not to issue an order prohibiting the defendant from proceeding with those acts”.

The court likewise considered that the general prohibition of infringement activity and the possibility that further infringement is penalized, does not amount to special reasons in the sense required by article 98 (1) in order to deny an injunctive order. Such decision affirming the pre-eminence of injunctive orders, by limiting the interpretation of the special circumstances in which these prohibitory orders might be denied, could also be considered as compatible

³⁷³ See *Nokia Corp. v. Wärdell*, 14 December 2006, C-316/05, available at: <http://oami.europa.eu/en/mark/aspects/pdf/JJ050316.pdf>

³⁷⁴ Council Regulation (EC) No 40/94 of 20 December 1993

with the words of article 21 of the TRIPS Agreement, which precludes the possibility of compulsory licenses for trademarks³⁷⁵. Nevertheless, the possibility of finding special circumstances in which an injunction could be denied, without the need to issue a compulsory license, still exists³⁷⁶.

This decision interprets a rule that pertains only to the community trade mark field and could not possibly be extended to the patent realm, at least, in the absence of further harmonization³⁷⁷, which has for a long time stagnated. However, the intention to re-launch negotiations about the community patent and a European Patent Litigation Agreement (EPLA)³⁷⁸ was expressly mentioned in a recent communication of the European Commission³⁷⁹. Still, the latest EPLA draft establishes a similarly vague language for injunctions in article 62³⁸⁰. Probably the most impacting change if the EPLA is agreed upon would be the introduction of a European Patent Judiciary dealing with infringement and validity of patents. A common judiciary would presumably help to fulfill the goals of the agreement, *inter alia*, to improve the enforcement

³⁷⁵ See article 21 of the TRIPS Agreement: “Members may determine conditions on the licensing and assignment of trademarks, it being understood that **the compulsory licensing of trademarks shall not be permitted** and that the owner of a registered trademark shall have the right to assign the trademark with or without the transfer of the business to which the trademark belongs” (emphasis added).

³⁷⁶ See *Nokia Corp. v. Würdell*, *ibid*, at paragraph 35, adding that the circumstances given by the Court, (“obviously do not preclude a Community trade mark court from not issuing such a prohibition were it to find that further infringement or threatened infringement on the part of the defendant was no longer possible. That would apply in particular if, after the commission of the acts in question, an action were brought against the proprietor of the mark infringed which culminated in a revocation of his rights”).

³⁷⁷ See Von Muhlendahl, Alexander. “*Enforcement of Intellectual Property Rights-Is Injunctive relief mandatory?*”, in IIC, N° 4/2007 – Verlag, Munich, arguing that: “As far as community-wide rights are concerned, the ECJ clearly favors a general rule which obliges the courts to grant injunctive relief unless there are circumstances specific to the case which would allow a conclusion that further infringements will not occur. The enforcement Directive is obscure as regards its mandatory nature, but one can have the hope that the ECJ will interpret Art. 11 of the Directive similarly broadly. As for the United States, it is unfortunately once again going its separate ways in an important field of intellectual property protection”.

³⁷⁸ See the Proposal for a COMMUNITY PATENT, available at: http://ec.europa.eu/internal_market/indprop/patent/index_en.htm and the last DRAFT AGREEMENT ON THE ESTABLISHMENT OF A EUROPEAN PATENT LITIGATION SYSTEM (December 2005) is available at: <http://www.epo.org/patents/law/legislative-initiatives/epla.html>. Both projects are still under discussion.

³⁷⁹ See the COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL - ENHANCING THE PATENT SYSTEM IN EUROPE- (COM (2007) 29-03-07), available at: http://ec.europa.eu/internal_market/indprop/patent/index_en.htm, setting patent harmonization as a key objective for Europe in the light of the renewed Lisbon agenda (“Many stakeholders continue to support the Community Patent as the approach which will yield most added-value for European industry under the Lisbon strategy...As to reforms of the existing European patent system within the framework of the European Patent Convention (EPC), numerous stakeholders support a rapid ratification of the London Agreement and adoption of the European Patent Litigation Agreement...”).

³⁸⁰ “The European Patent Court **may order** a party infringing or threatening to infringe a European patent to cease and desist from any act infringing the patent under Articles 33 or 34” (emphasis added). In the opinion of the German, French, MC and Dutch delegations, included in the draft, it was important to further discuss whether the right to request an injunction should expire after a certain time period, a limitation to possible over-extension of patent rights in time.

of European patents, enhance legal certainty and promote the uniform application and interpretation of European patent law³⁸¹.

In fact, injunctions have been described as particularly prone to problems of forum shifting between member states, which was reflected in the controversy about the possibility of awarding cross-border injunctions³⁸² and also in the use of delaying strategies such as torpedoed legislations³⁸³. However, it is probably important to recall how similar arguments were put forward during the debate preceding the creation of the U.S. Court of Appeals for the Federal Circuit in 1982³⁸⁴. After some decades, the salutary effects of a unique Court of Appeals with competence in patent cases are subject to controversy³⁸⁵. The debate then should really focus on estimating whether the advantages of having a specialized court might have been offset by their costs while avoiding that the move towards a unified approach in patent substantive law (community patent) and patent litigation (EPLA) affects the balances between the interest of patentees and society that should be incorporated in patent law.

In addition, the Communication from the Commission has already warned about the problems related to the dubious quality and increasing number of granted patents but concludes without applying these warns into the proposals:

³⁸¹ See DIETMAR HARHOFF, ECONOMIC COST-BENEFIT ANALYSIS OF A UNIFIED AND INTEGRATED EUROPEAN PATENT LITIGATION SYSTEM, FINAL REPORT, Tender No. MARKT/2008/06/D (26 February 2009), available at: http://ec.europa.eu/internal_market/indprop/docs/patent/studies/litigation_system_en.pdf

³⁸² See *ibid* at p. 17-18, explaining how cross border injunctions were initially granted by Dutch and then adopted by other courts. Patentees could start infringement proceedings in a Dutch court, even for other national patents derived from the same European patent and –Dutch- court assumed jurisdiction when the infringer was domiciled in the Netherlands or the Dutch patent was being infringed, applying then the law of the country where the patent was in force and where the plaintiff sought to obtain an injunction and often granting a cross-border injunction based upon article 5(3) of the Brussels Convention (currently Regulation 44/2001 on jurisdiction and the recognition and enforcement of judgments in civil and commercial matters). The practice came to an end by two decisions of the European Court of Justice; *GAT v. LuK* (case C-04/03, ECJ Report 2006, I, 6509) where the ECJ declared that national courts of the State of registration of a patent have exclusive jurisdiction over all proceedings relating to the validity of that patent and *Roche v. Primus and Goldberg* (case C-539/03, ECJ Report 2006, I, 6535) that finally ended the granting by national courts of cross-border injunctive relief for the infringement of European patents.

³⁸³ *Ibid* at p. 18, defining torpedoes as “actions for declaration of non-infringement in court systems which are known or alleged to work very slowly”. This strategy is based upon article 27 of Regulation 44/2001 which establishes that any court not first seized with an action must decline jurisdiction or stay the proceedings and in these cases, hence, while a declaratory statement is pending in the “slow” court, an infringement action in other courts is blocked.

³⁸⁴ See Fanelli et al., *Patent Law Decisions of the Federal Circuit*, 57 AM. U. L. REV. 821, April, 2008, citing also the S. Rep. No. 97-275, at 5 (1981) (arguing that the uniformity of the Federal Circuit could prevent forum shifting in litigation). See also FRANK CIHLAR, THE COURT AMERICAN BUSINESS WANTED AND GOT: THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT 11 (1982), at p. 11 (highlighting effects of uncertainty and forum shopping to patent law, where stability and predictability provide the basis for reasoned business judgments).

³⁸⁵ See Dreyfuss, *supra* note 313, analysing the reasons that justified the creation of the CAFC as well as the most recent decisions by the U.S. Supreme Court reversing many important interpretations of the CAFC with regard to patent law.

“...concerns have been raised that a spiralling demand for patents could result in increased granting of low quality patents. This is one of the reasons that could lead to the emergence of "patent thickets" and "patent trolls" in Europe. A high quality patent regime in the EU is an essential instrument to prevent such innovation hampering and to avoid destructive behaviour in Europe" (footnotes omitted)³⁸⁶.

Until more substantive harmonization is accomplished within the EU, national practices continue to be widely different in member states. In the following chapters, a comparative landscape about the approach towards *ex-post* liability rules within the U.K. and Italy is presented and contrasted with the U.S. case.

6 Conclusions

This chapter aimed at identifying the evolution of *ex-post* liability rules in history. The chapter examined the main compulsory licensing provisions in a historical context, focusing on the international context of patent law and then described the main features of remedies in the IP field in the context of common law countries and civil law countries. There are several observations that emerge from the historical account of the provisions under analysis. The first sections highlighted the early appearance of compulsory licensing provisions, that in spite of originating on dissimilar intentions, could be considered as an attempt to balance the exclusive nature of IP rights with their social function. The evolution of compulsory licensing provisions in history ends with the analysis of the TRIPS Agreement and the post-TRIPS landscape, which has largely constraint the use of compulsory licensing although there are still important spaces for their use.

Different than substantive patent law harmonization, enforcement is a late comer in the international context and remains mostly a national issue that depends on each country's legal system and traditions. In particular, the possibility of denying injunctions, subjecting them to equitable considerations that vary case-by case is rooted in the common law distinction of courts of equity and courts of common law. The chapter briefly discussed the historical origins of such rule while leaving the particular developments of the rule for the following sections that analyze the cases of U.S. and U.K. and contrast them to the case of a civil law country as Italy.

The first observation that emerges is that common law countries have historically conceived injunctions as an equitable remedy and have hence

³⁸⁶ See ENHANCING THE PATENT SYSTEM IN EUROPE, *supra* note 379, at p. 13.

subjected the award of this remedy to a factual test that aims at striking a balance between the particular circumstances of the case. The situation is, in appearance, outstandingly different in civil law countries, due to a diverse conception over both rights and remedies. Injunctions are not considered an equitable remedy and patent statutes as well as procedural laws do not condition their award to a factual inquiry.

Understanding the dynamics of remedies is not only important and difficult in the light of the remarkable differences between different countries, but also with regard to its theoretical treatment, where remedies are often categorized either as a procedural matter or as part of substantive law:

“Part of the difficulty with conceptualizing remedies as a field has been that remedies fits uneasily between the categories of substance and procedure. Remedies are central to litigation, but except for details at the edges, like the procedural rules for preliminary relief, remedies in the modern idea are not part of the law of procedure. The Supreme Court has correctly held that the measure of damages is substantive for Erie purposes. The same should be true of the standards for granting injunctions, although that question appears not to have been litigated. What or how much a plaintiff recovers is part of plaintiff’s substantive entitlement and not simply a rule for processing disputes”³⁸⁷

A second observation regards the importance of taking into consideration the interface between rights and remedies in order to understand this enhanced concept of compulsory licenses. A remarkable difference between civil law and common law countries with regard to the legal treatment of rights and remedies is precisely whether it is the remedy or the right that sets the starting point for such analysis. In spite of such marked difference, none form of reasoning – either one focusing on remedies or one focusing on rights- could be *a priori* judged as more efficient. As it has been already noticed, it would be rather the context in which the rule is applied -in the case of patent law the dynamic evolution of science and technology dramatically affects such context- that could determine whether a system that focuses on the remedy or one that focuses on the right is better able to cope with such new necessities³⁸⁸. A similar argument could be made with regard to the choice of each country of having one or another type of compulsory licenses or both, as in the U.K. case.

³⁸⁷ Laycock, *supra* note 292, at p. 166 (footnotes omitted).

³⁸⁸ See DI MAJO, *supra* note 320, at p. 15, arguing that a reasoning starting from the remedy does not necessarily lead to a better solution than a reasoning starting from the rights (...). The results rather depend on the capacity of adaptation that the legal system has in order to qualify the rights and grant the appropriate remedies, (free translation of the original text: “Non e detto, ad esempio, che ragionare per rimedi porti, in punto di tutela, a maggiori progressi rispetto al ragionare per diritti (...) Tutto sta nel vedere con quale capacita di adattamento l’ordinamento dato e disposto a qualificare diritto un determinato interesse oppure ad apprestare per esso un rimedio adeguato di tutela”).

CHAPTER III

EX-POST LIABILITY RULES A COMPARATIVE LEGAL VIEW

“From the character of the right of the patentee we may judge of his remedies”

U.S. Supreme Court, Continental Paper Bag Co. V. Eastern Paper Bag Co., 210 U.S. 405 (1908)

“The existence of a right to exclude does not dictate the remedy for a violation of that right”

Justices Kennedy, Stevens, Souter and Breyer, concurring opinion in eBay v. MercExchange, 547 U.S. 130 (2006)

1 Introduction

It has been recently argued that some modern patent systems have “failed”, are “broken” or have somehow lost their underlying balance by providing incentives for strategic patenting and litigation³⁸⁹. These assertions have been specifically applied to the preference for property rules manifested in the automatic use of injunctive relief in patent infringement cases. The questions of whether and how injunctions might be denied in specific circumstances have generated increasing scholarly and policy interest, evidenced in cases involving

³⁸⁹ For critics on the U.S. patent system see among others, FEDERAL TRADE COMMISSION, *supra* note 5; NATIONAL ACADEMIES OF SCIENCE, *supra* note 5; ADAM B. JAFFE AND JOSH LERNER, *INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS, AND WHAT TO DO ABOUT IT*, Chapters 1 and 2 (2004). See also BESSEN AND MEURER, *supra* note 14, at p. 2, claiming that the patent system has failed mainly because of a deficiency in the notice system with the consequence that “a defective property system discourages trade and investment not just by property owners, but also by those who inadvertently face the threat of property related lawsuits”.

the *BlackBerry* device³⁹⁰ and the eBay website³⁹¹ as well as prior discussions³⁹². These discussions have been also growingly recognized outside of the U.S.³⁹³

Indeed, to protect a patent through a property rule means –in procedural terms– granting an injunction and other measures that aim at preventing infringement to continue. While damages are most of the times awarded *in tandem* with injunctions to compensate for past losses; economic reasons call in certain instances for switching to a liability rule and substituting a permanent injunction with damages³⁹⁴. A similar outcome arises, when a compulsory license is put in place through specific provisions of substantive patent law.

This chapter aims at examining the use of *ex post* liability rules administered by courts by analyzing law provisions and case law allowing the switch from a property to a liability rule *ex-post*³⁹⁵. The chapter proceeds as follows. The first section explains the concept of *ex-post* liability rules. The second, third and fourth sections briefly describe *ex post* liability rules in the U.S., U.K. and Italy, respectively while discussing aspects of particular importance for each country. The chapter concludes by highlighting the similarities and differences between the systems under study.

³⁹⁰ See *NTP, Inc. V. Research In Motion, Ltd.*, 03-1615, US Court of Appeals for the Federal Circuit, 418 F.3d 1282; (2005).

³⁹¹ See *eBay Inc. v. Mercexchange*, supra note 2.

³⁹² See FEDERAL TRADE COMMISSION, supra note 5, at p. 38–39.

³⁹³ See for instance Dietmar Harhoff, *Patent Quantity and Quality in Europe – Trends and Policy Implications*, in *ADVANCING KNOWLEDGE AND THE KNOWLEDGE ECONOMY*, MIT Press (B. Kahin and D. Foray eds., 2006), p.331-350, arguing that “the stability of the European patent systems may be threatened by a strong increase in the number of patent applications, increased patent complexity and lower patent quality”. See also Christian Le Stanc, *Les malfaisants lutins de la forêt des brevets, à propos des ‘patent trolls’*, REVUE PROPRIETE INDUSTRIELLE, éd. Lexisnexis, févr. 2008, Etude 3, arguing that it is expected that this practice can be exported on the old continent and especially in France, even if the patents are said to be more seriously issued by the European Patent Office, even if the judges, specialized, may be more vigilant on the patentability of inventions and scope of the patents and even if the costs of litigation may be more modest. We will observe without doubt, today or tomorrow, some patent troll, acclimatized in our countries and pledging patents in force in France, (free translation of the original text: “Il est à prévoir cependant que ladite pratique puisse s’exporter sur le vieux continent et spécialement en France Note 20, même si les brevets sont, dit-on, plus sérieusement délivrés à l’Office européen des brevets ; même si les juges, spécialisés, peuvent être plus vigilants sur la brevetabilité des inventions et la portée des titres ; même si les coûts des contentieux peuvent être plus modestes. On observera sans doute, aujourd’hui ou demain, quelque patent troll, acclimaté dans nos contrées et nanti de brevets en vigueur en France...)”

³⁹⁴ See discussion on Chapter I.

³⁹⁵ The term *ex-post* refers to the application of a liability rule *ex-post* with respect to the decisions taken by the patent owner, including that of investing in R&D and filing a patent. An alternative would be *ex-post* with regard to the infringement, which would include the cases analysed within the U.S. precedent of *eBay*. However, in this case we would leave aside the cases of compulsory licenses for dependent patents and lack of working where infringers are usually forbidden to use these provisions, so that the liability rule is only applied *ex-post* with respect to the above mentioned decisions of investing and filing a patent. See section 5 below, discussing a recent reform in Italian legislation, allowing good faith infringers to apply for compulsory licenses.

2 *Ex-Post* Liability Rules

The preferential use of property rules to protect patent rights has often been advanced by arguing that patent rights grant a right to exclude others, rather than any direct right to use an invention³⁹⁶. In addition, injunctions, which consist in a judicial order to stop an infringing activity, have been often identified as the prime or solely appropriate remedy for patent infringement³⁹⁷. This predominant view across several jurisdictions has been accompanied by an absence –of statutory patent provisions in the U.S. case- or an increasing limitation –in the international system- on the use of patent compulsory licenses that has largely permeated law and economics analysis.

Such preference for property rules might actually respond to either one or both of the following explanations. A first explanation could be based upon the growing assimilation of IP rights to traditional property, for which injunctive relief is the standard remedy³⁹⁸. This argument, hence, concentrates on the nature of the right. The second explanation might be based upon the economic view, that has exercised an important influence among law and economic scholars and which sustains that injunctive relief is less costly to administer than damages, principally due to the difficulty of calculating the optimal amount of damage awards³⁹⁹. Hence, this explanation is predominantly focused

³⁹⁶ The argument is typically explained by patent scholars, as supported by three facts. First, a patent right entitles the patentee to exclude others but not necessarily to use her invention, since use might be subject to different requirements, for instance in the case of previous marketing authorization for chemicals and pharmaceuticals. Secondly, it is highlighted that an inventor using a previously patented technology, would require authorization from the first patentee and the second patent does not grant any direct right to use the first innovation. Thirdly, it is said that any inventor can use her invention even without a patent.

³⁹⁷ See Christopher Heath, *Comparative Overview and the TRIPS Enforcement provisions*, in *Patent Enforcement Worldwide: A survey of 15 countries*, IIC STUDIES, WRITINGS IN HONOUR OF DIETER STAUDER, HART PUBLISHING (2004) at p. 6-7; (observing that of all remedies, injunctions were the most commonly sought and arguing that the importance of injunctions stems out of 1) the need to avoid market confusion or erosion of the owner's competitive position in trademarks and unfair competition cases; 2) the need to preserve the owner's exclusive right and 3) the difficulty to prove damages). See also Marshall, *The enforcement of patent rights in Germany*, SAME VOLUME at p. 135 claiming that in Germany ("the most important remedy in a patent infringement case is the claim for cessation of further infringement (injunctive relief)"). Similarly, see Brinkhof, *The Enforcement of Patent Rights in the Netherlands*, p. 185, SAME VOLUME, highlighting that in the Netherlands "in almost all cases, the patentee requests an injunction against the infringer" which is accompanied by a judicially imposed sum in case of contempt ("dwangsom" corresponding to the French "astreintes") and as a consequence "an injunction is an effective means for stopping infringement"; and Blumer, *The Enforcement of Patent Rights in Switzerland*, SAME VOLUME, at p. 227 claims that "in practice, injunctive relief is more relevant than damages".

³⁹⁸ See *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1246-47 (Fed. Cir. 1989); holding that the "right to exclude recognized in a patent is but the essence of the concept of property". Compare with *Geragosian v. Union Realty Co.*, 289 Mass. 104, 193 N.E. 726, ruling in a case of encroachment upon land property that: "The general rule is that the owner of land is entitled to an injunction for the removal of trespassing structures".

³⁹⁹ See above, section 3.1.2 "Critics against Liability rules and section 4.1. "The Case against Liability Rules for Patent Rights, Chapter I.

on the remedy. Efficiency reasons can nevertheless suggest that in some cases a patent should be protected through a liability rule either under a rights' or a remedies' perspective⁴⁰⁰.

Until the U.S. Supreme Court decision in the *eBay* case, most law and economic analysis –constructing on U.S. law- assumed that an injunction will always follow any judicial decision asserting validity and infringement. In fact, permanent injunctive relief had received far less attention in studies about patent enforcement, compared for instance, to the study of damage compensation or preliminary measures⁴⁰¹. Moreover, studies on patent compulsory licensing often referred the absence of such provisions in U.S. patent law, concluding also that it was neither possible nor desirable to compel patentees to work their inventions.

The 2006 U.S. Supreme Court decision in the case of *eBay v. MercExchange*⁴⁰² declared that the four-factor test to guide the award of injunctions was also applicable to patent cases and hence admitted the possibility that district courts could deny this remedy under certain circumstances. This decision opened the door for the use of *ex-post* liability rules imposed by courts in patent infringement cases, which were possible in other countries under different compulsory licensing systems. Conversely, liability rules were practically absent from U.S. patent law and confined to antitrust cases. This decision therefore marks an important policy change in a country that had for a long time opposed the use of liability rules both in judicial decisions and proposals for patent law reform.

Ex post liability rules are judicially-administered and taken on a case-by-case basis regardless of whether they are included in law provisions or case law. Thus, the probability that a patentee obtains injunctive relief in a case in which the patent is found to be valid and infringed will be lower than one. As a consequence, courts will face similar obstacles when determining through a case by case reasoning if damages can substitute the injunctive order or whether the requirements for a compulsory license are satisfied, in spite of deciding such different cases. In doing so, courts shall assess whether the specific case calls for this switch by analyzing both the legal basis and –when a balance between the interests of the parties is allowed- by incorporating such

⁴⁰⁰ See chapter I, section 4.2. “The Case for Patent Liability Rules: Transaction Costs”.

⁴⁰¹ See BLAIR AND COTTER, *supra* note 93, at p. 2 noticing that “even within the burgeoning literature on the law and economics of Intellectual Property Rights (IP rights), there is, still relatively little discussion of the appropriate remedies for the infringement” while concentrating in the study of damage rules and claiming that there is consensus about the use of injunctions, “there is, to be sure, a fairly widespread consensus that an injunction –an order to cease infringement- is the appropriate remedy in most cases”.

⁴⁰² See *eBay Inc. v. Mercexchange*, *supra* note 2.

examination. Additionally, Courts will face the difficult task of fixing the amount of compensation.

Ex-post liability rules, as described here, hence resemble much more accurately the type of liability rules used in the entitlement literature, in comparison, for instance with *ex ante* compulsory licenses⁴⁰³. This latter type of compulsory licenses is often grounded on transaction costs due to the presence of multiple owners and many rights, each having a relatively low value⁴⁰⁴. Patent *ex-post* liability rules would be instead justified on the need to avoid strategic behavior and bargaining collapse.

For the purposes of examining and comparing *ex-post* liability rules in different jurisdictions, three particular cases will be examined⁴⁰⁵. A first type of *ex-post* liability rule is applied when a court denies injunctive relief for infringed patents with the clearest example found in common law countries which deem

⁴⁰³ Legal scholars however, disagree about whether denial of injunctions in fact amounts to a compulsory license. See GERVAIS, *supra* note 270, at p. 450, arguing that “the systematic impossibility to obtain an injunction and to obtain only actual damages could amount to a compulsory license”. See also Christopher Cotropia, *Compulsory Licensing Under TRIPS and the Supreme Court of the United States’ Decision in eBay v. MercExchange*, PATENT LAW: A HANDBOOK OF CONTEMPORARY RESEARCH, Toshiko Takenaka & Rainer Moufang, eds., (Edward Elgar Publishing, 2008), available at <http://ssrn.com/abstract=1086142>, arguing that “while *eBay* speaks to patent remedies, the *de facto* effect of an injunction denial is, by definition, a government allowed compulsory license” but making the claim that while damages establishing a high royalty rate are antithetical to the aims of compulsory licenses, the use of reasonable royalties “brings *eBay* in line with the definition of a compulsory license”. But see *Paice LLC, v. Toyota Motor Corp.*, et al. CV-211-DF., 16, August 2006, arguably wrongly explaining that: “We use the term ongoing royalty to distinguish this equitable remedy from a compulsory license. The term “compulsory license” implies that anyone who meets certain criteria has congressional authority to use that which is licensed”.

⁴⁰⁴ Neil Netanel, *Impose a Noncommercial Use Levy to Allow Free Peer-to-Peer File Sharing*, HARVARD JOURNAL OF LAW & TECHNOLOGY 17:1-84 (2003), at p. 25, arguing that: “a proliferation of copyright holders’ proprietary rights can also make it prohibitively expensive for prospective licensees to obtain all the permissions needed to use, modify, or distribute creative expression. Transaction costs are especially high with respect to motion pictures, sound recordings, and other expression that comprises a number of copyrighted works, each of which must be licensed (...)”. See also Merges, *supra* note 114, comparing the case of compulsory licensing for blocking patents and compulsory licenses for copyrights (statutory compulsory licenses and arguing that: “...the costs of strategic bargaining are far different from the costs of transactions in markets where multiple IPRs are needed as inputs. Input markets are notable especially for the repeated costs of locating right holders and negotiating individual licenses. And, with respect to these negotiations, the single most difficult issue -- and hence the most costly to resolve -- is the valuation of each unique IPR”.

⁴⁰⁵ See KONRAD ZWEIGERT AND HEIN KÖTZ, AN INTRODUCTION TO COMPARATIVE LAW, (3rd revised ed., Oxford, Clarendon press, 1998), at p. 34, explaining that: “the basic methodological principle of all comparative law is that of functionality. From this basic principle stem all the other rules which determine the choice of laws to compare, the scope of the undertaking, the creation of a system of comparative law, and so on...the only things which are comparable are those which fulfill the same function”. In this sense, Law and Economics adds to the Comparative Law method by clarifying on the underlying purposes of certain rules, even if they pertain to different legal areas, as it is the case with the rules regulating patent remedies and compulsory licenses. In all cases, liability rules can be thought as aiming to cope with the problem of efficient bargaining in the presence of high transaction costs, by “forcing” a transaction that would otherwise not occur.

injunctions as an equitable remedy, hence allowing judges to substitute injunctions with damage awards in accordance with the equities of the case. Although no equivalent rule considers the granting or denial of injunctions to fall plainly within the discretion of the judges; there are several spaces left for a flexible use of property rules also in civil law countries. In order to compare this type of liability rule with countries from such dissimilar law traditions, the following analysis centers on the reasons for denying injunctions in common law countries –most of them discussed by the U.S. Supreme Court *eBay* decision and follow-on cases and commentary- and examines the scope for judicial discretion with regard to remedies in patent infringement cases in the other countries⁴⁰⁶.

A second type of *ex-post* liability rule applied by courts are compulsory licenses addressing similar situations to the first case and contained in the patent laws of several countries. In this sense, there are compulsory licensing provisions addressing subservient or dependent patents and aiming at avoiding a potential “bargaining breakdown”, a situation clearly under the C&M framework of high transaction costs. Another type of compulsory license applies for patents that have not being worked, a provision which is historically rooted in industrial policies favoring national industries⁴⁰⁷ but that has been recently raised during the debate surrounding the *eBay* decision in spite of the fact that the U.S. had largely opposed patent compulsory licensing and specially non-working provisions. Although, the final decision of the U.S. Supreme Court did not

⁴⁰⁶ The analysis that follows mostly focus on a –typical- case where a plaintiff claims that her patented invention is infringed by a product or process used by a defendant either in an infringement case or as a defense during an invalidity procedure or a declaration of non-infringement. For the purposes of this debate it does not matter whether infringement is literal or through the application of the doctrine of equivalents, which allows courts to declare infringement even when the infringing device or process does not literally fall upon the literal scope of claims but nevertheless is equivalent to said claim or claims. The reverse doctrine of equivalents could play a closely related role to that of denying an injunction in the sense of allowing the use of a patented invention, however denying any relief for the patentee. Nonetheless, its use remains limited in practice. See *Roche Palo Alto v. Apotex Inc.*, (CAFC), 2008-1021, available at: <http://www.cafc.uscourts.gov/opinions/08-1021.pdf> explaining how the doctrine of reverse equivalents “is an equitable doctrine designed “to prevent unwarranted extension of the claims beyond a fair scope of the patentee’s invention” citing the U.S. Supreme Court ruling in *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608-609 (1950), holding that “Where a device is so far changed in principle from a patented article that it performs the same or similar function in a substantially different way, but nevertheless falls within the literal words of the claim, the [reverse] doctrine of equivalents may be used to restrict the claim and defeat the patentee’s action for infringement”. The CAFC held the doctrine is rarely applied and that the CAFC itself has never applied it and highlighting that defendants have to clearly meet their burden of proof in asserting whether the device “has so far changed in principle”, not being possible to prove such fact only through experts’ declarations but through the specification, prosecution history and prior art.

⁴⁰⁷ Under the requirements of the WTO and the TRIPS Agreement, a non-working provision might currently apply only if a patent is not being worked in any member country of the WTO, which is almost equivalent to say if the patent is not-worked or insufficiently worked in absolute terms. Hence, in our view, this provision might also encompass cases similar to *eBay* in the U.S. with the caveats explained below, principally the fact that many patent laws forbid infringers to apply for a compulsory license.

explicitly address the issue, it clearly departed from any categorical rule, hence denying that either non-working would be a compelling reason to deny injunctions in all cases or that it will not be a compelling reason in some cases. Moreover, non-working or insufficiently working a patent could arguably fall under the concept of strategic use of a patent, with the consequence that the insights developed by the property and liability rules framework could also be applied to this case.

Bringing together these apparently dissimilar cases can contribute to the understanding on the use of liability rules in patent law as some important insights in this area were indeed developed with a shortsighted view that considered most compulsory licensing provisions as not applicable or not advisable for application within patent law. Similarly, studies on compulsory licensing can shed light on the relatively “new” issue brought forward by the *eBay* case, which however, has already been faced by patent law at different times of history. The legal systems examined here are compared under two different perspectives with regard to the interface between rights and remedies. Under the first perspective, it is the right that determines the remedy whereas under a second perspective, it is the remedy that leads the treatment of the legal right. In the analysis that follows, both a “rights” and a “remedies” approach to the study of *ex post* liability rules will be used.

3 U.S. Ex-Post Liability Rules

It is commonly argued that courts applying the factual test to grant injunctions rapidly arrived to the conclusion that when a final decision on an infringement is taken, an injunction would always be necessary⁴⁰⁸. U.S. courts often reasoned that exclusive rights such as patents and copyrights would be deprived of their significance if the owner’s right to exclude was not protected through an injunctive order but limited to a monetary award; and that this will create a need for continuous litigation in the absence of a meaningful mechanism of deterrence⁴⁰⁹.

⁴⁰⁸ See Balganes, *supra* note 62, at p. 49. See also Herbert F. Schwartz, *Injunctive Relief in Patent Infringement Suits*, 112 U. PA. L. REV. 1025, 1041-42 (1964) (arguing that by the mid-nineteenth century, a permanent injunction was considered to be the only remedy adequate to protect a patent owner's right to exclude, and thus courts often granted injunctive relief "as a matter of course") quoted by Elizabeth Millard, *Injunctive Relief In Patent Infringement Cases: Should Courts Apply A Rebuttable Presumption Of Irreparable Harm After eBay Inc. V. Mercexchange, L.L.C.*, 52 St. Louis U. L.J. 985.

⁴⁰⁹ *Ibid* at p. 49, quoting from 2 JOSEPH STORY, COMMENTARIES ON EQUITY JURISPRUDENCE: AS ADMINISTERED IN ENGLAND AND AMERICA 612 (14th ed. 1918); explaining how (“it is quite plain that if no remedy could be given in cases of patents and copyrights than an action at law for damages, the inventor or author might be ruined by the necessity of perpetual litigation, without ever being able to have a final establishment of his rights”).

As a result, U.S. courts developed a strong presumption in favor of property rules for patents, in spite of the traditional equitable nature of injunctions. Moreover, the establishment of the Federal Circuit in 1982 is usually associated with the development of an “automatic injunction rule”⁴¹⁰. The CAFC reiteratively interpreted that injunctions should be automatically granted and that a presumption of irreparable harm held in any case of patent infringement of a valid patent. This interpretation furthermore reflected a patent policy transcending court remedies. In fact, the U.S. patent law and case law often rejected compulsory licenses for cases on non-use, and such view also prevailed at international IP rights negotiations:

“Patent laws outside the United States depart from the all-or-nothing principle by providing compulsory licenses in prescribed categories of cases, effectively depriving patent owners of injunctive relief and remitting them instead to court-ordered reasonable royalties. (Courts rarely have to order these payments because patent owners, knowing that only such limited relief is in prospect, will negotiate for reasonable rates).”⁴¹¹

3.1 The *eBay* case

During the last few years, scholars and policy makers have increasingly debated about the consequences of the strategic use of litigation and specifically about the possibility that patent holders might use permanent injunctions to hold infringers up⁴¹². The matter is contentious, and still, part of the literature

⁴¹⁰ See Balganes, *supra* note 62, at p. 51. See also the CAFC decisions: *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1247 (Fed. Cir. 1989); *Smith Int'l, Inc. v. Hughes Tool Co.*, 718 F.2d 1573, 1580-81 (Fed. Cir. 1983) *Teledyne Indus., Inc. v. Windmere Prods. Inc.*, 433 F. Supp. 710, 741 (S.D. Fla. 1977) and *Zenith Labs., Inc. v. Eli Lilly & Co.*, 460 F. Supp. 812, 825 (D.N.J. 1978), on the practice or presuming irreparable harm and hence, automatically awarding injunctive relief.

⁴¹¹ PAUL GOLDSTEIN, *INTELLECTUAL PROPERTY: THE TOUGH NEW REALITIES THAT COULD MAKE OR BREAK YOUR BUSINESS*, (New York Portfolio, 2007) at p. 59-60.

⁴¹² See Burk and Lemley, *supra* note 4, at p. 168-174, arguing that the baseline remedy for patents should remain a general property rule given that IP assets are very hard to value while highlighting that certain instances such as antitrust issues and holdups are preferably dealt by liability rules. For instance, they argue that compulsory licenses are more important within industries characterized by anti-commons problems where patentees may hold out for a disproportionately high royalty and obstruct downstream production and for patents that important products for society (pharmaceuticals and food products) that should be available at lower prices through the use of subsidized compulsory licenses. See also Shapiro, *supra* note 5, at p. 1, stating that the: “patent system systematically over-rewards the owners of patents in the information technology sector who license rather than practice their patents. These over-rewards are greatest for the owners of weak patents that cover minor features of complex products sold at prices well above marginal cost. Holders of such patents are over-rewarded relative to a natural normative benchmark primarily **because of their ability to obtain injunctions** in the event they prevail in patent litigation” (emphasis added)

continues to defend and highlight the importance of strong property rules to protect patents⁴¹³.

The debate progressively focused on the adequacy of a strong property rule in the form of an “automatic right” to injunctive relief. Some key patent cases increasingly echoed these concerns calling the attention of scholars, policymakers and the public opinion⁴¹⁴. In 2006, NTP Inc, the owner of patents on the BlackBerry wireless device threatened the manufacturer Research In Motion Ltd. (RIM) that it would shut down the production and commercialization of this system by asking the court an injunctive relief order⁴¹⁵. This threat was based upon the fact that RIM used some of the patents held and not commercialized by NTP Inc. Under the automatic award of injunctive relief and especially, the presumption of irreparable harm that was interpreted by the CAFC as following any finding of validity and infringement, it was possible for a non-manufacturing company to threaten another company with stopping all production related with the patent or patents under controversy. However, the case ended with a settlement in which supposedly NTP Inc. received \$ 612.5 million, an amount that is said to have reflected the potential disruption that an injunction could have caused. Nevertheless, the *Blackberry* controversy ended without a court decision addressing the convenience of using permanent injunctions in similar cases.

Shortly after, in the case of *eBay vs. MercExchange*, the U.S. Supreme Court was asked to analyze the conditions under which district courts should grant injunctions against infringers. The case involved the company *eBay* which operates an Internet website that allows private sellers to list goods they want to sell, and *MercExchange*, the holder of patents over a business method patent to facilitate the online sale of goods. After unsuccessful attempts to negotiate a licensing agreement, *MercExchange* sued *eBay* and obtained a decision that declared the patent valid and infringed. The jury awarded damages, but the district court denied *MercExchange's* motion for permanent injunctive relief. In addition to the automatic granting of injunctions under the emerging practice of the CAFC, at the time of the *eBay* controversy, a ruling from 1908 suggested that injunctions were always an appropriate remedy for patent infringement even if a patentee did not work his patent, and judges followed this precedent almost

⁴¹³ See, among others, Denicolo et al., supra note 160, at p 571-608; Epstein, supra note 65 and Kieff, supra note 124.

⁴¹⁴ See Dolak & Blaine Bettinger, *eBay and the Blackberry®: A Media Coverage Case Study* (December 11, 2007), available at: <http://ssrn.com/abstract=1082220>, analyzing the public attention granted to these cases and also noticing that the main arguments put forward by the media were expressed in the concurring opinion of Judge Kennedy in the *eBay* decision, supra note 425.

⁴¹⁵ See *NTP, Inc. V. Research In Motion, ltd*, supra note 390.

invariably⁴¹⁶. The CAFC applied such precedent and reversed the ruling of the district court, under the principle that “courts will issue permanent injunctions against patent infringement absent exceptional circumstances”. In effect, such exceptional circumstances had been interpreted in a narrow way, -especially by the same CAFC- covering cases that involved public interest, and more precisely when health or environmental issues were at stake⁴¹⁷. Only a few decisions had denied injunctive relief upon circumstances different than these⁴¹⁸

The U.S. Supreme Court granted *certiorari* to decide about the appropriateness of that general rule and decided that consistent with principles of equity, in the U.S., a plaintiff seeking a permanent injunction must satisfy a four-factor test demonstrating: (1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction⁴¹⁹. The Supreme Court

⁴¹⁶ Continental Paper Bag Co., 210 U.S. 405, 422-430 (1908), actually rejected the contention that a court of equity has no jurisdiction to grant injunctive relief to a patent holder who has unreasonably declined to use the patent. Compare with decisions at *infra* note 417.

⁴¹⁷ See *Hybritech, Inc. v. Abbott Lab.*, 4 U.S.P.Q.2d 1001 (C.D. Cal. 1987), where it was held that the public interest in the availability of medical test kits justified a denial of a preliminary injunction), *aff'd*, 849 F.2d 1446, 1458 (Fed. Cir. 1988); *Vitamin Technologists, Inc. v. Wis. Alumni Research Found.*, 64 U.S.P.Q. 285 (9th Cir. 1945), deciding that the public interest warranted refusal of injunction on irradiation of oleomargarine; *City of Milwaukee v. Activated Sludge, Inc.*, 69 F.2d 577, 593 (7th Cir. 1934), denying an injunction that would have required the city to close a sewage plant, “leaving the entire community without any means for the disposal of raw sewage other than running it into Lake Michigan, thereby polluting its waters and endangering the health and lives of that and other adjoining communities”; *Ethicon Endo-Surgery v. U.S. Surgical Corp.*, 855 F. Supp. 1500, 1517 (S.D. Ohio 1994), deciding to decline an injunction that would have created “a serious disruptive effect on surgical practice” because doctors distinctly preferred the endoscopic surgical cutters at issue and had trained with them extensively.

⁴¹⁸ See *Nerney v. New York, N.H. & H.R. Co.*, 83 F.2d 409, 411 (2d Cir. 1936), denying a permanent injunction to a railroad company where it was “recognized that the only real advantage to a plaintiff in granting the injunction would be to strengthen its position in negotiating a settlement.” See also *Foster v. American Machine & Foundry Co.* 492 F.2d 1317, 1324 (2d Cir. 1974) denying a permanent injunction to a non-manufacturing company because such “injunction to protect a patent against infringement, like any other injunction, is an equitable remedy to be determined by the circumstances. It is not intended as a club to be wielded by a patentee to enhance his negotiating stance. Here, as the District Court noted, the [defendant] manufactures a product; the [plaintiff] does not. In the assessment of relative equities, the court could properly conclude that to impose irreparable hardship on the infringer by injunction, without any concomitant benefit to the patentee, would be inequitable”. See also *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 628 (Fed. Cir. 1985) where the CAFC upheld a 5% court-ordered royalty, based on sales, “for continuing operations.” The parties contested the amount of the royalty, styled a “compulsory license” by the court but there was no dispute as to the district court’s authority to issue such remedy. See also *United States v. Glaxo Group Ltd.*, 410 U.S. 52, 59, 93 S. Ct. 861, 35 L. Ed. 2d 104 (1973), granting “mandatory sales and reasonable-royalty licensing” of relevant patents for an antitrust violation and describing remedies as “well-established forms of relief when necessary to an effective remedy, particularly where patents have provided the leverage for or have contributed to the antitrust violation adjudicated”.

⁴¹⁹ But see Laycock *supra* note 292, at footnote 13, arguing that the Supreme Court confused the tests for permanent and preliminary injunctions while “announcing a “familiar” four-part test that the Court had

reiterated that the decision to grant or deny permanent injunctive relief is an act of equitable discretion of the district court, subject to appeal for abuse of discretion since the Patent Act expressly provides that injunctions “may” be issued “in accordance with the principles of equity”⁴²⁰. Likewise, the Copyright Act gives the right holder a “right to exclude others from using his property”⁴²¹ while it provides that courts “may,” grant injunctive relief “on such terms as it may deem reasonable to prevent or restrain infringement of a copyright”⁴²².

In the final decision on the *eBay* case, the U.S. Supreme Court adopted a middle ground position. On the one hand it did not rule that lack of use of its patents by the right holder would necessarily preclude her right to an injunction, clarifying that patent holders, such as university researchers or self-made inventors, whom often license rather than work their patents may be able to satisfy the four-factor test. But on the other hand, the Court sustained that an injunction will not necessarily follow the finding of patent infringement and that either the categorical denial or grant of such relief by the District Court and the Court of Appeals were erroneous applications of the law. The Supreme Court hence rejected the use of categorical rules and tilted towards the use of standards to appropriately decide the grant or denial of injunctions for infringed patents⁴²³.

The standard governing injunctions is expressed in the four-factor test. Yet, the U.S. Supreme Court decision in *eBay* contained two concurring opinions offering contradictory views on how to read such test. Justice Robert’s opinion⁴²⁴

never before applied”. See also Douglas Laycock, *Modern American Remedies: Cases and Materials* 52-53 (Supp. 2007), discussing the case and the confusion of the Court with regard to the “traditional” test.

⁴²⁰ Section 283, of the U.S. Patent Act, which is found in Title 35 of the U.S. Code (hereinafter U.S.C.), provides that “[t]he several courts having jurisdiction of cases under this title may grant injunctions in accordance with the principles of equity to prevent the violation of any right secured by patent, on such terms as the court deems reasonable.”

⁴²¹ See *Fox Film Corp. v. Doyal*, 286 U.S. 123, 127 (1932).

⁴²² 17 U.S.C. § 502(a).

⁴²³ An important number of law and economics scholars have discussed the relative costs and benefits of adopting rules v. the adoption of standards, including the costs regarding norm-specification, case adjudication and the costs of compliance with legal norms. The rules v. standards debate might also be referred to the balance of competences between the legislator and the judiciary. See for instance, Louis Kaplow, *Rules versus Standards, An Economic Analysis*, DUKE LAW JOURNAL, pp. 557-629; Carol Rose, *Crystals and Mud in Property Law*, STANFORD LAW REVIEW, 1998 pp. 577-610 and, Hans-Bernd Schäfer, *Legal Rules and Standards*, GERMAN WORKING PAPERS IN LAW AND ECONOMICS, VOL. 2002, NO. 2, 2002, available at: <http://ssrn.com/abstract=999860>. Hence, whereas the analysis done here refers mainly to the question of property or liability rules for patent protection, it also regards a choice between rules or open standards. In this discussion, a basic trade-off exists between the legal certainty that follows from the use of rules and the potential for adapting to changing (technological) circumstances that is possible with the use of standards.

⁴²⁴ See *eBay Inc. v. Mercexchange*, supra note 2, at p. 1841-42, (Roberts, C.J., concurring), a concurring opinion by Justices Roberts, Scalia and Ginsburg that clearly favors the use of rules and privileges legal certainty as well as it considers that property rules are in the vast majority of cases (with the exception of

highlighted that injunctive relief was the remedy in the majority of patent cases “from at least the early 19th century”, and justified this choice as correct due to the “difficulty of protecting a right to exclude through monetary remedies that allow an infringer to use an invention against the patentee's wishes”.

Contrary to this approach, three important reasons were given to support a move towards a more discretionary use of injunctive relief by courts, all based upon the fact that the nature and economic function of patents has evolved⁴²⁵. Hence, Justice Kennedy’s opinion argues that injunctions were the preferred choice not primarily because of intrinsic valuation problems associated with the use of liability rules, but rather due to the prevailing historical context, which has greatly changed over the last years, at least within the U.S. patent system.

A first concern expressed in this opinion, regarded the increasing risk of holdups by owners of patent rights on small components of a product given that these players can use the threat of enjoining the whole product as a bargaining tool. This case stems out of the increasing number of products reading on multiple patents as opposed to the traditional pattern of one-patent one-product. In such cases, damage awards may be sufficient to compensate and more in tune with public interest.

Secondly, the opinion warned about the emergence of a business strategy in which firms use their patents for obtaining licensing fees, rather than for marketing innovative products or services. The emergence of such business entities (e.g. patent trolls) was acknowledged as a problematic outcome of the automatic grant of injunctions in patent cases:

“For these firms, an injunction, and the potentially serious sanctions arising from its violation, can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent”⁴²⁶.

Finally, the opinion emphasized the fact that patent quality has decreased, leading to a growing number of vague and suspiciously valid patents. This was mentioned in the opinion as an aggravating fact that could also weight against a strong property rule or against its “automatic” use in patent cases.

extreme circumstances) the best way to protect patent entitlements, a fact, the concurring Judges argue, evidenced by history.

⁴²⁵ Ibid at supra note 2, p. 1842–43 (Kennedy, J., concurring), a concurring opinion by Justices Kennedy, Stevens, Souter and Breyer. Conversely, this opinion highlights the ability of legal standars to cope with the challenges of adapting to new technologies and evolving business practices.

⁴²⁶ Ibid at p. 1843, also quoting from the report by the FEDERAL TRADE COMMISSION, supra note 5.

The Kennedy's opinion importantly stressed that "equitable discretion over injunctions, granted by the Patent Act, is well suited to allow courts to adapt to the rapid technological and legal developments in the patent system"⁴²⁷. By interpreting that judges have more discretion, the Court in fact allowed district courts to switch to a liability rule. In this sense, the opinion can be read a under the classic C&M framework where liability rules are more efficient in the presence of high transaction costs, especially the likelihood of strategic bargaining, since it acknowledged that a new set of firms devoted to hold patents, use them as: "bargaining tools to charge exorbitant fees to companies that seek to buy licenses to practice the patent".

Commentators echoing the concurring opinion of Justice Roberts (with Scalia and Ginsburg) in *eBay* have warned against the expansion of *ex post* liability rules as suitable remedies for patent infringement cases. In favor of maintaining injunctive relief as the paramount remedy in patent infringement cases is the need to provide patent holders with strong protection, which is often seen as the only way to sufficiently encourage welfare-enhancing investment in R&D⁴²⁸. Critics also highlight the drawbacks of switching to a liability rule because of the implied valuation and error costs⁴²⁹ as well as point to district courts decisions after *eBay*, which have purportedly put non-practicing entities at a disadvantage vis-à-vis would-be licensees and granting an unintended competitive advantage to large companies over smaller research-based companies⁴³⁰. On the other hand, several commentators have argued that the primacy of injunctive relief in IP infringement cases should be relaxed, especially in modern knowledge-based industries, where IP rights often overlap and mingle into a "thicket"⁴³¹ and where purported trolls have enhanced chances to act strategically and secure appealing settlement terms. As rational investors would anticipate a leakage of profits due to strategic suit and settlement, incentives to invest in R&D would be significantly reduced. In this context, patent holders should also be worried about excessive protection, especially when inventors are inadvertent or there are innocent infringers⁴³².

⁴²⁷ See *eBay Inc. v. Mercexchange*, supra note 2, at p. 1843.

⁴²⁸ See among others Golden, supra note 165.

⁴²⁹ See also Kieff, supra note 124 and Epstein, supra note 131.

⁴³⁰ See Denicolo et al., supra note 160 and Golden supra note 165, analyzing this case for non-practicing entities which are research centers. See also James McDonough, *The Myth of the Patent Troll: An Alternative View of the Function of Patent Dealers in an Idea Economy*. EMORY LAW JOURNAL, Vol. 56, p. 189 (2006) available at: <http://ssrn.com/abstract=959945>, pointing to the efficiency brought by patent dealers.

⁴³¹ See Shapiro, supra note 5, and Lemley and Weiser, supra note 72.

⁴³² See Christopher Cotropia and Mark Lemley, *Copying in Patent Law*, STANFORD PUBLIC LAW WORKING PAPER NO. 1270160, available at: <http://ssrn.com/abstract=1270160>, finding a small percentage of patent infringement cases involving an allegation of copying and an even lower percentage finding a proof of copying. See also BESSEN AND MEURER, supra note 14, arguing that inadvertent infringement is an important component of the failure of the U.S. patent system due to the malfunction of the patent notice mechanisms.

3.2 Post eBay interpretation of the four-factor test

Discretion over the grant or denial of injunctions was said to be governed by an equitable test that is applicable to all disputes, including those involving patent law⁴³³. The test is composed of the above mentioned four-factors⁴³⁴. Out of these four-factors, the first and the second directly refer to whether the right to exclude should be limited or not, in the sense of whether it should be protected by injunctive relief or not in a particular case. In fact, after the U.S. Supreme Court decision, the district court deciding on the remanded case of *MercExchange v. eBay*, emphasized this close relationship and almost identical meaning of the first and second factors:

“The irreparable harm inquiry and remedy at law inquiry are essentially two sides of the same coin; however, the court will address them separately in order to conform with the four-factor test as outlined by the Supreme Court”⁴³⁵.

The third factor performs a balancing test, similar to the “balance of convenience” that is described below with respect to the U.K. system. Conversely, the fourth factor was already incorporated in earlier court decisions which had denied injunctive relief for public interest purposes, because an injunction would impose a disproportional burden on society. Decisions denying injunctive relief upon this factor are hence, similar to different patent law provisions such as compulsory licenses granted for public interest reasons. The following sections describe these four-factor test in more detail and according to the interpretation of several district courts and the CAFC, after the U.S. Supreme Court decision in *eBay*⁴³⁶.

3.2.1 Irreparable harm

Under this factor, courts are called to examine whether the harm suffered by patentees is reparable or not in monetary terms and, as mentioned above, this first factor, along with the second factor, directly address whether the IP right

⁴³³ But see Laycock *supra* note 292, arguing that the test in fact did not exist before the *eBay* decision.

⁴³⁴ A plaintiff that wishes to obtain a permanent injunction must satisfy a four-factor test in order to show: (1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.

⁴³⁵ See *MercExchange, LLC v. eBay Inc.*, *supra* note 3, at footnote 11, p. 16.

⁴³⁶ For a summary of the cases analyzed here, see Appendix Chapter III.

to exclude should be protected by injunctive relief⁴³⁷. Until the 2006 *eBay* decision, the CAFC and district courts tended to apply an almost non-rebuttable presumption that harm would be irreparable if a valid patent was infringed. As a consequence, absent exceptional circumstances, courts always found irreparable harm in patent infringement cases. Although most post-eBay decisions seem to reflect that the presumption no longer exists, some decisions have not even attempted to analyze the issue and have reasoned that the loss of a right to exclude always imposes an irreparable harm⁴³⁸.

District courts have vacillated in interpreting this first prong, holding in some cases that the *eBay* decision should not be read as stating that losing the right to exclude could not *per se* constitute an irreparable harm⁴³⁹. In this view, the Supreme Court in *eBay* basically rejected the judicial practice that the patentee's right to exclude should always lead to injunctive relief:

"Prior to applying the facts of the instant matter to the four-factor test, the court must consider whether a presumption of irreparable harm upon a finding of validity and infringement survives the Supreme Court's opinion remanding this case. Although the parties did not perform extensive briefing on such issue and the Supreme Court's opinion does not squarely address it, a review of relevant caselaw, as well as the language of the Supreme Court's decision, supports defendants' position that such presumption no longer exists"⁴⁴⁰.

Other courts have noticed how the right to exclude is generally inadequately protected by damages but have asked plaintiffs to meet a burden to offer specific reasons why infringement cannot be compensated for with a monetary award, including such reasons as losing market share or opportunities or the difficulty of calculating damages, the most important arguments given for the award of injunctions⁴⁴¹. By so doing, some courts seem to be moving away from categorical rules and conclusive presumptions towards a factual and evidence-based consideration of each particular case.

⁴³⁷ See *MercExchange, LLC v. v. eBay Inc.*, supra note 3, at p. 16, footnote 11.

⁴³⁸ See Millard, supra note 408, discussing the presumption of irreparable harm and arguing that *eBay* should be read as allowing a rebuttable presumption of irreparable harm, which could be precisely rebutted in cases of holdups.

⁴³⁹ See *Novozymes v. Genencor*, No. 05-cv-160-KAJ (D. Del. 2007), available at: http://patentdocs.typepad.com/patent_docs/files/Novozymes.pdf, granting an injunction in favor of Novozymes.

⁴⁴⁰ *MercExchange, LLC v. v. eBay Inc.*, 2007 WL 2172587, No. 01-736 (E.D. Va. July 27, 2007), available at <http://www.patentlyo.com/patent/law/MercExchange.pdf.pdf>.

⁴⁴¹ See *Praxair, Inc. and Praxair Technology Inc. v. ATMI, Inc. and Advanced Technology Materials, Inc.* Civ. No. 03-1158-SLR (D.C. Delaware, Mar 27, 2007), where the court ruled that Praxair failed to prove why it would have difficulties calculating damages going forward and how money damages could not adequately compensate for "lost market share" or any "lost research opportunities".

3.2.2 *Inadequate remedies*

The second factor of the test considers whether other remedies, mostly monetary awards, would be adequate or not to compensate for the infringement. Courts have again fluctuated in their view about the correct interpretation of this factor after the *eBay* case. Some courts have gone as far as to acknowledge that any harm from future infringement could be compensated through a reasonable royalty given that the right to exclude alone is not sufficient and cannot lead to conclude that remedies other than an injunction cannot adequately compensate a patent holder⁴⁴².

However, most courts have given weight to cases involving loss of market share, goodwill or reputation of patentees⁴⁴³ in order to establish whether other remedies would be inadequate. The majority of decisions have granted injunctions to competitors of the infringer by reasoning that competitors are likely to suffer irreparable harm, in the form of losses in market shares, commercial reputation and the like⁴⁴⁴.

In addition, courts have identified as problematic, cases in which damages are difficult to prove or when, for instance, the measure of lost profits is not available to plaintiffs⁴⁴⁵. As in the case of the irreparable harm prong, a relevant consideration for some courts is the evidence needed to show the inadequacy of

⁴⁴² See *z4 Technologies Inc., vs. Microsoft Corporation and Autodesk, Inc.*, U.S. District Court for the Eastern District of Texas, 6:06-CV-142, available at: <http://www.patentlyo.com/patent/injunctionDenied.pdf>, where z4 had argued that monetary damages for future infringement were not an adequate remedy because they could not compensate z4 for the loss of "its right to exclude Microsoft" whereas the Court emphasized that z4's argument implied "that a violation of the right to exclude under the patent act can never be remedied through money".

⁴⁴³ See *z4 v. Microsoft* *ibid*, identifying such cases where damages were to be held inadequate when "an infringer saturates the market for a patented invention with an infringing product or damages the patent holder's good will or brand name recognition by selling infringing product or damages".

⁴⁴⁴ See Douglas Ellis et al, *The Economic Implications (And Uncertainties) of Obtaining Permanent Injunctive Relief After eBay V. Mercexchange* 17 FED. CIR. B.J. 437, 442 (2008), accounting that district court have referred to these losses in terms of: "market share," (Novozymes, Smith, Tivo and Wald) "sales," (Verizon, Litcubes and Wald) "customers," (Market Biosciences) "profits," (Smith) "opportunities," (Verizon and O2) "reputation" (MPT, Black & Decker and Robert Bosch) and "brand name." (Smith). See also *Commonwealth Sci. & Indus. Research Organisation v. Buffalo Tech. Inc.*, granting injunction to a non-competitor (Australian research center). A noticeable exception is *Praxair v. ATMI*, where a direct competitor was denied injunctive relief and the court also required proof that losses might not in fact be sufficiently compensated with money awards, evidencing the application of a different interpretation with regard to the burden of proof that falls on patentees.

⁴⁴⁵ In the *Novozymes* case, *supra* note 439, the court specifically considered that legal remedies were not adequate to compensate the patent owner for infringement because lost profits was unavailable (given that the patentee had licensed its rights to a subsidiary) and the right to exclude could not, under these circumstances be equated to its monetary equivalent.

legal remedies⁴⁴⁶. Any loss of market share, reputation or goodwill should be documented by patentees in order to successfully argue that damages are inadequate; however, the standard of proof remains largely variable from court to court.

Overall, the analysis of the first two factors centers on the questions of how much reward is needed to encourage innovation and whether should patentees' sometimes be limited to monetary awards without damaging such incentives⁴⁴⁷. The most interesting change in policy after the *eBay* decision is that the question can be addressed according to the circumstances of each case whereas before *eBay*, categorical considerations prevailed, by equating the character of patents as exclusive rights with the fact that they cannot be protected if they are not fully enjoined against non-authorized use. In this sense, after the *eBay* decision, the interface between rights and remedies is more clearly delineated.

3.2.3 *Balance of hardships*

Under the "balance of hardships" test, courts are called to consider any reasons that might impose greater burdens on infringers than on patentees such as to turn the balance in favor of denying injunctive relief. Courts are thus called to assess and balance the expected costs and expected benefits of a permanent injunction, a difficult task for which they usually rely on other considerations related to the first and second factors. In fact, one finding in the examination of the cases here described is that courts have often inclined towards denying or granting injunctive relief on the basis of the first and second factors while giving only secondary consideration to the balancing of the interests of infringers and patentees.

⁴⁴⁶ See *Praxair v. ATMI*, supra note 441, where the court denied an injunction in favor of Praxair because company "has not provided or described any specific sales or market data to assist the court, nor has it identified precisely what market share, revenues, and customers Praxair has lost to ATMI" and comparing to *Novozymes*, where "evidence demonstrated that plaintiff originally secured an 80% market share with its patented product, which fell to approximately 50% after infringing competitor's market entry". See also *Transocean Offshore Deepwater Drilling Inc. v. Globalsantafe Corp.*, No Civ. A. 03-2910, 2006 WL 3813778, *4 (S.D. Tex. Dec. 27, 2006), granting a permanent injunction where the customer base is small and the defendant has not only used the infringing technology to compete for the same customers and contracts as plaintiff but also to win contracts over competing bids from plaintiff; *Tivo Inc. V. EchoStar Communications Corp.*, 446 F. Suppl. 2d 664, 669-70 (E.D. Tex. 2006), arguing that the burden of proof could be met by showing that plaintiff was "a relatively new company with only one primary product" and the parties agreed that customers tend to stick to the company from which they obtained their first DVR recorder, "shaping the market to plaintiff's disadvantage and resulting in long-term customer loss".

⁴⁴⁷ Praxair stated "that it spends \$75 million per year in R&D and that denying protection to its rights to exclude through injunctions it would have "no incentive to innovate" and its patents "would be effectively meaningless". The court however reasoned that "Praxair does not explain why money damages could not suffice to compensate for any lost opportunities to conduct research due to budgetary constraints".

Courts have also evaluated under this test the importance of the patented technology in relation to infringing products, and especially the question whether products are of a multi-component nature and if the patent covers only a small part of them⁴⁴⁸. This was one of the important considerations given by Kennedy's opinion in the eBay case which reflects economic insights about the optimal reward to innovators. Nevertheless, courts have recognized the "speculative" nature of such balancing test⁴⁴⁹:

"With the future so speculative in this continually-developing, complex scenario, the court cannot confidently determine in which party's favor the balance of hardships tips"⁴⁵⁰.

As we will see in the comparative section (Italy and UK), similar tests are present in other legislations, even in different legal areas and with regard to other compulsory measures supporting injunctive relief, as destruction or confiscation.

3.2.4 *Public interest*

The interest of public has been traditionally considered as an important limit to the exclusive nature of patents and even before the eBay decision in 2006; several district courts had denied injunctions upon considerations of public interest⁴⁵¹. There is a wide contradiction however, in the interpretation of public interest, as some courts continue to plainly affirm that public interest is always better served by issuing an injunction and thus, maintaining the correct functioning of the patent system⁴⁵².

⁴⁴⁸ In the z4 case, the court discussed how "product activation" (the z4 patent) is a very small component of the software products that infringe upon this patent. Given this condition, the court went on to explain that the allegedly damage hardship that z4 will suffer should be balanced with the harms caused to the infringer, in this case, Microsoft. The court found that "the potential hardships Microsoft could suffer if the injunction were granted outweigh any limited and reparable hardships that z4 would suffer in the absence of an injunction". See also *Amado v. Microsoft Corp.*, 517 F.3d 1353 (Fed. Cir. Feb. 26, 2008), concerning a patent that covered a very small component of the infringing products (claim 21 was infringed which covers a single feature linking Access and Excel) and *Paice L.L.C. v. Toyota Motor Corp.*, 504 F.3d 1293, 1315 (Fed. Cir. 2007), concerning patents on part of the hybrid transmission system incorporated in cars manufactured by Toyota.

⁴⁴⁹ See *MercExchange v. eBay case*, supra note 3, where the court considered firstly that potential hardships for MercExchange were likely to be low because the company was willing to license its patents and was not competing with eBay. It also ascertained that the harm of a dubious patent (still the process before the U.S.P.T.O. is ongoing) would impose on the defendant was important. Nevertheless, the court recognized that the third prong did not clearly favor any party because of the uncertainty surrounding the validity of the patent, whether they had been designed around and whether the plaintiff could, in association with other companies, start competing with eBay as well.

⁴⁵⁰ Ibid at p. 39.

⁴⁵¹ See supra note 417.

⁴⁵² See *TiVo Inc. v. EchoStar Commc'n Corp.*, 446 F. Supp. 2d, 664, 670 (E.D. Tex. 2006) at 670, expressing that "the public has an interest in maintaining a strong patent system" and also concluding that in that specific

Such view would again end-up in a categorical rule that denies courts the possible, yet difficult exercise of balancing the interest of the public in a healthy patent system. With this regard, the district court in *MercExchange v. eBay*, concluded that:

“However, while preserving the integrity of the patent system will always be a consideration in the public interest analysis, it cannot be allowed to dominate such analysis lest a presumption results. Accordingly, the court considers the type of patent involved, the impact on the market, the impact on the patent system, and any other factor that may impact the public at large and concludes that, on these facts, the public interest weighs against the entry of an injunction”⁴⁵³.

Nevertheless, it has been widely acknowledged that attempting to strike a balance with public interest concerns by assessing the expected outcomes with or without an injunction is indeed a difficult task for courts. Hence, several courts have attempted again to speculate on the probabilities that a given outcome would result and the expected costs and benefits from this probable outcome in order to examine the potential impact that an injunction or the lack of one, would have on the interest of the public:

“Although it is impossible to determine the actual events that would follow the deactivation of Microsoft’s product activation serves, it is likely that the market would see an increase in pirate versions of the software”⁴⁵⁴.

3.3 The post eBay decision landscape

The aftermath of *eBay* has been characterized by astonishing legal uncertainty. In spite of a great controversy generated both in legal and economic terms, most commentators however, agree on some points. First, that *eBay* has represented an important transformation on the way patent remedies were routinely awarded and conceived and overall an important patent policy change in the

case, “public interest would not be disserved by a permanent injunction” as “the infringing products are not related to any issue of public health or any other equally key interest; they are used for entertainment”.

⁴⁵³ See *MercExchange v. eBay*, supra note 3 at p. 39

⁴⁵⁴ See *z4 v. Microsoft*, supra note 442, where the Court balanced the potential costs and benefits, concluding that an injunction could have increased the risks that some public users suffer negative effects whereas no effects might befall the public in the absence of an injunction. Although these effects were somewhat speculative, they weighted against granting an injunction.

U.S.⁴⁵⁵. Secondly, however, the decision did not provide enough guidance for district courts relative to the daunting task imposed upon them, which has given rise to uncertainty and conflicting decisions⁴⁵⁶. Moreover, the concurring opinions gave some contradictory suggestions, which have in practice been followed by district courts, producing a number of inconsistent decisions⁴⁵⁷. However, a number of interesting features can be identified in the set of cases following the *eBay* decision⁴⁵⁸. These features are briefly described in this section⁴⁵⁹.

A first observation is that the majority of decisions after *eBay*, have granted injunctions to competitors of the infringer. The reasoning is that competitors are likely to suffer irreparable harm, in the form of losses of market shares, commercial reputation, business goodwill and similar business values. In spite of this pattern, a noticeable exception is *Praxair v. ATMI*, where a direct competitor was denied injunctive relief. In this case, the court also required proof that such losses might not in fact be sufficiently compensated with money awards. This evidences the application of a different interpretation with regard to the burden of proof that falls on patentees if they seek injunctive relief. In fact, if the Supreme Court decision on *eBay* is read as imposing the use of a standard to decide upon the award of injunctions, it would not be sufficient to prove that a patent owner competes in order to ask for injunctive relief. Nonetheless, the existence of such a standard does not preclude the emergence of rules of interpretation and presumptions such as the one that holds that a competitor would be presumably suffer an irreparable harm in the absence of injunctive relief. A further complication however, is to determine which type of competitor the patent owner should be in order to suffer such irreparable harm⁴⁶⁰.

⁴⁵⁵ See Kieff, *supra* note 124, arguing that *eBay* the long-standing practice that made injunctions a credible threat available to patentees. See also *Amado v. Microsoft*, *supra* note 448, holding that “because *eBay* represents an intervening change in law, the Court finds it appropriate to revisit the propriety of the injunction in this case”).

⁴⁵⁶ See Millard, *supra* note 408, highlighting the contradictory decisions by different district courts with regards to the presumption of irreparable harm that follows from a finding of validity and infringement.

⁴⁵⁷ See Benjamin Diessel, *Note, Trolling for Trolls: The Pitfalls of the Emerging Market Competition Requirement for Permanent Injunctions in Patent Cases Post-eBay*, 106 MICH. L. REV. 305, 311, arguing that district courts have followed a “market competition requirement”, precluding injunctive relief for non-competitors. As we described below, courts have mostly based their decisions on whether patentee competes with infringer with some outliers but important cases at the margin.

⁴⁵⁸ The set of cases corresponds to the result of an automatic search on West Law performed during January 2008 until December 2008. The cases were subsequently revised and confronted with other articles reviewing post-*eBay* cases. See for instance, Ellis et al, *supra* note 444.

⁴⁵⁹ For an overview of the cases under analysis see Chapter III Appendix.

⁴⁶⁰ For instance, should the patent owner compete in the same market or markets, be a current or a former competitor and to what extent should the patent owner and infringer compete in order for there to be a presumption of irreparable harm. Moreover, if a “market competition” requirement emerges in order for patent owners to obtain injunctive relief, some patent owners might initiate commercial activities only

A second trend that emerges is that most cases denying injunctions concerned a non-practicing entity. Most non-practicing entities cannot in fact compete with the infringer, a reason used by district courts to hold that harm was not irreparable and that other remedies available at law could be adequate. An exception was the case of *Commonwealth Sci. & Ind. Research Org. v. Buffalo Tech Inc.*⁴⁶¹, where a non-practicing entity obtained an injunction. In this case the court highlighted the importance of granting injunctive relief to a research institution, which finances its R&D activity through the commercialization of its patents and how obtaining an injunction would help it to continue a successful licensing program. This case is exceptional in the sense that a national (Australian) research center was involved and comity implications might have also played a role.

A rather expansive reading of the possibility to substitute injunctions with damage compensation was given in the CAFC decision on the case of *Innogenetics v. Abbot Labs*⁴⁶². Whereas the district court had granted an injunction⁴⁶³, on appeal the CAFC reversed, based upon the argument that when a jury awards damage compensation that includes a market-fee entry plus ongoing royalty, this might be considered to be sufficient to ensure the plaintiff's relief. In this case, the CAFC admitted that forward-looking damages are a good substitute for injunctive relief.

The cases analyzed here, show that district courts (and the CAFC) have applied different reasoning while deciding cases especially upon the fact of whether the patentee is a direct competitor of the defendant. Additionally, some cases have denied injunctions when the patent concerned a small component of the infringing product⁴⁶⁴.

Nonetheless, the prevailing uncertainty in the interpretation of the four-factor test is manifested in its dissimilar application by District Courts. For instance, in interpreting the irreparable harm prong, even though courts have ascertained factual considerations such as whether the plaintiff would face losses of market

aiming at obtaining injunctive relief within their infringement cases, giving rise to potentially inefficient commercial activities.

⁴⁶¹ See *Commonwealth Scientific & Indus. Research Organisation v. Buffalo Tech. Inc.*, 492 F. Supp. 2d 600, 600–02 (E.D. Tex. 2007), granting injunction to a non-competitor (Australian research center).

⁴⁶² See *Innogenetics v. Abbot Labs* 512 F.3d 1363 (Fed. Cir. 2008), available at: <http://www.cafc.uscourts.gov/opinions/07-1145.pdf>

⁴⁶³ See *Innogenetics, N.V. v. Abbott Labs.*, No. 05-C-0575-C (W.D. Wis.).

⁴⁶⁴ See for instance, *Amado v. Microsoft*, supra note 448, which concerned a patent covering a very small component of the infringing products (claim 21 was infringed covers a single feature linking Access and Excel). *Paice LLC v. Toyota Motor Corp.*, concerned patents on part of the hybrid transmission system incorporated in cars manufactured by Toyota. *z4 Techs. v. Microsoft Corp.* concerned a patent on a product activation /anti piracy software.

share or reputation, they have made general and contradictory statements. Some courts have argued that a patentee has suffered irreparable harm solely because of the infringement of her right to exclude others from practicing its patent⁴⁶⁵, that is, still confusing the right with the remedy awarded.

Other courts interpreting the inadequacy of available remedies have expressed that “the statutory right to exclude represents a benefit that, under these circumstances, cannot be equated by an award of cash”⁴⁶⁶ or that “the statutory right to exclude represents a tangential benefit associated with patent rights that cannot be quantified in monetary damages”. Such cases underline how a multi-criteria test might benefit from economic analysis, which is absent in virtually every post-*eBay* case⁴⁶⁷.

3.4 Willful v. inadvertent infringement

When infringement happens intentionally or willfully, it implies the possibility of having to pay enhanced damages⁴⁶⁸. Accordingly, a court has to firstly determine whether the infringer is guilty, by proving that he or she acted in bad faith, either by engaging in vexatious litigation or willful infringement. Subsequently, the court discretionally establishes whether to increase damages and how much, in a decision that must take into account all the circumstances⁴⁶⁹.

An important object of critique about the denial of injunctive relief for some patentees is the possibility that such denial could give incentives to infringe as potential infringers would anticipate that in case the court decides that the patent was infringed, it might nevertheless limit relief to the payment of reasonable royalties. With this respect, however, other scholars argue that inadvertent or innocent infringement happens in an important number of

⁴⁶⁵ See *Novozymes v. Genencor*, supra note 439.

⁴⁶⁶ Ibid.

⁴⁶⁷ Chapter IV

⁴⁶⁸ See U.S.C. 35 § 284, establishing that: “the court may increase the damages up to three times the amount found or assessed”. Enhanced damages are punitive and not merely compensatory. Hence, they are only awarded upon a finding of culpability of the infringer. See also *Jurgens v. CBK, Ltd.*, 80 F.3d 1566, 1570 (Fed. Cir. 1996).

⁴⁶⁹ See *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 826 (Fed. Cir. 1992) arguing that the most important factor to determine willfulness is the egregiousness of the defendant’s conduct based on all the facts and circumstances, although providing an illustrative set of factors to take into consideration “(1) whether the infringer deliberately copied the ideas of another; (2) whether the infringer investigated the scope of the patent and formed a good faith belief that it was invalid or not infringed; (3) the infringer’s behavior as a party to the litigation; (4) the defendant’s size and financial condition; (5) the closeness of the case; (6) the duration of the defendant’s misconduct; (7) remedial action by the defendant; and (8) the defendant’s motivation for willfully infringing.

cases⁴⁷⁰. Some proposals to cope with this problem refer the possibility of establishing an independent inventor-defense in order to avoid inadvertent infringers to become victims of patent troll-behavior.

Rules on willful infringement aim at deterring wrongful behavior. However, it has been posed that such rules, as interpreted by the courts have actually provided incentives for avoiding a proper search before infringement occurs⁴⁷¹. The recent decision in *Re Seagate*⁴⁷², changed the way in which the CAFC interprets the standard for willfulness, now requiring a much higher standard to prove that an infringement was in effect willful. Whereas the standard previous to *Seagate* only required a proof akin to negligence, the court raised such threshold:

“Accordingly, we overrule the standard set out in *Underwater Devices* and hold that proof of willful infringement permitting enhanced damages requires at least a showing of objective recklessness. Because we abandon the affirmative duty of due care, we also reemphasize that there is no affirmative obligation to obtain opinion of counsel”⁴⁷³

A question posed after the *eBay* case and which still has not received any definite answer is whether injunctions should be denied in cases of willful infringement. Although the threat of enhanced damages in the U.S. might suffice as a deterrent for infringement, this question is still subject to controversy. The U.S. Supreme Court did not give any guidance with regard to this question, but at least one court has found willful infringement yet denied injunctive relief for the owner⁴⁷⁴.

⁴⁷⁰ See BESSEN & MEURER, *supra* note 14, warning about the risks of inadvertent infringement and the possibility of its prevalence due to decreasing quality of patents, uncertain borders and an overall failure of the patent notice system in the U.S. See also Chapter IV below, on the law and economic analysis of inadvertent infringement within the choice between property and liability rules.

⁴⁷¹ See Note, *The Disclosure Function Of The Patent System (Or Lack Thereof)*, 118 Harv. L. Rev. 2007 (2005), available at: http://www.harvardlawreview.org/issues/118/April05/Notes/Disclosure_FunctionFTX.pdf, arguing that: “The Federal Circuit’s willful infringement rules, for example, encourage innovators to protect themselves from treble damages by remaining “willfully ignorant” of the patents in their field”

⁴⁷² See *Seagate Technology, LLC*, 2007 WL 2358677 (Fed. Cir. Aug. 20, 2007).

⁴⁷³ *Ibid* at p. 5.

⁴⁷⁴ See *Paice LLC v. Toyota Motor Corporation*, Paice LLC v. Toyota Motor Co., 2006 WL 2385139, (E.D. Tex. Aug. 16, 2006), vacated and remanded, where the District Court of Texas found that Toyota willfully infringed Paice’s patent but it deemed an injunction was not an appropriate remedy because Paice did not compete with Toyota. The court ordered that each future sale of a vehicle by Toyota be subject to a \$25 per vehicle royalty to Paice, based on a hypothetical bargain approach. The decision of Toyota to continue the infringement would probably be taken into account in the calculation of royalties -Add the appellate decision which revised only the ongoing royalty issue, not the denial of injunctive relief-

3.5 Preliminary Injunctions

In the U.S., preliminary injunctions are subject to a test considering whether the plaintiff might prove the following conditions: (1) a reasonable likelihood of success on the merits; (2) irreparable harm; (3) the balance of hardships; and (4) the public interest⁴⁷⁵.

Although the *eBay* ruling directly refers to permanent injunctions, it raised doubts about whether the insights of the decision might be applied to preliminary injunctions. Some district courts have ruled in this sense, by not holding a presumption of irreparable harm upon a considerable likelihood of validity and infringement⁴⁷⁶.

3.6 Other liability rules in the U.S.

It has been widely suggested that compulsory licenses for patents are highly exceptional or completely absent from U.S. patent law. A precedent from 1908 held that even if competitors are excluded from the use of the new patent, such exclusion is on the very essence of the right conferred in the patent act and that it is the privilege of any owner, to use or not to use her property⁴⁷⁷.

In addition, several antitrust cases have expressed the U.S. view on compulsory licensing as opposing such provisions either in the context of debates for potential reforms of the Patent Act as well in the context of international negotiations. In effect, the U.S. Supreme Court acknowledged in 1945 that:

“A patent owner is not in the position of a quasi-trustee for the public or under any obligation to see that the public acquires the free right to use the invention. He has no obligation either to use it or to grant its use to others (...) Congress has repeatedly been asked and has refused to change a statutory policy by imposing a forfeiture or by a provision for compulsory licensing if the patent is not used within a specified time. Statutory compulsory licenses are only provided for in the US in the Atomic Energy Act (42 U.S.C.A. Sec. 2184) and the Clean Air Act (42 U.S.C.A. Sec. 1857 h-6), *i.e.*, in cases where there is a particular public interest”.⁴⁷⁸

⁴⁷⁵ See *Hybritech Inc. v. Abbott Labs.*, 849 F.2d 1446, 1451 (Fed. Cir. 1988).

⁴⁷⁶ John M. Griem Jr. and Anna Brook, *'Ebay' and Preliminary Injunctions Feature*, Special to The National Law Journal, The NATIONAL LAW JOURNAL, VOL. 30, NO. 35, May 12, 2008.

⁴⁷⁷ *Continental Paper Bag v. Eastern Paper Bag*

⁴⁷⁸ See *Hartford-Empire v. United States*, 323 U.S. 386 (1945). See also *Dawson Chem. Co. v. Rohm & Haas Co.*, 448 U.S. 176, 215 (1980); where the Court held that: "although compulsory licensing provisions were considered for possible incorporation into the 1952 revision of the patent laws, they were dropped before

However, it is often acknowledged that compulsory licenses have been widely used by antitrust authorities as a remedy against violations of antitrust law, especially during the 1940s⁴⁷⁹. These cases however, mainly concerned patents abused by cartels or for the purpose of obtaining or maintaining a monopoly position which had been attained for other reasons. These cases, however, mainly concerned patents abused by cartels or for the purpose of obtaining or maintaining a monopoly position which had been attained for reasons other than the “mere failure to work or refusal to license a patent”. Moreover, under the evolving and conflicting view about the interface between patents and antitrust law, such cases of antitrust compulsory licenses have diminished during the recent decades⁴⁸⁰.

4 U.K.

4.1 Injunctions as an equitable remedy

As an equitable remedy, an injunction is subject to the discretion of courts⁴⁸¹, which may award damages as a substitute of an injunction based upon the 50 Supreme Court Act of 1981. In practice, U.K. courts have only denied

the final bill was circulated." *Id.* at 215 n.21, *citing* House Committee on the Judiciary, Proposed Revision and Amendment of the Patent Laws: Preliminary Draft, 81st Cong., 2d Sess., 91 (Comm. Print 1950). The Court characterized antitrust law and patent law as equivalents in importance: "The policy of free competition runs deep in our law But the policy of stimulating invention that underlies the entire patent system runs no less deep." See *Ibid* at p. 221.

⁴⁷⁹ See Frederic Scherer, *The Political Economy of Patent Policy Reform in the United States*, (October 2007). KSG WORKING PAPER NO. RWP07-042, available at: <http://ssrn.com/abstract=963136>, referring that: "between 1941 and the late 1950s, compulsory licensing decrees had been issued in settlement of more than 100 antitrust complaints, covering inter alia AT&T's transistor and other telecommunications apparatus patents, IBM's computer patents, and DuPont's nylon and other synthetic fiber patents. The cumulative number of patents affected is estimated to have been between 40,000 and 50,000".

⁴⁸⁰ See Beier, *supra* note 98, at p. 264-265 and accompanying footnotes; discussing the absence of obligations to work or license a patent both in U.S. and German Law, and citing, among others, section 24(1) of the 1981 German Patent Act which established that "a compulsory license may only be granted if the use of the invention is indispensable in the public interest" and "the patent owner refuses to permit the party seeking a license to use the invention against payment of a reasonable license fee and security"; acknowledging also the opinions of several scholars, according to which: "failure to work or insufficient working of the invention, just as mere dependency, will not justify the grant of a compulsory license if there is no public interest in the invention being used". See also Makan Delrahim, *Forcing Firms To Share The Sandbox: Compulsory Licensing Of Intellectual Property Rights And Antitrust*, Presented at the British Institute of International and Comparative Law, London, England, May 10, 2004, available at: <http://www.usdoj.gov/atr/public/speeches/203627.htm>, analyzing compulsory licenses in the context of antitrust remedies and arguing that they should be drafted as narrowly as possible but can be nevertheless useful for merger cases as a complement or alternative to divestiture, or in non-merger cases when other, less restrictive remedies would most likely fail to address anticompetitive conduct by a defendant.

⁴⁸¹ See DAVID BAINBRIDGE, *INTELLECTUAL PROPERTY*, (Pearson Education Limited, Sixth edition. 2006), p. 460-461.

injunctions under unusual circumstances⁴⁸². Further exceptions are however provided by the same Patent Act, for instance, when a license of right has been filled.⁴⁸³

Injunctions are generally awarded when two conditions are met⁴⁸⁴: 1) that invasion of a property right is demonstrated and 2) that repetition is threatened⁴⁸⁵. Nonetheless, courts have considered that even if such conditions are met, injunctions should not be granted if their effect would be oppressive⁴⁸⁶, but they have been precautious in finding “oppressive” effects and have usually avoided a test to balance the convenience of an injunctive order⁴⁸⁷.

Nevertheless, nothing prevents judges to discretionally balance the interest of the parties and the public interest⁴⁸⁸. Courts also enjoy significant discretion to grant a stay of any injunction where there is an appeal⁴⁸⁹.

⁴⁸² See *Banks v. EMI Songs Ltd* (No.2), [1996] EMLR 452, a musical copyright case described by its own trial judge as “wholly exceptional”.

⁴⁸³ See BAINBRIDGE, supra note 481, at p. 463, describing how an injunction will not be granted against a defendant that had applied for such license and the amount of damages will also be limited recoverable against him is limited to a maximum of double the amount that he would have paid had the infringing acts all been done under the license. However, if the infringer did not have a license and failed to undertake to apply for a license of right an injunction could be imposed and damages would not be limited but set at the actual amount caused to the plaintiff.

⁴⁸⁴ See *Navitaire Inc v. Easyjet Airline Co. Ltd.* (No. 2), [2006] RPC 4, where judges concluded that because the copyright infringement only related to minor aspects of the software, an injunctive order was too extreme: “Generally, an injunction will be granted where the invasion of a property right is demonstrated, and where repetition is threatened.

⁴⁸⁵ Such requirements are similar to the Italian test for granting injunctive relief and also present in certain U.S. decisions. For instance, in *Mershon v. O’Neill* (1934, CA2 NY) 73 F2d. 68, it was held that absent threat of further infringement, there was no basis for injunction. Compare with *Crier v. Innes* (1909, CA2 Vt) 170 F 324 (superseded by statute and *American Medical Sys. v. Medical Eng’g. Corp.* (1993, CA FC 6 F3d 1523, 28 USPQ2d 1321) holding that an injunction would not necessarily be prevented if defendant had ceased to infringe and promised not to infringe in the future. For more cases see also LEXSTAT 35 USC 283, at lexis; p. 26-27 US Decisions; find Italian decisions on the matter.

⁴⁸⁶ See *Navitaire v. Easyjet*; supra note 484, quoting from *Jaggard v Sawyer*, supra note 293, which cites the working rule laid by A.L. Smith in *Shelfer v. City of London Electric Lighting Co.* (1895), and arguing that: “an exception to the general rule is that an injunction will not be granted where the effect of the grant of the injunction is oppressive”.

⁴⁸⁷ Ibid, stating that: “...my understanding of the word “oppressive” in this context is that the effect of the grant of the injunction would be grossly disproportionate to the right protected. The word “grossly” avoids any suggestion that all that has to be done is to strike a balance of convenience”. A working test to evaluate the circumstances of the case was developed in *Shelfer v. City of London Electric Lighting Co l* (1895, 1, Ch. 287), by Smith LJ and re-affirmed by Aldous J. The working rule states: “If the injury to plaintiff’s legal rights is small; and is one which is capable of being estimated in money; and is one which can adequately be compensated by a small money payment; and the case is one in which it would be oppressive to the defendant to grant an injunction”.

⁴⁸⁸ See *Chiron Corp v. Organon Teknika Ltd* (No. 10), 1995, FSR 325, arguing that “However the Court’s discretion under the section is not limited. Therefore the court should in appropriate circumstances take into account the interests of persons who would be affected by the grant of the injunction. That may involve considering the interests of the public”.

⁴⁸⁹ See the opinion by Buckley LJ in *Minnesota Mining and Manufacturing Co. V. Johnson & Johnson Ltd.* (1976, RPC 72), stating that consideration should be given to whether the appeal was made in good faith, the

4.2 Discretion to award damages in lieu of injunctions

U.K. courts hence enjoy ample discretion to award damages instead of injunctions, that is, the possibility of awarding *ex-post* liability rules in the sense used here of switching from a property to a liability rule. A working test to identify cases in which damages could substitute an injunction was developed in the *Shelfer* case:

“If the injury to plaintiff’s legal rights is small; and is one which is capable of being estimated in money; and is one which can adequately be compensated by a small money payment; and the case is one in which it would be oppressive to the defendant to grant an injunction”⁴⁹⁰.

However, the *Shelfer* case included three separate judgments; two of which expressing rather divergent views. The verdict by Lindley warned that injunctions should not be denied in order to grant infringers the possibility to buy-out their infringement but only under exceptional circumstances. In citing such exceptional circumstances, Justice Lindley included trivial and occasional nuisances, cases in which the claimant has shown that he only wants money, vexatious and oppressive cases and cases where the claimant has so conducted himself as to render it unjust to give him more than pecuniary relief, thus describing a broader set of cases in which injunctions could be denied in order to avoid patentee’s strategic behavior⁴⁹¹.

In contrast, the opinion by Judge Smith’s laid down a narrow and cumulative set of standards, which has been however read as being non-exhaustive. In general, it is argued that when the criterion of Smith’s test is met, U.K. courts are very likely to refuse an injunction whereas if it is not met, courts would refuse injunctions only in exceptional circumstances. Nevertheless, such circumstances have encompassed cases when “the claimant may have no real objection to the defendant’s use of the work other than the fact that it is not licensed”; “the claimant’s main aim may be to prevent competition by putting the defendant out of business”; where “the claimant has only offered a license at an unreasonably high fee” or when the infringer acted in “good faith and in ignorance of the rights (of the claimant), and thereby inadvertently placed himself in a position where the grant of an **injunction** would either force him to

likelihood of the appeal being successful, damage caused to the parties in each case and more in general, the particular facts of the case.

⁴⁹⁰ See Judge Smith’s opinion in *Shelfer v. City of London Electric Lighting Co.* (1895, 1, Ch. 287).

⁴⁹¹ See Gwilym Harbottle, *Permanent Injunctions in Copyright Cases: When Will They Be Refused*. EUROPEAN INTELLECTUAL PROPERTY REVIEW, 23(3), 2001.

yield to the (claimant's) extortionate demands or expose him to substantial loss"⁴⁹².

However, it is widely understood that the mere fact that the defendant is willing to pay damages does not free him from the threat of an injunction, since that would simply grant the infringer a license legalizing the misconduct:

"Accordingly the grant or refusal of a final injunction is not merely a matter of the balance of convenience. Justice requires that the court observe the principles enunciated in *Shelfer's* case and remembers that if the effect of the grant of an injunction is not oppressive the defendant cannot buy his way out of it, even if the price, objectively ascertained, would be modest. My understanding of the word "oppressive" in this context is that the effect of the grant of the injunction would be **grossly disproportionate to the right protected**. The word "grossly" avoids any suggestion that all that has to be done is to strike a **balance of convenience**"⁴⁹³ (emphasis added)

In a recent case concerning a copyright infringement on computer software and databases, and involving *Navitaire Inc v. Easyjet Airline Co.*, a U.K. court found that the balance tilted against a permanent injunction⁴⁹⁴. Whereas the claimant owned the copyright in various works embedded in the source code of a ticketless airline booking system called "OperRes", Easyjet had taken a license of the OperRes system. After two years of the licensing agreement, Easyjet decided to develop its own booking system given that the claimant could not or was unable to modify the module giving access to the world-wide-web. The copyright owners were successful only in establishing infringement in minor aspects of the software and hence, the remedy was deemed to be too extreme. Mr. Justice Pumfrey expressed:

"Generally, an injunction will be granted where the invasion of a property right is demonstrated, and where repetition is threatened. An exception to the

⁴⁹² See *Isenberg v. East India House Estate Co. Ltd*, (1863) 3 De G. J. & S. 263 at 273, cited by Millett L.J. in *Jaggard v Sawyer*, supra note 293, at p. 207 and stating that "it is the duty of the court not to deliver over the defendant to the claimant bound hand and foot in order that the defendant may be made subject to any extortionate demand that the claimant may seek to make. If the court granted injunctions in such circumstances it would effectively make itself an instrument of oppression". See also the decision in *Jaggard*, *Ibid*, arguing that a defendant may have acted in good faith or inadvertently and "the grant of an injunction would either force him to yield to the [claimant]'s extortionate demands or expose him to substantial loss". Similarly, the decision in *Banks* cited as one of the reasons why the court refused an injunction when "the claimant had made it plain that what she really wanted was money".

⁴⁹³ See *Navitaire Inc v. Easyjet Airline Co.*, supra note 484, citing and following the precedent of *Shelfer v. City of London Electric Lighting Co.*, [1895] 1 Ch 287.

⁴⁹⁴ *Ibid*.

general rule is that an injunction will not be granted where the effect of the grant of the injunction is oppressive⁴⁹⁵

Injunctions have also been denied in cases regarding confidential information under the application of a balance of convenience⁴⁹⁶. In one of these decisions, Judge Megarry J's discerned a number of circumstances according to which it might be appropriate to make the defendant pay only for what he had taken: (1) When defendant was copying only subconsciously or for some innocent reason; (2) According to the gratuitous manner of plaintiff's communication; (3) When the defendant was not himself using the idea but pursuing an alternative in collaboration with another producer; (4) The extent of defendant's own contribution to the design of successful product; (5) Whether information was economic or personal; (6) The relatively mundane or subsidiary character of the information that was copied and (7) The fact that the information had become public⁴⁹⁷.

Such working rule might be complemented by third parties or the public concerns. Courts also enjoy significant discretion to grant a stay of any injunction where there is an appeal⁴⁹⁸. Considerable discretion also surrounds the granting of injunctive relief and the design of injunctions; meaning not only that injunctions might be limited or denied but also they might be awarded in cases where other jurisdictions do not. The High Court in the Patents Court interpreted that Section 37 of the U.K. Supreme Court Act 1981 gave the court the jurisdiction, *inter alia* to grant post-expiry injunctions, especially when an infringer holds an advantage over its competitors, case in which the court deemed that forbidding use for further 12 months would put the patentee in the position it would have been, had her patents rights been respected⁴⁹⁹.

⁴⁹⁵ Ibid following *Jaggard v Sawyer*, supra note 293, and also citing the working rule laid by Justice A.L. Smith in *Shelfer v. City of London Electric Lighting Co.* (1895).

⁴⁹⁶ See WILLIAM CORNISH AND DAVID LLEWELYN, *INTELLECTUAL PROPERTY: PATENTS, COPYRIGHTS, TRADEMARKS AND ALLIED RIGHTS*, London Sweet & Maxwell, 5th edition, (2003), at p. 329, fifth edition, citing *Seager v Copydex N° 1*, 1967 2, All E.R. , 415 at 418 where the court of appeal refused injunction and left defendant to relief in damages and *Coco v. Clark*, 1964, R.P.C. 41 at 50, idem.

⁴⁹⁷ See Judgment of Megarry J's in *Coco v. AN Clark (Engineers)*, 1964, R.P.C. 41 at 50, cited in CORNISH AND LLEWELYN, supra note 496, at p. 329-330.

⁴⁹⁸ See supra note 489.

⁴⁹⁹ See *Crossley v. Derby Gas Light Co.*, 1834, 4LT Ch 25 and confirmed by *Dyson Appliances Ltd. V. Hoover Ltd N° 2.*, in BAINBRIDGE, supra note 481, at p. 454. In this case, a large quantity of infringing vacuum cleaners was sold and stocked and the High Court in the Patents Court interpreted s 37 of the Supreme Court Act 1981 to give jurisdiction, *inter alia*, to grant post-expiry injunctions. See also *Kirin-Amgem Inc. v. Transkaryotic Therapies Inc.* (N° 2) 1998, FSR 1. Compare with other countries that reject the award of post-expiry injunctions. But see also Ibid, at p. 458, arguing that "if secondary damages were recoverable, an injunction was unnecessary, providing these damages could be assessed" This reasoning is similar to those of some U.S. Courts, such as that of *Immogenetics v. Abbott*, supra note 462.

In addition, designing the appropriate scope for an injunction might be an important policy lever for cases in which a patent covers minor parts of a complex product and thus, injunctions might give raise to holdups⁵⁰⁰.

4.3 The rationale of ex-post liability rules in the U.K.

U.K. courts have tended to limit the circumstances in which damages might substitute injunctions, however recognizing the possibility that plaintiffs might use an injunction to extract a royalty fee greater than the value of the right, or to extort the defendant. In the *Shelfer* case, the decision by Lindley L.J., emphasized the attention that should be paid during the exercise of discretion to well-settled principles, in particular the principle that the court will not "allow a wrong to continue simply because the wrongdoer is able and willing to pay for the injury he may inflict"⁵⁰¹.

Scholars have also described how several cases reflect the principles of *Shelfer* while other cases have denied injunctions in a broader set of circumstances⁵⁰². This latter group of cases reflects the importance of discretion to encompass new situations where injunctive relief might result too costly or give raise to strategic behavior⁵⁰³. As Millett L.J. pointed out in *Jaggard*, this does involve the

⁵⁰⁰ See *Coflexip SA v Stolt Comex Seaway MS Ltd*⁵⁰⁰ which changed the judicial practice of granting broad injunctions that basically repeat the terms of the patent's claims. Compare with U.S. scholars F. Scott Kieff, Richard A. Epstein, and R. Polk Wagner, *Various Law & Economics Professors as Amicus Curiae in the U.S. Supreme Court Docket # 05-130, eBay v. MercExchange* (2006), arguing that: "No court should issue an injunction unless it is possible for the enjoined party to know what conduct is prohibited and what is not. Overbroad injunctions improperly curtail the defendant's right to conduct its own business as it sees fit, so any system of discretion must necessarily see that the remedy in question is tailored to the underlying wrong" and citing *Fuji Photo Film Co., Ltd. v. Jazz Photo Corp.*, 394 F.3d 1368, 1379 (Fed. Cir. 2005), where the court of appeals held that: "The district court determined that Fuji's proposed injunction lacked specificity and reasonable detail as required by Fed. R. Civ. P. 65(d)".

⁵⁰¹ Such exceptional cases in which an injunction could be denied would be the following: when the infringement consist on a trivial and occasional nuisance; when the claimant has shown that he only wants money; in vexatious and oppressive cases; and in such cases where the claimant's behavior has been such as to render it unjust to give him more than pecuniary relief.

⁵⁰² See Harbottle, *supra* note 491, at p. 154-155.

⁵⁰³ *Ibid*, referring the hypothesis that would likely be considered by courts in order to (exceptionally) deny injunctive relief: 1) cases where the claimant does not have a bona fide exception against the defendants' use of its work "as in *Ludlow* or *Banks*, the claimant may have no real objection to the defendant's use of the work other than the fact that it is not licensed or, as in *Ocular Sciences*, the claimant's main aim may be to prevent competition by putting the defendant out of business. In such circumstances the court will lean against the grant of an injunction; 2) Where "the claimant has only offered a licence at an unreasonably high fee, the court may decide merely to award damages, provided of course the defendant is solvent and willing to pay a reasonable fee (...); 3) As Millett L.J. made clear in *Jaggard v Sawyer*, *supra* note 293, it may be that the defendant acted "openly and in good faith and in ignorance of the [claimant]'s rights, and thereby inadvertently placed himself in a position where the grant of an **injunction** would either force him to yield to the [claimant]'s extortionate demands or expose him to substantial loss".

4) In *Banks*, "The claimant's copyright in the lyrics of a song performed by the band UB40 had been infringed. Jacob J. refused an **injunction** and ordered damages to be assessed. He gave two reasons. One was that the claimant had made it plain that what she really wanted was money..."

court giving its sanction to the expropriation of the claimant's rights⁵⁰⁴. On the other hand, courts have also acknowledged the perils of strategic behavior, which could allow a claimant to extort a defendant:

“it is the duty of the court not to deliver over the defendant to the claimant bound hand and foot in order that the defendant may be made subject to any extortionate demand that the claimant may seek to make”⁵⁰⁵. This set of cases resembles factual considerations in eBay and related cases⁵⁰⁶ in the sense of preventing extortionist behavior and the use of patents as bargaining chips instead than as mechanism to provide innovation incentives.

Moreover, given the fact that injunctions are equitable in nature, innocent infringers could, according to the circumstances of the case, fall into an exceptional denial of injunctions. For instance, whereas the standard remedies in cases of infringement were provided for in the old section 18(1) of the UK Copyright Act 1956⁵⁰⁷, however, such remedy was considered as “being grossly unfair in many cases, treating the infringing articles as having belonged to the plaintiff”⁵⁰⁸. The Copyright, Designs and Patents Act 1988 limited such remedy in subsection (2) such that “damages for conversion are not to be awarded if the defendants believed and had reasonable grounds for believing that the articles so made or intended to be made were not or (as the case may be) would not be, infringing copies”⁵⁰⁹.

4.4 Other ex-post liability rules: compulsory licenses

Most commentators agree that, amidst considerable discretion to deny injunctions, this happens only in few cases, mainly upon public interest and especially public health reasons⁵¹⁰. A possible explanation as to why courts do

⁵⁰⁴ See *Jaggard v Sawyer*, supra note 293.

⁵⁰⁵ See the opinion by Lord Westbury in *Isenberg v. East India House Estate Co. Ltd.*

⁵⁰⁶ See Harbottle, supra note 491, at p. 155-156.

⁵⁰⁷ The copyright Act established that “Subject to the provisions of this Act, the owner of any copyright shall be entitled to all such rights and remedies, in respect of the conversion or detention by any person of any infringing copy ... as he would be entitled to if he were the owner of every such copy or plate and had been the owner thereof since the time when it was made...”

⁵⁰⁸ See *Banks v. EMI Songs Limited (Formerly CBS Songs Limited) and Others* (No. 2), [1996] E.M.L.R. 452, at p. 2.

⁵⁰⁹ Ibid at p. 2-3.

⁵¹⁰ In *Biogen Inc v. Medeva plc* (1992, Chancery Division), the defendant claimed that the grant of an injunction would lead to loss of human life and/or avoidable damage to human health. The patent related to a vaccine for Hepatitis B. In *Rousell-Uclaf v. G D Searle & Co Ltd*, 1977, FSR 125 at 131, it was held that “a life saving drug is in an exceptional position...it is at the least very doubtful if the court in its discretion even ought to grant an injunction”. In *Chiron Corp v. Organon Teknika Ltd.*, supra note 488, the defendant argued that an injunction would be contrary to the public interest. The patent in question related prevent the public having access to the kits and would hinder research and development.

not often substitute injunctions, and which is also plausible for other countries, was provided by the decision of *Chiron v. Organon*⁵¹¹. The judge referred to the exceptions and limitations established in the Patent statutes, including license of rights and other compulsory licenses, highlighting how public interest might be better served through these means:

“For instance, the Crown can authorise the use of the patent in certain circumstances. That suggests that the interests of the public will normally be protected by the provisions of the Patents Act 1977 and an injunction should normally be granted restraining infringement unless the contrary is indicated in the Act. Thus it is a good working rule that an injunction will be granted to prevent continued infringement of a patent, even though that would have the effect of enforcing a monopoly, thereby restricting competition and maintaining prices. Something more should be established before the Court will depart from the good working rule suggested in the *Shelfer* case”⁵¹².

Such view is nonetheless in contradiction to a previous case, which held that injunctions should be rarely given for a life-saving drug:

“A life-saving drug is in an exceptional position. There are often cases where a number of drugs exist alongside each other and are in general all equally efficacious for a particular ailment or disease. If the evidence shows it to be the fact that there may well be cases where it would make little, if any, difference to the public, apart from satisfying personal preference, whether a particular drug was no longer available or not, then in such a case it may well be proper to grant an injunction. At the other end of the scale, however, there is the unique life-saving drug where, in my judgment, it is at least very doubtful if the court in its discretion ever ought to grant an injunction and I cannot at present think of any circumstances where it should. There are infinite variations between these two limits”⁵¹³.

Nonetheless, the U.K. Patent Act establishes several compulsory licensing provisions. Firstly, for the case of lack of working or inadequate working of a patent, it is possible to ask for a compulsory license after three years have

⁵¹¹ See *Chiron Corp v. Organon Teknika Ltd*, supra note 488.

⁵¹² See *Chiron Corp v. Organon Teknika Ltd*, supra note 488. Conversely, a previous case held that injunctions should be rarely given for a life-saving drug, at least when there are no substitutes (*Roussel-Uclaf v. GD Searle Co Ltd*, 1977 FSR 125 at 131): “A life-saving drug is in an exceptional position. There are often cases where a number of drugs exist alongside each other and are in general all equally efficacious for a particular ailment or disease...At the other end of the scale, however, there is the unique life-saving drug where, in my judgment, it is at least very doubtful if the court in its discretion ever ought to grant an injunction and I cannot at present think of any circumstances where it should. There are infinite variations between these two limits”.

⁵¹³ See *Roussel-Uclaf v. GD Searle Co Ltd*, 1977 FSR 125 at 131.

elapsed from the patent grant⁵¹⁴. In addition, U.K. law also provides for compulsory licensing to be used in the case of a dependent patent. This provision might be used after three years from the patent grant, and it allows any interested person to obtain a compulsory license if the working of an invention which makes a substantial contribution to the art is hindered and if the patentee refuses to license the required patent. Both compulsory licensing provisions as well as other provisions were reformed to adapt to the standards established by the TRIPS Agreement⁵¹⁵.

In addition, among the possible remedies for anticompetitive behavior, there is the possibility of using compulsory licenses. The legal basis for the application of Antitrust or Competition Law to patent cases is found on article 82 of the EC Agreement. In fact, a compulsory license might constitute a remedy for different types of anti-competitive behavior, including, a unilateral refusal to deal with the duty to provide access that might in some cases relate to a patent. In effect, article 82 (b) of the EC Treaty, provides that behavior consisting on “limiting production, markets or technical development to the prejudice of consumers” might be considered as an abuse of a dominant position. A Discussion Paper on Article 82, authored by the DG Competition and which opened a wide discussion on these matters, expressed that “a refusal to supply may be classified as an exclusionary abuse”⁵¹⁶.

In the framework of article 82 of the EC Agreement, a U.K. court ordered in a relatively recent case⁵¹⁷ that the competition aspects were to be treated separately from the patent law issues⁵¹⁸. After failed negotiations between the parties, the patentee refused to grant a license⁵¹⁹ and as a consequence, the

⁵¹⁴ See Section 48B of the U.K. Patents Act.

⁵¹⁵ See the U.K. Patents Act 1977 (as amended), comparing new provisions introduced after the enactment of the TRIPS Agreement, expanding the countries assimilated to the domestic markets, available at: <http://www.ipo.gov.uk/patentsact1977.pdf>

⁵¹⁶ See DG COMPETITION, DISCUSSION PAPER ON THE APPLICATION OF ARTICLE 82 OF THE TREATY TO EXCLUSIONARY ABUSES, 2005, available at: <http://ec.europa.eu/competition/antitrust/art82/discpaper2005.pdf>, at paragraph 210, and opened for public consultation, available at: <http://ec.europa.eu/competition/antitrust/art82/contributions.html>.

⁵¹⁷ See *Intel Corporation v. Via Technologies Inc. and HC 01 C 04136 Intel Corporation v. Via Technologies Inc.* [2002] EWHC 1159, where “Jacob J. ordered that the competition law aspects of both infringement actions should be tried together, but separately from the patent law issues. Trial on the competition law aspects was therefore set down in the Patents Court list for May 2003, following trial on infringement and validity which was set down for December 2002 (chipset action) and February 2003 (CPU)”. The case is currently under appeal.

⁵¹⁸ See *ibid*, supra note, arguing that: “The same practice was adopted in the earlier case of *Philips v. Ingman*, where Laddie J. ordered that the competition issues should be tried only after liability for patent infringement had been established. This approach has the virtue that the significant costs of disclosure and trial of the competition law defences are avoided in cases where the patent is invalid or the acts of the defendant do not fall within the scope of the claims”.

⁵¹⁹ *Ibid* at p. “The details of the allegations of breach of Article 82 were different in the two actions. However, *Via* essentially relied on *Intel's* refusal to grant a patent licence. In the CPU action, *Via*

defendant argued that this decision would force consumers to adopt a more expensive standard⁵²⁰. According to UK case law such compulsory licenses have been interpreted as confined to exceptional circumstances and as a consequence:

“any defendant that seeks a compulsory licence under a patent on the grounds that the situation is exceptional will have to plead explicitly the essential facts that comprise the exceptional circumstances. Otherwise the defence will be disposed of summarily”⁵²¹.

Many open questions in fact surround the application of article 82 of the EC Treaty to patents, especially in the context of patent infringement cases. The approach is variable from country to country, as it has also varied along the time in the decisions of the same European Court of Justice. In *Volvo/Renault*, the Court of Justice applied a cautious approach to the possibility of using a compulsory license for design rights⁵²². While the court ruled that IP right owners are free to refuse a license as this constitutes a core part of their right to exclude, the court also acknowledged that the exercise of an exclusive IP right can still be abusive when particular circumstances are in place⁵²³.

In a subsequent case, however, a more aggressive application of article 82 took place when the court decided to uphold a duty to license an IP right. The case concerned precisely broadcasters of the UK and Ireland that separately published weekly television guides⁵²⁴. Magill was interested in publishing a

complained that Intel refused to continue to license its CPU patents covering the Socket 370 features on the microprocessor. As a result, micro-processors that could be inserted into the Socket 370 on existing motherboards would be removed from the market even though there was still demand for them.

⁵²⁰ This would hinder existing owners of PCs from upgrading their processors and would force them to adopt the more expensive Pentium 4 technology. In the *Chipset* action, Via complained about Intel's refusal to license the Intel patents covering the interconnect between the Pentium 4 processor and the chipset, which was a de facto industry standard. This meant that Via could not sell chipsets compatible with the Pentium 4 microprocessor. Via was willing to pay substantial royalties for the compulsory licences that it sought from the court. Intel in fact offered Via a limited licence to manufacture chipsets compatible with the Pentium 4 processor, but only on terms that would have prevented Via from offering the most advanced products in this class. Via declined the offer.

⁵²¹ See *Brand* supra note 222, at p. 5, citing judgments of Laddie J. in *Philips v. Ingman*, n. 6 above, at para. 63; and *Neuberger J. in Sandvik v. Pfiffner*, n. 8 above.

⁵²² See *AB Volvo v. Erik Veng (UK) Ltd* (1988) ECR 6211 and *Case 53/87, Consorzio Italiano della componentistica di ricambio per autoveicoli and Maxicar v. Regie nationale des usines Renault* (1988) ECR 6039, both decided on similar substantial reasons. The main issue in this case was that the exclusiveness of design rights over components of a complex product, such as automobiles might preclude the production and commercialization of such spare-parts by other manufacturers. Such exclusiveness can originate or extend a monopoly over the aftermarket for spare parts. See also supra note 110, on the problem of aftermarkets.

⁵²³ See *Case 53/87*, supra note 522, at paragraphs 15-16 deciding that “the exercise of the exclusive right may be prohibited by article 82 if it gives raise to certain abusive conduct on the part of an undertaking occupying a dominant position”.

⁵²⁴ See *Magill TV Guide/ITP, BBC and RTE*, OJ 1989 L 78/43, case T-69/89, *Radio Telefis Eireann (RTE) v. Commission* (1991) ECR II-485, confirming the case on appeal.

comprehensive weekly guide that included all broadcasters but the information necessary to develop such product was denied by each broadcaster. The Commission decided to accord a duty to license and the Court of First Instance also upheld the decision. The Court of Justice finally held that the refusal to license an IP could not be considered as a general abuse although it could constitute such abuse in “exceptional circumstances”. Three reasons were argued for such decision: (1) that a new product for which there is consumer demand is prevented; (2) that the IP holders kept the secondary market for themselves and excluded all competition and (3) that there was no objective justification for such refusal. These brief overview only shows the controversial and still open debate that surrounds the use of compulsory licenses for patent rights as the application of antitrust law⁵²⁵.

5 Italy

Italian patent law has recently undergone several reforms including the coming into force of the Code of Industrial Property (hereinafter CPI)⁵²⁶. The drafting of a unique Code was justified by the increasing and dispersed amount of IP laws and hence the necessity to simplify rules and procedures⁵²⁷ as well as a political determination to protect private investment and market competition⁵²⁸. The CPI set aside copyrights and related rights, a choice that was criticized especially because it was in contrast with the model set for by the TRIPS Agreement which regulates all IP fields⁵²⁹.

⁵²⁵ The literature on this matter is profuse and characterized by wide divergences. Nonetheless, the focus of this thesis is on patent law provisions that allow the switch from a property to a liability rule, hence the brief reference to the application of article 82 of the EC Treaty, which would require further consideration.

⁵²⁶ See the Legislative Decree N. 30 of February 10, 2005 (hereinafter Industrial Property Code) and Legislative Decree, March 16, 2006, n.140, implementing Directive 2004/48/CE on the Enforcement of Intellectual Property Rights introducing some modifications, especially with regard to remedies.

⁵²⁷ See for instance, Alessandro Albini, in <http://www.ubertazzi.it/it/censnorme/censimentobrevetti.pdf>, quoted by UBERTAZZI (ED.), COMMENTARIO BREVE ALLE LEGGI SU PROPRIETÀ INTELLETTUALE E CONCORRENZA, 4 ed., (Cedam, Padova, 2007), pp. 3037, accounting for 360 different sources of law applicable to patents, and finding at least 205 provisions from 1859 to 2001. See also UBERTAZZI at p. 166-167, providing as a second motivation for the CPI the heterogeneous character of IP provisions, and how the interpretation of rules was often difficult due to the coexistence of different regulations conceived in different historical times as well as the international and European laws also applicable to these matters; a third explanation provided by this author is regulatory competition which produces deregulation and at the same time a trend of simplification of applicable laws accompanied by the political will of the Italian government at the time of discussion of the CPI in subjects related to the regulation of the market, competition and industrial property rights.

⁵²⁸ See UBERTAZZI, supra note 527, at p. 167, arguing that the Legislative Decree 273/2002, gave priority to the protection of private rights, enterprises and market competition, responding to political objectives of the government (free translation).

⁵²⁹ See UBERTAZZI, *ibid*, at p. 168-169, criticizing the decision of leaving copyrights and related rights out of the CPI; “Anzitutto la scelta di escludere dal codice i diritti d’autore e connessi non è condivisibile sul piano sistematico (...) in secondo luogo l’esclusione dei diritti di autore e connessi dal progetto di codice comporta una serie di inconvenienti sui diversi piani del diritto materiale e di quello processuale (...)”

In terms of procedural law, including remedies, the CPI did not introduce as many changes as the subsequent reform pursuant to the EU Directive on Enforcement⁵³⁰. With regard to remedies, the CPI explicitly sets up the possibility for courts to issue preliminary and final injunctions, delivery up, seizure and other corrective measures. As a consequence, remedies that were previously available only for certain rights, are now also applicable to IP rights in general⁵³¹. However, such extended application of remedies to all IP rights had also prevailed before the enactment of the CPI although with some contrary decisions and scholarly debate⁵³².

Nevertheless, when small procedural changes such as making injunctions and other corrective measures available for all categories of IP rights are integrated with the entire reform of substantial IP law, they could be arguably understood as following an expansionist view over IP rights as well as the evidence of an increasing IP protectionist trend. This trend seems to respond to the view of IP rights as property over intangible rights that deserve all the remedies available for real property and in general, to the view –shared by other countries as the case of U.S.- that since IP fosters innovation, more IP protection would always foster more innovation.

In fact, a clearly related question that emerges is whether procedural rules in IP and patent law are –and whether they should be- autonomous with respect to general –civil- procedural rules⁵³³. This is part of the broader debate about

⁵³⁰ See Marco Spolidoro, *Profili Processuali del Codice della Proprieta' Industriale*, DIRITTO INDUSTRIALE, 2008, 2, 174, arguing that few changes were introduced at the procedural level by either the CPI and the Enforcement Directive; (free translation of the original text: “se si eccettua infatti l'estensione alle materie di competenza delle sezioni specializzate del c.d. processo societario (estensione poi caduta sotto la scure della Corte costituzionale, con generale soddisfazione dei pratici), si può anzi dire che le novità di maggiore importanza sono arrivate dopo l'emanazione del codice, con l'attuazione della *Direttiva 2004/48/CE* sul rispetto dei diritti di proprietà intellettuale”).

⁵³¹ See Adriano Vanzetti, RIVISTA DI DIRITTO INDUSTRIALE 04, I (2007), 102 sustaining that article 124 of the CPI extends the possibility of obtaining final injunctions for all industrial property rights, which would strengthen protection for IP rights for “diritti non titolati” or atypical rights, in particular the “ditta” and “insegna”.

⁵³² See *infra* note 535.

⁵³³ See Spolidoro, *supra* note 530, arguing in favor of the autonomy of procedural IP rules; (“Le conclusioni cui siamo pervenuti partendo dal concetto dell'*autonomia* del diritto processuale industriale sono dunque due: - inammissibilità del ricorso agli istituti del diritto processuale civile comune dove esistano istituti del diritto processuale della proprietà industriale e intellettuale che, anche in senso lato, adempiano la stessa funzione; - impossibilità di una commistione (o contaminazione) della disciplina delle misure di tutela proprie del diritto industriale e del diritto della proprietà intellettuale con la disciplina delle (omologhe) misure del diritto processuale civile”); however recognizing that procedural IP rules are not complete and hence might be supported by the general procedural rules; (“L'asprezza di queste conclusioni deve essere tuttavia mitigata dall'ovvia considerazione che il diritto processuale della proprietà industriale e intellettuale è sì un *sistema*, ma non è *completo*: esso si appoggia, per così dire, sul tronco del diritto comune, che gli fornisce sostanza e forma”) and moreover, making a distinction between the influence of general procedural rules on IP procedural rules at the legislative level, which he judges as harmful

whether the treatment of IP shall or not be different than that granted to other property rights, and if the answer is affirmative, whether such treatment shall be more or less protective.

With respect to compulsory licensing provisions, the CPI did not introduce major reforms as these were mainly incorporated at the time of implementing the TRIPS Agreement. A minor reform was introduced with respect to the prohibition for infringers to opt for a compulsory license in the sense of reaffirming the prohibition unless infringers are in good faith. Although the possible practical impact of such reform might be minimal, it is discussed in more detail below.

5.1 Property rules: final injunctions

The Italian CPI establishes that the decision ascertaining the infringement of an industrial property right might include an order known as *inibitoria* to prohibit the fabrication, commercialization and use of infringing goods and also a permanent order to withdraw the infringing goods from the channels of commerce⁵³⁴. Before the CPI, Italian law only explicitly regulated preliminary injunctions, although judges and scholars in general admitted the use of permanent injunctions⁵³⁵. Hence, for a long time scholarly discussions centered on whether judges could grant permanent injunctions in patent cases, given that they were not explicitly established in the industrial property laws.

Within this debate, scholars also disagreed about the nature of *inibitoria* and specifically about whether this measure should be considered a mere declaration of infringement or susceptible of being executed as a judicial decision. The principal result of considering injunctions as a judicial decision is

whereas at the level of application –and interpretation– of the rules such influence is deemed as less harmful. (“In effetti, come già detto, se le norme processuali ora dettate dal Codice della Proprietà Industriale (e dalla legge sul diritto d'autore) costituiscono un sistema autonomo, esse non sono tuttavia complete. Perciò, se l'interpretazione, condotta sulla base del microsistema del diritto industriale, non conduce a risultati certi, è legittimo, anzi doveroso, rivolgersi al diritto comune”).

⁵³⁴ See CODICE DELLA PROPRIETÀ INDUSTRIALE, article 124: “Con la sentenza che accerta la violazione di un diritto di proprietà industriale possono essere disposti l'inibitoria della fabbricazione, del commercio e dell'uso delle cose costituenti violazione del diritto e l'ordine di ritiro definitivo dal commercio delle medesime cose nei confronti di chi ne sia proprietario o ne abbia comunque disponibilità...”.

⁵³⁵ See UBERTAZZI, supra note 527, at p. 606, referring that previous laws did not explicitly provide for permanent injunctions –although article 2599 of the civil code on unfair competition was applicable to non registered marks–. Ubertazzi also refers how scholars had for long accepted the jurisdiction of judges to grant permanent injunctions and citing FRIGNANI supra note 297, at p. 309; Marco Spolidoro, *Le misure di prevenzione nel diritto industriale*, Milano 1982, at p. 111; and judicial decisions by Trib. Vicenza 6-10-1990, in GADI 91, 295 (“la misura della distruzione ha carattere restitutorio, mirando ad eliminare lo stato di fatto contrario al diritto venutosi a creare per effetto della contraffazione”); App. Catania 12-9-1984 ivi 84, 606. Decisions against this position are few and isolated, for instance, Trib. Bari 10-6-1974 ivi 74, 815.

that non-compliance would constitute an offense –one potentially giving rise to administrative sanctions equivalent to the contempt of court of common law countries- with the additional obligation to pay a monetary sanction or *penalita di mora*, equivalent to the *astreintes* of French Law. Some authors have even also sustained that non-compliance could give rise to criminal sanctions established by article 388, c. 1, of the criminal code⁵³⁶.

Judicial decisions frequently cite as requirements for granting injunctions the repeated violation of a right and the risk of continuous repetition of such violation⁵³⁷. However, the majority of scholars and decisions have held that it is not necessary to prove any objective harm or any subjective element or intention in order to obtain an injunction, requirements that would only be necessary in order to obtain an award of damages⁵³⁸. Injunctions have been hence denied in cases lacking the abovementioned requirements –as considered by judicial decisions and scholar’s work-. An ulterior case of denial regards patents or other IP right that are about to expire. In this way, an extension of protection over IP rights beyond their statutory duration is avoided. Similar decisions can be found in the U.S. and the U.K.

5.2 Judicial discretion: how much space?

A general tenet of comparative law studies is that judicial discretion is limited to the legislative framework and that judges are confined to the “interpretation” of the law in Civil Law countries whereas Common Law judges “create” law. Nevertheless, the wording of article 124 of the Industrial Property Code establishes that judges “may” grant injunctive relief, thus indicating that judges have the power to grant injunctions while not requiring them to do so in all cases and hence subjecting the matter to an important degree of discretion.

⁵³⁶ But see decision by the Cass. pen. Sez. VI, 19/03/1997, n. 4298, holding that such criminal sanctions are just explicitly used for a permanent decision (sentenza di condanna) and not for an interim measure (misura cautelare). The decision also interpreted the old provision of art. 83 r.d. 29 giugno 1939 n. 1127 (inibitoria sui brevetti per invenzioni industriali) as an interim measure. See Adriano Vanzetti. *Brevi considerazioni in tema di inibitoria*. DIRITTO INDUSTRIALE, 2007, N. 4/5, p. 167.

⁵³⁷ Some authors criticize the CPI for not having included any reference to such conditions, losing the opportunity to clarify when should injunctions be granted; see Marco Spolidoro, *Le sanzioni civili nella bozza del Codice della proprietà industriale*, IN UBERTAZZI, supra note 527, at p. 131; against UBERTAZZI, supra note 527, p. 607.

⁵³⁸ See FRIGNANI supra note 297, at p. 308. “In sostanza, la giurisprudenza distingue chiaramente l’azione inibitoria da quella di risarcimento del danno, richiedendo per la prima solo l’idoneità degli atti a produrre l’effetto dannoso, con esplicita esclusione sia dell’elemento intenzionale (dolo o colpa) che di quello material (danno)”.

In spite of the language used by the CPI, which is similar to that used by previous laws, it is commonly argued that a permanent injunction is a legal right for owners and that judges could not deny an injunction in a final case finding infringement⁵³⁹. Still, some authors recognize that the judge has also discretion to grant or deny injunctions⁵⁴⁰. Moreover, scholars also recognize that judges in civil law countries enjoy certain discretion which might be created by the statutes themselves⁵⁴¹.

A specific example pertaining to nuisances is established in article 844 of the Italian Civil Code⁵⁴² and evidences the possible space for judges' discretion that

⁵³⁹ See Spolidoro, *supra* note 530, arguing that at least under the Directive, article 10.3 does not apply to the inibitoria and hence, Judges could not discretionally decide upon such measure; (free translation of the original text: "Posto che, almeno nel sistema della Direttiva, il precetto dell'art. 10.3 non riguarda l'inibitoria, il Giudice non dovrebbe poter graduare quest'ultima ad libitum").

⁵⁴⁰ See for instance SCUFFI, FRANZOSI E FITTANTE, *CODICE DELLA PROPRIETÀ INDUSTRIALE: COMMENTO PER ARTICOLI COORDINATO*, (Padova: Cedam, 2005) at p. 564-565, arguing that both the inibitoria and the destruction of infringing objects are subject to the discretion of Judges, who "may" accord such measures at the request of the interested parties, and due to the disruptive effects that might follow from such measures and especially when the controversy regards patents, it is advisable that such measures are used as "extrema ratio" in order to avoid extending over non-infringing products, (free translation of the original text: "Gli effetti dirompenti della distruzione – che resta (come l'inibitoria) facoltativa in quanto "può" essere disposta dal giudice e sempre ad istanza di parte secondo il principio della domanda (art. 112 c.p.c.)- dovrebbero poi consigliarne l'adozione -specie nel campo delle invenzioni – come "extrema ratio", considerato che l'istituto è stato sempre utilizzato dalla giurisprudenza con moderazione e cautela anche per evitare che ordini troppo estesi ed indeterminati finissero per conglobare oggetti estranei alla repressione dell'illecito").

⁵⁴¹ See FRIGNANI *supra* note 297, at p. 521 and corresponding footnotes. In particular, article 844 of the civil code permits judges to choose between the least oppressive remedy for the party and also to choose whether to give an injunction or other remedy. According to FRIGNANI, this is an application of the German doctrine of "Interessenabwägung", or balancing the interest of the parties. In these cases, especially with regard to nuisances, judges can exert their discretion and balance the interest of the parties and reasonableness (Zumutbarkeit) with respect to certain commercial activities such as boycott and discrimination. Frignani argues that the reasons why we cannot talk about discretionary granting or denying of injunctions in the same way as in common law are historic and systematic but he highlights the role of judges in designing the content of injunctions and deciding between this and other remedies, in order to find the least oppressive.

⁵⁴² See FRIGNANI *supra* note 297, discussing the implications of article 844 of the Italian Civil Code. See also Roberto Pardolesi and Bruno Tassone, *Guido Calabresi on Torts: Italian Courts and the Cheapest Cost Avoider*, *ERASMUS LAW REVIEW*, VOL. 1, NO. 4, 2008, available at: <http://ssrn.com/abstract=1498358>, analyzing the application of article 844 in the context of the property and liability rules debate and referring to a decision by an Italian court, where the Judge considered an ample space for its application: "before determining that the nuisances exceeded the limit of what is ordinarily bearable and that no precautions can be taken to bring them below the threshold, the judge observed that article 844c.c. can be seen as a tool to protect not only rights on real estate but even the person who lives in it and his health". See also Ugo Mattei, *Efficiency in Legal Transplants: An Essay in Comparative Law and Economics*, *INTERNATIONAL REVIEW OF LAW AND ECONOMICS*, MARCH, 1994, available at: http://works.bepress.com/cgi/viewcontent.cgi?article=1013&context=ugo_mattei, discussing article 844 and arguing that civil law countries have also reached "efficient" legal solutions, sometimes long before than its common law counterparts: "seventy years before the Boomer decision, German law reached the liability rule solution by applying Art. 906 BGB. It has done so by following the balancing theory of the great nineteenth-century jurist Rudolph von Jhering. This rule has been reproduced in Art. 844 of the

subsists despite the underlying logic of Civil Law countries. Article 844 establishes that a land owner cannot prevent the emission of smoke, heat, fumes, noises, vibrations or similar propagation originating from the land of a neighbour unless such emissions exceed a normal tolerability, with regard to the condition particular conditions of the place. In applying this rule, the court shall reconcile the requirements of production with rights of ownership and can also take account of the priority of a given use⁵⁴³. In fact, discretion is allowed to judges both with respect to the decision of whether the limit of tolerability has been reached; and in cases that surpass such limit the judge is also able to decide whether or not to grant injunctive relief⁵⁴⁴.

Moreover, article 844, by allowing judges to balance the interests of property rights and production, inclines the balance towards a wider judicial discretion with regard to the protection of property when a public interest is affected. For our purposes, this rule can be considered to be guided by efficiency reasons that have allowed judges to substitute a property rule with a liability rule⁵⁴⁵. Nevertheless, scholars have acknowledged that these doctrines can hardly be transposed to property rights, given their absolute nature⁵⁴⁶, even if one could question whether IP fits this “absolute” definition of property.

In addition and with regard to patent injunctions, judges have discretionary powers to tailor the scope of the injunction and courts might exercise their

Italian Civil Code and has long since been the law in Austria and Switzerland as well. In the civil law tradition, therefore, the law has long since reached the efficient result” (footnotes omitted).

⁵⁴³ Article 844 of the Italian Civil Code, (free translation of the original text: “Immissioni. Il proprietario di un fondo non può impedire le immissioni di fumo o di calore, le esalazioni, i rumori, gli scuotimenti e simili propagazioni derivanti dal fondo del vicino, se non superano la normale tollerabilità, avuto anche riguardo alla condizione dei luoghi. Nell'applicare questa norma l'autorità giudiziaria deve contemperare le esigenze della produzione con le ragioni della proprietà. Può tener conto della priorità di un determinato uso”).

⁵⁴⁴ See decision Cass. 12 giugno 1964, n. 1483), highlighting the discretion of judges also with respect to the remedy to be provided when emissions are deemed intolerable: (free translation of the original text: “Il che val quanto dire, a ben capire, che il giudice e «signore» della regola anche in relazione alle soluzioni da adottare ove le immissioni siano giudicate «intollerabili» (inibitoria e/o indennizzo)”).

⁵⁴⁵ See DI MAJO, supra note 320, at p. 94; describing this rule as modern since it allows the choice between remedies both *ex ante* and *ex post* with regard to the demands of activities and interests of third parties, (free translation of the original text: “Essa è dunque una regola profondamente moderna, giacché, nella misura in cui si consente che già all'interno di essa possa esservi conversione di rimedi (da quello inibitorio a quello indennizzatorio e infine a quello risarcitorio) da un settore all'altro non che «travasi» di disciplina, non solo vengono a regolarsi *ex ante* diritti di proprietà contrapposti (secondo il modulo dei rapporti di vicinato) ma si provvede anche a diversamente redistribuirli *ex post* in relazione alle esigenze di altri attività od interessi. Salvo a dire che, ove il rimedio dell'indennizzo dovesse veramente godere di assoluta prevalenza su quello inibitorio (accentuandosi di esso la componente risarcitoria, v. Cass. 15 gennaio 1986, n. 184), come sembra stia avvenendo con la prassi giudiziale, si assisterebbe ad un mutamento di natura e carattere della stessa regola qui discussa, da regola di proprietà a regola di responsabilità”).

⁵⁴⁶ See FRIGNANI supra note 297, quoting from a decision by the App. Ancona, 16-V-1962, *Ribighini c. Novelli ed altri*, in RIV. GIUR. UMBRO-ABRUZZ., 1963, at p. 160.

discretion in determining the boundaries of an injunctive order. In the case of *Chiron vs. Sorin*, for instance, the controversy gravitated around the infringement of a patent on the virus of HCV. The preliminary injunction was directed at the diagnostic kits produced by Sorin. However, the scope of the order was debated since in part, Sorin had found new sequences of nucleotides not originally disclosed in the patent by Chiron. In cases where a broad injunction might prohibit infringing and non-infringing activity with the potential risk of precluding certain innovation and technical development, the choice between substituting a property rule with a liability rule might also be complemented by the choice of issuing a narrower injunction. A narrower injunction would have the effect of allowing certain uses of a technology for free, a solution that is both fair and efficient where such uses are non-infringing but that of course, provides an incomplete answer for problematic injunctions and problematic technologies⁵⁴⁷.

Italian judges also enjoy reasonable discretion to grant or deny measures as destruction of infringing goods, the delivery-up and removal from the channels of commerce of infringing goods as well as tailoring such measures to the particular case⁵⁴⁸. These measures are closely related to, and might strengthen the effects of, a property rule⁵⁴⁹ and in fact an injunction order is often accompanied by orders of removal and destruction of infringing goods and means to infringe. Those measures are even more directly under the discretion of the court. Given the particularly disruptive and potentially harmful effects of delivery up measures, an order to destroy infringing goods and machinery cannot be ordered when it might cause harm to the national economy, in which case only damages might be available⁵⁵⁰.

⁵⁴⁷ See Lemley and Weiser, *supra* note 72, discussing several cases, mostly in the area of information and communication technologies, where modern technologies make it difficult to separate infringing from non-infringing technologies.

⁵⁴⁸ See FRIGNANI *supra* note 297, at p. 334 and current article 124 of the CPI.

⁵⁴⁹ See FRIGNANI *supra* note 297, at p. 334, arguing that these measures fall even more directly under the discretion of the court and its frequent use along with or in close relationship with injunctions expands the scope of discretion over injunctive relief: "Non si deve inoltre dimenticare un altro fenomeno, e cioè la discrezionalità del giudice in rapporto alla concessione di altri rimedi, che molto spesso accompagnano l'inibitoria...In realta, a causa degli stretti rapporti esistenti tra le azioni suaccennate e l'azione inibitoria, e facile comprenderé che la discrezionalità del giudice esistente per quelle si ripercuoterà anche su questa". See also *La Tutela della Varietà Vegetale: Inibitoria e Distruzione*; Trib. Di Bari, 26 Marzo 2003, *Est. Monteleone-Zanzi Fruitgrowing Equipment s.r.l. c. Susca*, ordering the inibitoria and destruction of the involved plant varieties; and Caterina Quaranta, *Commento*, in *IL DIRITTO INDUSTRIALE* N° 2, 1004 citing the following decisions denying destruction orders: 1786; App. Bologna 29 settembre 1981, in *GADI*, 1981, 1431; App. Milano 8 aprile 1977, in *GADI* 1977, 937; Trib. Milano 11 marzo 1996, in *GADI*, 1996, 3474. See also Marco Lamandini, *La restitutio in Integrum nel Diritto della Proprietà Intellettuale: la Rimozione e la Distruzione*, in *AIDA*, 2000, 70, discussing these measures.

⁵⁵⁰ See *Parere del Consiglio di Stato*, available at: www.ubertazzi.it/it/codiceip/indice.html; considering that this provision contains the general limit to destruction measures contained in article 2933 of the civil code and that in this case only damage compensation would be available.

5.3 Preliminary injunctions

Although preliminary injunctions differ in rationale and scope from permanent injunctions, they occupy a privileged position within Italian patent litigation. The practical importance of preliminary measures in Italy, follows from the long duration of trials which makes preliminary injunctions (as well as other interim measures) usually the most important decisions and often the final turning point for a settlement⁵⁵¹. This not only makes them comparable to permanent injunctions but also determines that decisions by courts about the adequacy of remedies are often taken in preliminary measures, especially injunctions⁵⁵².

Preliminary injunctions are regulated by article 131 of the Civil Code of Procedure. Plaintiffs are required to prove two necessary conditions in order to obtain a preliminary injunction: 1) the strength of the legal right, manifested both in the likelihood of success in the merits of the case in terms validity and infringement (*fumus boni iuris*); and 2) the urgency of the requested remedy, which is based upon the fact that during the time needed to reach the final decision, an irreparable harm might be generated (*periculum in mora*).

Italian courts have reiteratively considered that with regard to industrial property rights the *periculum in mora* should be considered in *re ipsa*, and also that such peril of irreparable harm goes beyond the danger that a defendant might be insolvent at the end of the trial. The reason usually given by courts is that damages are more difficult to calculate in this area and that the plaintiff might suffer losses in terms of market share, reputation and goodwill, which are irreparable. Several courts have even asserted that irreparability subsists even in cases where any subsequent damages for patentees might be easily calculated, as it happens when the infringed product is sold to public health institutions.⁵⁵³

⁵⁵¹ See Giorgio Floridia, *La tutela giurisdizionale dei diritti di proprietà immateriale* in AUTERI ET AL., DIRITTO INDUSTRIALE, PROPRIETÀ INTELLETTUALE E CONCORRENZA, Second edition, 2005, at p. 630, referring a progressive substitution of the normal procedure by an abbreviated procedure, given that parties usually abide by the outcome of the decision with regard that either accords or denies the provisional measure: "L'attore speso non ha interesse ad attendere il tempo lungo occorrente per la cognizione ordinaria se non abbia ottenuto i provvedimenti urgenti richiesti e il convenuto spesso non ha più interesse a resistere una volta che la situazione si sia modificata per effetto del provvedimento urgente concesso. **In questo senso pertanto può dirsi che si verifichi una progressiva sostituzione della cognizione sommaria rispetto alla cognizione ordinaria**".

⁵⁵² See also supra notes 334 and 335, discussing the application of provisional measures provided by article 700 of the Italian Civil Procedural Code and the result that follows from the practice of using such provisional measures as final measures.

⁵⁵³ See *Sorin Biomedica s.p.a. c. Chiron Corporation e Ortho Diagnostic*; Tribunale di Milano, Sez. I, 22 marzo 2007, in RIVISTA DI DIRITTO INDUSTRIALE, 1998, PARTE II, at p. 313 ruling that exclusive rights allow owners to achieve a position within the market, which creates advantages that might be irreparably harmed by infringing activities, (free translation of the original text: "Il diritto di esclusiva, comportando

With this reasoning, courts have also granted injunctions, even as late as three months before the expiry of the patent by interpreting that the exclusive rights of patent holders include a right “to prepare itself for the loss, when the patent expires, of the monopoly granted by the patent, in the absence of promotional campaigns—which may include the taking of orders by wholesalers and pharmacists—on which generics may embark when the expiry date is approaching”⁵⁵⁴. Although probably an outlier decision, at least in one case, a court has held that not only should the requirement of *periculum in mora* not be presumed, but that it cannot be proved in cases in which the patentee does not have any product in the market working the patented technology⁵⁵⁵

However, some scholars and courts seem to disagree with the presumption in favor of irreparable harm which holds that harm should be considered “*in re*

l’incompatibilità di attività di produzione e commercializzazione da parte di concorrenti, consente al titolare di raggiungere risultati di penetrazione e di consolidamento della propria posizione di mercato...tale situazione, di indubbio vantaggio concorrenziale...verrebbe **irrimediabilmente svuotata di contenuto nel consentire il permanere, per il tempo necessario alla definizione del giudizio, di attività – illegittime- da parte di concorrenti i quali neppure debbono scontare gli oneri per l’attività di ricerca svolta dal brevetto, così potendo, addirittura, praticare politiche di prezzo più appetibili per i potenziali clienti”**). See also *Teva v. Ist. Gentili, Trib. Genova*, in RASSEGNA DI DIRITTO FARMACEUTICO, 2007, 605, deciding that the factor of irreparable harm, is not to be excluded when the harm caused by the launch of the generic can be easily calculated by comparing the market share of the originator before and after launching the generic, specially when there are available sale records of pharmaceutical products and especially of those reimbursed by the National Health Service. The court argued that damages are always extremely difficult to calculate with precision ex post and that this fact makes a preliminary injunction order preferable. See also EUROPEAN GENERICS MEDICINES ASSOCIATION, KRISTOF ROOX ED., PATENT-RELATED BARRIERS TO MARKET ENTRY FOR GENERIC MEDICINES IN THE EUROPEAN UNION, available at: http://www.marcasepatentes.pt/files/collections/pt_PT/1/178/EGA%20Report%20IP%20Barriers%20Generic%20Medicines.pdf, accounting for this and other similar cases across Europe.

⁵⁵⁴ Ibid at p.

⁵⁵⁵ See *Chiron Corp. v. SmithKline Beecham s.p.a.*, Tribunale di Milano, 27-01-98, in GADI, XXVIII, 1999, TOMO UNICO 3900, at p. 294-304, where the defendant argued that lack of commercialization of any product by the patentee would preclude the possibility of obtaining preliminary relief. The court held that even though lack of working of a patent is not to be considered as a precondition for preliminary relief, such fact makes it difficult for the patentee to prove the priority and in any case the impossibility of calculating the harm, which is mostly imminent and irreparable due to its effects precisely on the business activities which are directly or indirectly referred to the subject: “va sottolineato come lo scrivente non ritenga –in se- l’effettiva (diretta o indiretta) attuazione del brevetto quale presupposto della tutela cautelare, la legge non ponendo limiti al riguardo; tuttavia, l’assenza di quel dato fattuale rende assai disagiata per il titolare della privativa la possibilità di comprovare la priorità e –comunque- la impossibile determinabilità del danno, di regola imminente ed irreparabile proprio in relazione agli effetti sull’attività imprenditoriale direttamente od indirettamente riferibile al soggetto”. Ibid, ruling that the requirement of *periculum in mora* cannot be deemed to exist, in particular, when the patentee asks for a preliminary measure after several years of infringement have been tolerated; “e certamente singolare che Chiron agisca in via d’urgenza onde reprimere una contraffazione brevettuale tollerata da svariati anni: il *periculum in re ipsa* in materia di privative industriali non può giungere a svalutare detto presupposto dell’azione cautelare riportandolo all’esistenza stessa della contraffazione, potendo –comunque- (quantomeno) l’asserito contraffattore dedurre (e provare) specifiche circostanze che escludano l’urgenza della repressione della (asserita) lesione ed imponendo –dunque- al titolare del brevetto di far previamente accertare il proprio buon diritto in un giudizio ordinario, fuori delle strette cognitive proprie della sommarietà del procedimento”.

ipsa”; a condition that facilitates or substitutes any proof of the *periculum in mora* requirement⁵⁵⁶.

5.4 Willful and Inadvertent infringement

The state of mind of the infringer has a limited influence on the availability of injunctions which are generally awarded in spite of whether the infringement was or not willful⁵⁵⁷. Conversely, the state of mind is important for the purposes of obtaining damage compensation although the public character of the patent documents gives raise to strong presumptions of the culpability of infringement⁵⁵⁸.

Moreover, as it will be discussed in the next section, the current text of article 71 of the CPI makes compulsory licenses also available for infringers in good faith, a provision that opens the possibility of either applying for a compulsory license after infringement or to oppose against an infringement suit in both cases by arguing that infringement was in good faith.

The possibility of defending from an infringement suit by arguing the independent invention of the same patented technology is generally banned in patent law, although some laws provide for prior rights for those using the invention prior to the concession of a patent. For instance, article 68 of the CPI establishes prior rights for anyone that has been using the invention during the

⁵⁵⁶ See UBERTAZZI supra note 527, at p. 630-631, explaining how some court cases sustain that the requirement of *periculum in mora* subsists in all cases because 1) infringement always creates a real danger of losing market share (sviamento di clientele tendenzialmente irreversibile) and 2) because damages are difficult to calculate, whereas some scholars, among which Spolidoro, and other court decisions sustain that there should be a specific assessment of the requirement of *periculum in mora*.

⁵⁵⁷ See UBERTAZZI supra note 527, at p. 613 comparing articles 125 that requires culpability and article 124 which does not: “la condanna al risarcimento dei danni patrimoniali del convenuto per contraffazione presuppone il dolo o la colpa (in dottrina cfr. Da ultimo Sarti, AIDA 00, 226) a differenza delle sanzioni ex art. 124 cpi che non sono impedita dall’assenza dell’elemento psicologico (Vanzetti-Di Catlato, 510)”.

⁵⁵⁸ See Ibid, at p. 613: referring that the the public nature of patent (and other IP) documents in the corresponding offices has been interpreted as creating a presumption or at least a burden to search which does not allow infringers to argue innocent infringement, at least with the aim of excluding intentional conduct (colpa): (free translation of the original text: “Secondo la tesi maggiormente seguita dalla giurisprudenza, l’esistenza di un regime di pubblicità dei diritti titolati i) implica, se non una vera e propria presunzione di colpa da parte di chi ha violato la privativa (come afferma ad esempio App. Milano 13-12-1977, GADI 77, 844), almeno l’onere di consultare i registri di pubblicità (Trib. Milano 22-2-1993, ivi 93, 463; Trib. Milano 26-9-1974, ivi 74, 1108); e ii) non consente al convenuto di allegare l’ignoranza dei titoli di proprietà industriale per escludere la colpa (da ultimo v. Trib. Roma 15-11-1988, GADI 88, 838”). Ibid at p. 613: Certain isolated decisions holding that such presumption was not rebuttable or that it only could stand if the infringing conduct was also categorized as unfair competition have now been superseded, (free translation of the original text: “isolate sono rimaste le sentenze secondo cui la presunzione di colpa sussiste solo se nella condotta del violatore sono ravvisabili gli estremi della concorrenza sleale (Trib. Reggio Emilia 3-2-1972, ivi 72, 434) o secondo cui, all’opposto, sarebbe esistente una presunzione juris et de jure de conoscenza delle altrui esclusive (App. Milano 7-12-1976, ivi 76, 779))”.

12 months previous to the date of patent filing or priority date, that is, the possibility of continuing to use the invention, but limited to the scope of such prior use, which in practice limits the use of such exception⁵⁵⁹.

5.5 Other ex-post liability rules: compulsory licenses

With few changes, the CPI has preserved the existing provisions on compulsory licensing for patents which were already adapted to the TRIPS Agreement. The Italian previous patent laws had incorporated compulsory licenses provisions by the d.p.r. 26 febbraio 1968, n. 849, which implemented article 5-A of the Paris Convention and hence substituted the forfeiture of patents with compulsory licensing provisions for non working. The most important changes with respect to compulsory licenses operated in fact after the enactment of the TRIPS Agreement, which introduced the requirements of article 31.

Italian legislation includes provisions for compulsory licensing pursuant to the CPI in the following cases 1) non-working of invention⁵⁶⁰; 2) inventions dependent upon prior patented inventions⁵⁶¹; 3) special provisions for plant varieties⁵⁶²; 4) licenses of right⁵⁶³; 5) special provisions for a “voluntary license” mediated by the Ministry with regards to active ingredients covered by Supplementary Certificates of Protection⁵⁶⁴. In addition to these provisions of the CPI, there is the possibility of applying article 82 and national antitrust legislation for granting compulsory licenses of patents⁵⁶⁵.

However, and as it is the case in the international setting and in other countries, Italian compulsory licensing provisions have seldom been used⁵⁶⁶. This is often interpreted either as a proof of their undesirability or of the irrelevance of their

⁵⁵⁹ See article 68 of the CPI providing that whomever has made use of the patented invention within the twelve months prior to the patent application or the priority date, can continue to use such invention within the limits of the prior use: (free translation of the original text: “Chiunque, nel corso dei dodici mesi anteriori alla data di deposito della domanda di brevetto o alla data di priorità, abbia fatto uso nella propria azienda dell’invenzione può continuare ad usarne nei limiti del preuso”).

⁵⁶⁰ See article 70 of the CPI.

⁵⁶¹ See article 71 of the CPI. See also article 72 on common provisions with regard to compulsory licenses and article 199 on the procedure to issue a compulsory license.

⁵⁶² See article 115 of the CPI.

⁵⁶³ See article 80 of the CPI.

⁵⁶⁴ See article 81 of the CPI and also article 200 on the procedure for this license.

⁵⁶⁵ See also supra note 517, on the application of article 82 EC to a patent dispute in the U.K.

⁵⁶⁶ See for instance SCUFFI, FRANZOSI AND FITTANTE, supra note 540, at p. 376 ss., referring only 9 cases in which a compulsory license was issued, 2 of them with regards to a temporary regime applicable when the duration of patents was extended from 15 to 20 years and 7 under the case of non-working within the 3 years after the issuance of the patent and none case for dependent patents. See also Paola Frassi, *Innovazione Derivata, Brevetto Dipendente e Licenza Obbligatoria*, RIV. DIR. IND. 2006, 06, 212, at footnote 12, citing only two cases of compulsory licenses for dependent patents analyzed by the administrative authority; Tar Lazio, 30 Novembre 1981, GADI, 1718 and Tar Lazio, 7 gennaio 1985, GADI, 1881.

actual use -especially in the law and economics literature where emphasis is given to the role that compulsory licensing provisions play on setting the terms of bargaining between the parties- given that the threat of using a compulsory license would induce parties to negotiate⁵⁶⁷. Nonetheless, this argument would only be valid insofar as compulsory licensing provisions could effectively enable a would-be-licensee to launch a credible threat to opt for a compulsory license, which is dubious in the Italian case for the reasons we will provide. Less often, however, scholars recognize that such failure to use the provisions could be just a consequence of their inappropriate design⁵⁶⁸.

Among the problems with the design of compulsory licensing provisions in Italy it is probably the ban for infringers to apply for a compulsory license⁵⁶⁹. Such prohibition importantly limits the use of compulsory licensing, in the light of the difficulties associated with careful previous patent search and especially in such industries where patent thickets are important and inadvertent infringement is likely to occur. By effect of the CPI, it is now permitted that infringers opt for a compulsory license when infringement happened in good faith⁵⁷⁰. However, the interpretation of “good faith” in the context of

⁵⁶⁷ See Ann Christoph, *Patent Trolls – Menace or Myth?*, in PATENTS AND TECHNOLOGICAL PROGRESS IN A GLOBALIZED WORLD, MPI STUDIES ON INTELLECTUAL PROPERTY, COMPETITION AND TAX LAW, N° 6, at p. 361, arguing that “compulsory licenses are the only exception to this rule. Amounting to an expropriation, which requires extreme circumstances, compulsory licenses are however rarely granted”. This argument is described in similar terms below, for the TRIPS controversy. See infra notes 771 and 772 and accompanying text.

⁵⁶⁸ See Paola Frassi, supra note 566, arguing that conversely, the reasons why compulsory licensing provisions have failed to deliver can be better found in the requirements for applying to such compulsory licenses as well as the complicated procedures which do not make this option appealing for potential applicants; (free translation of the original text: “Diversamente, credo che le ragioni dell’insuccesso dell’istituto vadano ricercate principalmente in due direzioni: la prima, risiede nelle condizioni per la concessione della licenza e la seconda nella farraginosità del procedimento di concessione della medesima. Per usare un’espressione efficace anche se non rigorosa, direi che il procedimento di concessione della licenza obbligatoria, formalmente devoluto al Ministero dell’Industria ma in sostanza amministrato dall’Ufficio Italiano Brevetti e Marchi, è decisamente poco attraente”). See also, Julian-Arnold, supra note 213, referring to compulsory licenses for dependent patents and arguing that: “partially due to safeguards implemented by various countries, this type of compulsory license is rarely granted”.

⁵⁶⁹ See Giorgia Floridia, *Il Codice Della Proprietà Industriale Fra Riassetto E Demolizione*, DIR. INDUSTRIALE, 2008, 2, 105, arguing that one of the main obstacles against the use of compulsory licensing provisions is the prohibition for infringers to apply for one, which is now attenuated with the possibility that good faith infringers could apply, (free translation of the original text: “Nella materia delle licenze obbligatorie il diritto vivente ha messo in evidenza che l’istituto resta sostanzialmente inapplicabile se viene considerata ostativa in modo assoluto la condizione che il richiedente la licenza non sia contraffattore del brevetto che viene chiesto in licenza dovendosi intendere per tale quello che, prima della presentazione della domanda di licenza, abbia fabbricato e/o venduto il prodotto oppure abbia attuato il procedimento brevettato. Per rendere questa condizione meno preclusiva, e per restituire quindi effettività all’istituto, si è disposto che la licenza possa essere concessa a chi abbia agito in buona fede”).

⁵⁷⁰ See T.A.R. Roma Lazio sez. III, 11 marzo 1998, n. 606, a decision prior to the coming into force of the CPI which interpreted that infringers could not apply to compulsory licensing provisions for lack of working and dependent inventions: “La contraffazione, cioè la riproduzione e l’imitazione degli elementi essenziali e caratteristici dell’idea coperta da brevetto, è dunque presupposto ostativo al rilascio di qualsiasi licenza obbligatoria, compresa quella per le c.d. invenzioni dipendenti. Il citato art. 54 bis non

infringement would be a particularly difficult one⁵⁷¹. No case has so far analyzed a request for compulsory licensing where infringement occurred in good faith⁵⁷².

The Italian legislation also establishes the possibility to opt for a license of rights, established by article 80 of the CPI⁵⁷³. Finally, there is an important provision for voluntary licenses over active ingredients, subject to the mediation of the Ministry of Production, which is established in article 81 of the CPI that probably aimed at putting end to a conflict between particularly contrasting and primordial interests: those that sustained that an exclusive right over the active ingredients and those who retained that none right existed over such ingredients⁵⁷⁴. Such license represents a mixed type between voluntary and compulsory in the sense that it can be accorded or refuted by the authority

opera nessuna distinzione al riguardo: l'ipotesi di licenza per mancato utilizzo viene disciplinata dal primo comma solo come fattispecie speciale, in relazione alla quale viene prevista una specifica causa ostativa al rilascio della licenza, costituita dalla non imputabilità della mancata o insufficiente attuazione del brevetto. Il contraffattore, pertanto, è sfornito in ogni caso di una legittima pretesa a sfruttare l'invenzione. Lo spirito della legislazione sui brevetti non consente concessioni al contraffattore. In questo senso si è già espressa chiaramente la sentenza n. 149/1994 della IV Sezione del Consiglio di Stato...". See article 72, n. 3 of the CPI, providing that compulsory licenses cannot be asked by infringers unless they prove they infringed in good faith. Compare with Michael Meller, *International Patent Litigation: A country by country analysis*, Bureau of National Affairs, BNA Books (2004), at p. DK-15, commenting the Danish Patent Act (Sections 45-50) where "the claim for a compulsory license is available for a defendant in an infringement case concerning the same patent for which a compulsory license is claimed. However, a court decision giving the infringer a compulsory license has no effect for the period of time before the infringer claimed such license". This results in a middle-ground solution whereby an infringer can opt for applying for a compulsory license but is subject to liability for infringement for the time before such application.

⁵⁷¹ See UBERTAZZI, *supra* note 527, at p. 462, quoting from Sena, *RIVISTA DIRITTO INDUSTRIALE*, 05, 300, who sustains that good faith should be understood as a reasonable doubt with respect to the validity and scope of the patent and not to the unawareness of the existence of a patent: "la possibilità di concedere licenze obbligatorie al contraffattore in buona fede va riferita non all'eventualità di un'ignoranza (che sarebbe comunque colpevole) del brevetto anteriore, ma all'esistenza di un ragionevole dubbio circa la validità e l'ambito di protezione del brevetto".

⁵⁷² Based upon a research on the following databases: Guritel, De Agostini and De Jure, last accessed on July, 2009, and using the following search criteria (contraffazione OR contraffattore AND "buona fede").

⁵⁷³ This provision was originally introduced by the Novella 1979, on the basis of article 44 of the CBC, See GIORGIO FLORIDIA AND PAOLA CAVALLARO, MARCHI, INVENZIONI E MODELLI, CODICE E COMMENTO DELLE RIFORME NAZIONALI (D.L. 4 DICEMBRE, 1992, N. 420), GIUFFRÈ ED. 1993, at p. 220. Similar provisions exist in several countries, including the U.K., see *supra* notes 514 and 515. While this provision could be defined as a "put" option in law and economics terms, its effects in practice remain negligible, probably due to an insufficient incentive for patent owners to offer a license for their patented invention instead of retaining the right to opt for a "property rule" and thus, a "right" to hold-up potential infringers in exchange for a reduction of the patent fees amounting to a 50%. Hence, similar proposals that seek to expand the public domain by giving incentives to patent owners to put their inventions either directly in the public domain or at least in the paid public domain (dominio pubblico pagante) should construct upon the experience of systems providing for licenses of right that are not used in practice.

⁵⁷⁴ See Giorgio Floridia and Marco Lamandini, *Commento a Merck-Principi Attivi, misure cautelari, e Merck & Co., Inc V. ACS Dobfar s.p.a., CPA Chemical Pharmaceutical Generic Association*, in *IL DIRITTO INDUSTRIALE*, III, at p. 281. See also Floridia, in AUTERI ET AL., *supra* note 551, at p. 261.

but it is yet originated in the common will of the parties⁵⁷⁵. Its inclusion in the CPI and the fact that such license is not a traditional compulsory license, alleviates a potential tension between antitrust and patent law, and also has the consequence that an abuse of dominant position in an antitrust sense would not be needed in order to apply this rule⁵⁷⁶. The license has been deemed as a compromise that put an end to a conflict that arose due to the over-extension in terms of duration of the Italian Supplementary Certificates of Protection with respect to the duration of the same Certificates in Europe⁵⁷⁷, but it can also be viewed as a middle path between obligatory and voluntary licensing, in which the antitrust agency intervenes, as some U.S. courts have done, only if negotiation between the parties fails.

6 Conclusions

This chapter aimed at identifying and analyzing the use of *ex-post* liability rules for patent protection in their legal –international and national- context. Several observations emerged from a comparative description of the provisions under analysis. The starting point of this chapter was the importance of broadening

⁵⁷⁵ See Floridia & Lamandini, *ibid*, at p. 281, arguing that the license is voluntary not because it can be arbitrarily granted or denied but rather because it can only derive from the procedure of negotiations established by the law, which guarantee that both the interests of the patent owner and those of protecting a national market for the exportation of active principles: (free translation of the original text: “è volontaria, ma non perché possa essere arbitrariamente concessa o rifiutata, ma perché è solo dal concorso delle volontà delle parti che può scaturire quel regolamento negoziale che integra le condizioni previste dal legislatore affinché la licenza costituisca un giusto contemperamento fra l'interesse del titolare della privativa e l'interesse alla salvaguardia di un mercato nazionale di produzione di principi attivi destinati all'esportazione”).

⁵⁷⁶ See *Ibid*, arguing that the legislator tried to avoid the use of a rigid instrument such as compulsory licensing provisions with the protection of patented inventions, except in the case of unreasonable denial to negotiate under the procedures provided for by the CPI: (free translation of the original text: “il Legislatore ha evitato di interferire nell'interpretazione delle norme che definiscono l'ambito di protezione dei certificati complementari di protezione; ha evitato di incrociare la tutela brevettuale con la normativa antitrust mediante lo strumento rigido della licenza obbligatoria; ma ha messo a disposizione delle contrapposte categorie un tavolo di conciliazione che favorisse la concessione di licenze fermo restando il deferimento all'Autorità Garante nel caso di rifiuto ingiustificato”. See UBERTAZZI, *supra* note 527, at p. 482, referring the discussion on whether compulsory licensing entails to consider that a refusal to license is legal or not. “Il meccanismo della licenza volontaria mediate presuppone che il rifiuto di concedere la licenza non sia in se illecito. Da tempo e tuttavia in corso un ampio dibattito sulla questione se in alcuni casi il rifiuto di licenza non possa essere illecito: vuoi seconda la dottrina del patent misuse...vuoi piu in generale secondo il diritto antitrust”; and citing “ACGM 14388/2005, Boll. 23/2005, confermata da TAR Lazio 9-11-2005, IDI, 06, 262; AGCM 15175/2006, Boll. 6/2006; CG 26-7-98, C-7/97”

⁵⁷⁷ See Floridia and Lamandini, quoting the decision of the T.A.R. Lazio 7 marzo 2006 which held: “il caso in esame riveste caratteri di unicità per il contesto normativo che lo disciplina, caratterizzato da una eccessiva durata del CCP italiano” e secondo la quale, per effetto della norma sulla licenza “rimediabile” “i CCP italiani ancora in vigore risultano meno efficaci in quanto circoscrivono al territorio italiano il godimento pieno della privativa da parte dell'impresa titolare”.

the concept of *ex-post* liability rules as applied to patent law. In this sense, the chapter encompassed both the study of traditional compulsory licensing provisions as well as the cases when a court denies injunctive relief and opts for using a liability rule, a case that some authors describe as a compulsory license while some others do not. Following this broader concept, the chapter examined the main *ex-post* liability rules in patent law, within three specific case studies of national law: the U.S., the U.K. and Italy.

In the U.S. the emphasis of scholarly work and case law is given to the problems of patent hold-ups, the strategic use of patenting by businesses characterized as “trolls” and the increasing multi-component nature of current technologies. In contrast and until recently, U.S. patent law seemed to sustain the view that patentees are free to choose whether to practice or not their inventions and should not, in general, be compelled to license them. This view is reflected in the absence of specific regimes of compulsory licenses for non-working or for dependent patents but has been lately changed, at least partially, under the influx of the *eBay* decision.

The examination of U.K. patent law and practice, serves to evidence the interface between remedies-based and compulsory licensing provisions. Whereas injunctions can be denied under equitable considerations, it has been commonly argued that problems of strategic use of patents, risk of blocking further technologies and lack of use of technologies could be better dealt with through the use of compulsory licensing provisions. Nevertheless, the denial of injunctions can also serve to tackle cases of “oppression” by right holders⁵⁷⁸.

The Italian case highlights the differences in the conception of rights and remedies within civil law countries yet the surprising similarity of arguments which have been produced with respect to IP remedies. A particular reference was made to preliminary injunctions, which frequently put an end to potentially long trial procedures performing a role similar to property rules in other systems.

The first observation that emerges from this analysis is that common law countries have historically conceived injunctions as an equitable remedy and hence subjected the award of this remedy to a factual test that aims at striking a balance between the particular circumstances of the case. Nevertheless, a glimpse into the law as it is actually practiced has showed how injunctions have been habitually awarded in patent cases while the conception of remedies has evolved -mainly but not only through the use of economic arguments- towards

⁵⁷⁸ See *Jaggard v Sawyer*, supra note 293, arguing that: “It is important to bear in mind that the test is one of oppression, and the court should not slide into application of a general balance of convenience test”.

favoring a strong or an automatic use of a property rule. This situation was more extremely in the U.S. and it was recently reversed by the *eBay* decision in 2006.

The situation is, in appearance, outstandingly different in civil law countries, due to a diverse conception over both rights and remedies. Injunctions are not considered an equitable remedy and patent statutes as well as procedural laws do not subject their award to a factual inquiry. Although patent statutes frequently grant judges the power to award injunctions without compelling them to do so in all cases, the law in action seems to reflect the view that a plaintiff whose patent right is violated (infringed) is “entitled to” or has a “right to” obtain injunctive relief. Moreover, the reasoning of courts in patent infringement cases has tended to favor a strong property rule, even in the case of preliminary injunctions, an outcome that could pose particular problems, especially in certain industries.

In fact, understanding the dynamics of remedies is not only important and difficult in the light of the remarkable differences between different countries, but also with regard to their theoretical treatment, where remedies are often categorized either as a procedural matter or as part of substantive law:

“Part of the difficulty with conceptualizing remedies as a field has been that remedies fits uneasily between the categories of substance and procedure. Remedies are central to litigation, but except for details at the edges, like the procedural rules for preliminary relief, remedies in the modern idea are not part of the law of procedure. The Supreme Court has correctly held that the measure of damages is substantive for Erie purposes. The same should be true of the standards for granting injunctions, although that question appears not to have been litigated. What or how much a plaintiff recovers is part of plaintiff’s substantive entitlement and not simply a rule for processing disputes”⁵⁷⁹

A second observation regards the importance of taking into consideration the interface between rights and remedies in order to understand the enhanced concept of *ex-post* liability rules. A remarkable difference between civil law and common law countries with regard to the legal treatment of rights and remedies consist precisely on whether it is the remedy or the right that sets the starting point for such analysis. In spite of such marked difference, none form of reasoning –either one focusing on remedies or one focusing on rights- could be *a priori* judged as more efficient. As it has been already noticed, it would be rather the capacity to adapt to the demands of society – in the case of patent law critically influenced by the dynamic evolution of science and technology- that

⁵⁷⁹ Laycock, *supra* note 292, at p. 166 (footnotes omitted).

could determine whether a system that focuses on the remedy or one that focuses on the right is better able to cope with such new necessities⁵⁸⁰. A similar argument could be made with regard to the choice of each country of having one or another type of compulsory licenses or both, as in the U.K. case.

With regard to the apparent similarities and differences between legal systems, the chapter also evidenced how the interpretation of Italian courts of a presumption of "*periculum in mora*" in *re ipsa*, has similar outcomes to the application of an "automatic injunction rule" in the U.S., even in spite of the different setting (preliminary or final injunctions). On the one hand this interpretation affects the use of different presumptions with regard to whether damages would be irreparable either in a final or in a preliminary injunction. On the other hand this particular aspect shows the importance of studying each legal provision in its context, for instance, the Italian judicial practice of granting preliminary injunction which might more relevant for the purposes of investigating the use of property rules and its comparison with other countries, than other practices, including those related to final injunctions.

Finally, this chapter identified several common concerns with regard to the use of liability rules across several jurisdictions and times, namely, the difficulties and costs that a court (or agency) would face in order to calculate damages that substitute an injunction and the interpretation of the sound grounds to provide a compulsory license. This chapter touched upon some law and economic aspects of the problems surrounding the use and design of ex-post liability rules in different patent systems. The next chapter focuses on the examination, under a law and economics viewpoint, of the grounds for granting *ex-post* liability rules, as they were identified in this chapter.

⁵⁸⁰ See DI MAJO, *supra* note 320, at p. 15, arguing that neither a reasoning conducted from the remedy nor one starting from the right can be a priori judged to better results, as this would depend on how easily the legal system might be adapted to the particular circumstances; (translation of the original text: "Non è detto, ad esempio, che ragionare per rimedi porti, in punto di tutela, a maggiori progressi rispetto al ragionare per diritti. Potrebbe essere il contrario. Tutto sta nel vedere con quale capacità di adattamento l'ordinamento dato è disposto a qualificare diritto un determinato interesse oppure ad apprestare per esso un rimedio adeguato di tutela").

CHAPTER IV

EX-POST LIABILITY RULES: WHEN SHOULD THEY BE USED?

“The operations of patent sharks sometimes compel an inventor to obtain patents for articles which are never meant to be placed on the market. A fellow often gets up a machine, and somebody else comes along, and by getting patents through for certain parts, can give the inventor a great deal of bother and make him pay well, even if the inventor gets control of it”⁵⁸¹

Thomas Edison, 1898

1 Introduction

The preceding chapters have sustained that strategic behavior and hold-ups are, in general law and economics, a key ground calling for the use of liability rules⁵⁸². The legal overview of patent law also confirms a rather ample space for the use of *ex-post* liability rules across different jurisdictions. Nevertheless many law and economics scholars continue to disagree about whether transaction costs and holdups in the context of patented technologies constitute market failures and the frequency in which high transaction costs and strategic behavior occurs, among other controversial points. Moreover, the patent economics literature has confined the problem of strategic behavior to the specific case of patent hold-ups while directing most attention the even more

⁵⁸¹ Interview in Scientific American 78 (2): 19. Available at <http://www.myoutbox.net/posa78n.htm>; last accessed on March 20, 2009. See also McDonough, *supra* note 430, describing Thomas Edison as a “king of trolls” in a recent article defending the business model of trolls: “For decades, this person held the U.S. record for the number of patents held by an individual— an astounding 1,093. This person primarily “described himself as an inventor,” and although many of his inventions were incorporated into products, he made a fortune from many patents that he never practiced. Not only did this man not practice nor have any intention of practicing many of his inventions, but he actually invented items specifically to deter innovation. This king of trolls was none other than Thomas Edison”.

⁵⁸² See Chapter I for the general concepts of transaction costs and holdups and their application to the patent area.

narrow study of entities such as “patent trolls” rather than to strategic patent behavior in general.

As a consequence, there is vast discrepancy with regards to the convenience of using patent liability rules. Moreover, the majority of law and economics contributions have focused on U.S. law and practice, in noticeable contrast with the overly importance of international patent harmonization. This chapter seeks to contribute to these debates by confronting the above mentioned economic insights, which constitute the theoretical grounds for applying *ex-post* liability rules with case studies arising from recent patent discussions in the U.S. and Europe.

The second section addresses the problem of patent hold-ups from the perspective of the specialized literature on the economics of patents hold-ups. The third section discusses the *eBay* and subsequent litigation within the U.S. as a case study of patent hold-ups and strategic behavior and argues for the use of a concept broader than patent hold-ups as treated in the economics literature. The fourth section refers to an even broader context for patent strategic behavior as it has been recently described in the European context. The fifth section examines the problems raised both in the U.S. and Europe while drawing policy conclusions in favor of focusing the discussion on the conduct rather than on the nature of the entity engaging in strategic behavior as well as proposing a concept of strategic behavior broad enough to encompass potential socially inefficient behavior and yet, narrow enough to avoid distorting innovation incentives.

2 Patent Hold-ups: economic theory

Recent scholarly work has argued that patent hold-ups might firstly impose losses in terms of static efficiency which are not sufficiently offset by expected dynamic efficiency gains in term of innovation incentives⁵⁸³ and that secondly; they might impose losses in terms of dynamic efficiency in the sense of blocking efficient subsequent innovations⁵⁸⁴. Nevertheless, important divergences subsist among scholars with respect to the actual effects of hold-ups on efficiency. Even in a general non-patent context, some authors have argued that bilateral hold-ups are not necessarily inefficient but would rather impose only distributional

⁵⁸³ See above Chapter I, Section 4.2.2. “Patent Hold-ups”.

⁵⁸⁴ See Cotter, *supra* note 38.

concerns. On the contrary, it is largely acknowledged that inefficiencies do arise when negotiations are multilateral⁵⁸⁵.

Either in a bilateral or a multilateral case, however, hold-ups have been mainly studied in the context of incomplete contracts, when a party making specific investments is prone to opportunistic behavior by its counterpart in a contract. Specific investments are those that cannot be easily or at all translated into another useful use. Hence, a firm making specific investments which constitute sunk costs, becomes a potential target for strategic or opportunistic behavior⁵⁸⁶. The rational response to the risk of opportunistic behavior would range between the use of contracts and vertical integration between firms⁵⁸⁷. However, as explained with more detail below, it is doubtful that contracts might avoid all risks of strategic behavior⁵⁸⁸. In addition, vertical integration would not necessarily be desirable in some cases; especially those related to certain technological sectors and might as well give raise to further competition problems⁵⁸⁹.

Translated outside the realm of contracts, the risk of opportunistic behavior might arise whenever a party makes a specific investment. When the problem is subsequently applied to the patent context, which is characterized by an increasing prevalence of transaction costs and complex negotiations that frequently fail, the potential risk of being exposed to opportunistic behavior, including hold-ups is even greater.

In the patent context, specific investments are usually made by 2nd innovators in the development of products that embody some patented technology, either in the form of an improvement of a previous patented technology or through its

⁵⁸⁵ See *ibid*, at footnotes 60-61 and accompanying text, also citing from Lloyd Cohen, *Holdouts*, in 2 THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 239 (1998).

⁵⁸⁶ See Benjamin Klein, Robert Crawford and Armen Alchian, *Vertical Integration, Appropriable Rents, and the Competitive Contracting Process*, 21 J. LAW & ECON. 297 (1978), at p. 298 explaining that: “when a specific investment is made and such quasi-rents are created, the possibility of opportunistic behavior is very real”.

⁵⁸⁷ *Ibid* at 298, arguing that: “as assets become more specific and more appropriable quasi rents are created (and therefore the possible gains from opportunistic behavior increases), the costs of contracting will generally increase more than the costs of vertical integration”.

⁵⁸⁸ See Lemley & Shapiro, *supra* note 162, at p. 2015, noticing that: “of course, patent pools do sometimes overcome these obstacles and successfully form. We simply note that the transaction costs can be substantial and that the presence of nonmanufacturing patent owners makes the formation of successful pools harder”. See also Shapiro, *supra* note 5, at p. 8, arguing that: “I see relatively little that private companies can do to overcome the hold-up problem without reform of the patent system itself. But there is quite a bit they can do to solve the complements problem, which itself is greatly exacerbated by the hold-up problem”.

⁵⁸⁹ See Denicolo et al., *supra* note 160, discussing the possibility that certain patent policies, especially the denial of injunctive relief, for non-manufacturing companies, might have on the incentives for vertical integration as well as the potential harms arising from such vertical integration.

incorporation in a multi-component product. If *ex-ante* negotiations for a license fail, or, as it has been recently argued, do not happen because of problems in the disclosure and notice function of patents, many innovators might refrain from making such specific investments in the fear of being held-up, and hence many technological improvements or new products might not come into existence or might be delayed. Dynamic efficiency losses then may follow, especially because of the following conditions⁵⁹⁰.

Firstly, and although the patent system aims at enabling patentees to profit and extract rents from their patented inventions, it is doubtful that extracting rents from hold-ups will benefit society in terms of providing more incentives for 1st innovators, especially if the costs of such greater capture are taken into account⁵⁹¹. Secondly, most 2nd innovators are not merely users of technologies but rather innovators and the patent system does not only aim at fostering 1st innovations but also at the development of useful new applications and improved technologies⁵⁹². Thirdly, the complement characteristic of many patented technologies might lead to the problem of Cournot complements by which the final product is priced above its social optimal⁵⁹³. Fourthly, hold-ups might also add up to the losses due to a double marginalization problem, when both upstream innovator and downstream user are monopolists and as a consequence net social benefits will be lower⁵⁹⁴.

A specific case of hold-ups might arise under the above mentioned case of the negotiation of technical standards comprising several patented technologies. These cases are increasingly important in today's world as technical standards have become ubiquitous and of especial value for industries relying on compatible products and the use of networks and interfaces. When negotiations for the implementation of technical standards take place, it is important for all firms to know which patent(s) are essential for the use of such standard. Any firm making specific investments in developing a product according to the

⁵⁹⁰ See Cotter, *supra* note 38, at p. 20.

⁵⁹¹ *Ibid* at p. 20-21 arguing that: "there are reasons to doubt that the ability to extract substantial rents by practicing holdup produces much, if any, social benefit in terms of dynamic efficiency (...)social welfare deficit, given the magnitude of the short-term social costs. And network effects may make it hard for users to avoid these costs by switching to alternative technologies".

⁵⁹² *Ibid*, at p. 21: "enabling patentees to extract excessive rents from downstream users may inhibit investment on the part of downstream firms in developing new applications for patent- or standard-specific technologies. In a sense, producers of end products are not merely *users* of the patented invention, but rather might be thought of as sequential innovators".

⁵⁹³ *Ibid*, at p. 21 "when multiple patents read on an end product, as will often be the case, holdup may exacerbate the "Cournot complements" problem".

⁵⁹⁴ *Ibid*, at p 23, arguing that: "if both patentee and downstream user have some degree of market power, another consequence of patentees extracting "too much" rent may be to exacerbate this "double marginalization" problem. It is conceivable, of course, that in such a case the social benefits of inducing upstream innovation outweigh the social costs; the point is merely that holdup exacerbates those costs, and thus makes it marginally less likely that there is a net social benefit".

standard could be otherwise subject to opportunistic behavior if disclosure does not take place before the development of the product. In fact, the adoption of a standard reduces the available options *ex ante* in the sense that once the standard is set and the industry decides to abide to such standard, the involved patents would acquire a value they did not have before. Such value is not inherent to the technology but rather derives from the specific investment made by firms in developing their products according to such standard.

Hence, whereas avoiding the use of the patent is not costly *ex-ante*, it will be very costly after the standard is set. The adoption of contractual terms such as FRAND or RAND⁵⁹⁵ precisely attempt to solve through a contractual commitment, the potential emergence of strategic behavior⁵⁹⁶. However, it is still unclear that such contractual commitments might completely avoid hold-ups as it is precisely in the context of SSO's negotiating technological standards that some firms have lately refused to abide to previously adopted commitments to license⁵⁹⁷.

The strategic behavior arising in this context that illustrates the close interface between antitrust and patent policy is often known as "patent ambush"⁵⁹⁸. This conduct can be defined as a sub-type of patent hold-up that occurs in the context of negotiations for technological standards within an SSO when a

⁵⁹⁵ These almost equivalent terms describe licensing commitments adopted in the context of negotiated technical standards standing for a promise to license on Reasonable and Non-Discriminatory (RAND) and Fair, Reasonable and Non-Discriminatory (FRAND) Terms, respectively.

⁵⁹⁶ See Joseph Scott Miller, *Standard Setting, Patents, and Access Lock-in: RAND Licensing and the Theory of the Firm*, 40 IND. L. REV. 351, 366-67 (2007), arguing that: "The holdup plays on a gap in projected returns that depends on continued access to the standardized technology: once the standard is set, users invest in making goods and services that use the specification. If a user were then denied access to the standard technology and the standard-compliant assets were sold at salvage value, the return on those investments would be far lower than first projected (when continued access was assumed). After all, if other providers enjoy continued access to the standard and the interface-dependent market thrives, how much will consumers pay for the shut-out party's nonstandard product? This scenario is not unique to the standards setting context. Economists have long called the problem "asset specificity." The RAND promise, which is an early agreement on the framework for later negotiation, is timed to take advantage of the tempering effect of the veil of ignorance and is designed to prevent this holdup problem".

⁵⁹⁷ See Pat Treacy and Sophie Lawrance, *FRANDly fire: are industry standards doing more harm than good?* JOURNAL OF INTELLECTUAL PROPERTY LAW & PRACTICE, 2008, Vol. 3, No. 1, commenting on various cases including the Rambus and Qualcomm cases in the U.S. as well as the investigation by the European Commission and other cases in Germany and the U.K.

⁵⁹⁸ Whereas an ambush is often referred as a conduct rather than the entity that practices it, this latter is often assimilated to a "troll". There are multiple bibliographic references on SSO's, patent ambushes, FRAND and RAND commitments. For a description of the role of SSO's in the modern patent system see Mark Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, BOALT WORKING PAPERS IN PUBLIC LAW, PAPER 24, available at: <http://repositories.cdlib.org/boaltwp/24>. For the problem of hold-ups in the standard setting context see also Cotter, *supra* note 38 and Lemley & Shapiro, *supra* note 162. For a view contrary to Lemley and Shapiro, see Miguel Rato & Damien Geradin, *Can Standard-Setting Lead to Exploitative Abuse? A Dissonant View on Patent Hold-up, Royalty Stacking and the Meaning of FRAND*, 3 EUR. COMPETITION J. 101, 107 (2007).

member of such organization misleads other members into the adoption of a standard that is or will be covered by a patent or patents that were not disclosed at that time⁵⁹⁹. The conduct consists in deceiving other members or in keeping patents hidden until the standard is set and lock-in occurs. In this sense, a patent ambush is a form of hold-up insofar as investments are sunk and SSO's members are locked into the standard. Often, an entity engaging in patent ambush makes use of filling strategies, for instance, the filing of continuation or divisional applications in order to deceive; or else keeps her patent hidden until the standard is set⁶⁰⁰.

The practice of filling continuation applications is in fact recalled as the key reason that allowed *Rambus* to maintain its patent secret until the DRAM standards were developed⁶⁰¹. Additionally, in some cases such as *Rambus* itself, where after a long procedure that extended over 9 years the EPO decided to revoke *Rambus'* patent, the involved patents might be of dubious validity⁶⁰². Similar cases have been tackled either through the application of antitrust law, equitable defenses against enforcement of such patents or the application of unfair competition laws, illustrating the complementary nature of such statutes⁶⁰³.

⁵⁹⁹ See Cotter, *supra* note 38, at p. 43.

⁶⁰⁰ See Herbert Hovenkamp, *Patent Continuations, Patent Deception, and Standard Setting: The Rambus and Broadcom Decisions*, UNIVERSITY OF IOWA LEGAL STUDIES RESEARCH PAPER NO. 08-25 (JUNE 2008), at 28-29, available at <http://ssrn.com/abstract=1138002>

⁶⁰¹ See Harhoff et al., *supra* note 165 at p. 95-96. Whereas the FTC found that Rambus had "unlawfully monopolized the markets for four computer memory technologies that have been incorporated into industry standards for DRAM chips", the Court of Appeals decided for...Information on the case Docket No. 9302 *In the Matter of Rambus Incorporated* is available on: <http://www.ftc.gov/os/adjpro/d9302/index.shtm>

⁶⁰² See Harhoff et al., *supra* note 165, at footnote 47 and accompanying text. See also press release by EPO, informing about the revocation of patent 0525068 available at: <http://www.epo.org/about-us/press/releases/archive/2004/12022004.html>, last accessed on August 13, 2009. However, the patent remains enforceable, for instance in Italy: http://v3.espacenet.com/publicationDetails/inpadoc?CC=EP&NR=0525068A1&KC=A1&FT=D&date=19930203&DB=EPODOC&locale=en_EP

⁶⁰³ See Thomas Rosch, *Remarks before the Newport Summit on Antitrust and Economics*, 2008 WL 2312363 (F.T.C.) referring the case of Negotiated Data Solutions LLC, FTC File No. 051 0094 (Consent Accepted For Public Comment, January 23, 2008), available at <http://www.ftc.gov/opa/2008/01/ethernet.shtm> ("N-Data") whereby N-Data acquired patents held by National Semiconductor Corporation in the knowledge that this latter had made a one-time \$1,000 licensing commitment. In this case, the FTC applied Section 5 of the FTC Act, alleging that N-Data's conduct was an unfair method of competition and an unfair act because after the industry committed to the related standard N-Data refused to license in the above mentioned terms and demanded a higher royalty. See also the STATEMENT OF THE FEDERAL TRADE COMMISSION, IN THE MATTER OF NEGOTIATED DATA SOLUTIONS LLC, FTC File no. 051 0094 at 5-6, available at <http://www.ftc.gov/os/caselist/0510094/080122statement.pdf>, arguing that: "in the standard-setting context with numerous, injured third parties who lack privity with patentees and with the mixed incentives generated when members may be positioned to pass on royalties that raise costs market-wide contract remedies may prove ineffective, and Section 5 intervention may serve an unusually important role".

Summing up, the risk of being held-up can occur either in a bilateral or in a multilateral context, and both within or outside negotiations of technical standards. In all these cases, incentives for 2nd innovators might nevertheless be affected. However, the disagreement of scholars over the economic effects of hold-ups is even more acute in the case of patents.

2.1 Economics of patent hold-ups: the Lemley and Shapiro model

Different economic models have been used to illustrate the problem of patent hold-ups. Some models attempt to study the impact of the availability of injunctive relief on negotiated royalties under a game theoretical approach considering that the outcome of negotiations depends on the threat point of each party, which is the value a party would obtain in case negotiations fail. The threat point of each party is itself dependent upon a number of relevant variables. The economic models described in this section aim at understanding how the availability of a property or a liability rule affects such threat points.

One such model foresees a patentee (1st innovator) that develops a technology which is incorporated in a downstream product by a potential infringer (2nd innovator)⁶⁰⁴. By the time a 2nd innovator develops the downstream product that infringes on the patented technology -at some cost- she might either be unaware that such technology is patented or might have doubts with regards to whether her product infringes the technology⁶⁰⁵.

Parties might negotiate *ex-ante* for a license, but if those negotiations fail, the patentee sues the 2nd innovator. The court has to determine whether the patent is valid and whether the product infringes the patent while some litigation costs will be imposed on the parties. Additionally, the final outcome of litigation is unknown to both parties and each of them will have some expectations from the results of the trial.

⁶⁰⁴ See the model developed by Lemley and Shapiro, *supra* note 162. See also critics developed by Denicolo et al., *supra* note 160 and Elhauge, *supra* note 38. The models principally illustrate the strategies that interested parties can adopt, the relevant variables that influence their payoffs and the decisions they would adopt under standard assumptions of rationality. Although the above mentioned models refer to a case of 1 upstream patentee and 1 downstream manufacturer, with some changes the results might also be applied to the context of multi-parties.

⁶⁰⁵ The reasons why a firm designs a product using a patented invention range from the willful infringement of the patented invention to its independent invention and might be as well affected by the confluence of patent strategies including delays in publication, filing strategies including the modification of patent applications to include the infringing product, the file of divisional applications or continuations with important differences from the previous patent that might deceive 2nd innovators or the case in which a 2nd innovator is simply unaware of the patent or even if aware, has a reasonable belief that the product is not infringing.

Before the final decision, and if the plaintiff has asked for it, the court might decide whether to award or not a preliminary injunction. Depending on the costs of litigation, expected duration, outcomes and cost from the trial, parties could also negotiate on the basis of this preliminary decision and reach a final settlement⁶⁰⁶. If litigation continues there is some probability that the court declares the patent valid and infringed and if this happens, the court will usually award damages as well as grant a final injunction. Whereas before *eBay*, the probability that the court awarded an injunction was approximately 100% when the court found the patent valid and infringed, after *eBay* there is some probability that the court would nevertheless deny injunctive relief⁶⁰⁷. At this point, parties can again negotiate in the shadow of the court's decision but the threat points would have changed. If negotiations fail at this time, the infringer will have to stop all productive activity related to the infringing product.

In the model used by Lemley and Shapiro, the outcome of negotiations would depend among different variables:

- V is the value of the patented feature to the downstream firm in comparison with the next best alternative technology.

- M is the margin earned by the downstream firm on its product.

- θ is the strength of the patent which reflects the probability that the patent is found to be valid and infringed by the downstream firm's product.

- C is the cost to the downstream firm of redesigning its product in order to avoid infringing the patent claims.

- L is the fraction of the downstream firm's total unit sales during the lifetime of the patent that would be lost if the downstream firm were forced off the market by an injunction.

-Finally, B is the bargaining skill of the patent holder, which reflects a fraction of the combined gains from settling, rather than litigating, which are captured by the patent holder. B has a value from 0 to 1 and is usually assumed to be 0.5 reflecting equal bargaining skills of the parties.

⁶⁰⁶ See Jean Lanjouw and Josh Lerner, *Tilting the Table? The Use of Preliminary Injunctions*. JOURNAL OF LAW & ECONOMICS, VOL. 44, NO. 2, PART 1, October 2001, available at <http://ssrn.com/abstract=281238>, analysing, from a law and economic point of view, the granting and abuse from preliminary injunctions in the U.S.

⁶⁰⁷ The set of cases (see appendix) analyzed in this thesis suggest that after *eBay* permanent injunctions are denied in approximately 31% and granted 69% of times whereas most U.S. commentators argue that before *eBay*, permanent injunctions (not preliminary ones) were awarded as a matter of course in all cases finding infringement and validity of patent. But see Denicolo et al. supra note 160, at p. 572-573, referring that previous research indicates that district courts awarded preliminary injunctions in 61% of cases (from the 1980s through the mid-1990s). Among those cases moving on to the Federal Court of Appeals over the same period, 58 percent of the injunctions granted were affirmed with percentages widely varying. In contrast, a study suggests that injunctive relief was awarded by federal district court cases in 1995, 1997, and 2000 only in 21 percent of the trials. See Jay P. Kesan & Gwendolyn G. Ball, *How Are Patent Cases Resolved? An Empirical Examination of the Adjudication and Settlement of Patent Disputes*, 84 WASH. L. REV. 237 (2006), quoted by Denicolo et al., supra note 160.

The model developed by Lemley and Shapiro studies how injunctions affect the threat points for parties bargaining over patent royalties and assumes that the bargaining skill of parties “*B*” remains constant. For the purposes of the analysis, the model needs to refer to a benchmark royalty that would be negotiated in an ideal patent system. Such benchmark, for Lemley and Shapiro, is $B \times V$ for an ironclad patent, that is, a patent that is certainly or almost certainly valid, whereas the benchmark is $\theta \times B \times V$ for other patents. The term θ discounts the benchmark by the probability that the patent is finally held valid and infringed⁶⁰⁸. Since reasonable royalties are calculated upon the basis of a hypothetical royalty, they argue that this benchmark can also be applicable for the calculation of reasonable royalties. Although they do not normatively argue for the use of such benchmark, they sustain that any rule significantly altering it, might distort patent incentives⁶⁰⁹. Then, they consider two cases according to the best strategy for infringer in the case *ex-ante* negotiations fail:

-The “Litigate” strategy would be the best possible strategy for an infringer when the patent is relatively weak and redesign costs are relatively high in comparison with profits that the downstream firm would lose by withdrawing from the market while having to redesign its product. In this case, if negotiations fail, the best strategy is to defend during the patent suit and redesigning the product only if the infringer loses the suit and is unable to negotiate a license after losing. In particular, Lemley and Shapiro highlight that the negotiated royalty rate for a single patent tends to be hugely above a reasonable benchmark level if the value of a patented feature is small relative to the total value associated with the overall product. This follows from the fact that an injunction would cause the infringer not only to lose the value of the patented part but of the whole product.

- The “Redesign and Litigate” would be the best strategy for an infringer when the patent appears stronger. Here the infringer starts redesigning the product even while litigating, especially if the cost of redesigning is low in comparison with the prospective profits that it would lose if enjoined. However, the patent

⁶⁰⁸ See Mark Lemley and Carl Shapiro, *Probabilistic Patents*, JOURNAL OF ECONOMIC PERSPECTIVES, Vol. 19, p. 75, 2005, available at SSRN: <http://ssrn.com/abstract=567883>, making the point that: “the actual scope of a patent right, and even whether the right will withstand litigation at all, are uncertain and contingent questions”. In this sense, patents are probabilistic rights and a value can be assigned to represent the strength of the patent, that is, the probability that once litigated it would not be declared invalid.

⁶⁰⁹ See Lemley and Shapiro *supra* note 162, at p. 2000, arguing that: “we do not mean that the benchmark royalty is the “right price” that should displace the workings of the market. To the contrary, as our use of the Nash bargaining model suggests, we are agnostic on how the cooperative surplus from bargaining is actually divided between the parties. We are, however, concerned to ensure that the law does not change the threat points that set the boundary conditions for this bargaining in ways that systematically move it away from the benchmark. If the law does so, the result, especially for weak patents, is that the patent system has distorted the market allocation of resources”.

holder benefits from the fact that the infringer's threat point in the negotiations involves incurring in redesign costs for sure and not just in the event that the patent survives litigation. Hence, the negotiated royalties would not be discounted by the patent strength. The gap between negotiated royalties and the ideal benchmark is higher the weaker the patent is, because the infringer is willing to settle for an amount that is greater than the expected value of the patentee's contribution but less than the cost of redesigning the product while litigating.

- An extreme case happens when the value of the patented feature is zero because there would be alternative ways to redesign without infringing the patent. The zero benchmark reflects that the infringer would not have negotiated a license *ex ante* and all negotiated royalties are "an overcharge based on holdup".

Lemley and Shapiro conclude that the threat of injunctive relief for component products causes patentees whose inventions are only one component of a larger product to be systematically overcompensated. In addition, the ways in which U.S. courts have awarded reasonable royalties, especially for component inventions: "has made them into a tool for patentees to capture more than their fair share of a defendant's profit margins. Realigning the reasonable-royalty calculation with its intended purpose—compensation of patent owners—will go a long way towards reducing the incentives of patent plaintiffs to engage in opportunistic holdup"⁶¹⁰.

According to Lemley and Shapiro, the calculations of reasonable royalties should take into consideration the availability of design around or non-infringing alternatives. Whereas courts currently analyze this factor when calculating lost profits, Lemley and Shapiro argue that this would also be pertinent for the calculation of reasonable royalties. Likewise, courts should take into consideration whether there are unpatented components on the infringing product; a factor that is actually contained in those mentioned by the typically applied precedent yet is often ignored⁶¹¹. In this way damages might better reflect the actual contribution of the patent, something that has been furthermore included in recent Bills proposing a reform of the U.S. patent act⁶¹².

⁶¹⁰ See Lemley and Shapiro, *supra* note 162, at p. 2044.

⁶¹¹ *Ibid*, at p. 2018, explaining that while the case of *Georgia-Pacific v. United States Plywood* 318 F. Supp. 1116 (S.D.N.Y. 1970) enumerated fifteen factors that might be taken into account when simulating the hypothetical negotiation that would have occurred *ex-ante*, these factors are often reduced to only three issues: the significance of the patented invention relative to the product and to market demand, the royalty rates people have been willing to pay for this or other similar inventions in the industry, and expert testimony as to the value of the patent.

⁶¹² See Cotter, *supra* note 38, citing the HEARING BEFORE THE SUBCOMM. ON COURTS, THE INTERNET, AND INTELLECTUAL PROPERTY OF THE H. COMM. ON THE JUDICIARY, 109TH CONG. (2005); H.R. 1908, 110th Cong., 1st

In spite of presenting a model that underlines a potentially pervasive problem in patent law⁶¹³, Lemley and Shapiro suggest that injunctive relief shall remain the baseline remedy for most patentees. They argue that courts shall nevertheless limit the availability of injunctions in some cases, especially when inventions are only a minor component of a larger product and when the patentee's principal interest in litigating patent infringement is to obtain licensing revenues. Likewise, they suggest that when the cost of redesigning the entire product is high relative to the value of the patented technology, courts shall deny the injunction. Even if such redesign costs are not so large, courts might award a stay in order to allow redesigning while calculating reasonable royalties for the time of such "allowed infringement". They suggest that courts should additionally take into consideration whether infringement was inadvertent as a prerequisite to deny injunctions. Conversely, in cases where the patentee might have been granted with lost profits, that is, when the plaintiff and the defendant are competitors, courts shall grant an injunction but might still allow a stay according to the proportion of the value of the patented innovation⁶¹⁴.

Sess., § 5 (2007), available at <http://www.govtrack.us/congress/billtext.xpd?bill=h110-1908&version=pcs>. See also H.R. 1908, 110th Cong., 1st Sess., § 5(a)(3) (2007), which passed the House of Representatives in fall 2007, but was removed in 2008 from the Senate calendar. A new proposal for reform of the Patent Act, § 284(b) provides that in order to award reasonable royalties, courts shall consider the following circumstances: (2) relationship of damages to contributions over prior art- upon a showing to the satisfaction of the court that a reasonable royalty should be based on a portion of the value of the infringing product or process, the court shall conduct an analysis to ensure that a reasonable royalty under subsection (a) is applied only to that economic value properly attributable to the patent's specific contribution over the prior art. The court shall exclude from the analysis the economic value properly attributable to the prior art, and other features or improvements, whether or not themselves patented, that contribute economic value to the infringing product or process. (3) entire market value- upon a showing to the satisfaction of the court that the patent's specific contribution over the prior art is the predominant basis for market demand for an infringing product or process, damages may be based upon the entire market value of the products or processes involved that satisfy that demand. (4) other factors- If neither paragraph (2) or (3) is appropriate for determining a reasonable royalty, the court may consider, or direct the jury to consider, the terms of any nonexclusive marketplace licensing of the invention, where appropriate, as well as any other relevant factors under applicable law. (5) combination inventions- For purposes of paragraphs (2) and (3), in the case of a combination invention the elements of which are present individually in the prior art, the patentee may show that the contribution over the prior art may include the value of the additional function resulting from the combination, as well as the enhanced value, if any, of some or all of the prior art elements resulting from the combination.

⁶¹³ The assertion that this might be a pervasive problem is not intended to judge on the actual frequency of hold-ups and strategic behavior in patent law, a –difficult- question left for empirical studies but it rather reflects a known feature about modern technologies where many of them are incorporated in multi-component products “reading on” hundreds and even thousands of patented technologies, for which redesign might be costly either with respect (1) to the value of the infringed patent or (2) *ex-post* with respect to the cost of *ex-ante* redesign if the potential infringer was aware of the patent.

⁶¹⁴ See Lemley and Shapiro, *supra* note 162, at p. 2035-2045, providing policy suggestions in the light of patent hold-ups and royalty stacking.

2.1.1 *Refinements and critics*

Many scholarly comments have followed and criticized the above mentioned model. In practice, however, most of the dissimilar results and policy suggestions vary according to the assumptions considered necessary in order to find a hold-up as well as whether such conditions are deemed to be more or less frequent in practice.

For instance, according to Cotter, additional requirements should be retained necessary in order to confine cases of patent hold-ups as much as possible⁶¹⁵, namely: 1) that the patent contributes only to a portion of some multi-component end product; 2) that the exercise of market power is linked to the possibility that the patentee obtains an injunction preventing commercialization of the multi-component product; 3) that the patentee is not a competitor of the potential licensee⁶¹⁶ and 4) that a benchmark is found that provides guidance as to when a patentee is extracting a royalty above some reasonable threshold.

The last requirement is used to assess whether the royalty extracted by the patentee is above a reasonable threshold has been the source of further disagreement that clearly captures the divergences about other underlying points in discussion. The ideal benchmark proposed by Lemley and Shapiro, which is $\beta\theta V$ ⁶¹⁷, means that injunctive relief systematically threatens to over-reward component patent owners, given that it empowers them to bargain for royalties above that threshold. Conversely, Elhauge proposed that the accurate benchmark shall be θV ⁶¹⁸. If this is the correct threshold, over-rewarding would occur only in a few cases, in particular:

- in cases of “strong surprise patents” only when “the fixed costs of a redesign exceed the expected value of the patent, taking into account the odds that the patent claim will be found invalid”.
- in cases involving weak surprise patents only when “the value of the lost profits from the lag time to redesign plus the fixed cost of a redesign exceed the value of the patent without any discount for its possible invalidity”
- in cases involving non-surprise patents, only when $\beta > \theta$.

⁶¹⁵ See Cotter, *supra* note 38, at p. 23-26.

⁶¹⁶ But see *Ibid*, adding that: “Of course, there might be mixed cases, in which the patentee competes in some markets and licenses its technology in others; holdup would be a risk in those markets in which the patentee does not compete, and would not be a risk in the others”.

⁶¹⁷ Notice that the lower the reasonable threshold, the more cases that will be found to be in excess of that threshold and therefore categorized as hold-ups. The term β included in $\beta\theta V$ represents a measure of the bargaining power of the patent holder, which is a variable ranging from 0 to 1 and usually assumed to be 0.5. Therefore the threshold proposed by Lemley and Shapiro ($\beta\theta V$) would be lower than that proposed by Elhauge, which is not “discounted” with the bargaining power of the patentee (θV).

⁶¹⁸ See Elhauge, *supra* note 38.

Cotter has argued that the Lemley and Shapiro's benchmark is the correct one and that even when it is not, there would still be cases where over-rewarding is possible outside of those confined by Elhauge's paper. Nevertheless, Cotter questions any distinction between $\beta\theta v$ and θv , basically because it is not clear how, if ever, a court could possibly estimate β . In addition, he points out that when the courts seeks to replicate the hypothetical royalty the parties would have negotiated, they may not take into account the *ex ante* value of θ . Hence, Cotter concludes that the fundamental theoretical question about the ideal threshold should be how to estimate the value the parties would have placed on V , that is, the value of the patented technology⁶¹⁹.

It is clear that calculating V might also be difficult. In fact, Cotter suggests that there is a trade-off between the different proposed methodologies to calculate reasonable royalties. One option is theoretically correct in that it reflects the value of the patented technology over the prior art with respect to alternative technologies but this option is administratively costly. The other approach is less costly but might create higher aggregate social costs⁶²⁰.

More in general, commentators argue that switching to a liability rule would likely lead to errors and costs in calculating the appropriate royalty, and whereas party-negotiated royalties reflect more accurately the value of innovations, court-calculated royalties would tend to err in the sense of under-compensating patentees. An important counter-argument is that it is however possible that courts might err both in the sense of over-compensating or in under-compensating⁶²¹. As expected, however, scholars do not only disagree about the potential biases of royalties calculated by courts but also about whether the current patent system over-compensates or under-compensates patent holders⁶²².

⁶¹⁹ See Cotter, *supra* note 38, at p. 36. See the conclusions of this section below, broadening the restrictive definition of patent hold-ups according to the threshold proposed by Cotter, which is as well compatible with previous literature in the economics of patent improvement (e.g., Merges and Nelson, *supra* note 35).

⁶²⁰ *Ibid*, at p. 40.

⁶²¹ *Ibid*, at p. 28-29, footnote 119 and accompanying text, indicating that "Indeed, if Lemley and Shapiro's analysis is correct, courts in patent infringement cases sometimes may be more prone to overcompensate in the sense of awarding royalties in excess of those which the parties themselves would have agreed to *ex ante* and citing Lemley & Shapiro, *supra* note 162, and Mark Lemley, *Distinguishing Lost Profits from Reasonable Royalties*, STANFORD PUBLIC LAW AND LEGAL THEORY WORKING PAPER SERIES, WORKING PAPER NO. 1133173, 2008, at p. 12-13, available at <http://ssrn.com/abstract=1133173> claiming that "some patentees who can prove lost profits elect instead to seek a 'reasonable' royalty that is far in excess (of) what the parties would have negotiated".

⁶²² Compare for instance, Lemley and Shapiro *supra* note 162, suggesting that patent owners are systematically over-compensated with Denicolo *supra* note 26 and Denicolo et al., *supra* note 160. Whereas Lemley and Shapiro based their model on the assumption of one-way complementarity, meaning that the product could have been designed without infringing the patent; Denicolo et al. develop a model in which innovations are complementary and find that inventors are likely to be under-compensated and investment would be sub-optimal, given that: "With strictly complementary innovations firm A exerts a

2.1.2 Assumptions of the models

An important additional source of controversy between scholars regards the assumptions followed by each model. For instance, Denicolo et al. explain that the results of Lemley and Shapiro rely on the following assumptions: (1) that infringement is inadvertent; (2) that infringement is detected with certainty (something that is implicit in their model); (3) that it is costly to redesign the product *ex-post* compared with what it would have cost *ex-ante* and; (4) that the technology has several components and the value of the infringed patent is small compared to the total value of the infringing product. They argue that notwithstanding the restrictiveness of their results in the light of these assumptions, Lemley and Shapiro have relaxed such assumptions for the purposes of drawing policy implications⁶²³. Hence, they suggest that limiting injunctive relief should only be possible under the above mentioned restrictive assumptions⁶²⁴. Moreover and following an error-cost approach, they argue that any policy restricting the availability of injunctive relief should take into account the possibility of errors and that any such policy would only be desirable when hold-ups are sufficiently frequent as to call for a change in the baseline rule⁶²⁵.

positive externality on firm B, and vice versa". As a consequence, under-compensation occurs since firms exert positive externalities on one another.

⁶²³ See Denicolo et al., *supra* note 160, at p. 589, arguing that: "Assumption (i) is reduced to "no explicit copying," a much easier hurdle to clear. Condition (ii), which is implicit in the theoretical model, is largely ignored, although it is crucial for obtaining the holdup results. Moreover, in the policy recommendation the important distinction between *ex ante* and *ex post* redesign costs is blurred. Finally, conditions (iii) and (iv) embed an additional assumption regarding the particular type of complementarity between components: although the stand-alone value of the technology owned by M is positive, that of the technology owned by I is zero. If all the multiple innovative components of a product are indispensable, however, the logic of the holdup problem, and hence the appropriate remedies, can be significantly different".

⁶²⁴ *Ibid*, concluding that "the theoretical circumstances under which patent holdup can occur are fairly narrow".

⁶²⁵ *Ibid*, at p. 583-584, explaining that: "On the one side is the risk of denying an injunction to a patent holder in the absence of a significant holdup problem, a type 1 ("false positive") error. On the other side is the risk of granting an injunction to a patent holder who is indeed intent on holdup, a type 2 ("false negative") error. Different policy rules entail different risks of type 1 and type 2 errors. If injunctions were granted routinely, for instance, type 1 errors would be avoided altogether but the probability of type 2 errors would remain. Conversely, with systematic denials of injunctive relief, the risk of type 2 errors would be avoided but a substantial risk of type 1 errors would emerge. Finally, categorical denials of injunctive relief, whereby injunctive relief is denied to certain types of patent holders, can produce both type 1 and type 2 errors if the category of firms for which injunctive relief is denied is not a clean match to the firms actually practicing patent holdup". They moreover criticize any attempt of developing a categorical rule that systematically denies injunctive relief for non-practicing entities. For the reasons mentioned in the precedent section we agree that such categorical rules might not bring beneficial effects for patent policy.

With respect to inadvertent infringement, Denicolo et al. pose that a distinction should be made between the case of inadvertent infringement and infringement that even if not implying a mere copying, could not fall under the definition of inadvertent or innocent infringement. Assimilating cases in which copying or willful infringement is not proved to inadvertent infringement could be detrimental because it would create incentives to infringe patents. However, the identification of inadvertent infringement is also difficult. Although an inadvertent infringer might be defined as one that after performing a previous reasonable search did not find any relevant patent that would be infringed, it is however debatable that such a previous “reasonable” search by the infringer would suffice to avoid surprise patents nowadays. In this respect, Elhauge concludes that infringement can always be avoided because “the downstream firm can (unless patent search costs are insuperable) always assure it pays a royalty rate that does not exceed the true optimal rate” by “simply search[ing] the patent records to avoid surprise and then negotiate a license before designing”⁶²⁶. However, many recent studies highlight that such a reasonable search is not possible in an important number of cases, making the exception “unless patent search costs are insuperable” to frequently become the rule⁶²⁷.

There are additional problems with using a standard of due diligence in order to rule out willful infringement as it happens in the U.S. case⁶²⁸. In practice, firms developing innovations in the U.S. often deliberately avoid performing a thorough patent search in order not to read previous patents. Otherwise, when a firm becomes aware of the existence of a patent it will be subject to an obligation to ask an opinion from a patent counsel or or else risk to be found a willful infringer and potentially be obliged to pay treble damages⁶²⁹. More in general, it is clear that a “due diligence” standard shall be subject to the court’s discretion in order to avoid parties behaving strategically with respect to the requirements set by any categorical rule as well as to adapt to future

⁶²⁶ See Elhauge, supra note 38, at p. 14.

⁶²⁷ See Cotter, supra note 38, at p. 25-26, counter-arguing the difficulty of previous patent searches and citing Bessen and Meurer.

⁶²⁸ See the CAFC decision in *Re Seagate*, supra note 472, correcting the threshold for willful infringement that was previously applied by the CAFC during the previous years, In fact, giving the punitive nature of enhanced damages, these should be considered as a deterrent mechanism, limited to cases of “recklessness” infringement. But see Cotter, supra note 38, agreeing with the new standard but disagreeing with the underlying analysis that relies on the probability that the patent would be declared valid and infringed instead than on the rate of detection, which is the relevant variable from an economic viewpoint.

⁶²⁹ See Mark Lemley and Ragesh Tangri, *Ending Patent Law’s Willfulness Game*, BERKELEY TECHNOLOGY LAW JOURNAL, VO. 18. P. 1085, available at ssrn.com/abstract, explaining how the willfulness rules create an important incentive for firms to avoid reading patents: “once a company becomes aware of a patent, it has an obligation to obtain a written opinion or risk later being held a willful infringer. To avoid this significant cost, in-house patent counsel and many outside lawyers regularly advise their clients not to read patents if there is any way to avoid it”.

technological events that either facilitate or difficult a previous search on prior art⁶³⁰.

Inadvertent infringement that occurs due to the incompleteness or costliness of patent information –even by effect of rules providing wrong incentives- might then produce or aggravate the risk of hold-ups. This would not only suggest that some limitation of injunctive relief might sometimes be needed but would also favor rules allowing the application of compulsory licensing provisions for infringers, at least when they are inadvertent⁶³¹. While a general drawback with limiting injunctive relief for inadvertent infringers is to give incentives to infringe patents, it is doubtful that awarding injunctions in cases of “good faith”, “inadvertent” or “innocent” infringement would help to achieve the optimal level of deterrence rather than tilting the balance towards over-deterrence. For the purposes of achieving optimal deterrence, it could be sufficient to consider the prospective of enhanced damages when willful infringement is proved and whether they are large enough with respect to the rate of detection.

A second point of controversy in the above mentioned models regards the rate of detection of infringement. Whereas the Lemley and Shapiro model seem to assume that every case of infringement is detected, Denicolo et al. criticize this assumption as unrealistic in the light that detection will occur only on a fraction of cases and as creating a problem of potential under-compensation for patentees⁶³².

⁶³⁰ See Epstein, Kieff & Wagner, *supra* note 500, at p. 591, arguing that: “Any party that did not use due diligence to find out whether its conduct constituted infringement would be in the advantageous position of using its own neglect to undermine the legal protection otherwise available to a patentee. Potential infringers would have a palpable incentive to decrease inquiry into existing patent rights, which would in turn increase the number of infringement disputes”. And *Ibid*, arguing that: “To avoid those risks, and hence avoid encouraging even greater false positives, it is important that injunction policy require a defendant to establish not only that it infringed inadvertently, but also that it exercised due diligence in searching for any intellectual property right its product might have violated”.

⁶³¹ See chapter III, section 5.5.5. “Other ex-post Liability Rules: Compulsory Licenses”. Such possibility is found in the new Italian rule that allows good faith infringers to apply for a compulsory license. Yet the standard of “good faith infringer” has not been still interpreted by any court in the context of awarding a compulsory license. Whereas it will be difficult to prove that either one was not aware of the patent, or that one had a reasonable doubt of the validity of the patent in the light of the presumptions of validity of patents and the public nature of patent documents, however, more often a defense could consist in a reasonable belief that one’s product does not infringe the patent or that the product was designed independently. Although this latter is not an exemption under patent laws it could be useful for the purposes of defining “good faith infringement”.

⁶³² See Denicolo et al., *supra* note 160, at p. 592, arguing that: “in the presence of a holdup problem, granting injunctive relief may not necessarily over-compensate the patent holders. Over-compensation requires that C is large relative to v if s is small. The smaller the probability of detection s , the more likely it is that we have an under-compensation problem”.

Indeed the probability of detection is an important variable from the economic viewpoint which is often proposed to optimally adjust the level of retrospective damages⁶³³. However, courts should also be careful enough to avoid rendering the patentee better off than he would have been without the infringement, or otherwise risk to make the strategy of “being infringed” profitable enough to encourage strategic behavior⁶³⁴.

Apart from the rate of detection, another variable that should probably be taken into account is the rate of settlement, as any previous agreement between patentee and infringer to put an end to the suit would probably reflect lower royalties than the final outcome discounted by the probability that the patent is found infringed. The effect of settlements might however, not be as significant as in other fields due to the fact that a settlement in a patent case usually involves also the payment of royalties to put an end to the controversy. In these cases, the payment of royalties or any other type of payment for the use of the patented technology happens in spite of the probability that the patent could have been considered invalid if the trial continued, with consequences that go beyond the private interests of the parties involved in the trial⁶³⁵.

A third debated assumption of the above mentioned models is the requirement that redesigning the product would be costly *ex-post*. Lemley and Shapiro argue that courts “should evaluate the cost that the infringing firm would have to incur to redesign its product and avoid infringing the patent. If this cost is high relative to the value that the patented technology has added to the infringing firm’s product, no permanent injunction should be issued”⁶³⁶. However, it has been stated that whereas Lemley and Shapiro’s model assumes that redesign costs are zero *ex ante* and costly *ex-post*; their policy suggestions are broader and

⁶³³ See Denicolo et al. supra note 160, at p. 592, footnote 72. See also Cotter, supra note 38, at p.30, footnote 127 and accompanying text, quoting also from Thomas F. Cotter, *An Economic Analysis of Enhanced Damages and Attorneys’ Fees for Willful Patent Infringement*, 14 FED. CIR. B.J. 291,315 (2004); and proposing an argument that can also be applied to the award of injunctive relief: “in cases in which infringement of the type at issue is likely to go undetected in a great many cases, enhanced damages may be necessary to ensure adequate deterrence”.

⁶³⁴ See also Henkel et al., supra note 139, referring two inefficiencies identified by scholars in legal practice, namely patentee-friendly injunctions and the granting of excessive damage awards as drivers of ‘destructive’ strategies put in place by patent trolls or patent sharks that aim at appropriating innovation rents by threatening to patent-block other players’ R&D-related value creation

⁶³⁵ See Lemley & Shapiro supra note 162, noting that patent invalidation is a public good which provides positive externalities to other competitors and hence tends to be under-supplied as well as describing the problems generated by reverse payments whereby patentees pay potential incumbents to drop claims of invalidity, a practice that has been found in the pharmaceutical sector in order to prevent the entrance of generic competitors.

⁶³⁶ See Lemley and Shapiro, supra note 162.

only require that the cost is high relative to the value that the patented technology has added to the infringing firm⁶³⁷.

Critics on the Lemley and Shapiro's model argue that different results hold when the infringed patent is essential for the innovative product. For instance, in the case of two complementary innovations which are both necessary to create a new product and which are held by the patentee and the infringer, the optimal degree of patent protection should be higher⁶³⁸. Likewise, in the case of multi-component products, it has been argued that holdups would be a threat only when all the following conditions apply, namely that the patent covers a single component of a larger complex product, that one component is minor and has a small value and that a stand-alone product excluding the value of such patent must have been commercially and technically feasible *ex ante*⁶³⁹.

2.2 From patent hold-ups to patent strategic behavior

The aforementioned models offer highly dissimilar views that range from a broad definition of hold-ups to a limited set of cases and models with highly restrictive assumptions. There is still another possible interpretation of economic models of patent hold-up which is also in tune with law and economics analysis. Even though the concept of patent hold-ups might indeed require a number of restrictive assumptions much more confined than those used in the policy recommendations of Lemley and Shapiro's model, it is still the case that patent hold-ups are only one out of many possible different types of strategic behavior belonging to the patent area. In fact, according to the insights of the previous chapter dealing with comparative case law as well as

⁶³⁷ See Denicolo et al., *supra* note 162, at p. 596, arguing that "If the suggested criterion were taken to mean that injunctive relief should be denied (or stays of injunctions routinely granted) whenever it is very costly or even impossible to design the product in a non-infringing way *ex ante*, this injunction policy would penalize the most valuable patents— precisely, those that are most difficult to circumvent even with full knowledge of the patent. Instead, to be consistent with the theory, the policy should indicate that to avoid injunctive relief an infringer must show not only that it is costly to redesign the product in a non-infringing way *ex post*, but also that it could easily have designed the product in a non-infringing way *ex ante* if only it had been aware of I's patent (which again emphasizes the importance of the inadvertent infringement assumption)"

⁶³⁸ See Denicolo et al., *supra* note 160, at p. 594-595 explaining this specific case: "with two-way complementarity, innovators are more likely to be undercompensated and hence denying injunctions can be especially harmful. Intuitively, when both innovations 1 and 2 are needed to develop a product, a firm racing for innovation 1 exerts a positive externality on the firms racing to achieve 2, and vice versa. This positive externality is a source of distortion that tends to reduce the investment in R&D compared with the social optimum: the firm that first achieves innovation 1 will only benefit from its invention if component 2 is achieved as well. Thus, the expected payoff of each successful innovator is the reward in case of success multiplied by the probability (a fraction less than one) that both inventions are created."

⁶³⁹ *Ibid*, at p. 596.

the interpretation provided below, there might be at least three different problematic cases of patent strategic behavior. These cases might or not qualify as hold-ups, depending on the particular assumptions used, yet they might impose losses in dynamic as well as static efficiency terms.

As a consequence, there will be cases in which it is costly to apply a property rule even if the downstream product is not multi-component or when the patented technology is essential –either part of a technological standard or not– in the sense that it could not have been easily invented around *ex-ante*. It is noteworthy that these apparently abstract cases largely correspond to most legal provisions and case law analyzed in the previous chapter.

The first cases regard improvement patents or 2nd innovation patents that contribute to a much higher proportion of (social) value⁶⁴⁰ with respect to the 1st innovation. The case of improvement patents is much broader than the above discussed cases of hold-ups. Nevertheless, there might be compelling reasons to conclude that these cases call for a switch into a liability rule. Such cases have in fact been regulated for long time in the national laws of many different countries, although not in the U.S. even though their implementation is confined to few cases. This is probably a consequence of the need to confine the application of such compulsory licenses as well as to the difficulty of proving that the 2nd innovation contributes in a larger proportion to the society⁶⁴¹.

The second case envisions a company that has made important specific investments and is afterwards held-up by the patentee. However, this case comprises at least two sub-types of cases. In one, the patent is part of the setting of a technological standard and in the second case (to which most models and critics refer) the infringer inadvertently uses a patented technology to the development of a multi-component product and is subsequently held-up.

Still, it is important to notice that the relevant variables to know whether a case falls within the above mentioned terms are difficult to assess. In particular, a threshold is needed to evaluate the contribution in terms of value from either innovation. This would perhaps be easier in the case of a patent contributing to

⁶⁴⁰ See Merges and Nelson, *supra* note 35, at p. 118-119 and Cotter, *supra* note 38, p. 18-19.

⁶⁴¹ Article 31 of the TRIPS Agreement establishes in fact that compulsory licenses for the case of a 2nd patent which cannot be exploited without infringing a previous 1st patent shall comply, with the following additional requirements: “(i) the invention claimed in the second patent shall involve an important technical advance of considerable economic significance in relation to the invention claimed in the first patent”. Moreover, it is arguable, than in the light of such difficult assessment, such compulsory licenses are subject to further limits such as requiring that: “(ii) the owner of the first patent shall be entitled to a cross-licence on reasonable terms to use the invention claimed in the second patent; and (iii) the use authorized in respect of the first patent shall be non-assignable except with the assignment of the second patent”.

a minor part of a multi-component product than in the case of improvements when a 2nd innovation should have a higher social value than the 1st innovation. In fact, this result is compatible both with the much stringent standard for compulsory licenses for improvement patents and the restricted number of relevant case law. The following section examines different cases of potential strategic behavior in the field of patent law, in order to illustrate the above theoretical considerations with current practices both in Europe and the U.S.

3 Strategic behavior and ex-post liability rules

As explained above, strategic behavior might either enhance the ability of the patentee to extract monetary sums in excess of the real value of her patent and the potential for threatening to block subsequent innovation, which would cause sequential or 2nd innovators to refrain from investing in such technologies and hence, important static and dynamic efficiency losses. These potential losses are an important ground calling for the use of *ex post* liability rules.

Of course the above mentioned losses are expected and cannot be ascertained accurately. However, courts might attempt to redress a situation of strategic behavior and under the current international patent rules are only authorized to do so in a case-by-case basis⁶⁴². From a policy perspective, the necessity of such examination by courts requires to further considering whether and to what extent is it advisable to prevent or redress patent strategic behavior without creating unduly burdens in terms of administrative costs and errors. As a first step, this requires a proper identification of the grounds to switch to a liability rule.

Law and Economics literature as well as an important thread of recent U.S. case law suggest that the problem of strategic behavior especially in the form of patent hold-ups is a growingly important reason calling for the use of liability rules notwithstanding its potential costs. Such theoretical findings are complemented by empirical studies showing that strategic behavior is probably increasing in frequency and impact and that specific industries of growing importance in today's economy that have been particularly exposed to the increasing use of strategic behavior. Some studies have found similar evidence for the case of Europe⁶⁴³.

⁶⁴² See chapter II above, section 3.3.1. "Article 31 of the TRIPS Agreement", arguing that ex-post liability rules for patents are the only possibility allowed by the TRIPS Agreement in the sense of the requirements of article 31 (a) which says that "authorization of such use shall be considered on its individual merits".

⁶⁴³ See next section

Indeed, patent strategic behavior can take place in different contexts, either through the use of a patent portfolio or individual patents and its effects can either be anticompetitive or not⁶⁴⁴. The following sections attempt to give a broader landscape for patent strategic behavior, starting from a case study derived from recent case law. Practices that allegedly amount to patent hold-ups are then compared to other adjacent practices in order to better define the scope of patent strategic behavior, which is the principal ground for the use of *ex-post* liability rules.

3.1 Problems put forward by *eBay v. MercExchange*

The U.S. case is noteworthy, since compulsory licensing provisions were largely absent from patent law and at the same time, the application of equity doctrines that gives discretion to judges in order to grant or deny injunctive relief had also been curtailed for a long time. In 2006, however, the U.S. Supreme Court acknowledged that injunctive relief rests within the discretion of district courts by pointing out that patent law cases should be governed by the traditional principles of equity in a decision that represented a major turning point in patent policy. In fact, whereas patent law is said to be distinctive in many different ways, the uniqueness of patent law does not necessarily weight in favor of awarding injunctions in an automatic way. Indeed while patent's unclear boundaries and the growing problems of patent notice and decrease of quality weight against using property rules⁶⁴⁵, the exclusive nature of patents as a mechanism to provide innovation incentives weights in favor.

These two contradictory arguments were evidenced in the two concurring opinions given by Justice Roberts and Justice Kennedy in the *eBay* decision⁶⁴⁶. In spite of being a unanimous decision, such divergent views provided little guidance for district courts to apply the traditional test in patent cases. This equitable test for the issuance of injunctions is probably the context in which *ex-post* liability rules have been discussed most extensively and thus a useful framework to analyze the underlying purpose of the rules⁶⁴⁷ potential problems

⁶⁴⁴ See Harhoff et al., *supra* note 165, proposing the following concept, which, however, would only apply to an entire patent portfolio and not to individual patents: "strategic use of the patent system arises whenever firms leverage complementarities between patents in order to attain a strategic advantage over technological rivals. This behavior is anticompetitive if the main aim and effect of strategic use of the patent system is to decrease the efficiency of rival firms' production efforts" (emphasis added).

⁶⁴⁵ See BESSEN AND MEURER, *supra* note 14 and see also *supra* Chapter I, Section 4 "Property and Liability rules in Patent Law".

⁶⁴⁶ See *eBay v. MercExchange*, *supra* note 2.

⁶⁴⁷ See *supra* notes 335 and 405, explaining the method of comparative law, based upon the underlying function of legal rules.

with their application and also to give a sense of the current landscape in U.S. patent law with respect to their use.

According to the Kennedy's opinion, treating injunctions as an equitable relief - and thus allowing the use of *ex-post* liability rules for infringed patents- could be a potential solution for three interconnected problems in the context of modern technologies: a) the impact of strategic behavior and specifically hold-ups; b) the growing multi-component nature of products which can at the same time exacerbate the risk of hold-ups; and c) the increase in number and economic importance of patents of dubious quality⁶⁴⁸.

The following section analyses these three reasons⁶⁴⁹, which overall reflect the underlying message that the modern patent landscape has greatly changed and that important opportunities have emerged for patent strategic behavior. Hence, these three main arguments in fact refer to such changing landscape and are all based on different strategic behavior practices of modern times.

3.1.1 *Strategic behavior*

The Kennedy's opinion argued in favor of the use of *ex-post* liability rules due to the increasing evidence of patent strategic behavior in its specific variant of patent hold-ups. Essentially, the further two reasons described below can also be rephrased in the context of patent strategic behavior. According to Justice Kennedy concurring opinion:

⁶⁴⁸ In fact these three reasons are mentioned subsequently in the same paragraph: "An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees. For these firms, an injunction, and the potentially serious sanctions arising from its violation, can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent. When the patented invention is but a small component of the product the companies seek to produce and the threat of an injunction is employed simply for undue leverage in negotiations, legal damages may well be sufficient to compensate for the infringement and an injunction may not serve the public interest. Injunctive relief may have different consequences for the burgeoning number of patents over business methods, which were not of much economic and legal significance in earlier times. The potential vagueness and suspect validity of some of these patents may affect the calculus under the four-factor test" (footnotes omitted).

⁶⁴⁹ The arguments offered by the Kennedy's opinion are mentioned as a simplified grouping of the most important arguments calling for the use of *ex-post* liability rules in the context of U.S. patent law. The Kennedy opinion in fact compiled a number of arguments elaborated by previous academic and policy discussion papers. Hence, the choice of referring to the Kennedy's opinion is not motivated to *a priori* favor its conclusion but to discuss the potential grounds for the use of *ex-post* liability rules. These grounds would not be possible to infer from the text of the majority's opinion as this latter did not provide ulterior guide or any reasoning beside the traditional use of an equity four-factor test the opinion by Justice Roberts does not provide any ground for the use of *ex-post* liability rules but rather elaborates on the principal arguments against their use. For this reason, the arguments of this opinion are dealt in the next chapter.

“An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees. For these firms, an injunction, and the potentially serious sanctions arising from its violation, can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent (...)”⁶⁵⁰

3.1.2 *Multi component patents*

A second reason why injunctions should not be awarded as a matter of course arises when the patented innovation is just a small part of a multi-component product:

“When the patented invention is but a small component of the product the companies seek to produce and the threat of an injunction is employed simply for undue leverage in negotiations, legal damages may well be sufficient to compensate for the infringement and an injunction may not serve the public interest”.

In fact, there are two inter-related but different arguments in such assertion. The first is the inherent changing nature of innovations and the fact that modern patents are usually embed in multi-component products. This change, which does not pertain to patent policy but is rather an inherent characteristic of modern technologies, might be however problematic since most patent laws around the world, including the U.S. were designed when inventions were mostly of the one-patent/one-product type. Conversely, products of the information technology industries such as microprocessors, mobile phones, software and DVD's are frequently covered by a great number of different patents⁶⁵¹.

Although this is a largely empirical issue, which has been -at least partially- evidenced by recent studies, more opportunities for strategic behavior have emerged as a consequence of this transformation. Each manufacturer that seeks to develop a product using a previous patent(s) must either seek consent from the patent owner(s) or else risk that such use might be considered infringing. As explained in more detail below, the problem of patent hold-up is then fostered by the fact that a patent owner of a small part of a multi-component product can extract rents above the economic value of the patent by threatening to use

⁶⁵⁰ See *eBay v. MercExchange*, (Justice Kennedy concurring), supra note 425 at p. 1842.

⁶⁵¹ See Lemley, Shapiro, *Patent Trolls: Fact or Fiction?* HEARING BEFORE THE SUBCOMM. ON INTELLECTUAL PROPERTY OF THE HOUSE COMMISSION ON THE JUDICIARY, 109 CONG. 5 (2006).

an injunction to shut down the production of the whole multi-component product.

3.1.3 *Dubious quality patents*

Probably one of the most controversial parts of the Kennedy's opinion is that which refers to some patents, especially those over business methods⁶⁵², being of dubious quality and hence problematic to enforce through the use of property rules:

"Injunctive relief may have different consequences for the burgeoning number of patents over business methods, which were not of much economic and legal significance in earlier times. The potential vagueness and suspect validity of some of these patents may affect the calculus under the four-factor test"⁶⁵³.

Whereas such reflection echoes widespread concerns about the convenience of patenting business methods and the quality of such patents, it in fact raises two important but different questions. The first question is whether it would be economically advisable to use property and liability rules in order to fine-tune the quality of patents or whether it is preferable to use a different policy lever. A second question is to what extent courts can alter the balances already established by the Congress in patent law, especially with regards to the patentability of some inventions such as business method patents.

From an economic point of view it is important to ask whether a particular type of patent might present a problem for the overall system. Secondly, and even

⁶⁵² It is often referred that patents on business methods were firstly allowed by the decision on *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, in which it was held that a claimed invention is patentable if it "produces a useful, concrete and tangible result". The CAFC has recently overturned such test in the *en banc* decision in *Re Bilski*, 545 F.3d 943, 88 U.S.P.Q.2d 1385 (Fed. Cir. 2008), whereby the CAFC reaffirmed the rejection of patent claims on a method of hedging risks within the trade of commodities and also rejected the machine-or-transformation test" laid down in *State Street Bank*. A number of recent decisions have already interpreted the new test under *Bilski*, and for instance, in the decision of *CyberSource Corp. v. Retail Decisions Inc.*, 2009 WL 815448 (N.D. Cal. Mar. 23, 2009), it was even argued that the: "The closing bell may be ringing for business method patents". The U.S. Supreme Court granted certiorari to hear the case, in a decision available at: <http://www.supremecourtus.gov/orders/courtorders/060109zor.pdf>, June 1st, 2009, to answer two particular questions: (1) Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ... despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas." And (2) Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273 and a decision is expected.

⁶⁵³ See *eBay v. MercExchange*, (Justice Kennedy concurring), supra note 425 at p. 1842.

though it is assumed that the decreasing quality of patents imposes economic losses, it is important to know whether it is efficient to solve these problems through the use of property and liability rules or rather through the use of a different policy lever. An alternative in fact would be to adjust the patentability requirements, including such patent doctrines deciding on the patentable subject matter, novelty and inventive step and to improve the quality of patents by improving the process of patent examination. In fact, losses might be imposed in a general category of patents if the costs of granting patents for such area surpass the benefits. As the main benefits from the issuance of patents are to provide innovation incentives, to disclose socially beneficial information that could otherwise remain secret and to facilitate the commercialization of innovations, it is important to analyze whether such three justifications are achieved through the granting of business method or software patents in spite of variegated critics⁶⁵⁴. As explained below, from an economic point of view, both the use of policy levers associated with the quality of patents as well as the choice between property and liability rules would be necessary and complementary to tackle the current perceived problems in patent design.

From a legal point of view, if courts opted for dealing with the problem of patent quality by systematically denying injunctions for some –problematic– categories such as business method patents, such decision could be criticized on the grounds of discrimination against a specific type of innovations in violation of article 27 of the TRIPS Agreement. In addition, it could be argued that correcting the problem of low patent quality and the patentability of some technological areas is not in principle a task for courts at the time of deciding on the available remedies for infringed rights.

It is evident that some types of patent might pose particular difficulties for courts when protected through an injunction⁶⁵⁵. Nonetheless, the quality of patents, regardless of their type, might be affected through a set of patent strategies that include the use (and abuse) of divisional applications, continuations of applications and other filing strategies which might obscure the disclosure function of patents and increase the risk of inadvertent infringement⁶⁵⁶. Such practices extend beyond the business method, software or any other patent category.

⁶⁵⁴ This chapter concentrates on the interface if any, between the uses of liability rules with such purported problems of the patent system beyond strategic behavior while it does not directly address the specific question of business method or software patents, as it would fall out of the scope of this Thesis.

⁶⁵⁵ The claims of a patent constitute the boundaries of the patent and business method patents usually present vague claims, a higher number of claims than the average patent as well as other related problems. See Rochelle Dreyfuss, *Are business method patents bad for business*, Santa Clara Computer and High Technology Law Journal 16, 2000, 263–278.

⁶⁵⁶ See section below and also BESSEN AND MEURER, *supra* note 14. For a similar reasoning and warning in Europe see Harhoff et al., *supra* note 165.

Hence, two different perspectives are implied in the problem of patent quality. One could be described as a “macro” perspective, responding to the question of whether a category such as business methods should be patentable at all. The same might happen with other problematic fields, including the patenting of information-based technologies, software and certain biotechnologies of informational nature. Under the second perspective, which we could describe as “micro”, what is implied is not the technological category of the patents but the conduct of the patentee. This is the case of the burgeoning number of patents with complex, long and numerous claims, the use of filing strategies as divisional or continuation applications and, importantly, of any other similar strategy that might arise with time.

It could be argued that, whereas equitable doctrines are an adequate option to handle the second perspective of the problem, which is in any case a strategic behavior of patentees, the “macro” facet of patent quality is better dealt *ex ante* through the use of the above mentioned policy levers.

4 The landscape of strategic behavior in Europe

Important differences exist between important patent rules, practices and industry characteristics that divide the European landscape from that of the U.S. Amongst the most important features for the purposes of this discussion are the harmonization –and lack of harmonization- of certain European patent rules, the opportunity for forum shopping that arises from a fragmented landscape with regards to patent litigation as well as the opportunity provided by the competition between different rules in place at the moment. The careful study of the characteristics of each patent system and their economic analysis would certainly be fundamental for the forthcoming harmonization, especially the projected European Patent Litigation Agreement and the Community Patent⁶⁵⁷.

Lacking a unitary system of litigation, each country’s patent litigation widely varies within Europe. France, Germany, the Netherlands and the United Kingdom are the countries producing the highest number of patent applications

⁶⁵⁷ This section attempts to provide a brief overview on the European patent litigation system, mainly focused on the issue of patent strategic behavior. While the analysis contained in this section is widely different than the above section describing the U.S. in the context for strategic behavior this is firstly due to the absence of completely equivalent situations to be compared to the U.S. eBay and post eBay decisions. Secondly it is an attempt of broadening the allegedly narrow concept of patent hold-ups as understood in the context of U.S. patent debates.

and have developed more specialized patent courts⁶⁵⁸. In fact these four countries concentrate approximately 90% of patent litigation in Europe⁶⁵⁹. Whereas patent litigation takes place either in the context of revocation proceedings in which the validity of patents is challenged or in infringement trials to enforce patent rights, the estimated probability that a patent is litigated varies between 1% and roughly 3% in most patent systems⁶⁶⁰, with some further differences according to technical sectors, industries and countries.

The lack of a unified European litigation system is said to have generated numerous problems that have in effect encouraged negotiations on the EPLA. Firstly, resources are duplicated and wasted in different proceedings to enforce the same patent in various countries due to the territorial nature of patents and the absence of a European litigation court. Secondly, difficulties for trade might arise inside the EU due to the diverging outcomes of litigation which can cause one patent to be protected in one country while not in another. Thirdly, delays and hold-ups might follow because the fragmented nature of the system creates the opportunity to adopt delay strategies or the creation of entry barriers by raising the costs of potential entrants⁶⁶¹. In fact, litigation and especially high litigation costs have been blamed to produce and worsen incentives for strategic behavior⁶⁶².

A distinctive feature of European patent litigation is the existence of a procedure for post-grant opposition which offers a lower cost mechanism to ask for the invalidation of patents. Lower cost opposition procedures have been perceived as a fundamental feature of the European patent system and several studies have in fact suggested transposing these rules into U.S. patent legislation in order to deal with some perceived flaws in this system⁶⁶³.

Overall, most commentators highlight that the European patent system remains immunized from the problems affecting the U.S. in terms of strategic litigation including the emergence of patent trolls and hold-ups and the increasing

⁶⁵⁸ See Harhoff, *supra* note 381.

⁶⁵⁹ *Ibid.*, at p. 13.

⁶⁶⁰ *Ibid.*, at p. 14.

⁶⁶¹ *Ibid.*, at p. 18.

⁶⁶² *Ibid.* at p. 11, arguing that “the cost level of litigation determines to what extent a potential for hold-up exists” and quoting from Ellis, T.S., *Distortion of Patent Economics by Litigation Costs. Proceedings of the 1999 Summit Conference on Intellectual Property*, UNIVERSITY OF WASHINGTON, SEATTLE. CASRIP SYMPOSIUM PUBLICATION SERIES, 5, July 2000, 22-26, available at: <http://www.law.washington.edu/CASRIP/Symposium/Number5/pub5atcl3.pdf>, last accessed on August 10, who argues that high litigation costs distort patent trade and the patent system.

⁶⁶³ See Paradise, Jordan K., *Lessons from the European Union: The Need for a Post-Grant Mechanism for Third-Party Challenge to U.S. Patents*. MINNESOTA JOURNAL OF LAW, SCIENCE & TECHNOLOGY, VOL. 7, NO. 1, pp. 315-326, 2005; available at: <http://ssrn.com/abstract=897741>, discussing opposition decisions at the EPO and advocating for the adoption of a similar third party opposition procedure in the U.S..

importance of patent thickets as well as the decreasing quality of patents⁶⁶⁴. This is said to be the consequence of several features of the European system including incentives embedded in EPO patent examination rules, such as higher fees, a tax imposed for applications with numerous claims and others which have assured a higher quality of examination as well as opposition procedures which provide a lower cost mechanism to weed out invalid patents.

Nonetheless, some recent studies providing a closer look on the European patent system have concluded that some of its laudable features might be either jeopardized or affected by the emergence of strategic patenting, an important increase in the number, complexity and lower quality of applications and also by the emergence of several instances of strategic litigation⁶⁶⁵. Studies cite that such events have been worryingly accompanied by a drop in the number of opposition procedures⁶⁶⁶. These findings are even more distressing as it is understood that:

“Fast and low-cost revocation proceedings are also a good defense line against “patent trolls” seeking to extort licensing fees from other parties based on weak or questionable patent rights”⁶⁶⁷.

The following section briefly analyzes some of the findings in recent studies on the European patent system that might have an impact in strategic patent practices and abusive behavior and that could be potentially tackled through the use of *ex-post* liability rules. As it was described in the previous chapter, most countries in Europe have national laws which include some sort of compulsory licensing provisions. If there is any lesson to be learned from the emergence of patent filing and litigations strategies in the U.S. which preceded and probably led to the U.S. Supreme court decision in the *eBay* case and other related cases adopting flexible standards in order to sort out such problems, it is precisely a warning against completely rigid rules. This would especially be the case with the adoption of property rules without the possibility of exceptions for the enforcement of patents, either at the level of substantive law with the provision of compulsory licenses or at the level of enforcement law through the

⁶⁶⁴ See Harhoff et al., *supra* note 165.

⁶⁶⁵ *Ibid.*

⁶⁶⁶ See Harhoff, *supra* note 381 at p. 45, arguing that: “opposition at the EPO used to involve more than 10% of granted patents in the early 1980s, but has declined to a level around 5%. One reason for the declining attractiveness may be the long delays in resolving opposition and any subsequent appeal cases. The unified Patent Court would offer an interesting alternative”. See also Graham and Harhoff *Can Post-Grant Reviews Improve Patent System Design? A Twin Study of US and European Patents*, CEPR DISCUSSION PAPER NO. 5680, London (2006).

⁶⁶⁷ See Harhoff, *supra* note 381, at p. 45.

regulation of remedies such as injunctive relief as well as other compulsory measures which might be the object of harmonization in the years to come⁶⁶⁸.

4.1 Incidence and effects of strategic behavior

Recent studies have highlighted that an increasing number of applications, in the form of an “escalation” has been taking place within Europe in a way similar to this process in the U.S. patent system. Such patent race does not seem to respond to higher innovation or other factors but rather to an offensive and defensive use of patents, especially in some technological areas:

“specific technology areas within the patent system are affected by competition between large patenting firms to build large patent portfolios. In our view the resulting patent portfolio races lead to increases in transactions costs and socially wasteful investments in the management of patent portfolios(...) Consequently we come to the conclusion that public policy should seek to reduce the incentives of large patent applicants to patent innovations of questionable novelty value”⁶⁶⁹.

Studies have suggested that such increasing “arms race” might affect predominantly small firms and individual innovators whereas it might not increase R&D expenditures but rather legal and administrative expenses directed at the utilization of any possible loopholes in the patent system⁶⁷⁰. In fact, the strategic construction and use of patent portfolios has been accompanied by an increase in strategic behavior practices in the application process, which is documented in Europe under the following terms:

“Not only do firms make patents more comprehensive, longer and more complicated by adding claims. They also increase the number of divisional patents and the number of patents that share the same priority. Both of these measures provide an indication that patent applicants are making it more difficult for rivals to determine the precise content of their patents and thereby the degree of protection which firms will enjoy”(references omitted)⁶⁷¹.

⁶⁶⁸ See the proceedings of negotiations on the EPLA and the European Community Patent within the European context, supra note 379. See also negotiations of ACTA (Anti-Counterfeiting Trade Act), supra note 290.

⁶⁶⁹ See Harhoff et al., supra note 165, at p. 277-278.

⁶⁷⁰ See Harhoff et al., supra note 165, at p. 260 for the European landscape and a comparison with the U.S., citing previous studies backing up such conclusions. For the U.S. landscape see also BESSEN AND MEURER, supra note 14.

⁶⁷¹ See Harhoff et al., supra note 165, at p. 259.

The consequences of such landscape might be summarized as follows. Firstly, and from the perspective of the patent office, there has been an increasing number of patent applications and the use of several strategies that causes a decrease in the quality of patents due to constrained resources for patent examination and increasing workload. This result might additionally turn into in a vicious circle whereby low quality generates incentives to file even more applications⁶⁷². Secondly, from the perspective of patentees, strategic behavior might materialize in the form of strategic management of patents portfolio, strategic management of individual patents or clusters of patents, the use of patent filling strategies and the use of enforcement and litigation strategies.

“there is ample evidence that strategic patenting behaviour, such as we have documented it in this study, is having effects on firms’ behaviour that are highly likely welfare decreasing. Most importantly we can see that these developments are affecting the ability of the European Patent Office to fulfil its mission⁶⁷³.”

Such escalation of patents is more closely associated with some specific technological sectors. In some of these sectors the aim is to accumulate patents towards enabling cross-licensing whereas in others the goal is to block rivals. As a consequence, it has been suggested that competition policy should take into account such important differences in patent strategic behavior between technological sectors and again, that it should avoid the use of one-size-fits-all solutions⁶⁷⁴.

Such differences by sectors are particularly manifested in the following changes: 1) an increasing number of patent applications in practically all technological sectors; 2) an increase in the number of claims, especially in the areas of Information technology, Pharmaceuticals, Cosmetics, Organic fine chemistry and Biotechnology and 3) an increase in the number of divisional applications in the areas of Telecommunications; Information technology; Audiovisual technology; Medical engineering; Pharmaceuticals, Cosmetics; Biotechnology; Agricultural and Food Machinery and Handling and printing.

⁶⁷² See *ibid* at p. 264: “the inelastic supply of examination capacity and of legal expertise together with increased demand for examinations caused by the escalation mechanism may lead to a feedback loop which leads to steadily decreasing quality of granted patents”.

⁶⁷³ *Ibid* at p. 266-267.

⁶⁷⁴ *Ibid* at p. 278, arguing that: “evidence of an escalation of firms patenting activities only in a subset of the technologies covered by patent protection by the EPO. Within these technology areas we find evidence of two distinct patenting behaviors. The first being directed towards cross-licensing of patent portfolios and the second focusing more on protection of own technologies and blocking of rivals. In consequence reviews of competition and enterprise policy need to recognize the difference between technology sectors. This is best achieved in sectoral reviews that take into account the competitive interaction of firms both in technology - and product markets”.

Table 2: the changing landscape of patent use in Europe

Technological Sectors/ Patenting behaviour	Increase applications ⁶⁷⁵	Increase claims	Increase divisional applications	Scores
Telecommunications	Yes	No	Yes	2
Electrical Devices	Yes	No	No	1
Information Technology	Yes	Yes	Yes	3
Audiovisual technology	No	No	Yes	1
Medical Engineering	No	No	Yes	1
Analysis, Measurement and Control	Yes	No	No	1
Pharmaceuticals and Cosmetics	Yes	Yes	Yes	3
Organic fine chemistry	Yes	Yes	No	2
Biotechnology	Yes	Yes	Yes	3
Agricultural and Food Machinery	No	No	Yes	1
Handling and Printing	No	No	Yes	1
Total	7 sectors	4 sectors	8 sectors	

Table 3: Applications by IPC sectors and pharma sub-sectors

Year of Filing	2000	2001	2002	2003	2004	2005	2006	2007
All Sectors	100702	110115	106341	106341	123761	128724	135425	140882
Organic Chemistry	5435	6022	6311	6622	6817	7193	8203	8743
A61K* Medicines	2876	3650	3762	4515	4988	5110	5562	5687
Electric communication technique	NA	NA	NA	NA	12120	12843	13488	14409
Biochemistry Genetic Engineering	NA	NA	NA	NA				

Source: Table 18: Total European and Euro-PCT (regional phase) filings at the EPO for all sectors, organic chemistry and A61K*; Final Report, European Commission, p. 162 plus added data on other sectors.

Table 4: Patent applications in IPC classes with most filings

IPC classes	2008	2007	2006	2005	2004
Medical or veterinary science; Hygiene	17006	16742	15752	14688	13770
Electric communication technique	14842	14409	13488	12843	12120
Computing	9520	8981	8969	8664	8134

⁶⁷⁵ Defined as a particular increase in the number of patent applications or in the number of claims respectively as described in Harhoff et al., supra note 165, analyzing the PAT Val survey and other previous studies.

Basic electric elements	8901	8147	8062	7541	7385
Measuring; testing	8206	7524	7151	6525	6700
Organic chemistry	8016	7940	7463	6570	6188
Vehicles in general	4513	4305	4322	4175	3901
Organic macromolecular compounds	4001	3835	3709	3331	3113
Biochemistry; genetic engineering	3953	3970	3847	4098	3975
Engineering elements	3867	3563	3298	3278	3238
Sub-total	82825	79416	76061	71713	68524
Others	63736	61309	59122	56966	55182
Total	146 561	140725	135183	128679	123706

Source: EPO Facts and figures per year, available at: <http://www.epo.org/about-us/publications/general-information/facts-figures.html>

4.2 A case study: the European Pharmaceutical Sector

Important differences remain within technological sectors, with some of them being more affected by the patents “arm race” and the emergence of strategic behavior practices. A sector often mentioned as “immune” to such problems and responsive to the incentives generated by the patent system is the pharmaceutical sector. However, recent studies have uncovered a number of problematic practices present in this sector as well as the increasing use of several patent strategies. This section is precisely motivated and drawn from the recently released Report on the Inquiry of the European Commission directed to investigate the European Pharmaceutical Sector. It is perhaps the most throughout and up-to-date evidence on patent practices, including strategic behavior, which is available in Europe at the time. In addition the inquiry in the pharmaceutical sector offers an opportunity to confront with most other European studies -following the most debated cases from U.S. studies- that focus on the sector of information and communication technologies with the landscape of a sector that is usually assumed to benefit from the patent system and to be the lively proof of its correct performance.

In addition, and without drawing definite conclusions –in the light of the complex features of this technological sector- it is probably not a coincidence that the majority of European case law analyzed in the previous chapter belongs precisely to this area⁶⁷⁶. There might indeed be systematic problems in the European Pharmaceutical industry but even in the absence of definitive conclusions it is yet possible to argue that the evidence weights in favor of maintaining proper spaces for a flexible use of *ex-post* liability rules. The use of discretionary rules could be a complement rather than a substitute of other policy changes directed at a particular technological sector perceived as problematic as it happens with business method or software patents in the U.S. *Ex-post* liability rules are probably necessary for a lower number of cases which nevertheless might have an important impact on the patent landscape. Such cases are precisely rooted in strategic behavior practices that mutate with time, might affect any technological sector and cannot be dealt with efficiently through the use of general or *per se* rules but rather through standards or rules of reason that are able to adapt to the particular circumstances of time and industry.

The Pharmaceutical sector inquiry performed by the European Commission indeed pertains to one of the most complex and important technological fields from the perspective of patent law. It is probably the technological sector with the highest response to the economic incentives set by patent law⁶⁷⁷ but in addition to patent law, the pharmaceutical sector is subjected to a complex web of regulations that relate to the marketing approval of new substances, price controls and reimbursement systems⁶⁷⁸. The pharmaceutical sector is important both in terms of R&D expenditure but also in its impact on the health of citizens and the correct functioning of national health systems⁶⁷⁹.

In 2008, the European Commission launched an investigation aiming at assessing “the reasons for observed delays in the entry of generic medicines to the market and the apparent decline in innovation as measured by the number of new medicines coming to the market”⁶⁸⁰. The focus was directed towards

⁶⁷⁶ See Chapter III, sections 4 and section 5; analyzing case law from Italy and the U.K. respectively.

⁶⁷⁷ See Wesley Cohen, et al., *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not)*, NBER WORKING PAPER NO. W7552 (Feb. 2000), surveying managers of firms in the U.S. and finding that only in the Chemical and Pharmaceutical sectors, patents played an important role as incentives to invest in R&D.

⁶⁷⁸ See EC, Pharmaceutical Sector Inquiry, Final Report, Staff Working Paper, Part I, 8 July 2009, paragraph (39), available at:

http://ec.europa.eu/competition/sectors/pharmaceuticals/inquiry/staff_working_paper_part1.pdf

⁶⁷⁹ Ibid at paragraphs (1), (11) and (12).

⁶⁸⁰ See Commission Decision of 15 January 2008 initiating an inquiry into the pharmaceutical sector pursuant to Article 17 of Council Regulation (EC) No 1/2003 (Case No COMP/D2/39.514), available at:

inquiring on “the competitive relationship between originator and generic companies and amongst originator companies”. The Commission selected 43 originator companies and 27 generic companies for in depth analysis, which together represented the 80 % of the relevant turnover in the EU, being mostly larger scale companies active in more than one Member State. The inquiry and the report concentrated on the behavior of pharmaceutical firms, leaving aside any other changes inherent to the technological sector or financial aspects that might also influence the innovativeness of the sector. For the purposes of the Inquiry and the Final Report, patents were classified into two main types, primary patents protecting the active ingredient, and secondary patents, protecting all other aspects relating to a pharmaceutical product⁶⁸¹.

The results of this Inquiry largely validate those of other previous studies, especially with regards to the increase in the number of patent applications⁶⁸² as well as the increasing use of patent strategies which are doubtfully contributing to foster innovation incentives. The practice of filing divisional applications for instance has increased in the field of pharmaceuticals⁶⁸³ in a way similar to the overall increase in all EPO applications, yet it remains at even higher relative levels⁶⁸⁴. Opposition procedures are however more frequently used in the pharmaceutical sector and might have a countervailing effect with respect to the increasing number of applications⁶⁸⁵. Some specific features are found in the pharmaceutical sector as generic companies tend to oppose almost exclusively secondary patents and to prevail in approximately 60% of final decisions rendered by the EPO (2000 -2007). At the same time, originator companies tend

http://ec.europa.eu/competition/sectors/pharmaceuticals/inquiry/decision_en.pdf, last accessed on August, 10, 2009.

⁶⁸¹ See EC, Final Report, supra note 678 , at paragraph (427), p. 164, explaining that: “Of the nearly 40,000 cases, some 87% were classified by the companies as involving secondary patents, giving a primary: secondary ratio of approximately 1:7. Of applications still pending, 93% were classified as secondary (a primary: secondary ratio of approximately 1:13), whilst 84% of the patents granted were classified as secondary (a primary: secondary ratio of approximately 1:5).

⁶⁸² But see the latest trend indicating a slightly lower number, in EC Final Report, ibid at paragraph (276), referring that: “In 2008, the EPO received 146,500 patent applications, an increase of 3.6% compared to 2007. In 2008, in total, 49.5% of final actions (outcomes) in examination were grants, down from 51% in 2007. This lower percentage of grants may be seen as a first result of the EPO’s increasing focus on ensuring the quality of granted patents”.

⁶⁸³ Ibid at paragraph (432), referring that the total number of voluntary applications for A61K* rose from 102 in 2000 to 470 in 2007 and compared to the number of overall application in A61K*, the relative share of divisional applications rose from 3.5% in 2000 to 8% in 2007.

⁶⁸⁴ Ibid at paragraph (432), referring that the number of voluntary divisional applications has grown in a parallel manner from 2.3% in 2000 to 4.9% in 2007, yet remains, in relative terms, on a lower level than in A61K*.

⁶⁸⁵ Ibid at paragraph (277), referring that 5.2% of granted patent applications at the EPO were opposed during 2007 and granted patent were revoked in 38% of cases and maintained in amended form in 30% of cases. Oppositions in the pharmaceutical sector tend to be more frequent (8%) than in organic chemistry (4%) and across all sectors (5%).

to oppose each other's secondary patents and prevailed in approximately 70% of final decisions.

However, in around 80% of cases, it took a long time of more than two years to arrive to a final decision. It is important to recall that during this rather long period of time generic companies are not able to obtain a clarification of the situation with respect to the patent and enter into the market. Further particularities of the patent pharmaceutical sector in Europe are the high concentration of the top selling products⁶⁸⁶.

Litigation procedures for invalidity and infringement are, as already explained, variable according to each national member state. One particular characteristic of litigation is that some national courts provide for separate procedures for enforcement and invalidation. As each procedure is independent, invalidity of the patent cannot be used in those cases as a defense against an enforcement action. Additionally, some national courts make it difficult to challenge the validity of the granted European patent when opposition proceedings before the EPO are pending and hence a final answer from the EPO is needed before invalidity proceedings can continue in those courts⁶⁸⁷.

4.2.1 Patent Strategies in the European Pharmaceutical Sector

The Final Report considered a number of practices used by “originator companies” in order to maintain exclusivity for their pharmaceutical products. This is fundamental for the sector, especially with respect to products with top sales (blockbusters) on which the Report particularly focused. In order to address the questions of why generic entry is blocked and why the number of new pharmaceutical substances has declined with time, the Report dealt with both competition between originator and generic companies as well as with competition between originator companies.

Strategies used by originator companies with respect to generic companies are important for competition law, patent law and regulation insofar as they might

⁶⁸⁶ Ibid, at paragraph (440), referring that the top 20% of INNs (International Non-proprietary Name for pharmaceutical substances) by total number of patents granted and pending applications, account for 60% of all patents and applications, whilst the top 50% account for 90%.

⁶⁸⁷ Ibid at paragraph (685), p. 245, “Therefore it can take up to 7 years or something more to get a final decision from the EPO. Some National Courts are particularly good at providing decisions quickly. [...] National revocation action or actions may be filed in parallel to a European Opposition in key territories or territories where prompt decision may be expected. Some National Courts may stay any such actions until the final outcome of the European opposition is known, but many (for example UK and Belgium) will not if it appears that legal certainty is important and the proceedings at the EPO have some time still to run”

aim at delaying the entrance of generics by creating unduly barriers. The Report acknowledged two principal objectives of the strategies that originator companies might pursue in order to exclude competitors. The first aim is maintaining exclusivity on blockbuster products during the whole period of the patent and of market exclusivity and avoiding challenges to the patent validity. This is mainly pursued through the filing of so-called patent clusters, that is, “a multitude of patent applications (on process, reformulation, etc.) protecting the product in addition to the base patent with the aim of creating several layers of defence”⁶⁸⁸.

The second aim is extending the period of exclusivity beyond the duration of the patent. This is pursued through the same multitude of filings during and towards the end of the period of patent protection. In practice, both objectives are pursued through overlapping strategies, as the same patent clusters for a given product might be able to protect against patent invalidity challenges as well as extending the patent period⁶⁸⁹.

Importantly, both of the above mentioned types of practices are used in tandem with enforcement procedures including preliminary and final injunctions. For instance, by filling clusters of patents on slightly modified versions of a chemical form, an originator company might then engage into an aggressive enforcement of such patents. In a series of documents obtained during the investigation, a testimony of one Originator Company expressly indicated the following:

"We were recently successful in asserting the crystalline form patent in [name of country], where we obtained an injunction against several generic companies based on these patents by 'trapping' the generics: they either infringe our crystalline form patent, or they infringe our amorphous form process patent when they convert the crystalline form to the amorphous form. [...] The availability of 'trapping' strategy will be evaluated on an on-going basis"

Such modified versions of a new molecule, which are often categorized as incremental or “secondary innovations” (slightly modified chemical forms such as salts, esters and enantiomers) might be socially desirable insofar as they might enhance the safety and efficacy of a drug. However, it is still the case that such patents might in some cases be considered dubious in terms of patentability requirements, especially under the test of non-obviousness or inventive step. That means that even though society benefits of such innovations, the absence or dubious presence of the patentability requirements

⁶⁸⁸ Ibid at paragraph (476).

⁶⁸⁹ Ibid at p. 186-187, footnote 355.

might signal that such innovations would have been developed even in the absence of patent protection⁶⁹⁰. This seems to be the case in many European cases where patents have been revoked in 60% of opposition and appeal procedures against originator companies whereas the scope of the patents was reduced in another 15%, in procedures concerning almost exclusively such “secondary patents”. In cases litigated between an originator company and a generic company concerning the validity of patents, 55% of such patents were finally annulled⁶⁹¹.

Filing strategies of pharmaceutical companies include the construction of patent clusters especially for the most (privately) valued patents. According to the inquiry individual medicines are protected by even 100 product-specific patent families, which can amount to 1,300 patents and pending patent applications across Member States. In addition, the number of patents and patent applications is 140% higher for the top selling medicines in contrast to the rest of the sample.⁶⁹²

A second filing strategy is the use of divisional applications, which are a procedure provided by law in order to divide an initial or parent patent application. Whereas in theory, the divisional cannot extend the content of the original application or its protection period, in practice because the examination of divisional applications continues notwithstanding the outcome of the parent application -even if the parent application is withdrawn or revoked- a divisional can in fact extend the examination period of the patent office. This practice then entails great uncertainty over patents for generic companies and in fact, the EPO has recently limited their use⁶⁹³.

The report also enquired on the litigation practices used by originator companies, starting from the premise that the enforcement of one’s right is in itself enshrined in the European Convention on Human Rights. Nonetheless the

⁶⁹⁰ See Alessandra Arcuri and Rosa Castro, *How Innovative is Innovative Enough? Reflections on the Interpretation of Article 27 TRIPS from Novartis v. Union of India*. SOCIETY OF INTERNATIONAL ECONOMIC LAW (SIEL) INAUGURAL CONFERENCE 2008 PAPER, available at: <http://ssrn.com/abstract=1159821>.

⁶⁹¹ More specifically, originator companies won 53% of final rulings concerning product patents, whereas nearly 70% of final judgments handed on process patents 83% of cases regarding second medical use patents and 88% regarding first medical use patents were favourable to the generic companies. See EC Final Report, *supra* note 678, at p.226-227; arguing that: “Hence, it would appear that among litigated patents the strength of process patents, first medical use and second medical use patents is relatively more limited and their challenge before court more often yields favourable results for generic companies”.

⁶⁹² See EUROPEAN COMMISSION, COMMUNICATION FROM THE COMMISSION: EXECUTIVE SUMMARY OF THE PHARMACEUTICAL SECTOR INQUIRY REPORT, available at: http://ec.europa.eu/competition/sectors/pharmaceuticals/inquiry/communication_en.pdf, at p. 10.

⁶⁹³ See the DECISION OF THE ADMINISTRATIVE COUNCIL OF THE EUROPEAN PATENT ORGANISATION OF 25 MARCH 2009 AMENDING THE IMPLEMENTING REGULATIONS TO THE EUROPEAN PATENT CONVENTION (CA/D 2/09) at: <http://www.epo.org/patents/law/legal-texts/decisions/archive/20090325.html>

Report recognized the potentially detrimental effects that the use of litigation might impose to competitors when it is used mainly as a way to deter entry of generic companies and as a means to create obstacles for competitors, especially if they are smaller⁶⁹⁴.

Litigation was found to be rising and in a sample of 219 molecules, originator and generic companies referred more than 1300 patent-related out of court contacts and disputes concerning the launch of generic products corresponding to the period of 2000-2007, during which, the number of cases grew four times. From a total of 698 cases of patent litigation between originator companies and generic companies, 223 cases were settled, final judgments were given in 149 cases and 326 cases were either pending or withdrawn⁶⁹⁵.

Originator companies were found to have initiated the majority of the cases, and yet generic companies won 62% of the 149 cases. The procedures had an average duration of 2.8 years, but important variations were found between Member States. In 30% of the cases, litigation was initiated between the same parties in more than one Member State with respect to the same medicine and in 11% of the final judgments that were studied in the report, there were two or more contradictory final judgments on the same issue of patent validity or infringement across EU member States⁶⁹⁶.

The findings of the Report confirm the general conclusion of patent studies providing evidence that litigation is costly and lengthy. The total cost of patent litigation in the EU (for the years 2000-2007) with regard to 68 medicines was estimated to be above € 420 million. In addition, the final report highlights the savings that could have arisen if a community patent and a unified patent court were present⁶⁹⁷.

With regard to the use of preliminary injunctions, originator companies were found to have asked for one in 255 cases and to have obtained a favorable response in 112 cases. The average duration of such preliminary measure was of 18 months and in 46% of cases where an injunction was granted the results of the proceedings consisted either in a final judgments favorable to the generic company, or in a settlement apparently favorable to the generic company. Yet the Report highlighted the differences present in different countries with regard

⁶⁹⁴ See EC Final Report, *supra* note 678, at p. 201, referring that: "litigation can also be an efficient means of creating obstacles for generic companies, in particular for smaller ones. In certain instances originator companies may consider litigation not so much on its merits, but rather as a signal to deter generic entrants".

⁶⁹⁵ *Ibid* at p. 11.

⁶⁹⁶ *Ibid* at p. 11.

⁶⁹⁷ See EC, COMMUNICATION FROM THE COMMISSION, *supra* note 692, at p. 12.

to the requirements to obtain preliminary injunctions. For instance, the Report accounts that it companies perceive it is fairly easy to obtain preliminary injunctions in Belgium whereas the patent holder has to show that there is a serious issue to be tried in order to obtain an injunction in the U.K. and courts in Germany and the Netherlands are more inclined to take into consideration the merits of the case when considering whether to grant one⁶⁹⁸.

4.2.2 Policy suggestions of the Final Report

Whereas the data compiled by the inquiry and Final Report on the European Pharmaceutical Sector are an important contribution towards understanding this specific sector and the European patent landscape in general and especially with regards to patent strategic behavior, some of its policy conclusions are rather simplistic. The Report produced four main suggestions, namely: (1) Intensify Competition Law Scrutiny; (2) Rapid Establishment of the Community Patent and Creation of a Unified Litigation System; (3) Streamlining the Marketing Authorisation Process and; (4) Improving Pricing and Reimbursement Systems and Developing a Pro-Competitive Environment for Generic Uptake. Whereas all these suggestions cover important aspects of the pharmaceutical sector, we only focus on the first two as they directly although only partially pertain to this debate.

In particular, the Report gave a quite complete view on the practices used by pharmaceutical companies which might prompt the future use of antitrust or projected reforms in the patent system. In contrast, the suggestions to cope with such problems were vague and limited. In the case of competition law, this might be understandable as the Report only sought to compile the basis for further eventual intervention⁶⁹⁹. With respect to the interface between patents and competition law, the Report reiterates what has become a prevailing view: that the existence and exercise of an industrial property right are not themselves incompatible with competition law and yet they are not immune from antitrust intervention. However, these practices put in place either between originator companies⁷⁰⁰ or between an originator company and a generic company⁷⁰¹ were considered to infringe competition law under exceptional circumstances.

⁶⁹⁸ See EC Final Report, *supra* note 678, at footnote 205.

⁶⁹⁹ See the Communication from the Commission, at p. 18: "Where appropriate, the Commission will make full use of its powers under antitrust rules (Articles 81, 82 and 86 of the EC-Treaty), merger control (Regulation (EC) No 139/2004)³⁸ and State aid control (Articles 87 and 88 of the EC-Treaty). The Commission, in close cooperation with the National Competition Authorities, will pursue any antitrust infringement in the sector, wherever required by the Community interest. Action can also be taken at national level and in areas which were not the primary focus of the inquiry or are outside its scope".

⁷⁰⁰ See *ibid* at p. 19. "With regard to competition between originator companies in particular, defensive patenting strategies that mainly focus on excluding competitors without pursuing innovative efforts

With respect to the area of patent law, the incompleteness or biases of the policy suggestions of the Report might be the result of a lack of more consolidated data for some of the problems, practices and legal rules under analysis. The two main suggestions made in this context were to accelerate the projects of patent harmonization for the implementation of a community patent and the EPLA⁷⁰² and to continue to ensure the quality of EPO patents⁷⁰³. In contrast with such strong suggestions for further patent harmonization, for instance, the Report gave a quite incomplete view on the use of compulsory licensing in Europe:

“In Europe, compulsory licence provisions have been very rarely used in practice, including in the area of pharmaceuticals. In the sector inquiry, only two cases were identified where compulsory licences had been issued. Both of these cases concerned Italy. In the first case, the Italian Patent and Trademark Office referred the matter to the Italian Competition Authority (...) In the second case, the Italian Patent and Trademark Office itself granted a compulsory licence. This licence was subsequently revoked upon request of the two parties concerned after they had reached a settlement. Under the settlement, an exclusive licence was issued. As for compulsory licences in general, it has been submitted by the UK Intellectual Property Office that in the UK such requests - although not very common - have occasionally been made in other sectors than pharmaceuticals”.

Even though the practice of compulsory licensing has remained largely limited⁷⁰⁴, this information is clearly incomplete and confined only to a few cases. The Report does not certainly focus only on patent law and was rather elaborated from a competition law viewpoint. However, in both areas of law

and/or the refusal to grant a license on unused patents will remain under scrutiny in particular in situations where innovation was effectively blocked”

⁷⁰¹ See *ibid* at p. 19. “As regards competition between originator companies and generic companies, delays to generic market entry are a particular point of concern. The possible use of specific instruments by originator companies in order to delay generic entry will be subject to competition scrutiny if used in an anti-competitive way, which may constitute an infringement under Article 81 or 82 of the EC Treaty”.

⁷⁰² See *ibid* at p. 21: “The results of the inquiry confirm that the Community patent and unified litigation system would create significant cost and efficiency improvements, in particular by reducing the costs associated with multiple filings, by eliminating essentially parallel court cases between the same parties in different Member States and by enhancing legal certainty through the avoidance of conflicting rulings. The Commission continues to make all efforts leading to the rapid adoption of these instruments”

⁷⁰³ *Ibid* at p. 21: “Stakeholders agree on the importance that European - and in the future Community - patents granted by the EPO should respond to a high quality standard. Strong support was further received by all stakeholders that the EPO should be enabled to accelerate procedures whenever possible. Based on its findings of the sector inquiry, the Commission supports the recent initiatives by the EPO to “raise the bar”. In this respect the Commission welcomes the recent decision to limit the time period during which the voluntary divisional patent applications can be filed. The Commission also supports the EPO in its efforts to shorten the opposition and appeal procedures”.

⁷⁰⁴ See chapter III above.

the practice of compulsory licensing is far more complex than stated by the above quoted footnote. Although this fact might only reflect a normal limitation on the scope of the inquiry which could not possibly cover all strategic patenting practices and all patent rules involved, it is important to consider that one out of the four policy formulations of the Report is the “Rapid Establishment of the Community Patent and Creation of a Unified Litigation System”. In contrast, such further processes of harmonization should previously give consideration to the difficulties that might surround the practice of compulsory licensing worldwide and also to the lessons learned through the latest case law in the U.S., to which the same Final Report refers⁷⁰⁵.

4.2.3 Beyond the European Pharmaceutical Sector

As mentioned above, the Final Report on the Inquiry about the European Pharmaceutical sector is an important source of information on patent “strategic behavior” within Europe. Beyond the European Pharmaceutical Sector, however, it is also possible to link some of these practices by the Pharmaceutical Industry, which are described in the Report with the more general case of strategic behavior as described in U.S. current practice.

With this regard, patent strategic behavior might be divided into two different types of practices. The first group encompasses the practices related with patent filling, including clusters of patents, filling strategies with respect to the claims of the patent and with patenting many adjacent technologies. The second group encompasses practices related with the enforcement of patents, and is mainly represented by enforcement practice initiated by Originator Companies against Generic Companies. One of such practices uses precisely the possibility of obtaining injunctions and especially preliminary injunctions in order to maintain competitors out of the market, even when patents are of a dubious quality and validity.

An important difference between the Pharmaceutical sector and for instance, the information and communication technologies is that in this latter, products tend to be multi-component whereas most pharmaceutical products are thought to relate to the one-patent/one-product paradigm. Nonetheless, such premise is changing, not only due to the technical evolution of the sector, where pharmaceutical substances are currently identified by making use of complex

⁷⁰⁵ Ibid at p. 6, arguing that “Poor quality rights can also contribute to problems with “patent trolls” that have arisen in the US judicial system”. Whereas we have argued that a categorization such as “trolls” does not efficiently tackle issues of patent strategic behavior, it is undeniable that these issues have been discussed in the context of the recently issued compulsory licenses in the U.S.

methods, including the use of biotechnologies, which are associated with a multi-component paradigm of patent protection but also by the use of strategies where patents are sought in many slightly modified versions of such substances in order to create “clusters” and “thickets”. For both reasons, the possibility that Pharmaceutical companies act “strategically” is importantly present and furthermore aggravated by the impact of this particular sector on social welfare⁷⁰⁶

This situation is noticeably not foreign to similar practices in other countries of the world, including the U.S. A widely discussed case in which these latter practices are put in evidence and in which Judge Posner gave an opinion as district judge, was that involving Originator Company SmithKline Beecham Corp. and Generic Company Apotex Corp.⁷⁰⁷. Whereas Judge Posner had dismissed the case on infringement of SmithKline’s patent⁷⁰⁸, an interesting part of his opinion regarded the creation of a new equitable defense, whereby an infringer would be excused as long as the patentee’s behavior had inhibited “non-infringing practice of the prior-art”⁷⁰⁹. Although the CAFC declined to follow the reasoning by Judge Posner, at the end the patent was invalidated, apparently signaling that neither court was willing to validate the strategic behavior of the patentee:

“This behavior is certainly opportunistic, and Judge Posner, sitting by designation, was bothered by SKB’s actions. As a result, he postulated a number of alternative theories, some quite novel, which allowed Apotex to escape liability and bring the substantially pure anhydrate to market. The Federal Circuit initially declined to adopt any of Posner’s myriad approaches and invalidated the SKB patent based on public use. After the original opinion was vacated en banc, the court subsequently invalidated the patent as inherently anticipated on remand”⁷¹⁰ (footnotes omitted).

⁷⁰⁶ See Jeremiah Helm, *Why Pharmaceutical Firms Support Patent Trolls: The Disparate Impact of eBay v. MercExchange on Innovation*, 13 MICH. TELECOMM. TECH. L. REV. 331 (2006), available at <http://www.mttl.org/volthirteen/helm.pdf>, giving examples of “trolling-like” behaviour by pharmaceutical companies (Originator Companies), and specifically referring at p. 340: “Especially suspicious is the practice of listing patents of questionable validity in the Orange Book to keep generic firms off the market. This allows the branded firms to maintain their monopoly pricing and extract greater profits from society as a whole. This opportunistic behavior, focused on extracting rents from society, is suspiciously similar to that of the patent troll holding up a large, established company”.

⁷⁰⁷ *SmithKline Beecham Corp. v. Apotex Corp.*, 247 F. Supp. 2d 1011, 1048–50 (N.D. Ill. 2003), 365 F.3d 1306 (Fed. Cir. 2004), *vacated*, 403 F.3d 1328 (Fed. Cir. 2005), *remanded* 403 F.3d 1331 (Fed. Cir. 2005).

⁷⁰⁸ Judge Posner’s opinion is available at: <http://www.projectposner.org/case/2003/261FSupp2d1002>.

⁷⁰⁹ See Dennis Crouch, *SmithKline Beecham v. Apotex (Paxil)*, April 24, 2004, available at: <http://patentlaw.typepad.com/patent/2004/04/smith.html>, last retrieved on December 15, 2009.

⁷¹⁰ See Helm, *supra* note 706, at p. 341.

5 Patent strategic behavior: towards a broader framework

Liability rules are normally justified by the presence of high transaction costs and strategic behavior. However, recent patent discussions on the use of liability rules have mostly been confined to the problem of hold-ups. Additionally, patent hold-ups have been mostly identified with the emergence of a business model in which firms often named patent trolls principally use patents as instruments of hold-up. This section discusses the notion behind patent trolls and hold-ups and argues in favor of preferring the latter concept as a normative threshold for the use of *ex-post* liability rules while a broader context for strategic behavior is proposed as a more adaptable alternative to the use of categorical definitions such as the current definition of hold-ups. The section revises different purported definitions of actors engaging in patent hold-ups and strategic behavior while concluding that the focus of analysis should be the purported strategic conduct rather than any specific actor involved.

5.1 Actors: Non-manufacturing entities, trolls, ambushes and others

The emergence of a new business model in which firms use patents -and the threat of injunctive relief- in a strategic way, has generated distress on governmental agencies, innovators and the U.S. Supreme Court⁷¹¹. Such concerns have also been expressed in some recent European reports⁷¹² and used by the *eBay* decision to call for the use of *ex-post* liability rules, specifically in the concurring opinion by Justice Kennedy⁷¹³.

A substantial part of the discussion following the *eBay* decision has in fact focused on the potential efficiency or inefficiency of a business model where firms are often named trolls⁷¹⁴. Nevertheless many issues related to the emergence of such “new” business model still remain unclear and a source of divergence between scholars and policy makers. Among the unanswered questions are which type of firms are trolls and whether trolls -a particular type of entity- should pose a concern for policy makers or whether patent policy should focus on the particular type of behavior behind trolls.

To begin with, the label “troll”, an arguably pejorative term, which is often substituted with the name “non-manufacturing” or “non-practicing entities”

⁷¹¹ See FEDERAL TRADE COMMISSION, *supra* note 5, at chapter 3, pp 38-39, also quoted in the Kennedy concurring opinion in *eBay v. MerExchange*, *supra* note 425, at p. 1842 (Kennedy’s opinion).

⁷¹² See also Harhoff et al., *supra* note 165.

⁷¹³ See *supra* note 425 and accompanying text.

⁷¹⁴ See *infra* note 716.

(hereinafter NMEs), comprises in fact a number of widely different entities ranging from individual inventors, joint ventures and universities to firms specialized in financing and enforcing patents. As a consequence it is difficult to identify which type of firm –if any- threatens the correct functioning of the patent system and hence the incentives to innovate.

The question that naturally follows is whether it is the type of entity that should be the object of distress or whether any type of entity can –once the proper incentives are in place- act as a patent troll. If the last statement is correct, the analysis should focus on “trolling” behavior rather than on the aforementioned entities. Such result would be furthermore in line with the theoretical insights of law and economics that warn against a type of behavior –opportunistic behavior, strategic behavior and hold-ups- instead of warning against any special type of firms or individuals or against the intention, mission or principal activities of a firm. These latter could at the most be used as a presumption or guide for judges or agencies when deciding whether they are in front of any allegedly harmful behavior⁷¹⁵.

In what follows, it is suggested that from a law and economics point of view, it is more accurate to identify patent hold-up and strategic behavior independently and isolated from the entity that carries on such behavior. This would be the case if strategic behavior can be explained in both subjective (intentional) and objective terms.

The following section describes trolls and identifies the various forms that trolls –understood as NMEs actively pursuing the enforcement of their patents- can adopt. At least three reasons are given why trolls should not be the potential object of a rule tackling with the above mentioned problems. The first reason relates to the difficulty of finding a unitary legal and business definition of potential trolls. The second reason is historical because any business model and even the *modus operandi* of any entity intending hold-ups and strategic behavior is likely to evolve as technologies and rules change. Strategic behavior is largely adaptable and hence, the design of legal rules tackling with strategic behavior shall be as flexible as possible. The third reason why a rule directed against trolls would not be desirable is that it could deter presumably efficient behavior while failing to encompass inefficient behavior.

⁷¹⁵ See Mark Lemley, *Are Universities Patent Trolls?* (April 11, 2007). STANFORD PUBLIC LAW WORKING PAPER No. 980776. Available at: <http://ssrn.com/abstract=980776>, advancing a similar argument and arguing that: “Universities will sometimes be bad actors. Nonmanufacturing patent owners will sometimes be bad actors. Manufacturing patent owners will sometimes be bad actors. Instead of singling out bad actors, we should focus on the bad *acts* and the laws that make them possible. We will solve the troll problem not by hunting down and eliminating trolls, but by hunting down and eliminating the many legal rules that facilitate the capture by patent owners of a disproportionate share of an irreversible investment”.

5.1.1 Definition and business models

Patent trolls have been generally described as companies that do not use their patents but rather devote their resources to licensing and/or enforcing them. Whereas the definition of NMEs comprises any patent holder that does not commercialize or works her invention, patent trolls have been often defined as patentees that do not only abstain from using their patents but rather wait until someone “infringes” and uses litigation and the threat of litigation and injunctions to actively enforce their patents⁷¹⁶. Thus -at least indirectly- it is the typical element of hold-up that occurs when someone makes specific investments in a 2nd innovation, which often separates a troll from other types of NMEs.

There is however a wide spectrum of different sub-types of NMEs that might be classified according to different features⁷¹⁷ such as the way in which inventions

⁷¹⁶ See Lisa Dola and Blaine Bettinger, *Ebay and the Blackberry®: A Media Coverage Case Study* (DECEMBER 11, 2007). Available at: <http://ssrn.com/abstract=1082220>, illustrating how scholarly papers and even press articles about “patent trolls” have mushroomed in the follow-up of the *eBay* case. For the origin of the term “patent troll” see William Everding, “Heads-I-Win, Tails-You-Lose”: *The Predicament Legitimate Small Entities Face Post Ebay And The Essential Role Of Willful Infringement In The Four-Factor Permanent Injunction Analysis*, 41 J. MARSHALL L. REV. 189, referring that Peter Detkin created the term “patent troll” in 1999 while being assistant counsel at Intel Corp. and after having being suited for libel due to the use of the term “patent extortionist”: “A patent troll is somebody who tries to make a lot of money off a patent that they are not practicing and have no intention of practicing and in most cases never practiced”; and also explaining that Mr. Detkin afterwards left Intel to join Intellectual Ventures, which could itself be considered a patent troll. (See Intel, FTC and eBay’s definition). See also BRIEF OF AMICUS CURIAE YAHOO! INC. AS SUPPORTING PETITIONERS, IN *EBAY, INC. V. MERCEXCHANGE, L.L.C.*, 126 S. Ct. 1837 (2006), No. 05-130, available at: <http://patentlaw.typepad.com/eBay/eBayYahoo.pdf>, last accessed on August 11, 2009, posing that trolls: “do not innovate, but rather seek to acquire broad and nebulous patent claims that arguably encompass existing technologies relied on by companies with deep pockets(...)By acquiring these claims and threatening or pursuing litigation, the patent trolls seek and often receive economic settlements from genuine innovators and producers that greatly exceed the true economic value of the patents in question”.

⁷¹⁷ See for instance, Allison, Lemley and Walker, *Extreme Value or Trolls on Top? The Characteristics of the Most-Litigated Patents*, STANFORD PUBLIC LAW WORKING PAPER NO. 1407796, available at: <http://ssrn.com/abstract=1407796>, classifying non-practicing entities in different classes that include: 1) acquired patents, 2) university heritage or tie, 3) failed startup, 4) corporate heritage, 5) individual inventor started company, 6) University government or NGO, 7) startup/pre-product, 9) individual, 10) industry consortium and 11) subsidiary of product company, and found that the most litigated patents were owned in a greater proportion by non-manufacturing entities, principally “licensing companies which are in the business of buying up and enforcing patents (“trolls” virtually by anyone’s definition)” and by companies started by the inventor but which do not make products. Also concluding, among other things, that features such numerous claims, more prior art citations, more forward citations, more assignments between issue and litigation, and larger numbers of continuing applications, which distinguish the most litigated patents from other patents could signify that “the most litigated patents are also the most valuable patents”, however warning that such higher value expresses private rather than social value of such patents.

are developed, the ownership of patents and their commercialization policies⁷¹⁸. NMEs have largely been classified according to whether or not they perform any innovation activity into two main types: 1) research centers, universities or companies devoted to R&D but not to the commercialization of their innovations and 2) companies specializing in the commercialization of or financial intermediation and/or managing or enforcement of patents, especially through the use of patent litigation or threats of using patent litigation. Whereas many commentators have argued that the first type of NME should have easier access to injunctive relief than the second⁷¹⁹, some have considered both types of companies to be justified upon efficiency considerations⁷²⁰. The decision of abstaining from commercializing patented inventions is in the case of universities, research centers or companies specializing only in research, based upon economic reasons as specialization and efficient division of labor⁷²¹. A most efficient use of resources could arise when entities specialize, some of them focusing on research and some of them on commercialization. Hence, the mere fact that an entity invents and patents an invention with no intention to practice the technology does not seem to *per se* imply any efficiency problem.

Companies specializing only on patent enforcement and financing activities have also been defended because of the special enforcement needs and the benefits provided by financial intermediation in the patent area⁷²². One specific type of companies are funds operating on a similar basis to a normal fund with investors buying shares on the fund and the fund buying and managing patents or exclusive licenses on patents. However, and differently from a normal stock

⁷¹⁸ Ibid at p. 39. See also McDonough, *supra* note 430, at p. 192-193, describing three types of trolls: 1) individual inventors that do not practice their patents; 2) companies that generate ideas for patenting and eventually licensing, e.g. Intellectual Ventures and 3) patent holding companies that buy patents for the only purpose of licensing and enforcing them, e.g. Acacia Research Corporation. Compare the mission of Intellectual Ventures LLC: “to assemble a world-class team to invent and invest in inventions with the intent of creating a new, dynamic marketplace where inventors are fairly compensated for their work and the public can be assured fair access to innovation”, available at: <http://www.intellectualventures.com/background.aspx>, last visited on August 9, 2009 with that of Acacia Research Corporation stating that: “Acacia Research’s subsidiaries develop, acquire, and license patented technologies. Acacia controls over 100 patent portfolios covering technologies used in a wide variety of industries”, available at: http://www.acaciaresearch.com/aboutus_main.htm

⁷¹⁹ See for instance Lemley, *supra* note 715. See also the *eBay* decision, *supra* note 2, acknowledging that: “For example, some patent holders, such as university researchers or self-made inventors, might reasonably prefer to license their patents, rather than undertake efforts to secure the financing necessary to bring their works to market themselves”.

⁷²⁰ See McDonough, *supra* note 430. See also Ronald Mann, *Do Patents Facilitate Financing in the Software Industry?*, 83 TEX. L. REV. 961, 1024 (2005), arguing that: “Essentially, trolls are serving a function as intermediaries that specialize in litigation to exploit the value of patents that cannot be exploited effectively by those that have originally obtained them. That is not in and of itself a bad thing”.

⁷²¹ See Denicolo, et al., *supra* note 160.

⁷²² See McDonough, *supra* note 430, at p. 190, arguing that: “These trolls act as a market intermediary in the patent market. Patent trolls provide liquidity, market clearing, and increased efficiency to the patent markets—the same benefits securities dealers supply capital markets-. Ultimately, this Comment suggests that the emergence of patent trolls is simply a stage in the natural evolution of the patent market”.

or bond fund, the commercialization and enforcement of the patent portfolio is particularly important given the complexities of patent litigation⁷²³. Hence, apart from hedging risks as a typical fund, companies operating patent-based funds need to actively pursue the enforcement of their patents. It is the particular means used to enforce and commercialize their patents that is often criticized as troll-behavior⁷²⁴.

In addition to identifying efficiencies in the operation of NMEs, some analysts have considered that a rule disfavoring NMEs as a category –for instance by creating a presumption for denying injunctive relief– would favor big companies over small ones either intentionally or not⁷²⁵. Whereas such argument might actually point towards a valid concern it is however troubling to conclude by suggesting that permanent injunction should always follow a finding of infringement because otherwise small companies would be at a disadvantage.

In fact, it can be argued that although the prototypical patent hold-up case involves a small NME suing a large company⁷²⁶, this would not be necessarily the case, and defendants (presumed infringers) are not necessarily big companies in all cases. A possible example –under a broader concept of strategic behavior– would be the case of pharmaceutical companies which have presumably acted strategically in order to impede the commercialization of

⁷²³ See McDonough, *ibid*, at p. 211-212, proposing the alternative name of “patent dealers” to substitute the pejorative label of trolls and arguing that patent dealers are efficient because they (1) create a credible threat of litigation that an individual inventor would not have by himself and “which encourages exchange, makes patents more liquid, and facilitates market clearing through price equalization”; (2) create liquidity and transform patents in “commodities” by matching patent owners with companies seeking to commercialize patents, managing transactions and providing a “central place of exchange” and they do so precisely by holding a patent inventory and licensing it to companies seeking specific technologies and finally; (3) patent dealers clear the market by equalizing prices and undertaking risks in a market such characterized by information asymmetries among participants that might cause market friction induced by search and evaluation costs and lead to inconsistent pricing and eventually to a failure of the market.

⁷²⁴ In Europe, for instance, the company SISVEL specializes in the management and enforcement of some patents, also promoting the formation of patent pools. See mission of Società Italiana per lo Sviluppo dell’Elettronica SISVEL, available at: <http://www.sisvel.it/english/aboutus/mission> last accessed in August 8th, 2009: “In short, SISVEL operates as a bridge between manufacturers that require access to key technology and patent owners that wish to license their portfolios to finance further research. Among its activities, SISVEL assists companies in preparing and executing a strategy to protect their R&D efforts with effective intellectual property”. It is noticeable that SISVEL appears as applicant of approximately 93 patent filing applications at the EPO –search in esp@cenet.com, last visited in August 8th, 2009-. See also Christoph, *supra* note 567, citing the case of SISVEL, which has been sometimes referred as a European patent troll.

⁷²⁵ See John Golden, ‘Patent Trolls’ and Patent Remedies. TEXAS LAW REVIEW, VOL. 85, p. 2111, 2007, available at: <http://ssrn.com/abstract=991698>

⁷²⁶ See among others, the above mentioned cases of *Amado v. Microsoft*, *Paice v. Toyota* and *MercExchange v. eBay*.

generics⁷²⁷. Moreover, recent studies show that among other litigation patterns, small firms have a higher probability of being sued relatively to their R&D expenditure than large firms⁷²⁸. This data could warn against associating typical troll cases with a small firm suing a large firm and especially against building policy suggestions on that basis.

A closely related argument against an absolute right to obtain injunctions for NMEs is based upon the misleading view that describes NMEs as “innovators” and large companies as “infringers”. This assertion is also part of a broader and much more complex issue that derives from the fact that patent law in principle does not provide for an exception in case of independent invention. Hence, even if a second innovator could or in fact arrived to the same innovation independently, there will still be patent infringement⁷²⁹. In fact, several recent studies have underlined the difficulties behind assessing the intention of infringement (willfulness in the U.S.), which is important for the purposes of calculating damages. The problem is also closely related to the recently acknowledged fact that a great number of infringement cases occur inadvertently but rather due to the difficulties of an optimal prior art search and the increasing complexity of patent landscapes filled with thickets and complex clusters of patents over adjacent technologies.

In front to these realities it is probably advisable to reject both the *a priori* identification of plaintiffs as presumed trolls and that of defendants as presumed infringers. If the controversy over hold-ups is rooted in the complexities of patent scope and the ambiguous results in the economic theory of patent improvement, as it has been recently argued⁷³⁰, most cases would actually reflect a tension between first and second innovators rather than a conflict between innovators v. infringers or trolls v. innovators. These reasons also weight in favor of maintaining a certain degree of discretion and flexibility for the issuance of injunctive relief.

Additionally, studies have suggested that defendants (presumed infringers) are often firms that invest hugely in R&D, in contrast with the image of firms

⁷²⁷ See Helm, *supra* note 706, describing examples of pharmaceutical companies acting like trolls in the sense of acting strategically including through the use of a threat to enjoin generic companies to avoid competition even when patents have expired.

⁷²⁸ See BESSEN AND MEURER *supra* note 14, at p. 123.

⁷²⁹ See also Cotropia and Lemley, *supra* note 432, arguing that “one of the most significant differences between patent law and other areas of intellectual property is that copying is irrelevant to the determination of infringement”. See Stephen Maurer & Suzanne Scotchmer, *The Independent Invention Defence in Intellectual Property*, 69 *ECONOMICA* 535 (2002).

⁷³⁰ See Cotter, *supra* note 38, arguing that disagreement about hold-ups was due to an underlying disagreement about the economics of patent improvement and citing the pioneering work “On the Complex Economics of Patent Scope”, Merges and Nelson *supra* note 35.

stealing other firm's property and/or free riding on other's innovation. Actually some of those presumed infringers have invested more on R&D than their plaintiffs in infringement suits⁷³¹. In the highly publicized case involving the manufacturer of *Blackberry*⁷³², RIM, it has been argued that this latter had invested nearly half a billion dollars in developing this technology -much more than NTP's R&D expenditures- even before knowing about the existence of the NTP's patents. Furthermore, in many cases, including this one, patents have been subject to re-examination on multiple grounds that rise doubts with regard to the validity of the involved patents. However, decisions on infringement of patents, including preliminary and final measures are independent from re-examination procedures. For all these reasons, an injunction might have potentially disruptive consequences even if it refers to a patent that might be eventually held invalid and/or relates to a technology that another firm has independently developed by making important investments in R&D.

In this sense, arguments in favor of awarding injunctive relief for NMEs that are research institutes or universities due to the fact that such entities invest in R&D are usually based upon the fact that the bargaining power they exercise would be necessary to recover their investments as well as being the basis for further R&D investments⁷³³. Such arguments could also be applied to defendants that make important investments on R&D and are then object of hold-ups. Empirical studies have in fact showed that higher expenditures in R&D are associated with a higher probability of being sued for infringement⁷³⁴. Moreover, studies have found that most infringers do not usually attempt to hide their infringing products, as one would expect if infringement were willful, and that only in a very small portion of cases -around 4% in the U.S.- defendants have been found to have willfully infringed⁷³⁵. These data is supportive of the thesis, sustained by some scholars, that it is inadvertent infringement more than intentional infringement that drives most litigation⁷³⁶. In practice, again, the fact that either the defendant or the plaintiff might invest in R&D, should only weight in favor of rejecting a categorical *a priori* identification of both defendants and plaintiffs rather than suggesting which party should patent policy irrefutably favor.

⁷³¹ See BESSEN AND MEURER, *supra* note 14, at p. 123. See also below Graph 1: Who files more patents?

⁷³² See *NTP v. Research In Motion*, *supra* note 390.

⁷³³ A similar reasoning was developed by the circuit court in the case of *Commonwealth Scientific & Indus. Research Organisation v. Buffalo Tech. Inc.* (CSIRO) *supra* note 461, which argued that CSIRO should be entitled to an injunction as it is a center that invested in R&D activities.

⁷³⁴ See BESSEN AND MEURER, *supra* note 14, at p. 124.

⁷³⁵ See also *Re Seagate*, *supra* note 472.

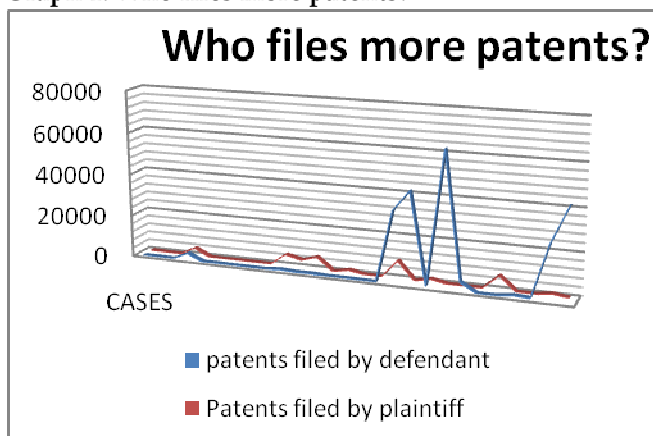
⁷³⁶ See BESSEN AND MEURER *supra* note 14, at p. 124, arguing that: "this pattern is entirely consistent with the inadvertent-infringement explanation -the more a firm invests in technology, the more it inadvertently exposes itself to patents of which it is not aware". See also Cotropia and Lemley, *supra* note 432, making a similar argument.

Table 1: Who files more patents? Parties in US litigation filing patents at the EPO⁷³⁷

Case	Plaintiff	Patents filed in EPO	Defendant	Patents filed in EPO
Tivo Inc. v. Echostar Communications Corp.	Tivo Inc.	228	Echostar	2
Visto Corp. v. Seven Networks, Inc.	Visto Corp.	71	Seven Networks	34
MPT, Inc. v. Marathon Labels, Inc.	MPT Inc.	7	Marathon Labels	0
Novozymes A/S v. Genencor Int'l, Inc.	Novozymes	3764	Genencor	3399
Ortho-McNeil Pharmaceutical, Inc. v. Mylan Labs. Inc.	Ortho-Mc Neil	3	Mylan Labs	9
O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.	O2 Micro Int'l	5	Beyond Innovation	166
800 Adept, Inc. v. Murex Securities, Ltd.	800 Adept Inc	3	Murex Securities	14
MGM Well Services, Inc. v. Mega Lift Systems	MGM Well Servi	2	Mega Lift system	0
Brooktrout, Inc. v. Eicon Networks Corp.	Brooktrout Inc	0	Eicon Networks	8
Commonwealth Scientific & Industrial Research Organisation v. Buffalo Technology Inc.	CSIRO	5604	Buffalo Technology	707
Sanofi-Synthelabo v. Apotex Inc.	Sanofi Synthelabo	3675	Apotex	313
Johns Hopkins University v. Datascope Corp.	J.H. University	6026	Datascope Corp	386
Baden Sports, Inc. v. Kabushiki Kaisha Molten	Baden Sports	1	Kabushiki Kaisha	17
Verizon Services Corp. v. Vonage Holdings Corp.	Verizon	1486	Vonage	84
Sundance, Inc. v. Demonte Fabricating Ltd.	Sundance Inc	8	Demonte Fabricating	0
Martek Biosciences Corp. v. Nutrinova Inc.	Market Biosciences	1	Nutrinova	4
Broadcom v. Qualcomm	Broadcom	8561	Qualcomm	34119
z4 Techs. v. Microsoft Corp.	z4	8	Microsoft	43677
Finisar Corp. v. DirecTV Group	Finisar	1626	Directv	766
Paice LLC v. Toyota Motor Corp.	Paice	42	Toyota	63874
Voda v. Cordis Corp.	Voda	98	Cordis	4298
IMX, Inc. v. LendingTree, LLC	IMX	24	LendingTree	8
Praxair, Inc. v. ATMI, Inc	Praxair	6800	ATMI	21
Acumed LLC v. Stryker Corp	Acumed	81	Stryker Corp	1112
MercExchange, LLC v. eBay, Inc.	MercExchange	5	eBay	588
Innogenetics v. Abbott	Innogenetics	1146	Abbott	26200
Amado v. Microsoft	Amado	1	Microsoft	43677
Joltid v. Skype	Joltid	2	Skype	77
NTP v. RIM	NTP Inc	22	RIM	9621

Source: Search done in EPO sp@cenet database, last revised on August 8, 2009

Graph 1: Who files more patents?



Source: table 1

5.1.2 Evolution of patent strategic behavior

Another reason why defining firms as “patent trolls” or NMEs would not be useful to weed out hold-ups without incurring in significant costs and errors is that even if one such category was sufficiently homogenous at present, it would

⁷³⁷ The table only shows the number of patent filings before the EPO of the main parties involved in several U.S. cases applying the *eBay* precedent. The number of filled patents is only a rough proxy for the capacity of innovation and investments in R&D of a company, however it gives an approximate sense of the fact that the typical case of infringement does not necessarily involve an innovative plaintiff against a copyist infringer but rather, as sustained by Cotter, *supra* note 38, mostly a problem between parties involved in patent improvements and sequential innovations.

be likely to evolve rapidly. As a consequence, any policy measure targeting a similar category of patentees would most probably fail. The reason is that entities anticipating such policy responses would probably mutate their strategies and change their business model, licensing practices and any other factor taken into consideration by courts in order to avoid any policy responses.

In fact, there are historical examples of strategic behavior put in place at different periods of time by different types of entities although with the use of similar litigation and patenting strategies. An example has been drawn from the U.S. agricultural sector following the creation -first by the U.S. Patent Office and then on the patent statute- of a new type of design patents during the 1860s, which was meant to provide incentives for incremental innovations. In practice, this reform is said to have lowered the bar for the patentability of such designs and opened the door for an important increase in the number of applications. As a commentator explains, “patent sharks” –as they were named at the time- bought inactive patents, mainly in the agricultural field, in order to sue inadvertent farmers who were using such patented products⁷³⁸. At that time, the practice was criticized on grounds similar to those used now with respect to patent trolls⁷³⁹. Moreover, patent sharks presumably emerged due to reasons comparable to those nourishing the emergence of patent trolls nowadays:

“Opportunistic licensors flourish when there is a large gap between the cost of getting a patent and the value that can be captured with an infringement action. This sort of arbitrage is likely to occur when: (1) those being sued cannot easily substitute away from the disputed technology; (2) the average scope of improvements in the industry is incremental, which makes the outcome of infringement litigation hard to gauge; and (3) the cost of acquiring and retaining patents is low”⁷⁴⁰.

The menace of patent sharks was finally tackled through the elimination of the design patents that made their emergence possible. Although the situation was different from the multi-component and abstract nature of modern patents, some insights can still be learned for the purposes of today’s challenges. Recent scholarly commentary suggests that any patent reform would encounter significant opposition given that the problem of patent trolls is confined to a particular type of patents. In the case of the modern controversy about patent trolls the more problematic sectors are business method and software patents or

⁷³⁸ See Gerard Magliocca, *Blackberries and Barnyards: Patent Trolls and the Perils of Innovation*. NOTRE DAME LAW REVIEW, June 2007, available at: <http://ssrn.com/abstract=921252>.

⁷³⁹ Ibid, arguing that: “At that time, the growth of sharks was blamed on excessive patent remedies, incompetent examiners, and the lack of compulsory licensing”

⁷⁴⁰ Ibid at p. 6.

more in general abstract patents of growing technological sectors as information and communication technologies and biotechnologies⁷⁴¹:

“any proposal affecting substantive rights is a non-starter because most patentees are not susceptible to holdups. Whether this is just a fact of interest-group politics or a principled stance that remedies should be tailored to fit harms, the point flows directly from the observation that only some types of patents are exposed to opportunistic licensors. In the *eBay* case discussed earlier, the effort to convince the Court to restrict injunctive relief (a form of compulsory licensing) was met with a stack of hostile amicus briefs from groups like the pharmaceutical industry that do not fear trolls. Similarly, the bills that are languishing in Congress seek to stop opportunistic licensing by overhauling standards on willful infringement and injunctive relief while altering the examination process by allowing third parties to challenge patents in an administrative proceeding”⁷⁴².

Another similar practice to that employed by patent trolls, in the sense of exploiting the unawareness of potential infringers about an existent patent, was used for a long time by so-called “patent submarines”, which kept patents from being published during a long period of time following the application⁷⁴³. Such practice was possible according to U.S. law, where a continuation could be filled for a patent whereas the first application could be finally abandoned. Strong incentives to hide applications were importantly present when the duration of a patent was calculated from the time of issuance since the system allowed patents to remain secret until that time. Hence, the applicant could delay the issuance of a patent as long as she kept on filing successive patent continuations.

Several solutions were proposed to avoid patent submarines. In fact the patent reform that extended the duration of patents from 17 year from the issuance to 20 from the application lowered the incentives for hiding applications but not necessarily for filing continuations⁷⁴⁴. In 2001, an additional reform was needed to make the publication of patents mandatory after 18 months from the day of

⁷⁴¹ Ibid, discussing alternative reforms suggested at that time and why they possibly failed, and making the interesting point that one important reason why other alternative policy changes failed were the opposition of groups, especially of patent holders of other technologies, which lobbied against any such reform. In particular, some proposals for compulsory licensing were put forward. Ibid at footnote 98, quoting from 45 CONG. REC. 398 (1878) (statement of Sen. Christiancy) (“There is still another class of cases in which, for patents hereafter to be issued, to prevent extortion, some rate of compensation should be fixed by the statute . . . when the infringement consists in using the thing patented.”).

⁷⁴² Ibid at p. 51.

⁷⁴³ The term patent submarine often refers to the patent in question, whereas the entity or individual engaging in such practice is also named a “troll” or “shark”. See Harhoff et al., *supra* note 165, at p. 95

⁷⁴⁴ Ibid at p. 95.

application in order to adapt the U.S. legislation to international standards. However, it is still possible for a patent applicant in the U.S. to keep a patent application secret as long as the applicant declares that he does not intend to file patents in jurisdictions requiring publication after 18 months. The USPTO hence proposed a revision on the rules governing such practice targeted at avoiding abuses⁷⁴⁵. The issue was subject to wide controversy and to the disagreement between industries holding different views about the convenience of patent continuations. The controversy then centered on whether the USPTO was competent to issue such rules that might affect substantive patent law and in 2009, the Federal Circuit issued a permanent injunction against the implementation of the rules proposed by the USPTO⁷⁴⁶.

A potential approach to avoid the abuse on the practice of patent continuations is the use of equitable doctrines, for instance the doctrine of prosecution laches, which allows declaring a patent unenforceable. This was the case in a land marking decision in which some patents held by Jerome Lemelson⁷⁴⁷ were held unenforceable:

"Jerome Lemelson, a prolific inventor with close to 600 patents, is renowned among patent lawyers as the master of "submarine" patents –patents kept hidden for many years-. Lemelson slowed the prosecution of his patents, sometimes for over twenty years. He waited until his technologies were independently invented and commercialized, and then he brought his patent to the surface and negotiated royalties after the potential licensees were locked into the patented technology. Although his patents covered breakthrough technologies as bar-code scanning, he did not contribute these breakthroughs to society"⁷⁴⁸.

A drawback with the doctrine of prosecution laches and probably with other doctrines such as equitable estoppel and patent misuse would be that they are likely to be applied only to a subset of cases under strict requirements that do not often allow to balance all the circumstances of the case. In the case of

⁷⁴⁵ See the USPTO, PROPOSED CHANGES TO PRACTICE FOR CONTINUING APPLICATIONS, REQUESTS FOR CONTINUED EXAMINATION PRACTICE, AND APPLICATIONS CONTAINING PATENTABLY INDISTINCT CLAIMS, NOTICE OF PROPOSED RULEMAKING, available at: <http://www.uspto.gov/web/offices/com/sol/notices/71fr48.pdf>, last accessed on August 13, 2009.

⁷⁴⁶ The Eastern District of Virginia issued an injunction against the implementation of the rules considering that they were substantive rather than just procedural and hence affected rights of the applicants under the Patent Act. However, in March 2009, on appeal before the Federal Circuit, this latter overturned the decision by the District Court, upholding several of the proposed rules. The controversy continues and on July 6, 2009, the Federal Circuit agreed to rehear the case *en banc*.

⁷⁴⁷ *Symbol Technologies v. Lemelson* 301 F.Supp.2d 1147, 69 U.S.P.Q.2d 1738 (D.Nev. 2004)

⁷⁴⁸ See BESSEN AND MEURER, *supra* note 14, at p. 170.

prosecution laches, an additional requirement is that the inaction of the patentee takes place over an important number of years⁷⁴⁹.

Moreover, and as above mentioned, it is still possible for an applicant to avoid the publication of the patent, as long as the applicant does not seek the filing of applications outside the U.S. under the Patent Cooperation Treaty. Given the size and importance of the U.S. market, in an important number of cases it could still be a rational and profitable strategy to keep applications hidden for as long as a potential infringer independently develops an infringing technology.

Finally, from an efficiency perspective, a rule that directly punishes trolls or NMEs would not be desirable. Such rule could be over-deterrent⁷⁵⁰, insofar as it could affect companies that presumably carry out efficient activities such as management and enforcement of patents. At the same time such rule could also be under-deterrent⁷⁵¹, by failing to tackle the behavior of certain types of companies, which in spite of falling out of the definition of trolls, could nevertheless engage in trolling, e.g. universities or research centers and also manufacturing firms.

5.2 The conduct: Trolling behavior

The definition of patent trolls does not encompass all cases of detrimental strategic behavior involving potential losses in terms of static and/or dynamic efficiency and also unduly extends to cases beyond those losses. Hence, in the light of the necessity to examine alternative benchmarks, a natural alternative for courts to determine whether in a particular case, a plaintiff is taking advantage of patent law doctrines to engage in hold-up or other similar type of inefficient strategic behavior is to focus on the conduct rather than on the entity that is engaging in such practice.

In fact, some scholars have already proposed that the focus of study should not be “trolls” understood as the entities but “trolling” understood as a behavior. Yet others insist on using the definition of patent trolls or argue for the use of both factors (trolls and trolling behavior) as appropriate benchmarks:

⁷⁴⁹ See Cotter, *supra* note 38. See also Robert Merges and Jeffrey Kuhn, *An Estoppel Doctrine for Patented Standards*, 97 CAL. L. REV. 1, February, 2009.

⁷⁵⁰ A type 1 error would happen under a rule that ends up in false convictions where the entity considered a troll is engaging in socially efficient behaviour.

⁷⁵¹ A type 2 error would happen under a rule that ends up in false acquittals given that an entity that is not a troll under the above mentioned definitions or a NME, could nevertheless be engaged in patent strategic behaviour.

“determining whether a particular patent holder should be awarded an injunction demands a fact-specific inquiry that cannot be reduced to a rigid checklist. But two factors are most important in distinguishing patent holders entitled to an injunction from patent trolls that are not. The first is the nature of the entity. If it is an entity organized for the purpose of investing in litigation rather than innovation, a remedy at law is more than adequate to compensate any legitimate claims it might have. The second is whether the entity engaged in any strategic troll-like behavior designed to increase disproportionately the settlement value of its claim. If such an entity set a trap for a productive firm, it should not be entitled to an injunction”⁷⁵².

Moreover, and as it is explained with further detail below, “trolling” conduct can be said to pertain to the broader class of hold-ups. At the same time, hold-ups have been deeply analyzed by the law and economics literature and pertain to the broader concept of “strategic behavior”. Moreover, these types of conduct can also be identified from a legal point of view through a diverse set of conditions that might include objective elements as well as subjective elements denoting intention.

Objective elements might include some external factors as the type of technology patented and whether it constitutes a small or an important portion of a multi-component product and even if being a small portion, whether it is a core element of such product or just one trivial or minor element. Subjective elements understood as factors to analyze the hold-up intention of a plaintiff, might include considerations such as her past litigation pattern –using patents as a sword rather than a shield to protect innovations- whether the patented technology was plainly suppressed due to financial hardships that made it difficult to commercialize such inventions or whether it was an intended suppression as well as the specific causes of suppression or non-working.

Although an often cited principle in patent law is that patentees are free to work or not, and even to suppress their patented technologies from the market, such considerations might still matter under a rule or reason, equitable doctrine or case-by-case examination. If the intention of suppressing a patent is to block competition in a technological area, patents could also be in tension with competition laws⁷⁵³. Although it is often acknowledged that patents do not *per*

⁷⁵² See BRIEF OF AMICUS CURIAE YAHOO! INC. AS SUPPORTING PETITIONERS, IN *eBAY, INC. v. MERCExchange, L.L.C.*, supra note 716. Compare with Lemley, supra note 715, focusing on trolling behaviour.

⁷⁵³ See Kurt Saunders, *Patent Nonuse and the Role of Public Interest as a Deterrent to Technology Suppression*, HARVARD JOURNAL OF LAW & TECHNOLOGY, VOLUME 15, NUMBER 2, Spring 2002 analyzing patent suppression and suggesting ways through which patent law and antitrust law could deal with this problem, including compulsory licenses for particular cases.

se confer market power or do not pose any *a priori* anti-competitive concern, it is also well-known that the abusive exercise of a patent does. This will be the case if patent suppression comports the emergence of more efficient standards or technologies. From an economic point of view such blocking would be detrimental for the promotion of innovation incentives and hence for the overall goals of patent law as well as competition law. Even if such conduct cannot be deemed as contrary to antitrust statutes of a particular jurisdiction or in the particular circumstance of the case, such cases might still run counter to the goals of patent policy.

A leitmotiv of “trolling” and more in general of patent strategic behavior is precisely the intention of surprise that is present in the conduct of submarines, ambushes and trolls. Such surprise element of hold-ups has been already acknowledged by the CAFC as it:

“obliges the producer to pay [the patent holder] as much as it would cost to shift to a noninfringing product, an amount, given investment in infringing systems, perhaps far more than a reasonable royalty [as determined preinvestment]. These incentives . . . encourage patentees to adopt a strategy of ambush rather than providing fair notice⁷⁵⁴.

The above mentioned subjective or objective elements to judge the occurrence of troll-like behavior are not easy to discern. But they are neither impossible for a court to assess, especially given that some of the factors that were explained above with regards to patent hold-ups, such as willfulness of the conduct, likelihood of inadvertent infringement, cost of redesigning and impact of the patented technology on the infringing product, among others, are already considered –at least by U.S. courts- when calculating reasonable royalties and more recently within the application of the four-factor test to award or deny injunctive relief.

Moreover, and as we have sustained, trolling behavior is neither a new nor the sole basis calling for the application of a case-by-case reasoning to deny injunctive relief or to opt for the use of other type of *ex-post* liability rules. In fact, since the times of the first major harmonized instrument for patent law, the Paris Convention, it was precisely the concept of patent abuse that provided one of the most important bases for switching into such rule⁷⁵⁵. Legal provisions

⁷⁵⁴ See *Odetics, Inc. v. Storage Technology Corp.*, 185 F.3d 1259, 1273 (Fed. Cir. 1999) See also Brief Amici Curiae Yahoo, *supra* note, 716. See also Note, *The Disclosure Function Of The Patent System (Or Lack Thereof)*, *supra* note 471.

⁷⁵⁵ Under the well known standards of article 5-A (2) of the Paris Convention, *supra* note 12: “Each country of the Union shall have the right to take legislative measures providing for the grant of compulsory licenses to prevent the abuses which might result from the exercise of the exclusive rights conferred by the

around the world have sanctioned different conducts as abuse, misuse, anti-competitive uses of patents as well as other similar grounds, which in an economic sense, might correspond with the concept of “strategic behavior”.

Economic analysis has the further task of identifying the effects of such rules and helping to determine when such behavior shall be corrected through the use of a liability rule. Among other questions it is important to analyze whether there might be any anti-competitive effects affecting consumers or whether it is only competitors that are affected by such practices. Even if only competitors are affected by such practices, however, it is still possible that competitors have developed second or improved innovations and hence the use of first innovations under a liability rule would still be socially beneficial. This factor could be examined upon the basis of whether strategic behavior causes dynamic losses, static losses or both and in which cases a patentee should be liable according to such different losses. Additionally it is also important to consider the suggestions of economic analysis about a proper definition of patent abuses and whether such definition(s) overlaps or complements those of antitrust law and unfair competition statutes.

6 Conclusions

Whereas law and economics studies justify the use of liability rules in the presence of high transaction costs, including in the form of “strategic behavior”; recent discussions on the use of patent liability rules have tended to focus on the purported problem of hold-ups. This chapter highlights that the adoption of such narrow focus is mainly due to the fact that discussions have followed the logic of notorious U.S. cases including the *eBay* and *Blackberry* litigation. Some analysts have further narrowed the concept of patent hold-ups concluding that liability rules would be preferable on efficiency grounds only on very specific context and under particularly restrictive assumptions. Furthermore, many studies have focused on the role of patent trolls in order to explain the emergence of a type of strategic behaviour that occurs when firms use their patents in order to extract large settlements above their economic value. This chapter argued that such focus is not correct as it might improperly conduce to condemn efficient behaviour while still tolerating inefficient behaviour from patentees.

In contrast, this chapter provided an alternative view on the question of when should patent *ex-post* liability rules be used. To this purpose, the chapter started

patent, for example, failure to work”. Such provision is further subject to the requirements of article 31 of the TRIPS Agreement, which nevertheless left ample space for the implementation of compulsory licenses to correct the aforesaid abuses.

from the main insights generated by recent case law in the U.S., the U.K. and Italy. Those cases not only addressed presumed patent hold-ups but also extended to cases of sequential and incremental innovation and of bargaining breakdown between the involved parties. A broader concept of strategic behaviour was then proposed in order to identify the potentially problematic cases where a liability rule might offer a superior outcome in terms of efficiency.

Patent hold-ups have been furthermore linked to a particular type of patents, *i.e.* patents on business methods and to a particular sector, *i.e.* the information and communication technologies. Based upon those premises, it has often been argued that Europe is somehow immunized from the emergence of problems similar to those present in the U.S. which have recently justified a major departure from the use of strong property rules in the patent field. Consequent with the aim of providing a broader view on the problem that includes both sides of the Atlantic, the chapter examined the main features of the European landscape that are associated or might be related with high transaction costs and patent strategic behaviour. Not surprisingly, an increasing number of studies have reported the emergence of patent strategies related to the filing of single applications, the management of patent portfolios and litigation of specific patents.

A particular sector, which has opposed any reform towards the use of *ex-post* liability rules both within and outside the U.S. as well as exercised important pressure within international negotiations, is the pharmaceutical sector. Whereas the information and communication technologies have often been identified as a problematic sector where patent strategic behaviour plays a central role, and where patents are used more as bargaining chips than to reward and incentivize innovation, the pharmaceutical sector is often cited as the paradigmatic case for patent protection. In contrast with this widely held view, the results of a recent inquiry performed by the European Commission on the European Pharmaceutical sector have put in evidence the increasing frequency and importance of strategic practices relating with the filing of patents, managing of patent portfolios and litigating pharmaceutical patents that might potentially affect innovation incentives as well as create undue burdens for citizens in such a vital sector as health.

CHAPTER V

EX-POST LIABILITY RULES TOWARDS AN EFFICIENT DESIGN

1 Introduction

The previous chapter analyzed the main economic grounds for a switch into an *ex-post* liability rule to protect patent rights. The central problem identified both by recent literature and case law is the occurrence of strategic behavior in multiple sectors, which has been facilitated by a changing technological and patent landscape. Hence, the previous chapter focused on the question of when should liability rules be used using a comparative perspective and hence, taking into account the particularities of the most relevant case law.

Using a similar approach, this chapter focuses on the costs arising out of the application of *ex-post* liability rules. While many critics against the use of liability rules have been largely formulated in abstract, an overview of specific cases might serve to refine those critics while highlighting the (potential) costs as well as the (potential) benefits of each alternative rule. Once more, the wave of cases applying the *eBay* precedent in the U.S. might serve precisely to confront the insights of previous theoretical studies with the insights of recent particular cases.

As it was previously illustrated by a comparison of the most important cases in selected jurisdictions, the design of a compulsory licensing provision is fundamental to its successful or even just workable application. In effect, previous theoretical discussions have coincided that the main cost arising from the use of liability rules is the difficulty in assessing the compensation for a non-voluntary use of the patented technology. Hence, this chapter focuses on analyzing this particular cost. Two other main critiques against the use of *ex-post* liability rules, namely the effects on efficient bargaining between the parties and the potential uncertainties arising from the use of an *ex-post* liability rule are also briefly addressed.

This chapter is organized as follows. The second section focuses on the problem of implementing a liability rule in general. The third section analyses the problem and different approaches used to calculate a monetary compensation that substitutes a property rule. The third section concludes by suggesting a summarized cost-benefit analysis of the alternative rules, ranging from categorical rules to open standards.

2 The Efficient Implementation of ex post liability rules

The efficiency of any liability rule regime would depend upon whether the system preserves the incentives of patent law and/or is able to redress a situation where such incentives are unbalanced. Among other factors that would affect the capability of liability rules to preserve innovation incentives and to redress a situation of imbalance are the level of compensation that substitutes the property rule and the impact of the rule on the ability of parties to achieve a negotiated solution. In practical terms, the switch from a property to a liability rule is done under a “standard” of interpretation⁷⁵⁶ that foresees a balance of the particularities of the case, including a comparison of innovation incentives of the involved parties.

2.1 How could courts efficiently apply ex-post liability rules?

A general framework to assess the alternative effects of property and liability rules must take into account static as well as dynamic efficiency effects. Liability rules might help in dealing with high transaction cost situations where otherwise bargaining would not have happened efficiently; hence ensuring potential static and dynamic efficiency gains. Nonetheless, liability rules impose important administrative costs as well as potential dynamic efficiency losses. An important question is then whether and how can courts decide upon the switch to a liability rule⁷⁵⁷. Moreover, the question arises especially in Civil Law countries as to whether courts could engage in this type of balancing exercise⁷⁵⁸.

2.1.1 *The balancing test in post-eBay cases*

The above mentioned balancing exercise might take place, to a different extent; either in the context of patent infringement cases or on compulsory licensing

⁷⁵⁶ See law and economics literature on the use of rules v. standards, supra note 108 . See Posner, supra note 68, at p. 590-591, explaining that: “to control behavior through a set of detailed rules rather than through a general standard involves costs both in particularizing the standard initially and in revising the rules to keep them abreast of changing conditions; as we have noted, a specific rule will obsolesce more rapidly than a general standard. The costs of governance by specific rules are particularly high for bodies like the Supreme Court or Congress, where every rule is very costly to promulgate. But often the benefits of particularization outweigh the costs. These benefits are obtained at three levels: in guiding the courts themselves, in guiding the behavior of the people subject to the rule, and in guiding the behavior of the parties to actual disputes”.

⁷⁵⁷ Of course, these questions depend upon the desired policy goals as conceived, tacitly or expressly in patent law. Such policy goals might express that the use of liability rules is desirable only when a property rule may cause potential dynamic efficiency losses by discouraging follow-on innovation; whether the use of liability rules would also be advisable when a property rule may cause static losses that surpass possible losses in terms of innovation incentives or whether liability rules might also be desirable when a property rule would impose important static efficiency losses, irrespectively of whether they surpass or not any dynamic efficiency gains.

⁷⁵⁸ See above Chapter III, Section 5, discussing the spaces for discretion that Judges might have in Civil Law countries.

procedures but both cases share similar concerns. For instance, the calculus of the adequate remuneration has a vital importance either for the issuance of a compulsory license or for the substitution of injunctive relief with damage compensation.

With regards to the balancing test done by courts, the recent set of cases decided by U.S. district courts after the *eBay* decisions might serve to illustrate such common problems and the ways in which such courts have addressed them. For instance, U.S. district courts have been performing different tests in order to facilitate the factual considerations of the four-factor test with regards to injunctions. The cumulative application of these tests might allow courts to efficiently screen cases of holdups and strategic litigation while granting injunctive relief in cases where innovation incentives might be affected in the absence of an injunction⁷⁵⁹.

This “multi-factor” test has at least attempted to include the following reasons. A first important factor that has been taken into consideration is whether plaintiff and defendant are competitors. Many commentators have criticized the use of such factor, since, if adopted as the only test to judge on the availability of remedies, it could in practice discriminate against non-practicing entities that for different reasons might lack resources to commercialize their inventions⁷⁶⁰. In fact, when patentees compete with the infringer, courts have almost automatically found that the first two factors are satisfied, deriving the corollary that competitors might lose market shares, reputation or goodwill as a result of infringer’s activities. Differently, when the patentee is not a competitor, courts have tended to rely on the competition test only if this is coupled with other complementary measures that suggest the inadequacy of injunctive relief: the patent covering a small component, the patentee’s willingness to license or the effects of an injunction or the lack thereof in innovation incentives.

Secondly, an innovation-effects test as it has been applied by few courts, which, in analyzing the balance of hardships test, have asked about the effects that an injunction would have in the innovation incentives. The U.S. Supreme Court had already recognized that a categorical rule denying injunctions for all non-practicing entities was not in line with the discretionary nature of the four-

⁷⁵⁹ Efficiency in this context could refer to several concepts. First, it could refer to the cost minimizing way in which courts might take account of costs derived from errors in granting injunctive relief and secondly it could reflect the need to balance innovation incentives with access to knowledge and the use of technology by developers (infringers). In this analysis we follow the second option, considering both static and dynamic efficiency effects.

⁷⁶⁰ See Denicolo et al., *supra* note 160. See also Andrew Beckerman-Rodau, *The Supreme Court Engages in Judicial Activism in Interpreting the Patent Law in eBay, Inc. v. MercExchange, L.L.C.*, TUL. J. TECH. & INTELL. PROP., VOL. 10:165 (2007), at p. 199-200, arguing that denying injunctions to non-competitors, would put small companies at a disadvantaged position before big rivals

factor test, explicitly referring to the case of “university researchers” and “self-made inventors” centers as capable of satisfying the four-factor test even if they would be willing to license their patents and would not be practicing or commercializing any of them. In such cases, it is straightforward to presume that innovation incentives would be harmed if a permanent injunction is not granted⁷⁶¹.

A third possible test would refer to the multi-component nature of the product, which, as acknowledged by the Supreme Court would differentiate between cases, according to whether the patent covers only a small part of a multi-component product or not. Such cases might exacerbate the risk of holdups if patentees are able to threaten to stop all activities related with the whole product, which was the case in the *Blackberry* and *eBay* litigation. Moreover, a patent reform has been discussed to apportion damages in such cases, as a complementary and necessary mechanism to avoid over-compensation⁷⁶².

Overall, just the careful consideration of all factors might conduce to decisions that respect the equitable nature of injunctions. The adoption of one or several tests to facilitate the interpretation of the particularities of each case might save on administrative costs and errors that courts might face with the examination of such factual considerations. Nonetheless, the adoption of any test as a definite answer to similar cases would again fall into the categorical application of rules that the U.S. Supreme Court rejected in the *eBay* decision. Hence, courts have to engage into significant fact-finding activity as well as deciding on such delicate issues as the determination of the appropriate compensation to substitute for injunctive relief. The next section discusses some of the options with regard to such difficult task while the last section of this chapter compares the costs and benefits of each different rule with a special emphasis on these problems.

3 A monetary substitute for a property rule

The law and economics literature on entitlement protection, its extensions to the case of IPRs and especially to patent law as well as recent debates on the

⁷⁶¹ At least two post-*eBay* cases have concerned a university or research center. In *Commonwealth*, for instance, the court, decided to grant a permanent injunction, even in the absence of competition between the plaintiff and defendant. *John Hopkins University and Arrow International Inc. v. Datascope Corporation*, No. 05-0759, 2007 WL 2682001 (D. Md. Aug. 9, 2007), involved a University research center, but the court did not consider the innovation incentives for this particular type of patentees, instead basing its decision in the fact that co-plaintiff Arrow International Inc. was a licensee which manufactured a product competing with the defendant's. Cases such as *Amado v. Microsoft* and the same *eBay v. MercExchange* instead regard an individual inventor but such cases are rare. See also BESSEN AND MEURER, *supra* note 14, concluding that the impact of small inventors in the U.S. patent system is very limited.

⁷⁶² See *supra* note 610.

exclusivity of patents have all coincided in one relevant aspect. The use of liability rules to protect patents entails the task –often deemed as discouraging or insurmountable– of calculating a remuneration or compensation that preserves the goals of patent law.

While most critics argue in a general way that such calculation is costly and/or impossible to be accurately performed, important insights have been already developed under different patent doctrines that aim at setting up a compensation for past damages as well as in the context of adequate remuneration for traditional compulsory licenses. These insights might contribute to a better understanding of how such determination might resemble an optimal amount. This section discusses the main insights produced in these dissimilar contexts with the aim of examining the calculation of an appropriate compensation or remuneration to be applied when a property rule is substituted with an *ex-post* liability rule.

The section highlights how difficult and problematic might indeed be the calculation of a valid monetary substitute for property rules when a patent is protected through a liability rule. However, such exercise is neither impossible nor absent of the ordinary practice of courts and agencies. In patent infringement decisions, courts have to calculate a compensation for past damages in most cases. Agencies and courts have as well a vast experience in the estimation of an adequate remuneration in the context of compulsory licenses for a variety of cases.

Moreover, recent literature highlights how property rules are also costly to administer. This is the case when the patented technology is complex and difficult to be separated from other technologies⁷⁶³ and, in general when the patent notice system is not functioning correctly⁷⁶⁴. In such cases, a chilling effect might preclude or offset any dynamic gains from patent protection, as further innovation might be blocked. When other factors such as the risk of bargaining failure surpass the information costs of liability rules, each alternative rule should be considered under different settings. As a consequence, the argument that liability rules do not offer a viable solution in high transaction cost cases because it is too costly to determine the compensation cannot be sustained plainly, and must instead be confronted with the particular conditions of the case.

3.1 TRIPS: Adequate compensation and adequate remuneration

⁷⁶³ See Lemley and Weiser, *supra* note 72.

⁷⁶⁴ See BESSEN AND MEURER, *supra* note 14.

In this first sub-section, the legal and economic meaning of the “adequate remuneration” and “adequate compensation” thresholds established within the TRIPS Agreement⁷⁶⁵ are briefly discussed. Contradicting the importance that scholars attribute to calculating such appropriate threshold, the issue of compensation or remuneration has received modest attention⁷⁶⁶. In comparison, other issues related to compulsory licensing provisions, and in particular, the grounds for using compulsory licenses, especially with regards to the case of public health have been the focus of most discussions. The modest use of compulsory licenses makes it difficult to foresee a serious discussion and/or further harmonization on the issue of compensation, notwithstanding the fact it is the most often cited argument against the use of liability rules in general and compulsory licenses in particular:

“Currently, a dispute over the level of compensation seems unlikely. If the scale of compulsory licensing under patents were to grow, under pressure of political and economic change, to rival that of the historic episodes of expropriation of property, there would be a similar systemic need to deliver pragmatic judgments on adequacy of compensation. A greater case load would induce pressure to produce judgments more responsive to the particular facts of each case, calling for clearer analytical tools”⁷⁶⁷ (footnotes omitted).

If a WTO panel were asked to interpret the concept of “adequate remuneration” in the context of a dispute settlement procedure, it could use several rather different approaches, starting from the classical rules of interpretation in

⁷⁶⁵ Article 31 of the TRIPS Agreement establishes that one of the requisites for uses non-authorized by the right holder that must be respected by member states is that: “(h) the right holder shall be paid adequate remuneration in the circumstances of each case, taking into account the economic value of the authorization”. Article 44 of the TRIPS Agreement refers to payment of remuneration according to article 31 and to “adequate compensation”: “ Notwithstanding the other provisions of this Part and provided that the provisions of Part II specifically addressing use by governments, or by third parties authorized by a government, without the authorization of the right holder are complied with, Members may limit the remedies available against such use to **payment of remuneration** in accordance with subparagraph (h) of Article 31. In other cases, the remedies under this Part shall apply or, where these remedies are inconsistent with a Member’s law, declaratory judgments **and adequate compensation shall be available**”.

⁷⁶⁶ See Taubman, *supra* note 97; arguing that: “Debate and analysis on the compulsory licensing issue has concentrated on the substantive grounds, legal conditions and political economy of threatening to and actually issuing compulsory licenses. But the level of remuneration expected, and actually paid, may in itself become a trade issue, in part because it is an area of comparative uncertainty. Further, the level of entitlement due to the patent holder should in principle determine the remedies available in a dispute. Assessments about the likely cost or other implications of losing a dispute could influence a State’s choices when weighing costs and benefits of invoking a compulsory license as an instrument of public policy”. See also Daniel Cahoy, *Confronting Myths and Myopia on the Road from Doha*, *GEORGIA LAW REVIEW*, Vol. 42:131 2007, at p. 153, noticing that: “The flexibility of TRIPS opens up a number of methods for ascribing value to compulsory licenses. However, the subject of remuneration rules has received relatively little attention.⁹³ If addressed at all, it is generally a small component—seemingly an afterthought—in broader compulsory license discussions” (footnotes omitted).

⁷⁶⁷ See Taubman, *Ibid*, at p. 958.

International Law and including a literal and a contextual reading⁷⁶⁸. Nonetheless, it is expected that any hypothetical decision in the context of the WTO would be “defendant-friendly” in the sense that given a dubious interpretation, a formula to be preferred would be the least onerous for the country under an obligation⁷⁶⁹.

Apart from the interpretation of “adequate remuneration” which is the threshold for compulsory licenses, a similar standard of “adequate compensation” is established by article 44 with regard to infringement cases:

“Further textual guidance is given by Article 44.2 (...) One commentator reads this as requiring in effect that adequate remuneration should be the same as (commercial) damages awarded in infringement cases. TRIPS uses a similar formula when requiring that judicial authorities should be able, in the case of infringement of IP rights, to order 'damages adequate to compensate for the injury' caused by the infringement”⁷⁷⁰ (footnotes omitted)

In addition, other international law fields distinct from the international trade discipline might provide other (contradictory) insights with respect to the issue of compensation. For instance, investment law implies a threshold of compensation that aims at ensuring the protection for foreign investments. The application of investment protection to patent rights could be based on the fact that the definition of investment, contained in most of the currently existing investment treaties, includes intellectual property rights as a type of intangible investment⁷⁷¹.

Nonetheless, the application of expropriation rules, especially with regards to the standard applicable to monetary compensation is still controversial and has not been directly addressed in any precedent so far. The insights elaborated by

⁷⁶⁸ See Ibid at p. 951, mentioning the different approaches used by WTO panels, ranging from a literal reading to the application of a broader context, including national practices.

⁷⁶⁹ See Taubman, supra note 97, at p. 952, arguing that “This 'defendant-friendly' approach is reinforced by a literal reading of the text. The Appellate Body in applying the customary rules of treaty interpretation noted that 'Article 31 of the Vienna Convention provides that the words of the treaty form the foundation for the interpretative process: "interpretation must be based above all upon the text of the treaty"'. Dictionaries suggest 'adequacy' means mere sufficiency to meet a need. Since the term 'equitable remuneration' was available and is used elsewhere, a strict reading of adequacy may suggest only a minimum 'safety net', and not an equitable balancing of interests” (footnotes omitted).

⁷⁷⁰ See Taubman, supra note 97, at p. 956.

⁷⁷¹ Compensation for expropriation in the context of investment treaties is usually defined in the formula dating from the Hull rule of “prompt, adequate and effective”. This treatment is often viewed as pro-investors and its potential application to intellectual property disputes, especially with regard to compulsory licenses is rather controversial. See Rosa Castro, *Compulsory Licensing and Public Health: TRIPS-Plus Standards in Investment Agreements*, TRANSNATIONAL DISPUTE MANAGEMENT, VOLUME 6, ISSUE 02 (August 2009), available at: <http://www.transnational-dispute-management.com/samples/toc.asp?key=27>. See also Taubman, supra note 97.

the economics of takings and compensation with respect to the incentives to take property and the incentives for inefficient investments might contribute to a better understanding of the economic effects of such remuneration. The standard economic analysis of compensation in the cases of takings, argues for just compensation, which is less than full compensation, and equivalent to the discussion about damages in cases of breach of contract.⁷⁷² Of course, the typical case of expropriation might greatly differ from the type of compulsory license mostly discussed in this Thesis, not only with respect to the public interest goal that surrounds any expropriation but also with respect to the authorized user, which is often the government in expropriations whereas the cases here discussed have mostly regarded the use by other competitors or potential competitors of the patent owner. Nonetheless, the possibility of inducing socially inefficient over-investment might be an important concern in the calculation of compensation for patent owners, especially in the context of International Investment Law, which often involves countries with highly dissimilar levels of development and other North-South contentious issues⁷⁷³.

Another important field that might contribute to the interpretation of the compensation due to patent holders is human rights law, which would of course tilt in the opposite direction of investment protection and towards a lower threshold of compensation.

3.2 Determining the level of compensation: an impossible task?

Different references might be used in order to estimate the remuneration or compensation of patent owners when a liability rule is applied. The choice between such different approaches often depends on whether the patent liability rule is a compulsory license, a damage award substituting injunctive relief in patent infringement cases or a mandated license in antitrust litigation involving a patent right. In addition, the absence of international harmonization with regard to the level of compensation has led to the application of several different standards in different countries, as well as to a tension between different international law fields, such as patent law, investment law and humanitarian law as described in the previous section.

Notwithstanding such complex array of mechanisms to calculate the remuneration for non-authorized use of patented technologies, there seems to

⁷⁷² See Posner, *supra* note 68, at p. 64-65, arguing that “full compensation would probably be a mistake even if subjective values could be determined accurately at law cost. It might induce overinvestment in property that the owner had reason to think was likely to be taken eventually by the government”.

⁷⁷³ For a discussion on some of the contentious issues with regard to the application of investment law to patent protection and the issue of public health, see Castro, *supra* note 771.

be a practical convergence with regards to a level of payments, which often consist in royalties based upon the sales prices of patented products:

“This practical tension highlights one of the paradoxes of the increasing legalization of trade relations--constructing a legal pathway to determining the question of 'adequate remuneration' is potentially fraught with complexity, and entails traversing competing doctrines and reconciling differing legal constructions (...) but these diverse ways of legalizing and constructing the question may in practice end up delivering very similar outcomes within a similar general band. Essentially, a 'reasonable' royalty might lie within the region of 3-5% of the sales price of the product delivered under the NVUA, or would at least fall between the truly nugatory (say, 0.1%) and the unrealistically high (say, 15%). This apparent paradox of legal analysis may be resolved by simply welcoming this convergence as a symptom of the greater practical coherence and mutual consistency of these sets of international norms that are often assumed to be at odds with one another, and assumed to express irreconcilably diverse values”⁷⁷⁴.

Such alleged convergence might or might not mimic the optimal remuneration for the non-voluntary uses of a patent right. Nevertheless, in economic terms, the fact that most royalties might fluctuate between known reference points or percentages might entail potential savings in administrative costs related to the calculation of such remuneration when fixed thresholds are adopted, as it is the case with guidelines adopted by several countries for specific cases⁷⁷⁵.

In any case, the compensation or remuneration for patent owners might reflect three possible levels with respect to the market price of the patented innovation. One possible level mimics the market price of the patented technology, as it happens with some compulsory licenses but also with reasonable royalties in the context of infringement. A second possible level surpasses such market price assuming a deterrent or punitive component as it happens with other doctrines on infringement damages such as lost profits⁷⁷⁶ and unjust enrichment but especially with punitive damages. A third possible level of compensation could be set below the market price threshold either due to

⁷⁷⁴ See Taubman, *supra* note 97.

⁷⁷⁵ See JAMES LOVE, REMUNERATION GUIDELINES FOR NON-VOLUNTARY USE OF A PATENT ON MEDICAL TECHNOLOGIES, WHO/TCM/2005.1 (2005), available at http://www.who.int/medicines/areas/technical_cooperation/WHOTCM2005.1_OMS.pdf, referring to several cases including infringement cases, compulsory licenses, licenses of right and the special case of the waiver of article 31 (f) of the TRIPS Agreement and explaining and comparing the different approaches used to calculate the remuneration for patent holders.

⁷⁷⁶ See Lemley *supra* note 621, analysing the reasonable royalties and lost profits thresholds and suggesting that the measure of reasonable royalties might produce higher levels of damages within the U.S.

humanitarian or other reasons of public interest or due to a punitive component against the patent holder, as it happens mostly in antitrust cases where the royalty can also be set at a zero price. Where the remuneration stands with respect to the market price will have effects in terms of economic incentives to innovate for the first and second innovators as well as the incentives to bargain for a license, incentives to settle or to continue litigation. The following table summarizes these choices:

Table 1: level of remuneration or compensation

Level of damages	Infringement	Compulsory licensing	Policy goals
Zero	No	Antitrust	Punish anticompetitive behavior Increase supply Decrease price
Below market price	Rarely (depends on jurisdiction)	Public interest cases Antitrust	Increase supply Decrease price
Market price	Reasonable royalties	Dependent patents Lack of working	Compensation
Above market price	Punitive or treble damages	No	Compensation Deterrence

The following sections examine the different ways to estimate the remuneration in cases of non-authorized uses in the context of traditional compulsory licenses and also on patent infringement cases. The economic insights on the optimal level of compensation and deterrence are briefly reviewed and confronted with the available options to calculate the remuneration. With regards to the patent infringement case, a few remarks are provided about the main patent damages rules under a law and economics perspective with a special focus on the practice of granting forward-looking damages or ongoing royalties, a calculation that has taken place in recent cases applying the precedent of the U.S. Supreme Court in *eBay*.

3.3 Remuneration for compulsory licenses after the TRIPS Agreement

At first sight, the case of patent infringement and compulsory licensing for dependent patents and lack of working should be markedly different with regard to the remuneration of patent owners. Nonetheless, the level of remuneration tends to be linked in most debates and each level of compensation or remuneration to right owners seems to conduce to the other in the sense that the expected damages for patent infringement would most of the times influence the calculation of voluntary licenses and this latter would also exercise an influence over damage awards, which are often calculated with reference to a hypothetical royalty on a voluntary negotiation. Moreover, the remuneration in compulsory licenses is often calculated by referring the awards

of damages provided by courts and by the available royalties from voluntary deals⁷⁷⁷.

Only the particular case of compulsory licenses for pharmaceutical patents under the Doha Declaration seems to follow a rather different and humanitarian policy goal of “access to medicines for all”, as stated in the Doha Declaration. Nonetheless, even in this special framework, several scholars have also defended the use of patent damage awards and voluntary licenses as applicable thresholds⁷⁷⁸. The most important problem of such approach is that the underlying policy goal of access to medicines might be contradicted if the level of remuneration is such that it does not solve the allocative efficiency problem of increasing supply and reducing the price:

“By imposing the market cost as a compensation measure, countries will only issue a compulsory license when negotiation fails or the desired quantities cannot be produced by the patent owner. Such a system may create exactly the right kind of incentives” (footnotes omitted)⁷⁷⁹

In effect, while creating, or better, maintaining the incentives for R&D embedded in patent law, a market compensation level might undermine the goal of access to medicines for all, if such goal implies a cost reduction. To be sure, in that case, compulsory licensing would only remain a viable option for the hold-up cases when the patent owner attempts to extract a supra monopoly rent⁷⁸⁰.

In fact, the most developed discussion on the use of compulsory licensing and particularly on the remuneration regards the case of pharmaceutical patents, the Doha Declaration and the waiver of article 31 (f) of the TRIPS Agreement. In spite of the controversy that surrounds most aspects of this topic, the emergence of guidelines and country study cases demonstrate that the issue of remuneration is not impossible to solve, at least once the policy goals of the particular patent liability rule are clearly identified⁷⁸¹.

⁷⁷⁷ See SCOTCHMER, *supra* note 29, at p. 211, referring to the circularity problem in the calculation of patent damages.

⁷⁷⁸ See for instance Cahoy, *supra* note 766, emphasizing the importance of remuneration for the controversy over compulsory licensing. The author argues in favor of using a market value approach for the determination of the compensation due in compulsory licensing cases, nonetheless proposing a three-tiered system that differentiates developed countries, developing countries and least-developed countries for the purposes of its calculation.

⁷⁷⁹ *Ibid*, at p. 159.

⁷⁸⁰ *Ibid*, at p. 160.

⁷⁸¹ See LOVE, *supra* note 775.

In this particular case, the humanitarian and public health aspects differ widely from the high transaction environments and hold-ups that call for the use of other liability rules. Not only is the economic case different, but there are also distributional and equity concerns involved, that widely differ from the economic reasoning used so far in this thesis. Moreover, in the case of compulsory licensing to address public health concerns, these licenses are usually provided under the framework of governmental licenses, whereby the government covers (and attempts to diminish) the cost of the royalties even though the manufacturer might be the same government or a generic company. So, in these cases, the government has to pay both the royalties to the patent holder as well as the costs of manufacturing the generic medicines. Were the royalties to be fixed at the market level, the costs of issuing a compulsory license might be higher than the cost of manufacturing through the patent holder company, undermining the goal of this type of compulsory license, which is to reduce costs for the government acquisition of medicines with the aim of enhancing the access to medicines for the public⁷⁸².

The case is different in the context of dependent patents or lack of working when a competitor or potential competitor of the patent holder asks for a compulsory license or a damage award substituting an injunction in order to develop and commercialize a product that “uses” the previous patent. Through this action, the “beneficiary” of such liability rule would be advancing a goal of dynamic efficiency in the sense of providing a different product to consumers and maintaining the incentives to further develop patented technologies. The cases might coincide, especially under the test put forward by the *eBay* case, which foresees that the interest of the public should be taking into consideration in the decision regarding injunctive relief, but in principle, the economic rationale is different for patent liability rules aiming predominantly at dynamic efficiency goals and patent liability rules aiming predominantly at static efficiency goals

3.4 Patent infringement: the goals of damages substituting injunctions

An examination of patent remedies indicates that, as it is the case in other legal fields, remedies are envisaged both to compensate and deter infringing activity. However, available remedies are thought to have a complementary role; it is usually conceived that damages aim at compensating for past losses and injunctions at deterring future infringing activity. It is important however to acknowledge that damages can also have a deterrent effect provided they are set at a threshold that makes the infringing activity unprofitable, e.g. in the case

⁷⁸² See LOVE, *supra* note 775.

of punitive and enhanced damages⁷⁸³ whereas injunctions might and in fact do exert an effect on any possible settlement between the parties.

The above considerations are fundamental both for understanding how damages might constitute an appropriate substitute for injunctions and in order to perform any comparison between different legislations. In such comparisons, it is important to take into consideration both the probability that an injunction will be granted and also the level of expected damages to be awarded. For instance, a country where damage awards are usually high and the possibility for enhanced or punitive damages exists, damage compensation in substitution of injunctions could still act as a quasi property rule, achieving both deterrence and compensation and sometimes even exceeding the optimal level for both goals. So, when a liability rule is warranted because the activity by the infringer would be efficient, and hence should not be deterred, high damages could take with one hand what the denial of injunctive relief had just given with the other. Conversely, when courts give relatively lower damage awards, which hence might not deter the infringing activity, the case for injunctions might be stronger in order to achieve an optimal level of deterrence.

In fact, the possibility of awarding enhanced damages with regard to the calculation of prospective relief has been analyzed by scholars although it is not a factor that is usually considered by courts. The argument is that enhanced damages might truly substitute an injunction both by providing incentives for the infringer to negotiate a license as well as an economic incentive (or disincentive) to deter such infringing activity:

“Although not as powerful as the threat of injunctive relief, the knowledge that going forward the court may enhance the reasonable royalty damages by up to a factor of three, could give the defendant an incentive to enter into a license. Moreover, for a patentee who truly wants to exclude the defendant from using the patentee’s patented technology, enhanced damages may provide a sufficiently high economic disincentive to achieve this result without injunctive relief. In any event, the potential award of enhanced damages for future infringement is an element that has been missing from the analyses to date”⁷⁸⁴.

The problem, from a practical point of view, is to determine precisely where the optimal level stands, in order to know also the threshold beyond which, a damage award might be considered as equivalent to a property rule. Beyond

⁷⁸³ See Smith, *supra* note 92, arguing that punitive damages are property rules whereas damages granted at a reasonable royalty threshold are liability rules.

⁷⁸⁴ See Newcombe et al., *Prospective Relief for Patent Infringement in a Post-eBay World*, NYU JOURNAL OF LAW AND BUSINESS, Vol. 4:549, at p. 576.

such level, it is useful to remind that the costs of property rules will once again enter into the picture⁷⁸⁵.

Table 2: Damages calculations across different jurisdictions

	Lost profits	Licensing fee	Infringer's profits	Can the plaintiff choose?
U.S.	35 USC Section 284. Requirements: (1) demand; (2) marketing capacity; (3) absence of competition, non-infringing substitutes	Fall-back provision where lost profits cannot be or are not claimed	No	Yes
Japan	Section 102(1) Patent Act: multiplication of infringer's turnover with the profits the patentee would have made for such a number of products. Marketing capacity of patentee must be proven	Section 102(3) Patent Act: fall-back provision; estimate of royalty rate	Section 102(2) Patent Act. Not applicable where patent was not used by patentee	Yes
Germany	Section 249 Civil Code: restitution of the <i>status quo ante</i> . Limitation by production capacity and proof that infringing product could act as a substitute	Most common form of calculation, normally agreed upon in court settlement. No "infringer's surcharge" can be claimed except for copyright matter (double royalty)	Based on the legal fiction that infringer undertakes a business allocated to the patentee. Deduction of infringer's expenses. Infringer's marketing efforts taken into account	Yes: claim for inspection of infringer's accounts allowed prior to choice of calculation base
UK	Yes, likelihood of having made the infringer's sales, deduction of infringer's efforts to commercialize	Yes, a notional royalty as the minimum of lost profits	Yes, but rarely requested	Yes, after review of the defendant's commercial documents
France	Only if patent is used; calculated by amount of counterfeit	Where the invention is not used. Infringer's turnover multiplied by an	No, clarified in Patent Act 1968	If patent is actually used: Yes

⁷⁸⁵ See Paul J. Heald, *Optimal Remedies for Patent Infringement: A Transactional Model*, JOHN M. OLIN LAW & ECON. WORKING PAPER NO. 431 (2D SERIES), (Sept. 2008), available at <http://ssrn.com/abstract=1278062>, at p. 8, arguing that "If patent damages were set too high, excessive transaction costs would be incurred and innovation would be stunted. On the other hand, if damages are set too low, inventions will be misappropriated excessively, and both transacting and innovating would likely be deterred".

	products, loss of turnover (determined <i>inter alia</i> by the quality of the patent) and amount of lost profits. Market share of patentee considered	appropriate royalty rate		
The Netherlands	Same as Germany. Section 42(2) Patent Act 1910, Section 70(3) Patent Act 1995	Regarded as the minimum that can be claimed as lost profits	Section 43(3) Patent Act 1910; Section 70(4) Patent Act 1995: the infringer should not be allowed to keep his profits	Yes, after inspection of documents

Source: Reitzig et al., 2007 and own elaboration.

3.4.1 Post-eBay application

Applying the *eBay* precedent, courts have been faced with the special case of calculating patent infringement damages in substitution for injunctive relief. With this respect, the position of courts has not been uniform. Some courts have awarded future damages⁷⁸⁶; some other courts have done nothing in the sense of declaring infringement and leaving it for the patentee to ask for future damages⁷⁸⁷ and some others have issued compulsory licenses⁷⁸⁸.

These three approaches used by U.S. courts applying the *eBay* precedent can be analyzed from a cost-benefit point of view. The first option used by courts has been to apply some measure of past damages to future or prospective damages, by using the measure of reasonable royalties and not of lost profits. The calculation of reasonable royalties in the U.S. is largely focused on a hypothetical negotiation that is governed by the principles stated in *Georgia-Pacific*, a series of 15 factors that might be taken into account when calculating such royalties. This method offers the advantage of being predictable and avoiding further litigation costs⁷⁸⁹.

⁷⁸⁶ See Newcombe et al., supra note 784 at p. 569, citing: *Voda v. Cordis Corp.*, No. CIV-03-1512-L, 2006 U.S. Dist. LEXIS 63623 (W.D. Okla. Sept. 5, 2006) and *Paice L.L.C. v. Toyota Motor Corp.*, No. 2:04-CV-211, 2006 U.S. Dist. LEXIS 61600 (E.D. Tex. Aug. 16, 2006). However, in this latter case, the court imposed an “ongoing royalty that could be still considered as a compulsory licensing. In accordance to the authors: “The Federal Circuit has only just begun to express its views on the appropriateness of these varied remedies, allowing for the award of future infringement damages, which unlike a compulsory license, correctly keep the infringer in the status of an ongoing (and willful) infringer as opposed to a licensee”.

⁷⁸⁷ Ibid citing *z4 Tech., Inc. v. Microsoft Corp.*, 434 F. Supp. 2d 437 (E.D. Tex. 2006).

⁷⁸⁸ Ibid citing *Finisar Corp. v. DirecTV Group*, No. 1:05-CV-264, 2006 U.S. Dist. LEXIS 76380 (E.D. Tex. July 7, 2006). To this, we could add *Paice v. Toyota* (depending on the view one holds about the differences between ongoing royalties and compulsory licenses) and *Innogenetics v. Abbott*, supra notes 462 and 463.

⁷⁸⁹ Ibid at p. 570.

Under this option, error costs might however be large, especially when past damage awards are inexact. However, administrative costs would be lower than in the cases when another different calculation is needed for prospective damages. The question is whether the court should consider that circumstances have changed in the light of the decision of validity and infringement so as to affect the hypothetical negotiation that was previously used. In this sense, two positions are possible. Firstly, one could argue that there is no need for any change in the hypothetical negotiation setting⁷⁹⁰. However it could be counter-argued that there is a need to take into consideration the change of circumstances after the decision of validity and infringement was taken⁷⁹¹.

A second alternative is that courts “do nothing” in a way similar to what a U.S. district court did when deciding the case of *z4 v. Microsoft*. In that case, the district court recognized that when a permanent injunction is denied, courts need to find an efficient method for the recovery of future monetary damages post-verdict. In the case, the court judged that such efficient method could consist in abstaining from calculating prospective damages so that the verdict on injunctive relief was the following:

“The Court **severs** z4's causes of action for post-verdict infringement (...) and **orders** z4 to file an appropriate complaint within ten days of the issuance of this Memorandum Opinion and Order. The Court **orders** Microsoft to file an answer to z4's complaint within the normal time allotted under the Federal Rules of Civil Procedure. Furthermore, the Court **orders** Microsoft to file quarterly reports in the new action beginning on July 1, 2006 indicating the number of units sold with regard to all Microsoft products found to infringe z4's patents in this case. This will preserve z4's rights to future monetary damages in an efficient manner, while relieving Microsoft of the hardship and expense that would be occasioned by the issuance of a permanent **injunction**”⁷⁹².

⁷⁹⁰ Ibid at p. 571 arguing that: “One might argue that that it is fair to assume that any agreement reached during a hypothetical “negotiation” runs for the life of the patent. Under this theory, the patentee’s victory at trial merely confirms certain key facts presumed during the hypothetical negotiation – validity and infringement – and validates the running royalty conceived in such a negotiation”.

⁷⁹¹ See Ibid at p. 571, quoting from *Paice LLC v. Toyota Motor Corp.*, Nos. 2006-1610, -1631, 2007 U.S. App. LEXIS 24357, at *51 (Fed. Cir. Oct. 18, 2007) (“pre-suit and post-judgment acts of infringement are distinct, and may warrant different royalty rates given the change in the parties’ legal relationship and other factors”).

⁷⁹² See *z4 Tech., Inc. v. Microsoft Corp.*, 434 F. Supp. 2d 437, 444-45 (E.D. Tex. 2006)

Such order has in effect been interpreted as equivalent to omitting the calculation of forward damages while leaving it for the plaintiff to file a separate (new) cause of action for post-verdict infringement⁷⁹³.

A third option for courts is to issue a compulsory licensing. Commentators and courts have disagreed about whether there is any (relevant) difference between issuing ongoing royalties and a compulsory licensing. Some scholars argue that ongoing royalties are fundamentally different than compulsory licenses, especially as this latter mechanism somehow transforms the status of infringer into a forced licensee⁷⁹⁴. In spite of the legal subtleties that might differentiate the issuance of an ongoing royalty from a compulsory licensing, from a law and economics perspective both methods share an important number of similarities. As it was posed by Judge Rader's dissent on *Paice v. Toyota* "calling a compulsory license an "ongoing royalty" does not make it any less a compulsory license"⁷⁹⁵.

Nonetheless, Judge Rader based his dissent on the fact that district courts should not merely consider the possibility of allowing parties an opportunity to negotiate the terms of such license, which go beyond the calculation of the royalty, but that they should actually be compelled to do so in the light of the possible disruptive costs of issuing such compulsory licenses. The opportunity for parties to negotiate the terms of a license is, in the opinion of Judge Rader's dissent what differentiates an "ongoing royalty" from a "compulsory license" and would as well eliminate the harmful effects of compulsory licensing⁷⁹⁶.

It is doubtful, however, that such negotiations between the parties might indeed arrive at a more efficient calculation of the royalties after a costly litigation has been initiated and maintained for a long period of time:

"It is far from clear that providing the opportunity to the parties – who have just fought for several years – one more opportunity to settle before the court

⁷⁹³ See *ibid*, at p. 573-574, arguing that: "the Court crafts such a remedy by severing z4's continuing causes of action for monetary damages due to Microsoft's continuing post-verdict infringement of z4's patents".

⁷⁹⁴ See Newcombe et al., *supra* note 784, at p. 575, arguing that: ("First, the "license" may give rise to cross-licensing obligations, trigger most-favored-nation clauses whereby the patentee has to alter terms with other licenses, or affect any exclusive license that the patentee has granted. Second, a compulsory license changes the infringer's status from an ongoing *willful* infringer to a licensed entity. That change in status could have major implications for determining whether a patentee is entitled to enhanced damages for future infringement").

⁷⁹⁵ *Paice LLC v. Toyota Motor Corp.*, Nos. 2006-1610, -1631, 2007 U.S. App. LEXIS 24357, at 55 (Fed. Cir. Oct. 18, 2007) (Rader, J., concurring).

⁷⁹⁶ *Ibid*, arguing that: "To avoid many of the disruptive implications of a royalty imposed as an alternative to the preferred remedy of exclusion, the trial court's discretion should not reach so far as to deny the parties a formal opportunity to set the terms of a royalty on their own. With such an opportunity in place, an ongoing royalty would be an ongoing royalty, not a compulsory license"

issues prospective relief will be a fruitful exercise once the threat of an injunction is eliminated (and setting aside the issue of enhanced damages). Other than eliminating future uncertainties on appeal and possible remand, there appears to be little incentive for the parties to reach such an agreement. The plaintiff is unlikely to accept a royalty rate less than the jury awarded and the defendant has no incentive to pay more than that amount⁷⁹⁷

Judge Rader's dissent also focuses on the potential administrative costs that either option would impose to courts. Whereas the extrapolation of damages calculated for past infringement would entail lesser costs since it would not require an additional assessment of the changed circumstances, it would also impose potentially higher error costs:

"Evidence and argument on royalty rates were, of course, presented during the course of the trial, for the purposes of assessing damages for Toyota's past infringement. But pre-suit and post-judgment acts of infringement are distinct, and may warrant different royalty rates given the change in the parties' legal relationship and other factors. When given choices between taking additional evidence or not, and between remanding to the parties or not, a district court may prefer the simplest course – impose its own compulsory license. This simplest course, however, affords the parties the least chance to inform the court of potential changes in the market or other circumstances that might affect the royalty rate reaching into the future⁷⁹⁸.

Finally, another important case of a district court applying the eBay precedent was that of *Innogenetics v. Abbott*, where the court granted an injunction accompanied with an ongoing royalty plus a fee corresponding to the entrance in the market. On appeal, the CAFC reversed the decision for abuse of discretion and denied the permanent injunction. The reason was that, in the opinion of the court, a market-fee entry plus ongoing royalty was considered to be sufficient to ensure the plaintiff's relief and hence totally substituting the need for injunctive relief. In this case the court considered that forward-looking damages are a good substitute for injunctive relief⁷⁹⁹. The following table summarizes the different choices that courts might use in substituting an injunctive order with monetary damages.

⁷⁹⁷ See Newcombe et al. *supra* note 784, at p. 573.

⁷⁹⁸ *Ibid.*

⁷⁹⁹ See John Skenyon, Christopher Marchese and John Land, *Patent Damages Law and Practice*, § 3:20.50, DATABASE UPDATED AUGUST 2008, referring also the case of *Amado v. Microsoft Corp.*, 517 F.3d 135 (Fed. Cir. 2008): "There, the district court awarded a post-verdict royalty which consisted of trebling of the original jury verdict rate of \$.04 per unit. The Federal Circuit was "unable to determine" whether the award was reasonable or not, and it was vacated".

Table 3: cost-benefits of damage calculation methods in post eBay cases

Approach	Benefits	Costs	Cases
Extrapolating past damages for the future	Less administrative costs	More error costs	<i>Voda v. Cordis Corp.</i>
No calculus	Less administrative and error costs	Uncertainty Continuous litigation	<i>Z4 v. Microsoft</i>
Ongoing royalty/Compulsory licensing	Less error costs	More administrative costs	<i>Innogenetics v. Abbott</i> <i>Paice LLC v. Toyota Motor Co.</i> <i>Amado v. Microsoft</i>
License is imposed only if voluntary negotiations fail	Administrative and error costs are saved if voluntary negotiations succeed	Double transaction costs? Negotiation costs; plus administrative and error costs in case negotiations fail	<i>Paice L.L.C. v. Toyota Motor Co.</i> (Judge Rader dissent)

3.4.2 Law and Economics of Damage Remedies

The majority of law and economics analysis considers that damage awards should achieve compensation and deterrence pursuant to the goal of providing (and preserving) sufficient incentives for innovation. Most economic models are based upon innovation incentives but face the difficulty of the changing economic landscape and function for patents. If indeed patents are not mainly or at least not necessarily conceived in the majority of industries as instruments to foster innovation incentives and if the optimal level of R&D is in itself difficult to be identified, a model based upon incentives to transact might be closer to the current problems of patent law. An alternative is then to consider optimal incentives to transact instead of optimal incentives to invest in R&D⁸⁰⁰, as has been recently proposed in an academic article that develops a model to determine optimal remedies for patent infringement, based upon the optimal incentives to transact with patents.

The model is arguably a better alternative to models based upon incentives for R&D, given the multiple problems of this latter approach. A normative conclusion of this model is that the use of *per se* rules such as the automatic rule for injunctive relief in place before the eBay decision should be abandoned. The model also suggests that the intention of the infringer and the cost of patent searches are taking into consideration in order to decide whether or not to

⁸⁰⁰ See Heald, *supra* note 785.

award injunctive relief as well as justifies an independent invention defense⁸⁰¹. In spite of the inherent difficulty of calculating actual values, the model suggests some guidelines in order to determine whether or not to award extra-compensatory damages⁸⁰². In addition, the model argues in favor of using the unjust enrichment measure for calculating patent damages⁸⁰³, a standard for damage that was abandoned in the U.S. but is still applicable in several other countries.

Economic analysis still has to produce more definite conclusions with regard to the optimal level of compensation for patent owners. In the meanwhile, it is important from a policy point of view to compare all the costs and all the benefits associated with the use of property and liability rules to protect patent rights.

4 Other costs of Patent Liability Rules

4.1 Interference with bargaining outcomes

Many commentators have argued that liability rules disfavor the voluntary bargaining between the parties, a solution that would be better if compared with a forced license. This is because parties themselves are supposed to be better able to negotiate all terms of a license, including the royalties. In this light, property rules have been defended as a better mechanism to induce efficient bargaining between the parties and the emergence of contractually negotiated mechanisms such as patent pools and their equivalents in copyright law⁸⁰⁴.

However, some of these comments disregard the potential emergence of strategic behavior which is precisely what precludes an efficient bargaining between the parties. In fact, it is in the context of patent pools and specifically during the negotiation of technological standards that some of the most recent cases of hold-ups (so called patent ambushes) have taken place. As Shapiro has described, it is possible to differentiate between different types of transactions costs and whereas patent pools and collective organizations can help to decrease the transaction costs related with the presence of multiple parties and

⁸⁰¹ See Heald, *supra* note 785, arguing that courts should not increase the award of damages or accord injunctive relief where the defendant has engaged in a reasonable search before infringement and yet failed to discover the plaintiff's patent.

⁸⁰² *Ibid*, explaining that: "Along with the *eBay* decision, the model supports the other important CAFC decision in the case, which also disfavor the automatic application of a rule that indicated the use of treble damages when a failure to search patents occurred. The decision in *Seagate*, takes into account the possibility that sometimes, patent searching would be inefficient, and enhance damages would be over-deterrent under such circumstances (...).

⁸⁰³ *Ibid*, arguing that: "Economic research has yet to . . . offer any efficiency argument for the abandonment of unjust enrichment, the most commonly used regime into the 1960."

⁸⁰⁴ See Merges, *supra* note 114 and Kieff *supra* note 124.

the necessity to clear many rights, they are doubtfully capable of dealing with potential hold-up⁸⁰⁵.

4.2 *Ex-post* liability rules and legal uncertainty

Whether strict rules or flexible standards should govern the protection of patent rights has been the object of long discussions and growing interest by scholars, courts and policy-makers. For instance, the rule for equitable relief as interpreted by *eBay* while being part of a historical tradition, poses new issues in the context of IP and innovation in our days. On the one hand, allowing more discretion to district courts might increase uncertainty. This can be detrimental especially for technological fields requiring great amounts of investment and surrounded by uncertain results, which is the typical case of the pharmaceutical and biotech industries. On the other hand, the fact that courts can apply the four-factor test in the light of particular circumstances can be welcomed as technologies change, become more complex and are poorly understood by policy makers and as different costs and incentives are in place for different industries while patent law remains inherently uniform⁸⁰⁶.

In this sense, if patent policy is guided by efficiency, it must attempt to balance legal certainty with the capacity to adapt to technological changes or else risk that rules become obsolete and hinder rather than foster innovation. This balance is easier to achieve through equity decisions adapted to particular circumstances such as the increasing number and importance of multi-component industries, patenting information-based products and the emergence of patent-thickets and anti-commons.

The application of the four-factor test after the *eBay* case has indeed been characterized by legal uncertainty. In fact, the same *eBay* decision did not provide enough guidance for district courts relative to the task imposed upon them, resulting in some conflicting decisions⁸⁰⁷. Nonetheless, such legal uncertainty should be compared with the costs arising from the use of a rigid or categorical rule awarding injunctive relief, which was not only rejected by the U.S. Supreme Court in *eBay* but that is also not in tune with the analysis presented in the previous chapters with regard to emerging “strategic behaviour” practices of patentees.

⁸⁰⁵ See Shapiro, *supra* note 5.

⁸⁰⁶ See Carroll, *supra* note 56.

⁸⁰⁷ See *supra* notes 457 and 458 as well as accompanying text.

5 Cost-Benefit Analysis of the Rules

The prospective costs and benefits of protecting patents through a property or a liability rule should be measured either in static or dynamic efficiency terms. In fact, whereas the traditional justification of patent compulsory licensing provisions has been posed in static efficiency terms, the newest literature examining the denial of injunctions and the case law adopting this form of *ex post* patent liability rules has underlined the potential losses from the use of property rules in environments with high transaction costs and strategic behavior from the perspective of static and dynamic efficiency losses⁸⁰⁸:

(1) **The static efficiency losses that arise from the ability of 1st innovators of extracting rents** from a holdup due to the highest prices imposed to both second innovators and final users. With regard to the relationship between the first and second innovators, there are also distributional consequences in the sense that the ability of holding-up puts the 1st innovator in a bargaining position that allows her to extract a higher surplus at the cost of the 2nd innovator surplus.

(2) **The dynamic efficiency losses** that arise when, given the distributional consequences favoring 1st innovators at the cost of the surplus of 2nd innovators; the second innovator anticipates such windfall and limits or abstains from investing in a second innovation. Such losses might be higher in the presence of multi-component innovations, where the possibility that each 1st innovator extracts similar rents might amount to royalty stacking.

(3) **Dynamic efficiency losses due to rent-seeking “investments” of 1st innovators to induce hold-ups** through the use of filling strategies such as increasing the number of patent applications over slightly different technologies, drafting complex and numerous claims, filling continuations and divisional applications. These practices might lead to a more general effect, which cancels out the capacity of the patent system of disclosing efficient information and providing efficient notice of patented innovations.

(4) **Investments of 2nd innovators to avoid hold-ups** among other activities in inefficient patent searching, i.e. searching beyond reasonable and rational terms, which precisely responds to the presence of filing strategies, patent thickets and in general, the increasing number and complexity of patent documents and the inefficiency of the patent notice system.

5.1 A comparative overview of costs and benefits of rules

⁸⁰⁸ This section draws on the analysis contained in Cotter, *supra* note 38; BESSEN AND MEURER, *supra* note 14 and Lemley & Weiser, *supra* note 72.

Combining the choice of type of protection (property rule or liability rule) and the type of interpretation to apply such protection (whether it is a *per se* rule or rule of reason) we might obtain four possible combinations. However the table below differentiates between liability rules, according to whether the reasons for basis for applying to such rule is a ban on strategic behavior or whether it is based upon a compulsory license on non-working or dependent patents. The tables below reflect an overview of the costs and benefits of such possible combinations.

Rule v. Standard	Exceptions	Entitlements	Examples
1. Strict property rule -Subject to a <i>per se</i> rule	-Only public interest exceptions	-Right holder always gets injunction against infringement	-Pre-eBay decisions; Continental Europe; U.K.
2. Property rule -Subject to a rule of reason/standard	-Ban on strategic behavior	-Right holder gets injunction unless there are (either intention or presumption) of hold-up - If hold-ups occur	- Decisions applying <i>eBay v. MercExchange</i>
3. Liability rule -Subject to a rule of reason/standard	-Ban on strategic behaviour	- Right holder is entitled to injunction unless infringer applies for liability rule	- Balancing test where right holder gets injunction unless the balance of hardship favors defendant in some U.K. decisions -or, compulsory licensing as a defense for some (good faith) infringers
4. Liability rule -Subject to a rule of reason/standard	-Non-working innovations -Dependent innovations	- 2nd innovator is entitled to compulsory license under grounds established by law	-compulsory licensing for either infringers (<i>ex-post</i>) or non-infringers (<i>ex-ante</i>)
5. Liability rule -Subject to a <i>per se</i> rule	-None, the property rule is transformed into a right to compensation	- 2nd innovator is always entitled to apply to a compulsory license	-Not possible for WTO country members

Nonetheless, rule number (3) and rule number (4) are both *ex post* liability rules subject to a rule of reason and only differing on whether infringers might also be entitled to a compulsory license, hence, in the following analysis, they are treated as one rule, obtaining the possible combinations ranging from a protection favoring property rules to one favoring liability rules through a *per se* rule and the intermediate choices of rules of reasons or standards favoring either a property or a liability rule.

Rule 1: property rule subject to a *per se* rule

A cost-benefit analysis: private costs and benefits

	Potential costs	Potential benefits
1 st innovator	-Inefficient investments in filing/negotiation strategies	-Higher rents
2 nd innovator	-Inefficient investments in previous patent search	-None

A cost-benefit analysis: social costs and benefits

	Potential costs	Potential benefits
Society	-Misalignment of incentives which might be not proportional to the value of innovation -Inefficient investments in previous patent search -Inefficient investments in filing/negotiation strategies -Higher prices for final consumers -Less incentives for 2 nd innovators -Higher prices for 2 nd innovators, possibly royalty stacking	-Incentives to invest in (patentable) R&D -Saved administrative and error costs in analyzing both the grounds to switch into a liability rule and deciding any possible compensation.

Rule 2: property rule subject to a rule of reason (*ex post* liability rule)

A cost-benefit analysis: private costs and benefits

	Potential costs	Potential benefits
1 st innovator	-Rents from hold-up	-Rents from a property rule
2 nd innovator		-Less search costs 1 st innovations

A cost-benefit analysis: social costs and benefits

	Potential costs	Potential benefits
Society	-Prices might still be high for final consumers -Administrative and error costs	-Incentives to invest in (patentable) R&D - Less inefficient investments in previous patent search -Less inefficient investments in filing/negotiation strategies

Rule 3: liability rule subject to a rule of reason

A cost-benefit analysis: private costs and benefits

	Potential costs	Potential benefits
1 st innovator	-Lower rents -Less bargaining power	
2 nd innovator	-Subject to the interpretation	- Less search costs

	of the court	
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A cost-benefit analysis: social costs and benefits

	Potential costs	Potential benefits
Society	-administrative and error costs in analyzing the grounds to switch into a liability rule -administrative and error costs in calculating the royalties	

Rule 4: liability rule subject to a *per se* rule

A cost-benefit analysis: private costs and benefits

	Potential costs	Potential benefits
1 st innovator	-Lower rents -Less bargaining power	
2 nd innovator		-Higher rents -More bargaining power

A cost-benefit analysis: social costs and benefits

	Potential costs	Potential benefits
Society	-administrative and error costs in calculating the royalties -less incentives to invest in 1 st innovations	-saved administrative and error costs in analyzing the grounds to switch into a liability rule -more incentives to invest in 2 nd innovations when benefits surpass costs

6 Conclusions

This chapter focused on the cost side of patent liability rules. As it is often argued in economics as well as legal studies, the administration of liability rules imposes important costs. In particular, the calculation of the appropriate compensation for patent owners is often presented as so difficult and costly as to make property rules look preferable in comparison.

Contrary to this view, there is a recently growing understanding that property rules might also impose costs of their own in a significant magnitude. This is the case of patent law, where the boundaries of patented inventions are often unclear and embedded in increasingly complex claims. Before this reality, the task of mimicking the market through the calculation of the optimal remuneration might indeed be less costly, at least in some cases. Pursuant to the analysis of previous chapters, this would be the case in the presence of patent strategic behavior.

In addition, and without attempting to enter in the specialized field of damage calculation, this chapter compared the methods used to calculate remuneration focusing especially on the new sub-set of cases from the U.S. as they present

some alternatives to more traditional ways of calculating the remuneration under a liability rule. Notwithstanding the important differences between the context of compulsory licenses and damage calculation in patent infringement cases as well as the differences pertaining to each national law, the principles underlining patent protection suggest that the difficulties surrounding this calculation are not insurmountable. Moreover, such difficulties should be always compared with the costs associated with the use of pure property rules as neither option is free from costs.

CHAPTER VI

CONCLUSIONS

This research began with the objective of providing new insights on the use of liability rules to protect patent entitlements. The project was ambitious since the economic analysis of patents is a well-developed field and the particular framework of property and liability rules had already been examined by renowned economic and legal scholars. Nonetheless, previous research had resulted in contradictory callings for and against liability rules in patent law and, in effect, an interesting controversy surrounded the possibility of limiting the exclusivity of patent rights. A large amount of previous discussions focused either on the use of compulsory licensing provisions in the context of the implementation of the TRIPS Agreement, the Doha Declaration and access to medicines, or on the interface of IP rights and antitrust regulation. In contrast with the important amount of literature produced about these cases, many studies highlighted the fact that patent liability rules were seldom used in practice.

Soon after this research was initiated, the case of *NTP v. Research in Motion*⁸⁰⁹ (RIM) regarding some patents held by the former company and used in the *BlackBerry* manufactured by RIM, captured the attention of the patent community. The case was also popular among the public opinion as the news warned about the possibility that an injunctive order against RIM would have shutdown the whole service for users of this device. Following the denial of *certiorari* from the U.S. Supreme Court, the controversy was settled on March 2006. Hence, in spite of the great amount of discussion generated by scholars, a decision addressing the potential disruptive effects of a property rule did not arrive at that time.

Nonetheless, a similar case promptly arrived as the U.S. Supreme Court granted *certiorari* on the case of *eBay v. MercExchange*⁸¹⁰, which likewise regarded a patent holder that did not practice her patents and threatened to shut down a popular website for online trading. The U.S. Supreme Court decision of 2006

⁸⁰⁹ See supra notes 390, 414 and 415 and accompanying text.

⁸¹⁰ See *eBay v. MercExchange*, supra note 2, and Chapter III, section 3.1. "The eBay case"; explaining the case and the decision by the U.S. Supreme Court.

served as the starting point of a line of patent infringement cases using a factual test in order to consider whether or not to grant injunctive relief. Scholarly controversy rapidly flourished, but most discussions focused on the issue of holdups and specifically on the emergence of a particular type of firms sometimes denominated as “patent trolls” or “non-manufacturing entities”.

Such case law provided a unique opportunity to produce new insights under a widely known framework as the property and liability rules. The research plan was to provide a comparative view of several patent systems using a law and economics methodology to examine patent liability rules. Besides attempting to analyze this new case law, this research work examined a variety of cases addressing different inter-related problems. Finding a sub-set of cases that could be compared to those applying the *eBay* precedent in the U.S. was a difficult task. On the one hand, the equitable nature of injunctions can only be found in common law countries. On the other hand, the counterpart sub-set of cases applying compulsory licenses are few and dispersed throughout the world. Nonetheless, the framework of property and liability rules is precisely useful in that it allows -if broadly interpreted- bringing together a wider number of cases apparently different from the legal point of view but sharing the important feature of transforming the way in which patent entitlements are protected.

A number of fruitful conclusions emerged precisely from the fact that the “liability rules” label describes such varied cases where patent rights are protected through a right to get a remuneration that substitutes the right to exclude. This conclusive chapter provides an overview of the findings of each chapter, the main implications of the findings of this research both for theoretical and policy discussions as well as some suggestions for future research.

1 The research question

The central question of this Thesis was whether and to what extent can the use of liability rules for patent protection be supported on efficiency grounds. In order to answer this question, the Thesis analyzed the use of patent liability rules from a historic, economic as well as a legal point of view while developing and then focusing on the concept of *ex-post* liability rules as currently applied in the patent field. The answer to the research question was affirmative in the sense that, under certain circumstances, the use of patent liability rules might be superior in efficiency terms. The most difficult issue, to which the Thesis provides a partial answer, is the identification of such circumstances as well as

the evaluation of the (potential) costs and (potential) benefits of both property and liability rule in the context of patent law.

2 Findings of the research

The findings of this research may contribute in several ways to current theoretical and policy discussions in the patent field. In particular, each chapter aimed at testing the general research question from a different perspective and allowed a particular contribution.

2.1 Chapter I

The first chapter undertook a review of the literature addressing property and liability rules both in general and with regards to IP and patent law in particular. Solid theoretical reasons were found in the law and economics literature that support the use of liability rules in many fields, including patent law. A basic insight from the law and economics literature is that liability rules are superior to property rules when transaction costs are high in comparison with the administrative costs inherent to the administration of property rules. Whereas such normative proposition has been the subject of multiple extensions and critics, its explanatory logic continues to be applicable to multiple legal problems. In this sense, the literature on entitlements conceives property and liability rules as alternatives to protect entitlements according to the relative costs and benefits of each rule.

In the light of this framework, the first chapter undertook a critical review of the application of these insights to the IP field. In spite of the divergences in the patent economics literature, a recurring concern regards the potential costs of strategic behavior and the potential excesses of patent protection. In contrast to this, however, the application of the entitlements literature to the IP and patent fields has been rooted in a restricted view.

One contribution of this chapter was bringing together the insights developed by recent patent literature focussing on transaction costs in the patent field and the specific consequences of patent strategic behavior together with the insights from a long-standing application of compulsory licensing provisions in patent law. The most recent patent literature has addressed the use of a type of liability rule administered by courts that deny property rule protection in some patent infringement cases and limit the relief of patentees to the grant of damage compensation.

In this sense, the chapter set up the framework for the following chapters that analyze both types of *ex post* liability rules for the patent case, keeping in mind that one type of liability rule is usually included in substantive provisions of patent law, whereas the other belongs to enforcement or procedural rules. In particular, the second and third chapter analyzed both types of rules from a historical and legal perspective, keeping in mind the law and economics framework that makes it possible to bring them together under the liability rules umbrella.

2.2 Chapter II

The second chapter focused on the use of patent liability rules from a historical viewpoint. The choice of incorporating a historical perspective had a special advantage for this particular research question. The use of patent liability rules as well as other inter-linked patent controversies has historically emerged at different times. The problems faced by today's patent system are driven by the particular features of modern and high technologies and indeed far away from the mechanical type of invention that was the prototype that experts had in mind when drafting the first national and international patent statutes. Nonetheless, the lessons from the most important patent reforms and processes of harmonization can still enlighten many modern patent law discussions.

The main lesson from history is that liability rules have actually played an important role throughout the history of patents. The first example of liability rules were compulsory licensing provisions when a patent was not worked in the country granting protection. In their origin, hence, compulsory licenses created a balancing mechanism that was incorporated in the international system to substitute the much harsher measure of patent forfeiture in cases of lack of national or local production. Hence, compulsory licensing entered into the patent landscape as an improvement in the protection of patentees at the same time that it allowed countries to continue the defense of their national spaces by maintaining local requirements.

Another important lesson from history is that, on the one hand, the extension of patent protection, and on the other hand, the limitations and exceptions of patent law, have clearly oscillated with time. Traditional compulsory licensing provisions have already been the object of much discussion and analysis. In contrast, the importance that enforcement provisions might have for the use of liability rules in patent law was far less known until recently and may indicate a fluctuation in patent law, this time towards a more restricted view on patent

protection. The 2006 decision on the *eBay* case could be in fact understood as part of a broader trend towards restraining an excessive expansion of patent protection in the U.S.⁸¹¹.

In the international context, important requirements for the use of liability rules were set for by the TRIPS Agreement and in fact, a great amount of the controversy after the enactment of the TRIPS referred to the limitations on the use of compulsory licenses⁸¹². In contrast with substantive patent law harmonization, enforcement is a late comer in the international arena and mostly remains a national issue depending on each country's legal system and traditions. The possibility of denying injunctions, subjecting them to equitable considerations that vary case-by case is rooted in the common law distinction of courts of equity and courts of common law, while a largely different approach is used by civil law countries where legal analysis has emphasized rights over remedies. Nonetheless, countries that view IP rights as absolute rights have always conceived them, to a varying extent, as limited rights. Such limits are set, among other doctrines by the application of compulsory licenses.

An observation that emerged was that common law countries have historically conceived injunctions as an equitable remedy and hence subjected the award of this remedy to a factual test that aims at striking a balance between the particular circumstances of the case. Nevertheless, a glimpse into the law as it is actually practiced showed how injunctions have been habitually awarded in patent cases while the conception of remedies has evolved -mainly but not only through the use of economic arguments- towards favoring the use of strong property rules. This situation was more extremely in the U.S., yet it was recently reversed by the *eBay* decision.

The situation is –at least apparently- different in civil law countries, due to a diverse conception over rights and remedies where injunctions are often conceived as a right, or inherently inseparable from the right. The law in books in many countries usually follows a language similar to that of article 44 of the TRIPS Agreement, which only obliges countries to grant the authority to judges in order to issue injunctions without compelling them to do so in all cases. However, the law in action seems to reflect that a plaintiff whose patent right is infringed is entitled to obtain injunctive relief.

In this sense, the chapter analyzed the interface between rights and remedies that allows countries from different legal systems to converge in the law in

⁸¹¹ This interpretation could be valid if the *eBay* decision is analyzed in the context of other recent decisions by the U.S. Supreme Court mentioned in *supra* note 314.

⁸¹² See Chapter II, Section 3.3.1. Article 31 of the TRIPS Agreement”.

books and diverge in the law in action. It seems that in the light of the information available at our times, no system can be considered *a priori* as more efficient according to whether remedies dictate or are separated from the nature of rights. This is even more important in a dynamic field as patent law, where the progress of technology demands the ability of adapting to the particular challenges of this field.

2.3 Chapter III

The third chapter developed the concept of *ex post* liability rules for patents in order to compare and analyze these provisions in patent law. The analysis referred to the international level as well as to three specific national patent laws: the U.S., the U.K. and Italy. Some important conclusions were drawn from each specific case. In the U.S. the emphasis of scholarly work and case law has been given to the problems of patent hold-ups, the strategic use of patenting by businesses characterized as “trolls” and the increasing multi-component nature of current technologies. In contrast, U.S. patent law seemed to sustain the view that patentees are free to choose whether to practice or not their inventions and should not, in general, be compelled to license them. This view is reflected in the absence of specific regimes of compulsory licenses for non-working or for dependent patents.

The U.K. patent law is an interesting case to understand the interface between remedies-based and compulsory licensing provisions. Whereas injunctions can be denied under equitable considerations, it has been commonly argued that the problems of strategic use of patents, the risk of blocking further technologies and the lack of use of technologies could be better dealt through the use of compulsory licensing provisions. Nevertheless, the denial of injunctions has also served to tackle extreme cases of “oppression” by right holders without admitting a “balance of convenience” test⁸¹³.

The Italian case highlights the differences in the conception of rights and remedies within civil law countries yet the surprising similarity of arguments with respect to IP remedies. A particular reference was made to preliminary injunctions, which frequently put an end to potentially long trial procedures performing a role similar to property rules in other systems. The reasoning of courts in patent infringement cases has sometimes favored a strong property rule in the sense that some Italian courts have presumed the requirement of

⁸¹³ See *Jaggard v Sawyer*, supra note 293, arguing that the balancing test is one of oppression, and the court should not slide into application of a general balance of convenience test.

“*periculum in mora*” in *re ipsa* for patent infringement cases. The outcome is similar to the application of an “automatic injunction rule” in the U.S. and hence, some courts have “tilted the table” in favor of patent owners that can easily obtain a preliminary injunction that sets up favorable terms for a settlement⁸¹⁴. This could pose particular problems, especially in certain sectors, such as the pharmaceutical industry where delays in allowing the entrance of generic products can generate significant welfare losses.

In addition to these particular conclusions by country, the comparative examination performed in this Thesis, produced some suggestions to improve the use of patent liability rules. For instance, the *eBay* case, highlights that compulsory licensing might contribute to dynamic efficiency when strategic behavior might otherwise preclude follow-on innovation. Secondly, while a question mark surrounds the practical utility of compulsory licenses as they are seldom used⁸¹⁵, the rule applied in the *eBay* case suggests an important deficiency of traditional compulsory licenses which are seldom available in cases of patent infringement.

The chapter also identified how a common concern with regards to the use of liability rules across several jurisdictions and times is the difficulty and cost that a court (or agency) would face in order to calculate damages that substitute an injunction and the interpretation of the sound grounds to provide a compulsory license.

2.4 Chapter IV

The first chapters focused on a positive analysis and hence on the questions of when and how are patent liability rules used. This chapter instead addressed the normative question of when should patent liability rules be used. From a law and economics perspective, several misconstructions on the application of the liability rules framework to patent law were found. Whereas studies justify the use of liability rules upon the presence of high transaction costs, including strategic behavior; recent discussions on the use of patent liability rules have tended to focus on the problem of patent hold-ups. The adoption of such

⁸¹⁴ See Lanjouw & Lerner, *supra* note 606, using the term “tilting the table” to describe the effect of preliminary injunctions in the U.S.

⁸¹⁵ Nonetheless, it is often argued that compulsory licenses have an important effect as negotiations happen in the shadow of such rules but any blocking effect would prevail in case they are not used because of an inefficient design. Below we explain some of the features that might lead to such inefficient design. One of these is the fact that they are not available as a defense within patent infringement cases, at least for the case of inadvertent or good-faith infringers.

narrow focus is mainly due to the fact that discussions have mostly followed the renowned U.S. case of *eBay*.

In addition, some studies have proposed a narrow definition of patent hold-ups and suggested that the use of patent liability rules be limited to a very specific context with particularly restrictive assumptions. Furthermore, another extremely narrow approach is to focus on the figure of patent trolls as business entities that make use of their patents mainly through litigation and the threat of using litigation in order to extract large settlements above the economic value of their patents. The principal message of this chapter was that such restricted views are misleading in that they might improperly suggest condemning efficient behavior while still tolerating inefficient behavior from patentees.

In contrast, an alternative view of the question of when should patent *ex-post* liability rules be used was provided. The main insights generated by the analysis of national practices holds that problematic cases refer to patent hold-ups but also the problem of sequential and incremental innovation and the potential bargaining breakdown that might occur between the involved parties. A broader concept of strategic behavior was then proposed in this chapter that might offer guidance as to when a liability rule might offer a superior outcome in terms of efficiency.

Patent hold-ups have been furthermore linked to a particular type of patents, *i.e.* patents on business methods and to a particular sector, *i.e.* the information and communication technologies. Based upon those premises, it has been often argued that Europe is immunized from the emergence of some of the problems recently faced in the U.S. patent system. This chapter contributed to such debate by examining the main features of the European landscape that are associated or might be related with high transaction costs and patent strategic behavior. Several recent studies have found an emergence of patent strategies both related to the filing of single applications, management of patent portfolios and litigation of specific patents.

A particular sector, as the pharmaceutical, which has been distinguished from the problematic features of sectors such as information and communication technologies and where patents are said to play a major role, was recently confronted with the results of a recent inquiry performed by the European Commission on the European Pharmaceutical sector. This inquiry put in evidence the increasing frequency and importance of strategic practices with regard to pharmaceutical patents, which might potentially affect innovation incentives as well as create unduly burdens for citizens in such a vital sector as health.

2.5 Chapter V

The last chapter of this thesis concentrated on the cost side of patent liability rules. As it is often argued in economics as well as legal studies, the administration of liability rules might impose important costs. It is often mentioned that the calculation of the appropriate compensation for patent owners would be so difficult and costly that property rules would be preferable in comparison.

Contrary to this view, is the recent understanding that property rules might also impose significant costs, for instance when the boundaries of patented inventions are unclear and entrenched in increasingly complex patent claims. Facing this reality, the calculation of the optimal remuneration might indeed be less costly, at least in some cases. Coinciding with the analysis of previous chapters, this would be the case in the presence of patent strategic behavior.

In addition, and without attempting to enter in the specialized field of damage calculation, this chapter compared the methods used to calculate remuneration focusing especially on the new sub-set of cases from the U.S. as they present some alternatives to more traditional ways of calculating the remuneration under a liability rule. Notwithstanding the important differences between the context of compulsory licenses and damage calculation in patent infringement cases as well as the differences pertaining to each national law, the principles underlying patent protection suggest that the difficulties surrounding this calculation are not insurmountable. Moreover, such difficulties should be compared with the costs associated with the use of pure property rules.

3 Impact and applications of this research

3.1 Lessons from the entitlements literature to the patent field

The application of the property and liability rules framework to the particular case of patent law has produced several interesting findings. In particular, this research allowed clarifying several points of misunderstanding which had biased the use of liability rules to protect patent rights. A first finding regards some deficiencies of previous theoretical analysis based upon a limited view of patent law. In spite of the long-lasting presence of compulsory licensing provisions in patent law, their study has been largely confined. For instance, a first commonly stated view is that patent compulsory licensing provisions were largely absent from U.S. law. A second commonly held view is that patent

compulsory licensing is potentially beneficial from a static efficiency viewpoint while it is detrimental from a dynamic efficiency viewpoint.

Contrary to such views, this research found that the presence of liability rules in patent law has only oscillated in time. Likewise, it was highlighted how this presence has also permeated U.S. patent law, as demonstrated by the new wave of cases after *eBay* but also through historical examples of the application of compulsory licenses by antitrust authorities. In addition, this research showed how, in some situations, protecting a patent through a liability rule can achieve objectives of dynamic as well as static efficiency. This is the case when a property rule would otherwise preclude further investments in R&D activity due to the fear of being exposed to patent strategic behavior.

In addition, the recent case of *eBay* in the U.S. has re-opened discussions about the use of patent liability rules but has also been similarly surrounded by a number of debatable conclusions. A first misunderstanding is reflected in the narrow view that liability rules are only justified when hold-ups are frequent; costly in comparison with the purported costs of liability rules and cannot be solved by means of contractual agreement by the interested parties. Contrary to this view, this research shows that law and economics supports the use of patent liability rules in a wider number of cases. More in general, those cases would arise when patent strategic behavior imposes costs higher than those arising from the switch to a liability rule.

A second contentious view is that the *eBay* decision and applications of this precedent is only possible in the framework of equitable doctrines in common law countries. Conversely, patent liability rules nowadays tend to converge into a model of *ex post* rules, under a case-by-case reasoning that fully considers the particular circumstances of the case. Thus, even though it might be easier to imagine such type of liability rule in a common law country, a similar reasoning might be applied with respect to compulsory licenses for patents in civil law countries as well.

3.2 Patent policy: efficiency and other goals of public interest

This thesis used economic analysis in order to analyze the use of *ex-post* liability rules in patent law. Under an economic approach to law, the guiding policy principle is that of efficiency. However, an important concern that was reflected throughout the analysis is the presence of other important public interest goals in patent law. Indeed, the interface between efficiency and those other public

interest goals, such as fairness and distributive concerns has been reiteratively the object of multiple discussions within and outside of the patent realm⁸¹⁶.

Under the law and economics literature patents are mainly justified as temporary exclusive rights that foster innovation incentives. However, and consequent to the conclusions of this research, the guiding principle of efficiency requires that exclusive rights over technological and scientific knowledge do not preclude their further advancement. Efficiency indeed suggests that patent rights should not extend beyond a social optimal in order to avoid that patents encroach upon other goals such as access to knowledge. In a similar way, goals such as social justice also call for limitations on the exclusive nature of rights⁸¹⁷:

“There are essentially two reasons why we might be concerned about the dynamic described above. One is fear that parties may fail to come to terms in these cases even where the infringing product would not conflict with any development of the IP by its owner, thus resulting in wasted resources and the loss of potentially large gains from trade. The other is the belief that even if the parties do come to terms, it is undesirable for the IP owner to command a disproportionately large share of those gains where they result primarily from the other party’s productive investments. This latter position can be understood as a belief about the demands of equity, based on a particular notion of distributive justice. Or it might be understood as another form of efficiency concern, based on the idea that overcompensating IP owners at the expense of people who make productive downstream use of their works will skew investment incentives in an unproductive manner”⁸¹⁸.

Hence, both efficiency and other public interest grounds support the need for patent policy to address several current problems. For instance, there are reasons to believe that certain technological areas will benefit more from other incentive mechanisms different than patents. Recent proposals for prizes and public-private partnerships in order to provide incentives for research related to

⁸¹⁶ See e.g., Kaplow and Shavell, *supra* note 54. See also Richard Craswell, *Kaplow and Shavell on the Substance of Fairness*, THE JOURNAL OF LEGAL STUDIES, vol. 32 (January 2003); on the particularities of IP law see Farber, Daniel A., & McDonnell, Brett. (2003). Why (and How) Fairness Matters at the IP/Antitrust Interface. UC Berkeley: Boalt Hall. Retrieved from: <http://escholarship.org/uc/item/60c8d09h>

⁸¹⁷ See Rosa Castro, *Ex-post Liability Rules: a Solution for the Biomedical Anti-commons?* IN INTELLECTUAL PROPERTY LAW: ECONOMIC AND SOCIAL JUSTICE PERSPECTIVES, FLANNAGAN AND MONTAGNANI EDS., EDWARD ELGAR PUBLISHING (2010). See also Giovanni Ramello, *Access to vs. exclusion from knowledge: Intellectual property, efficiency and social justice*, P.O.L.I.S. DEPARTMENT'S WORKING PAPERS 90, Department of Public Policy and Public Choice – POLIS (2007), available at: <http://polis.unipmn.it/pubbl/RePEc/uca/ucapdv/ramello100.pdf>.

⁸¹⁸ See Christopher Newman, *Infringement as Nuisance*. CATHOLIC UNIVERSITY LAW REVIEW, FORTHCOMING; GEORGE MASON UNIVERSITY LAW & ECONOMICS RESEARCH PAPER NO. 09-17. Available at: <http://ssrn.com/abstract=1354110>.

neglected diseases are a vivid example of a failure of private IPR's to provide sufficient incentives for R&D. Such mechanisms were not evaluated in this research, but other research has highlighted the importance of incentive mechanisms that can be an alternative to patent protection in areas where patents have failed to deliver⁸¹⁹.

Different reasons would also justify precluding patent protection for some types of technologies. One example is the case of business method patents where it is often argued that patents do not exercise a positive effect on R&D, or at least not positive enough to outweigh the costs imposed by this type of patents. Patents on business methods have incremented at an exponential rate, imposing unduly burdens for patent offices to screen out "good" from bad "patents". This detrimental effect is not only circumscribed to the field but obviously, the administrative burdens imposed by the examination of these patents probably affects the scarce resources of patent offices in general, hence translating into an structural problem pertaining to all patent fields. In addition, the great private value relative to the social value of these patents has created enormous opportunities for patent strategic behavior as well as incentives for the beneficiaries of this protection to engage in rent-seeking activities, including lobbying for lenient legislation with regard to these patents.

The aforementioned problems and their solutions in terms of substituting patent protection in certain cases are only adjacent to the main research question of this Thesis. The central question of this Thesis rather dealt with the type of protection that should be accorded to patent rights, once it is decided that such protection is preferable than its complete absence. In this sense, the use of liability rules is an option that stands in the middle from either full protection or the absence of protection for patents in certain complex cases. Liability rules cannot however be proposed as a solution either to problems where the complete absence of patent protection would be superior or those where full patent protection would be better. But the use of liability rules to protect patents remains an important option for implementing patent policy grounded in efficiency as well as other public interest goals. Whereas much previous research had focused on the fairness and development justifications for the use of liability rules for patents, this research highlighted that their use can also be supported under efficiency grounds, both on a static and a dynamic efficiency perspective. A possible convergence then exists between efficiency and other public interest goals of patent policy in the sense that the use of patent liability rules will sometimes be supported by both grounds.

⁸¹⁹ See WORLD HEALTH ORGANIZATION, REPORT OF THE WORLD HEALTH ORGANIZATION EXPERT WORKING GROUP ON RESEARCH AND DEVELOPMENT FINANCING, January 2010, available at: http://www.who.int/phi/documents/ewg_report/en/index.html, discussing other alternative mechanisms to finance R&D activities.

3.3 Intellectual Property as property

One question that reiteratively appeared in the analysis of patent liability rules regards the nature of IP entitlements and the interface between the nature of the right and the remedy used to protect it. The question of whether IP rights should be granted the same treatment as real property has been the object of much recent discussion in the U.S. following the *eBay* case and various Bills for patent law reform proposed to the U.S. Congress during the last few years⁸²⁰. One of the most important advocates of the extension of property rights treatment to IP is Professor Epstein, who filed one of the numerous *amici* briefs in the *eBay v. MercExchange* case arguing in favor of maintaining a “structural unity” between real property and IP. Professor Epstein, as well as other scholars have interpreted that the property rule protection for real property would only be denied under cases of necessity and applying such logic to IP, he concludes that such cases will be rare in patent law:

“To be sure, the likelihood that these necessities will arise in the context of intellectual property is lower than it is with respect to tangible property, for it is highly unlikely that persons will need to infringe patents in order to escape with their lives. But the class of cases in which this issue is raised is not empty. Indeed, it is just those cases that are tracked by the Federal Circuit below when it references “public health” dangers as a category of reasons that could lead to a suspension of patent property rights”⁸²¹

Indeed, one can argue that this interpretation was followed in the U.S., especially by the CAFC, before the decision of *eBay* and that it is still probably shared by some courts in the U.S. as well as other countries. But as this research showed, such interpretation has not prevailed throughout patent history and it is not supported by economic reasoning. On the contrary, an appropriate contribution of property rights theory to patent law highlights the importance of taking into account that property law has also provided for mechanisms to ensure that society benefits from such protection. In addition, a well balanced application of property rights theory to patent law would take into account the similarities as well as the differences between both fields. Such differences are reflected in mechanisms of patent law that do not have a strictly identical equivalent in real property, including liability rules.

⁸²⁰ See supra note 612.

⁸²¹ See Epstein, Kieff & Wagner, supra note 500.

One of the most important examples is that of eminent domain or expropriation which permits a government to take private property upon the payment of compensation. Whereas such provision can be compared not only with the expropriation of IP rights but also with compulsory licenses in cases of public utility or governmental uses, the varied cases of patent liability rules described in this research cannot be restricted to such limited example with respect to tangible property. Limitations and exceptions are much more profuse in patent law, precisely because this field is based upon a different dynamic which requires balancing the interest of inventors, second innovators and final users of innovation⁸²².

Contrary to the view of IP rights as reflecting the logic of property, Professor Menell and other scholars have argued against the application of such unitary structure to both fields. The reasoning, which is similar to that used by this Thesis is that neither history, nor legal or economic reasons clearly sustain a completely uniform treatment of both fields:

“While there are certainly historical connections and functional parallels between “intellectual property” and “property,” philosophical, legal, economic, and political bases for protecting intellectual property and tangible property differ in significant ways”⁸²³.

A Lockean conception of property as a natural right implies that property should be protected from any private or government interference. This is for instance reflected in the U.S. interpretation of the Constitutional taking clause that grounds the protection of property rights on liberty. Nonetheless, those opposing an unrestricted application of a property rights approach to IP, sustain that the Constitutional mandate for Congress “to promote the progress on Science and the Useful Arts” is based upon a different justification. Menell, for instance, cites a 1790 speech by President George Washington to the Congress that preceded the enactment of the first patent and copyrights legislation and to which the House of Representatives responded that:

“We concur with you in the sentiment that (...) the promotion of science and literature will contribute to the security of a free Government; in the progress of our deliberations we shall not lose sight of objects so worthy of our regard.”

⁸²² To this we may add other patent law exceptions such as experimental research which have no equivalent for tangible property. Experimental research exemptions may have probably been neglected for reasons similar to those described with respect to compulsory licenses, that is, their absence or current limitation within U.S. law, which has been the most influential patent law legislation, at least for the field of law and economics.

⁸²³ See Peter Menell, *Intellectual Property and the Property Rights Movement*, REGULATION, VOL 30, NO. 3, FALL 2007.

According to Menell, IP rights fundamentally differ from the Blackstonian view⁸²⁴ of property rights as absolute, perpetual and exclusive rights. For these purposes, Menell and other scholars highlighting these fundamental differences, cite, among other features, the limited duration, exceptions and limitations entrenched in IP laws. Compulsory licenses are an important example of when the exclusive right is transformed into a remunerative right following a special approach of patent statutes. In substance, this position highlights the economic rationale of IP rights as a mechanism to provide innovation incentives and solve the public goods problem that affects the production of knowledge and information. Patent rights nevertheless create costs in the form of a deadweight loss, the potential inhibition of further research and the inexact allocation of resources in R&D which are not necessarily produced by the most efficient firms under the influence of patent incentives. Such costs are even more critical in cumulative innovation and sequential innovation settings, so that exclusive and unlimited rights would hinder rather than foster the objectives of IP protection and hence the importance of keeping in mind the necessity of a patent system balanced with exceptions and limitations.

Outside of the U.S. debate, the conception of property and IP as natural rights is followed by several other countries. Nonetheless, the utilitarian theories of IP rights and patent law have permeated the most important processes of harmonization around the world. Although the TRIPS Agreement only defines IP rights as “private rights”⁸²⁵, it is noticeable that it does not fix any position with respect to whether IP rights belong or not to the realm of other property rights. Article 7 of the TRIPS Agreement, which refers to the objectives of the agreement, establishes that:

“The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations”⁸²⁶

Closely related to this question is that on the interface between rights and remedies in the sense of how the system determines the type of protection rule to be applied. As it was pointed out in this Thesis, patent laws can use two

⁸²⁴ WILLIAM BLACKSTONE, 2 COMMENTARIES ON THE LAWS OF ENGLAND, Book 2, Chapter 1, at p. 2, “defining property as that sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe”.

⁸²⁵ See Preamble of the TRIPS Agreement.

⁸²⁶ Article 7 of the TRIPS Agreement.

different types of reasoning with regard to this issue. The first approach considers that the nature of the right determines the remedy, and hence a property right would deserve protection through a property rule. Under the second approach, it is the remedy that determines the nature of the right, for instance, the availability of a property rule would determine that the right in question is a property right.

Hence, whereas different legal traditions privilege different solutions, the results of this research suggest that it is not possible to establish which solution would be more efficient. The specific problems of patent law require that the reasoning used to establish which protection rule to adopt, should be responsive to the problems posed by the development of new technologies. In this sense, one might argue that a remedies-based approach would be more flexible than a rights-based approach in that it would permit to choose a different type of remedy and balance its prospective costs and benefits.

Nonetheless, this research evidenced that the law in books can widely differ from the law in action, so that the practical relevance of such differences might be less intense than it appears. The law in books of common law countries puts an emphasis on remedies whereas the law in books of civil law countries emphasizes the nature of the right and judges are more limited to decide upon the available remedies outside their statutory definition. Nonetheless, the law in action in common law countries has tended to converge in the development of presumptions and case law interpreting IP rights as deserving property protection and/or an automatic entitlement to injunctive relief precisely by emphasizing the nature of the right. This was the case in the U.S., at least before the eBay case. Hence, the findings of this research would support the common law solution insofar as it is the remedy and not the conception of IP rights as property that is emphasized. Nonetheless, a closer look into the law in action suggests that either making the right determine the remedy or vice versa can lead to efficient or inefficient solutions.

This is also confirmed by the differences with regards to the justification of IP rights in different legal traditions. Countries from continental Europe tend to follow a French conception of IP as natural rights or personality rights where creativity and invention supports the recognition of rights belonging to the individual. The U.S. has for instance a diametrically different approach which reflects a utilitarian approach to IP and patent protection.

Whereas such different legal traditions have largely recognized that IP rights are limited in nature, limitations have been frequently misinterpreted. A typical misconception is that the only limit to IP rights should be their duration. Such statement is contradicted by the historical presence of limitations and exceptions in patent law, including the use of liability rules. A second statement addressed by this research was the view that substantive IP laws contain rules

that balance benefits and costs of the system, so that enforcement should not attempt to fix such balance⁸²⁷. Notwithstanding the diverse views with respect to IP rights, countries of civil law and common law traditions have progressively adopted incremental levels of protection for IP entitlements so that it is not possible to plainly assume that substantive laws are always following an adequate balance. This suggests firstly that enforcement rules should also be interpreted in the light of the objectives of patent law. Secondly, it is a confirmation that neither a common law nor a civil law approach is better able to deal with current patent law problems.

One of the most important conclusions from this research is to confirm the detrimental effects of any unbalanced view that privileges the need for protection and loses sight of the need of a balanced patent system. In contrast, all legal traditions have for long recognized this need, not only by establishing a limited duration but also through patent scope and the design of proper limitations and exceptions. Although compulsory licenses and other liability rules are only part of this complex system, they have played a historical role in the patent field that has reflected the evolution in time of the justifications for patent protection. Compulsory licenses flourished at a time of controversy between a protectionist view of patents and the development of an ideological conflict between free trade and monopoly. In that context, compulsory licenses entered into the patent landscape as an ambiguous instrument of national protectionism and a middle ground solution for more protectionist measures as patent forfeiture in the absence of local working.

In our times, the international patent landscape has largely evolved side by side with the international trade system. But this evolution, as it has been argued by many renowned authors before, has not been a balanced one. Strong interests have surrounded many land marking reforms in the IP and the patent field⁸²⁸. The study of patent liability rules confirms the need for balancing mechanisms that act as contention devices for the indiscriminate increment of patentability, patent scope, patent duration and above all, as it was the focus of most of this analysis, of an indiscriminate use of enforcement measures that reflect such unbalanced view.

Summing up, it is not the reasoning that starts from the right or from the remedy that might be inefficient. Both systems might lead to a well-designed or

⁸²⁷ See Canada – Protection of Pharmaceutical Products, WT/DS114/R, 17 March 2000 (EC-Canada) case at the WTO, where the Dispute Settlement Body noted with regards to the standards of interpretation for the TRIPS Agreement that: “Both the goals and the limitations stated in Articles 7 and 8.1 must obviously be borne in mind when doing so as well as those of other provisions of the TRIPS Agreement which indicate its object and purposes.” See also *supra* notes 51, 52 and 53, and accompanying text.

⁸²⁸ See LANDES AND POSNER, *supra* note 15 and Scherer, *supra* note 479, among others.

to a badly designed patent system. It is rather the misconception of patents and IP rights as unlimited rights that might impose severe losses in static efficiency terms as well as block rather than foster innovation in the future. Of course, if one's view of property reflects a Blackstonian "absolute" view, the conception of IP rights as property will determine an unlimited extension of protection. Such view would be incompatible with the historic, legal and economic justifications of patent rights as almost every country in the world has traditionally provided for exceptions and limitations for patent protection.

Under efficiency grounds, every patent system should be careful in maintaining such exceptions and limitations while fine-tuning those that might run against other objectives such as those embedded in the TRIPS Agreement, which include free trade and technology transfer. From this analysis, it is easy to conclude that patent liability rules, constructed either on the traditional way or on other equitable doctrines do not run counter to the objectives of the TRIPS Agreement, which, at this time, at least partially reflects a global understanding in the IP field. Article 7, 8 and 40 as well as the preamble⁸²⁹ of the TRIPS Agreement seem to support such view although their interpretation in relation to other provisions such as articles 27 and 28 on patent rights and articles 30 and 31 on exceptions and other uses not-authorized by the patent holder is still highly controversial⁸³⁰.

3.4 Rules of interpretation: the role of Courts and Agencies

One of the most often raised critiques to the analysis of the *eBay* case in the context of traditional compulsory licenses regards the impossibility that countries of civil law tradition undertake a similar type of equitable analysis. In part, this is due to differences in the legal traditions but in some other countries an important constraint regards the additional (and scarce) resources that would be needed to enforce the law if courts were asked to engage in substantial fact finding activity. This is even more critical with respect to patent law where courts lacking specialization struggle with the difficulties of a highly technical field.

⁸²⁹ See preamble of the TRIPS Agreement, expressing that: "*Desiring* to reduce distortions and impediments to international trade, and taking into account the need to promote effective and adequate protection of intellectual property rights, and to ensure that measures and procedures to enforce intellectual property rights do not themselves become barriers to legitimate trade" (...) "*Recognizing* the underlying public policy objectives of national systems for the protection of intellectual property, including developmental and technological objectives".

⁸³⁰ It is often argued that articles 7 and 8 express non-operational rules. Moreover, it has been argued that the balance referred in article 7 is already reflected in the text of the Agreement; although such interpretation would signify that these articles are meaningless even if included in the text of the agreement.

Nonetheless, this research put in evidence that the utilization of *ex-post* liability rules for patents requires a similarly in-depth activity from the courts or agencies whether under the application of an equitable doctrine to deny injunctive relief or through the issuance of a compulsory license. In this latter case, as it was highlighted several times, the TRIPS Agreement imposes that each compulsory license is considered in its own individual merits as well as mandates that the “adequate remuneration” that should be awarded to patent holders be calculated according to “the circumstances of each case, taking into account the economic value of the authorization”. The second requirement is probably the most complicated and costly part once the authority has decided the switch from a property rule to a liability rule. The first requirement, that each compulsory license be considered in its own merits curtails the possibility of saving up costs by awarding compulsory licenses in “blanket”. The possibility of using compulsory licenses as well as administering them efficiently would hence, greatly depend on their design just as it happens with the application of equitable doctrines in Common Law countries.

3.5 The design of patent liability rules

An interesting aspect of Italian patent liability rules that was analyzed in this Thesis is a new provision included in the 2005 Industrial Property Code that would allow good faith infringers to apply for a compulsory licensing. Infringers were previously excluded from applying for a compulsory license in the context of patent litigation for infringement. This was apparently one of the most important obstacles for the use of compulsory licenses, as demonstrated by important cases such as *Chiron v. Sorin*, which regarded the development of an improved version of an immunodiagnostic kit for HCV that infringed upon the controversial patent held by *Chiron*⁸³¹. Nonetheless, it is possible that a rigid interpretation of such formula might in practice preclude any important change in the way compulsory licenses are administered. If compulsory licensing provisions are indeed to play a role in practical terms, more flexibility is needed with regard to some of the constraints surrounding their use. This is just an

⁸³¹ See above discussion in Chapter III, Section 5.5.5. “Other ex-post Liability Rules: Compulsory Licenses”. The *Chiron* patent was subject to litigation in an important number of countries. See Keith Maskus, *Reforming U.S. Patent Policy: Getting the Incentives Right*, CSR, No. 19, November 2006, available at: www.cfr.org/content/publications/attachments/PatentCSR.pdf, at p. 19-20, referring how: “Since that time Chiron has aggressively enforced its patent, and critics claim that its enforcement has held up research by other firms and agencies for years (...) A 2003 study by the National Academy of Sciences also singled out Chiron as a company with a reputation for limiting access to its patents. Moreover, a number of small companies interested in extending research on hepatitis C claim to have abandoned that research because of an inability to license the Chiron patent”

evident example of an improper design that has precluded the use of compulsory licenses in situations where –at least in efficiency terms- society would have gained from such use.

Similar arguments can be raised with regard to the effective use of compulsory licensing under the TRIPS Agreement. In effect, some of the requirements of article 31 of the TRIPS Agreement have precluded its use. The most often discussed requirement is that of article 31 (f) that “any such use shall be authorized predominantly for the supply of the domestic market of the Member authorizing such use”. A problem with this requirement arises because the countries that precisely need to use this system are constrained if they lack or have insufficient manufacturing capacities to produce locally such products under a compulsory license. This case was addressed by paragraph 6 of the Doha Declaration and then transformed into the first proposal for amendment of the TRIPS Agreement⁸³². Nonetheless, it is often argued that the exception provided either by the Doha Declaration and now on the proposal for amendment has not facilitated the use of compulsory licenses especially by developing and least developing countries.

Another problematic requirement is the one established in article 31 (b), by which “such use may only be permitted if, prior to such use, the proposed user has made efforts to obtain authorization from the right holder on reasonable commercial terms and conditions and that such efforts have not been successful within a reasonable period of time”. The same article 31 (b) established a possible derogation of this requirement in cases of “a national emergency” or “other circumstances of extreme urgency” or “in cases of public non-commercial use”; and in the same article 31 (k), it is also established that conditions of subparagraphs (b) and (f) do not have to be applied “where such use is permitted to remedy a practice determined after judicial or administrative process to be anti-competitive”.

Hence, drafters of the TRIPS Agreement considered that such conditions would have disfavored or blocked the possibility of using compulsory licensing in such cases. However, and as it was shown in this research, similar reasons would hinder the use of compulsory licenses in cases of patent strategic behavior, which is precisely when they are needed the most. Such problem has

⁸³² The TRIPS Council has extended the period giving an additional two-years term for countries to approve the amendment in two occasions. See AMENDMENT OF THE TRIPS AGREEMENT – EXTENSION OF THE PERIOD FOR THE ACCEPTANCE BY MEMBERS OF THE PROTOCOL AMENDING THE TRIPS AGREEMENT, WT/L/711, 18 December 2007, available at: http://www.wto.org/english/tratop_e/trips_e/wt-l-711_e.pdf and AMENDMENT OF THE TRIPS AGREEMENT – SECOND EXTENSION OF THE PERIOD FOR THE ACCEPTANCE BY MEMBERS OF THE PROTOCOL AMENDING THE TRIPS AGREEMENT, 17 December 2009, available at: http://www.wto.org/english/tratop_e/trips_e/wt-l-785_e.pdf.

been already evidenced in both of the cases analyzed here. In the context of the *eBay* case in the U.S. the solution has been to by-pass the requirements of article 31, giving that the possibility of denying injunctions is also embedded in article 44 of the TRIPS Agreement. Nonetheless, in some of the cases applying the *eBay* precedent to deny injunctive relief “the proposed user” (infringer) had made previous “efforts to obtain authorization from the right holder on reasonable commercial terms and conditions” but such efforts were not successful within a reasonable period of time. From that perspective, *eBay* case law might still comply with article 31 of the TRIPS Agreement. In the same *eBay v. MerExchange* case, the company *eBay* attempted to negotiate a license but it was after such negotiations failed that *MercExchanged* sued for patent infringement.

The question remains whether, from an efficiency viewpoint it is advisable to require negotiations with the patent holder as a prerequisite for applying for a liability rule. Strategic behavior, which is one of the most important factors preventing efficient bargaining would preclude any fruitful effect from such negotiation while such requirement might impose an undue burden for potential users. The problem of this requirement is that liability rules are thought to facilitate efficient bargaining in environments with high transaction costs and in this sense, they provide a mechanism that is less costly or solves the bargaining breakdown that would otherwise preclude efficient transactions under the property rule. But such transaction costs are precisely formed by those arising out from the negotiation, and especially by the costs produced by opportunistic behavior of the parties involved in such negotiation. The requirement of paragraph (k) of article 31 hence imposes an additional cost of “prior efforts” to obtain a voluntary license as a requirement to opt for a liability rule in cases where transaction costs are already high.

In addition, one of the most important cases here discussed which is that in which the infringer is unaware of the existence of the patent, its validity or precise scope would be completely precluded from the possibility of applying a liability rule to prevent strategic behavior. A possible interpretation is that the requirements of article 31 do not apply for the case of restricting the availability of injunctions as allowed by the text of article 44 of the TRIPS Agreement. As suggested, one possibility for courts applying an equitable appreciation of the facts of the case in order to grant or deny injunctions is to mandatorily require a negotiated solution from the parties as it was suggested in the case of *Paice v. Toyota*⁸³³. According to Judge Rader, the fact that the court mandates such solution instead of just suggesting that parties do so, would allow to actually differentiate an ongoing royalty from a compulsory license, hence avoiding any doubts with respect to the application of article 31 of the TRIPS Agreement. In

⁸³³ See Judge Rader’s concurring opinion, *supra* note 795.

spite of the possible compatibility with the TRIPS Agreement, these requirements seem to impose great costs from an economic point of view that might even preclude the use of compulsory licenses. This issue as well as other pointed out below are open for future research and dissenting opinions as this specific line of case law is just starting to develop in the U.S.

4 Future research

As it is the typical case, this research raised more questions than the answers it provided. It is clear that efficiency supports the alternative use of property and liability rules according to particular circumstances; that such rules are now mostly applied *ex-post*; and that the costs implied in their use are sometimes outweighed by the costs of using a property rule. Nevertheless, further research is needed in order to clarify the precise conditions to use such rules, their approximate costs and benefits and the multiple differences in their application to various technological sectors. Certainly there is an abundant literature and multiple previous empirical researches done, but there is still a need to connect such empirical evidence with the theory behind patent protection as well as with the legal framework regarding protection, limitations and exceptions of patent law and especially of patent enforcement rules. With regard to these questions, there are some areas in which more theoretical work is needed as well as some projects of harmonization where the use of patent liability rules needs to be seriously considered.

4.1 Other IP rights: copyright, trademarks and unfair competition law

This research started from a general view of liability rules in IP but concentrated on the specific features of patent law. Nonetheless, there are many consequences for other IP rights as well. For instance, whereas trademark law does not provide for compulsory licensing provisions pursuant to article 21 of the TRIPS agreement, common law countries still are able to limit the (abusive) enforcement of trademarks. A reflection should hence be made in the sense that other IP statutes need to give serious consideration to rules preventing abuse of the rights and especially the abuse in the enforcement of rights.

For a long time, liability rules have also been proposed in several areas, including for the protection of undisclosed information, and more specifically

the clinical data used to obtain marketing authorization of pharmaceutical products⁸³⁴. Whereas such proposals have been widely addressed by scholars, they have been largely neglected by policy makers. Other proposals relate to the copyrights field, including one to make certain fair uses subject to appropriate compensation, thereby creating a liability rule similar to those used in patent law insofar as their application is not automatic and needs a revision from a court⁸³⁵.

4.2 Public choice applications

Particular developments in U.S. patent law, including the recent decisions by the U.S. Supreme Court and the CAFC could be interpreted as a new fluctuation in the trend of IP protection⁸³⁶. As it was confirmed also by this research, the national regulation of patents as well as international harmonization processes have been subjected to expansion and contraction waves. A similar argument is often made with respect to the interface between antitrust law and IP law. For instance, it is often pointed out that antitrust law had a preeminent role during the 1940's, then it had contracted during the 1980's, coinciding with a period of great expansion for the protection of IP rights⁸³⁷.

Likewise, the oscillation in the use of patent liability rules might respond to a similar rationale. Positions contrary to the use of patent liability rules might only be a reflection of a movement towards an excessive increment of patent protection during the past decades. Underlying the utilization of a property rights' rhetoric there is probably a willingness to extend patent protection without appropriate balancing mechanisms, and hence, a matter for public choice analysis⁸³⁸.

Additionally, this research has evidenced that efficiency does not preclude but actually requires a balance in patent law that includes rules to avoid or put a remedy to strategic behavior, including patent hold-ups. This might be

⁸³⁴ See Jerome Reichman, *Rethinking the Role of Clinical Trial Data in International Intellectual Property Law: The Case for a Public Goods Approach* (January 1, 2009). MARQUETTE INTELLECTUAL PROPERTY LAW REVIEW, VOL. 13, NO. 1, 2009, available at: <http://ssrn.com/abstract=1433392>, citing those proposals as well as the resistance against them as well as arguing in favor of treating clinical trial data as a public good.

⁸³⁵ See Thomas Cotter, *Fair Use and Copyright Overenforcement*, 93 IOWA L. REV. 1271, advancing such proposal.

⁸³⁶ See supra note 314.

⁸³⁷ See for instance, Herbert Hovenkamp, *United States Antitrust Policy in an Age of IP Expansion*, U IOWA LEGAL STUDIES RESEARCH PAPER NO. 04-03, available at SSRN: <http://ssrn.com/abstract=634224>.

⁸³⁸ See LANDES AND POSNER, supra note 15, on the necessity of explaining certain the expansion of some IP rights under public choice theory.

achieved through the use of exceptions and limitations and defenses in patent infringement cases. Moreover, in some cases, as it was already pointed out, the solution is not to use liability rules but to completely re-think the protection of certain rights, as it is the case with some matters lately considered as patentable. Hence, the use of liability rules is only an alternative among many other policy levers⁸³⁹ that probably need to be readjusted. But more extreme reforms, as Menell accurately has pointed out, would be likely subject to great pressure from interest groups:

“more fundamental adjustments to the patent system are called for to distinguish among the very different fields of inventive activity covered by patent law. But given the various political and other impediments to such a direct cure to the patent system’s root ills, more flexibility at the remedy stage looks to be a good utilitarian compromise”⁸⁴⁰

Future research should compare the costs and benefits of the application of liability rules in comparison with other policy levers also taking into account a public choice dimension. One situation analyzed in this thesis was the case of dubious quality patents whereby it is often argued that patentability requirements or the restriction of patentable subject matter are the proper tools to deal with these issues⁸⁴¹. It would be interesting to revise this and other problematic issues that were only touched upon indirectly in this research and that might be explained in public choice terms as well as suggest the least costly alternatives for policy reform.

4.3 Antitrust and IP interface

The focus of this thesis was the study of patent liability rules embedded in patent law, but the application of antitrust statutes is an important factor that was mentioned in several related discussions, including the legal tools available in different countries to immunize from patent strategic behavior. Hence, this research addressed some but not all of the questions that arise from the perspective of the interface between antitrust and patent legislation.

Whereas the modern vision of antitrust and patent law sustains that both work “in tandem to bring new and better technologies, products, and services to

⁸³⁹ See supra note 4, defining policy levers.

⁸⁴⁰ Peter Menell, *Intellectual Property and the Law of Land*, REGULATION, VOL. 30, NO. 4, WINTER 2007-2008; UC BERKELEY PUBLIC LAW RESEARCH PAPER NO. 1078982, available at: <http://ssrn.com/abstract=1078982>.

⁸⁴¹ See Chapter IV, Section 3.1.3. “Strategic Behavior”.

consumers at lower prices”⁸⁴², it is widely acknowledged that a number of potentially anticompetitive practices by patentees might pose challenges for a balanced IP-antitrust policy. The exclusivity of patent rights signifies that in principle, a patentee might refuse to grant a license to any potential user. As this research evidences, however, there are a number of exceptions to this rule in the form of compulsory licenses or the denial of injunctive relief for patent rights.

Moreover, antitrust laws around the world also foresee the possibility of requiring a compulsory license and sanctioning patentees which use their patents in an anti-competitive way. The TRIPS Agreement explicitly allows countries to grant such compulsory licenses and even authorizes countries to waive certain requirements as the prior negotiations and “adequate remuneration” in such cases⁸⁴³.

Yet, controversy surrounds many questions, including, when should a refusal to license a patent be considered anti-competitive, whether this problem should be held by antitrust law, patent law or both and how to determine the realm of each field. These questions are not new but the abundant law and economics literature evidences that there are neither complete nor totally convergent answers⁸⁴⁴.

This thesis analyzed a type of refusal to license patent rights and the legal tools available for potential users from the perspective of patent law. However, one important case that was also discussed is that of hold-ups arising under the framework of standard setting organizations when a patentee conceals a patent that is essential to a standard and only discloses such patent to litigate potential infringers after the standard has been set. This case has been described as a special instance of patent hold-up whereby a patent ambush waits until the rest of negotiating parties have sunk their costs by locking into a specific technological standard and then sues them, most times even in spite of an assumed FRAND or RAND commitment⁸⁴⁵.

Whereas some authors suggest that this problem could be better held by contract law or unfair competition, the argument advanced here is that patent law, should intervene when dynamic efficiency is threatened. This would be the case if the deceiving conduct of a patentee causes potential relevant parties to SSO’s to abstain from disclosing and participating due to fears of investing and

⁸⁴² See U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, ANTITRUST ENFORCEMENT AND INTELLECTUAL PROPERTY RIGHTS: PROMOTING INNOVATION AND COMPETITION (2007), available at: www.usdoj.gov/atr/public/hearings/ip/222655.pdf

⁸⁴³ See Chapter II, Section 3.3.1., “Article 31 of the TRIPS Agreement”.

⁸⁴⁴ See Cotter, *supra* note 38.

⁸⁴⁵ See *supra* notes 595-599 and accompanying text.

then suffer a hold-up by an “ambush”. Since the goals of both antitrust law and patent law are mostly conceived as complementary, more research is needed to understand the proper role of antitrust and patent statutes in these as well as other cases of patent strategic behaviour.

4.4 Further national, international and European harmonization

The discussion of this research has been a recurrent issue of controversy over the last few years, in various national, international and European forums. The issue is likely to be debated also in the near future⁸⁴⁶. Discussion continues in the U.S. as the *eBay* precedent is just starting to be applied in patent decisions as well as in other IP fields. Consequent to the problem of over-enforcement, several bills for patent law reform have addressed the problem of calculating patent damages and proposed the rule of “apportionment of damages” by which compensation to right owners should reflect “only [the] economic value properly attributable to the patent's specific contribution over the prior art”. As predictable, such proposal has been contentious, envisioned by some as the required complement to the *eBay* decision in order to avoid problems of over-enforcement and tackle with patent strategic behavior and by others as a prospective erosion of patent profits⁸⁴⁷.

In the meanwhile, European authorities are trying to move forward negotiations for further patent harmonization as the European patent landscape remains fragmented and patent enforcement remains a national issue. In this sense, the draft European Patent Litigation Agreement and the Community patent are among the most important initiatives that will still be discussed in European context during the forthcoming years⁸⁴⁸. While these proposals for the EPLA and the Community patent have received a recent impetus, they have also met with important resistance.

Although such instruments will likely contain a compromise between the countries in terms of the use of compulsory licenses and enforcement provisions, their discussion might also be a useful moment for the construction of a properly balanced European patent system. Any future harmonization with regard to patent substantive and enforcement standards should take into

⁸⁴⁶ See supra note 5 on discussions centered on the U.S. patent system; supra note 6 on International discussions about exceptions and limitations in patent law, including the use of liability rules; and 379, on similar discussions between Europe.

⁸⁴⁷ See supra note 612. See also Maskus, supra note 831 and Scherer, supra note 479, discussing a potential patent law reform in the U.S.

⁸⁴⁸ See supra notes 378, 379 and 380 and accompanying text, describing these projects for future harmonization.

account the lessons learned with regard to the use of property and liability rules and more in general with regard to the importance of limitations and exceptions in patent law. This is critical in a time where the EPO starts to face important problems with respect to an overload of patent applications and a decreasing quality of granted patents. In this sense, further harmonization processes should not lose sight of the need to balance the aspirations of users of the patent system which mainly seek to save on patent application costs and the needs of users of technologies that might often be also second innovators that would benefit from a system that preserves the proper balances as well as of final users of technologies and society as a whole.

There are further important initiatives at the international level that need to be seriously examined in the context of this discussion and more in general in the context of discussions on a properly balanced patent system. Among the most important examples are the regional and bilateral free trade agreements often signed between the U.S. or the EU on the one hand and one developing or least developed country on the other hand. Such treaties often contain commitments that go beyond the level of protection set up by the TRIPS Agreement even though the economic case for patent and IP protection in general is lower for the case of these latter countries⁸⁴⁹.

In addition to these treaties, there are several global initiatives for harmonization. One such initiative is the Substantive Patent Law Treaty (SPLT) promoted by the WIPO and which has recently stalled due to the resistance of developing countries, which are nevertheless signing other bilateral treaties. The other most recent example is the Anti-Counterfeiting Trade Act, a multilateral treaty proposed by OECD countries and which has been moreover surrounded by non-disclosed negotiations⁸⁵⁰. The future of international patent law depends on a properly balanced and informed negotiation of any forthcoming treaty. In such negotiations, a balance must be preserved both in substantive as well as in enforcement rules, keeping in mind also the differences, which might seem obvious and are nevertheless often conflated between piracy and counterfeiting activities on the one hand and the use of limitations, exceptions and defenses in patent law on the other hand.

⁸⁴⁹ See Vivas, *supra* note 286 and Castro, *supra* note 771, on TRIPS-plus agreements and new international IP standards affecting developing and least developed countries.

⁸⁵⁰ See *supra* note 290.

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APPENDIX

COMPULSORY LICENSING PROVISIONS

Table 1: Compulsory Licenses for public interest reasons

Country/Treaty	Provision
Paris Convention	5-A
TRIPS	Article 31 "other use without authorization of the right holder", plus articles 1, 7, 8, 27.1, 30 and 44
US	<u>28 USC 1498</u> , concerns uses of patents or copyrights by or for the government. The US government does not have to seek a license or negotiate for use of a patent or copyright and any federal employee can use or authorize the use of a patent or a copyright. The right owner is entitled to compensation, but cannot enjoin the government or a third party authorized by the government, to prevent the use.
Spain	<u>LEY 11/1986, de 20 de marzo, de Patentes.</u> <u>Artículo 90. 1.</u> Por motivo de interés público, el gobierno podrá someter en cualquier momento una solicitud de patente o una patente ya otorgada a la concesión de licencias obligatorias, disponiéndolo así por Real Decreto. 2. Se considerará que existen motivos de interés público cuando la iniciación, el incremento o la generalización de la explotación del invento, o la mejora de las condiciones en que tal explotación se realiza, sean de primordial importancia para la salud pública o para la defensa nacional. Se considerará, asimismo, que existen motivos de interés público cuando la falta de explotación o la insuficiencia en calidad o en cantidad de la explotación realizada implique grave perjuicio para el desarrollo económico o tecnológico del país. 3. El Real Decreto que disponga la concesión de licencias obligatorias deberá ser acordado a propuesta del Ministerio de Industria y Energía. En los casos en que la importancia de la explotación del invento se relacione con la salud pública o con la defensa nacional, la propuesta deberá formularse conjuntamente con el Ministro competente en materia de sanidad o de defensa, respectivamente. 4. El Real Decreto que someta una patente a la concesión de licencias obligatorias por su importancia para la defensa nacional podrá reservar la posibilidad de solicitar tales licencias a una o varias empresas determinadas. 5. Cuando el interés público puede satisfacerse sin necesidad de generalizar la explotación del invento, ni de encomendar esa explotación a una persona distinta del titular de la patente, el Real Decreto podrá disponer el sometimiento condicional de la patente a la concesión de licencias obligatorias, autorizando al Ministro de Industria y Energía para que otorgue al titular un plazo no superior a un año

	<p>para iniciar, aumentar o mejorar la explotación del invento en la medida necesaria para satisfacer el interés público. En tal caso, el Ministro de Industria y Energía, una vez oído al titular de la patente, podrá concederle el plazo que estime oportuno o someter la patente de forma inmediata a la concesión de las licencias. Una vez transcurrido el plazo que, en su caso, hubiere sido fijado, el Ministro de Industria y Energía determinará si ha quedado satisfecho el interés público, y, si no fuera así, someterá la patente a la concesión de licencias obligatorias.</p>
	<p>Art.141.Espropriazione. 1. Con esclusione dei diritti sui marchi, i diritti di proprietà industriale, ancorche' in corso di registrazione o di brevettazione, possono essere espropriati dallo Stato nell'interesse della difesa militare del Paese o per altre ragioni di pubblica utilità'. 2. L'espropriazione puo' essere limitata al diritto di uso per i bisogni dello Stato, fatte salve le previsioni in materia di licenze obbligatorie in quanto compatibili. 3. Con l'espropriazione anzidetta, quando sia effettuata nell'interesse della difesa militare del Paese e riguardi titoli di proprietà industriale di titolari italiani, e' trasferito all'amministrazione espropriante anche il diritto di chiedere titoli di proprietà industriale all'estero.</p>

Table 2: Compulsory Licenses for lack of working

Country/Treaty	Provision	Practice
Paris Convention	5/A. "Each country of the Union shall have the right to take legislative measures providing for the grant of compulsory licenses to prevent the abuses which might result from the exercise of the exclusive rights conferred by the patent, for example, failure to work".	N/A
TRIPS	31	No panel decision interpreting article 31, only on Article 30. See Canada – Protection of Pharmaceutical Products, WT/DS114/R, 17 March 2000 (EC-Canada).
U.S.	No provision and long history of rejection. After 2006 <i>eBay v. MercExchange</i> decision it is possible if the district court denies injunctive relief for non-working entities	Post-eBay decisions
U.K.	Section 48 of the UK Patents	N/A

	Act 1977 as amended by the Copyright, Designs and Patents Act, 1988	
Italy	Article 70 of the CPI, if the invention is not worked in any country of the European Union, European economic Space or the WTO or if even though it is being worked, production is not proportionate to the national needs.	N/A
France	<u>Article L-613-12</u> , reformed to allow granting as exclusive or non-exclusive granting	Rarely granted Lyons Court of Appeals, September 11, 1997; 1998 PIBD III. 167; 1998 JCP ed. E Chronique at 172
Spain	<u>Artículo 86.</u> <u>Artículo 87. 1.</u> Una vez finalizado el plazo establecido en el artículo 83 para iniciar la explotación de la invención protegida por la patente, cualquier persona podrá solicitar la concesión de una licencia obligatoria sobre la patente, si en el momento de la solicitud, y salvo excusas legítimas, no se ha iniciado la explotación de la patente o no se han realizado preparativos efectivos y serios para explotar la invención objeto de la patente, o cuando la explotación de ésta ha sido interrumpida durante más de tres años. 2. Se considerarán como excusas legítimas las dificultades objetivas de carácter técnico legal, ajenas a la voluntad y a las circunstancias del titular de la patente, que hagan imposible la explotación del invento o que impidan que esa explotación sea mayor de lo que es.	N/A

Table 3: Compulsory Licenses for dependent patents

Country/Treaty	Provision
Paris Convention	5/A

TRIPS	Article 31
U.S.	N/A
U.K.	Section 48 of the UK Patents Act 1977 as amended by the Copyright, Designs and Patents Act, 1988
European Directive 98/44/EC on The Legal Protection of Biotechnological Inventions	<u>Article 12</u> cross-licensing of patents in cases where there is another invention or a new seed variety that provides a "significant technical progress of considerable economic interest."
Italy	Article 71 of the CPI
Spain	<p><u>Artículo 89. 1.</u> Cuando no sea posible la explotación del invento protegido por una patente sin menoscabo de los derechos conferidos por una patente o por un derecho de obtención vegetal anterior, el titular de la patente posterior podrá solicitar una licencia obligatoria, que será no exclusiva, para la explotación del objeto de la patente o de la variedad objeto del derecho de obtención vegetal anterior, mediante el pago de un canon adecuado.</p> <p>2. Cuando no sea posible obtener o explotar un derecho de obtención vegetal sin menoscabo de los derechos conferidos por una patente anterior, el obtentor podrá solicitar una licencia obligatoria, que será no exclusiva, para la explotación del invento protegido por la patente, mediante el pago de un canon adecuado.</p> <p>3. Si una patente tuviera por objeto un procedimiento para la obtención de una sustancia química o farmacéutica protegida por una patente en vigor, tanto el titular de la patente de procedimiento como el de la patente de producto, tendrán derecho a la obtención de una licencia obligatoria no exclusiva sobre la patente del otro titular.</p> <p>4. Los solicitantes de las licencias a que se refieren los apartados anteriores deberán demostrar:</p> <p>a) Que la invención o la variedad representa un progreso técnico significativo de considerable importancia económica con relación a la invención reivindicada en la patente anterior o a la variedad protegida por el derecho de obtención vegetal anterior.</p> <p>b) Que han intentado, sin conseguirlo en un plazo prudencial, obtener del titular de la patente o del derecho de obtención vegetal anterior una licencia contractual en términos y condiciones razonables.</p> <p>5. Cuando según lo previsto en el presente artículo proceda la concesión de una licencia obligatoria por dependencia, también el titular de la patente o del derecho de obtención vegetal anterior podrá solicitar el otorgamiento, en condiciones razonables, de una licencia por dependencia para utilizar la invención o la variedad protegida por la patente o por el derecho de obtención vegetal posterior.</p> <p>6. La licencia obligatoria por dependencia se otorgará solamente con el contenido necesario para permitir la explotación de la invención protegida por la patente, o de la variedad protegida por el derecho de obtención vegetal de que se trate, y quedará sin efecto al declararse la nulidad o la caducidad de alguno de los títulos entre los cuales se dé la</p>

	<p>dependencia.</p> <p>7. La tramitación y la resolución de las solicitudes de licencias obligatorias por dependencia para el uso no exclusivo de una invención patentada, se regirán por lo dispuesto en la presente Ley. La tramitación y la resolución de las solicitudes de licencias obligatorias por dependencia para el uso no exclusivo de la variedad protegida por un derecho de obtentor se regirán por su legislación específica.</p>
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INJUNCTIONS

Table 4: Injunctions for patent infringement in International Treaties

TREATY	PROVISION
<p>TRIPS Agreement</p> <p>PART III: Enforcement Of Intellectual Property Rights. Section 2: Civil And Administrative Procedures And Remedies</p> <p>Article 44. Injunctions</p>	<p>The judicial authorities shall have the authority to order a party to desist from an infringement, <i>inter alia</i> to prevent the entry into the channels of commerce in their jurisdiction of imported goods that involve the infringement of an intellectual property right, immediately after customs clearance of such goods. Members are not obliged to accord such authority in respect of protected subject matter acquired or ordered by a person prior to knowing or having reasonable grounds to know that dealing in such subject matter would entail the infringement of an intellectual property right.</p> <p>2. Notwithstanding the other provisions of this Part and provided that the provisions of Part II specifically addressing use by governments, or by third parties authorized by a government, without the authorization of the right holder are complied with, Members may limit the remedies available against such use to payment of remuneration in accordance with subparagraph (h) of Article 31. In other cases, the remedies under this Part shall apply or, where these remedies are inconsistent with a Member's law, declaratory judgments and adequate compensation shall be available.</p>
<p>U.S.–Peru Trade Promotion Act</p> <p>Article 16.11: Enforcement of Intellectual Property Rights. Civil and Administrative Procedures and Remedies</p>	<p>In civil judicial proceedings concerning the enforcement of intellectual property rights, each Party shall provide that its judicial authorities shall have the authority to order a party to desist from an infringement, in order, <i>inter alia</i>, to prevent the entry into the channels of commerce in the jurisdiction of those authorities of imported goods that involve the infringement of an intellectual property right immediately after customs clearance of such goods, or to prevent their exportation.</p> <p>(Bolded text goes beyond TRIPS) However, a salient TRIPS-plus feature is contained in what is omitted in the article rather than what is prescribed, e.g. the lack of reference to the TRIPS' exceptions in cases of non-willful infringement and most importantly in cases related to subparagraph (h) of Article 31.</p>
<p>Agreement on the establishment of a European patent litigation system</p> <p>(Draft, December 2005).</p> <p>Article 62. Injunction</p>	<p>The European Patent Court may order a party infringing or threatening to infringe a European patent to cease and desist from any act infringing the patent under Articles 33 or 34.</p> <p>Notes. See Art. 44 TRIPS.</p> <p>DE, FR, MC and NL delegations and one expert supported the idea of considering whether the right to request an injunction should expire after a certain time period; cf. Art. 67 on the limitation of the right to claim damages.</p> <p>(Emphasis added)</p>

<p>European Enforcement Directive⁸⁵¹ CHAPTER II MEASURES, PROCEDURES AND REMEDIES Article 11: Injunctions</p>	<p>Member States shall ensure that, where a judicial decision is taken finding an infringement of an intellectual property right, the judicial authorities may issue against the infringer an injunction aimed at prohibiting the continuation of the infringement. Where provided for by national law, non-compliance with an injunction shall, where appropriate, be subject to a recurring penalty payment, with a view to ensuring compliance. Member States shall also ensure that rightholders are in a position to apply for an injunction against intermediaries whose services are used by a third party to infringe an intellectual property right, without prejudice to Article 8(3) of Directive 2001/29/EC. (Bolded text goes beyond TRIPS).</p>
<p>Andean DECISION 344 Common Regime on Industrial Property</p> <p>SECTION VIII Legal protection of the patent Article 51</p>	<p>The owner of the patent or the person who considers himself entitled to a patent by virtue of this Decision may institute any actions claiming ownership or indemnification that are available to him under the national legislation of the Member Country concerned.</p> <p>Without prejudice to any other action that may be available to him, the owner of the patent may, after the patent has been granted, bring action for damages against any person who, without his consent, has exploited the patented process or product, where such exploitation took place after the publication date of the patent application.</p> <p>In cases of alleged infringement of a patent relating to a process for the manufacture of a product, the defendant shall be responsible for proving that the process used by him to manufacture the product is different from that protected by the patent allegedly infringed. To that end it shall be assumed, in the absence of proof to the contrary, that any identical product manufactured without the consent of the owner of the patent has been manufactured by means of the patented process if:</p> <p>(a) the product manufactured by means of the patented process is new; (b) there is a reasonable likelihood that the identical product was manufactured by means of the process, and the owner of the process patent is not able to</p>

⁸⁵¹ Within European Law, a Directive, differently than a Regulation should be transposed into national legislation. Therefore, in spite of the fact that it might be regarded as domestic European law I have included it along with other international treaties because countries enjoy a significant degree of discretion to implement its provisions.

	<p>establish, after reasonable effort, what process actually was used.</p> <p>In the submission of proof to the contrary, due account shall be taken of the legitimate interests of the defendant with respect to the protection of his trade and manufacturing secrets.</p> <p>(Emphasis added)</p>
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POST-EBAY CASES IN THE U.S.

Table 5: summary of injunctions granted and denied after the eBay case

Cases	Competitors	Non-competitors	Total
Granted Injunctions	28 cases ⁸⁵²	1 Case <i>Commonwealth v. Buffalo</i>	29 granted injunctions 69%
Denied Injunctions	2 Cases - <i>Innogenetics v. Abbott</i> (on appeal) - <i>Praxair v. ATMI</i>	11 Cases ⁸⁵³	13 injunctions denied 31%
Total cases	30 competitors	12 non-competitors	42

SUMMARY OF SELECTED CASES APPLYING THE *EBAY V. MERCSEXCHANGE* PRECEDENT

GRANTED INJUNCTIONS

1. *Wald v. Mudhopper Oilfield Servs.*, U.S. Dist. LEXIS 51669 (D. Okla. 2006)

Parties	<i>Wald v. Mudhopper Oilfield Servs.</i> ,
Citation	U.S. Dist. LEXIS 51669 (D. Okla. 2006)
Patent(s)	6,655,475 "Product and method for treating well bores"
Current International Class ⁸⁵⁴	E21B 27/00 (20060101);

⁸⁵² *Wald v. Mudhopper Oilfield Servs.*; *Telequip Corp. v. Change Exchange*; *Tivo Inc. v. Echostar Communications Corp.*; *Floe Int'l, Inc. v. Newmans' Mfg.*; *Litecubes LLC v. Northern Lights Prods*; *3M Innovative Properties Co. v. Avery Dennison Corp*; *Rosco v. Mirror Lite Co.*; *Smith & Nephew, Inc. v. Sythes (U.S.A.)*; *Black & Decker Inc. v. Robert Bosch Tool Corp.*; *Transocean Offshore Deepwater Drilling, Inc. v. GlobalSantaFe Corp.*; *Visto Corp. v. Seven Networks, Inc.*; *MPT, Inc. v. Marathon Labels, Inc.*; *Novozymes A/S v. Genencor Int'l, Inc.*; *Ortho-McNeil Pharmaceutical, Inc. v. Mylan Labs. Inc.*; *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*; *800 Adept, Inc. v. Murex Securities, Ltd*; *MGM Well Services, Inc. v. Mega Lift Systems, LLC.*; *Sanofi-Synthelabo v. Apotex Inc.*; *Miniauction, Inc. v. Thomson Corp.*; *Allan Block Corp. v. E. Dillon & Co.*; *Johns Hopkins University v. Datascope Corp.*; *Baden Sports, Inc. v. Kabushiki Kaisha Molten*; *Verizon Services Corp. v. Vonage Holdings Corp.*; *Sundance, Inc. v. Demonte Fabricating Ltd.*; *Martek Biosciences Corp. v. Nutrinova Inc.*; *Acumed LLC v. Stryker Corp.*

⁸⁵³ *Respirionics, Inc. v. Invacare Corp.*; *MercExchange, L.L.C. v. eBay, Inc.*; *Voda v. Cordis Corp.*; *Paice LLC v. Toyota Motor Corp.*; *z4 Techs. V. Microsoft*; *Amado v. Microsoft*; *Acumed LLC v. Stryker Corp.*; *IMX v. LendingTree LLC*; *Monsanto Co. v. Scruggs*; *Finisar Corp. v. DirecTV Group*; *Sundance Inc. v. Demonte Fabricating Ltd. (D.C.)*

	E21B 27/02 (20060101); E21B 21/00 (20060101); E21B 033/13
Claims ⁸⁵⁵	35 claims 3 independent claims
Infringing Technology	Poly Drill Sticks, a product used in the treatment of oil wells
Arguments of the court (irreparable harm)	"As a result of Defendants' infringement, Plaintiffs suffered injuries in addition to lost sales. Specifically, Plaintiffs note that they lost market share and "the opportunity to maintain their own polymer stick to as the industry standard" and that their "reputation for innovation" was damaged as a result. (Pls.' Reply at 8-9.) Thus, damages, either awarded by the jury or trebled, do not necessarily take into account other items of loss".
Willful infringement	"given the finding of willful infringement and because there have been no indications that Defendants do not still possess an inventory of these products or the ability to secure more, the Court is unpersuaded that there is no need for an injunction"

2. Telequip Corp. v. Change Exch., 2006 U.S. Dist. LEXIS 61469 (N.D.N.Y Aug. 15, 2006).

Parties	Telequip Corp. v. Change Exch.,
Citation	U.S. Dist. LEXIS 61469 (N.D.N.Y Aug. 15, 2006).
Patent(s)	Patent 5,830,055 "Coin/token canister and ejection mechanism"
Current International Class	G07D 9/00 (20060101); G07D 1/00 (20060101); G07D 001/00
Claims	15 claims 5 independent
Infringing Technology	Poly Drill Sticks, a product used in the treatment of oil wells
Arguments of the court (irreparable harm)	"monetary damages are not an adequate remedy against future infringement because "the principal value of a patent is its statutory right to exclude.
Ceased infringement does not preclude injunction	"the fact that an infringing defendant has apparently, at least temporarily, ceased its infringement is not a basis for the court to deny a permanent injunction against future infringement unless the evidence is very persuasive that the infringing defendant will

⁸⁵⁴ For information about the International Patent Classification see <http://www.wipo.int/classifications/ipc/en/>. See also Joshua Lerner, *The Importance of Patent Scope: an Empirical Analysis*, THE RAND JOURNAL OF ECONOMICS, VOL. 25, NO. 2 (SUMMER, 1994), at pp. 319-333, using the IPC as a proxy of patent scope, however limiting to the first four digits of the Code.

⁸⁵⁵ According to Niels Stevnsborg and Bruno van Pottelsberghe, at p. 163, applications with a few independent claims and a limited number of dependent claims would constitute a 'good' patent. The EPC in fact establishes higher fees for applications having more than ten claims at filing. Moreover, "the number of claims is, in addition, also closely linked to the breadth of claims, e.g. a very broad independent claim may become considerably more limited in scope if combined with one or more of its dependent claims".

	not resume its infringement”
Public Interest	“without the right to obtain an injunction, the right to exclude granted to the patentee would have only a fraction of the value it was intended to have, and would no longer be as great an incentive to engage in the toils of scientific and technological research.”

3. **Tivo Inc. V. EchoStar Communications Corp., 446 F. Suppl. 2d 664, 669-70 (E.D. Tex. 2006)**

Parties	Tivo Inc. V. EchoStar Communications Corp
Citation	446 F. Suppl. 2d 664, 669-70 (E.D. Tex. 2006)
Patent(s)	6,233,389 “Multimedia time warping system”
Current International Class	G11B 27/10 (20060101); G11B 27/034 (20060101); H04N 5/775 (20060101); G11B 27/031 (20060101); H04N 5/44 (20060101); H04N 5/00 (20060101); G11B 27/032 (20060101); G11B 27/024 (20060101); G11B 27/022 (20060101); H04N 5/782 (20060101); G11B 27/00 (20060101); H04N 7/16 (20060101); H04N 005/92
Claims	61 Claims 4 Independent
Infringing Technology	DVR’s
Arguments of the court (irreparable harm Loss of market shares for new industries with sticky consumers)	“Loss of market share in this nascent market is a key consideration in finding that Plaintiff suffers irreparable harm – Plaintiff is losing market share at a critical time in the market’s development, market share that it will not have the same opportunity to capture once the market matures. One thing the parties agree on is that DVR customers are “sticky customers,” that is they tend to remain customers of the company from which they obtain their first DVR. “Thus, the impact of Defendants’ continued infringement is shaping the market to Plaintiff’s disadvantage and results in long-term customer loss. This is particularly key where, as is the case here, Plaintiff’s primary focus is on growing a customer base specifically around the product with which Defendants’ infringing product competes. And, as Plaintiff is a relatively new company with only one primary product, loss of market share and of customer base as a result of infringement cause severe injury”
Public Interest	The public has an interest in maintaining a strong patent system. This interest is served by enforcing an adequate remedy for patent infringement --- in this case, a permanent injunction. The infringing products are not related to any issue of public health or any other equally key interest; they are used for entertainment. The public does not have a greater interest in allowing Defendants’ customers’ to continue to use their infringing DVRs.

4. Floe Int'l, Inc. v. Newmans' Mfg., 2006 U.S. Dist. LEXIS 59872 (D. Minn. 2006).

Parties	Floe Int'l, Inc. v. Newmans' Mfg.,
Citation	2006 U.S. Dist. LEXIS 59872 (D. Minn. 2006).
Patent(s)	Patent 5,738,379 "An improved trailer structure constructed of light-weight material and especially adapted for hauling snowmobiles"
Current International Class	B62D 63/06 (20060101); B62D 63/00 (20060101); B62D 021/20
Claims	17 Claims 3 independent
Infringing Technology	Snowmobile trailers
Arguments of the court (irreparable harm)	Citing eBay with no discussion of the four-factor test

5. Litecubes LLC v. Northern Lights Prods., 2006 U.S. WL 5700252 (E.D.Mo.)

Parties	Litecubes LLC v. Northern Lights Prods.
Citation	2006 U.S. WL 5700252 (E.D.Mo.)
Patent(s)	6,416,198 on a Illuminable beverage accessory device
Current International Class	F21V 1/00 (20060101); F21V 1/10 (20060101); A47G 19/22 (20060101); A47G 21/00 (20060101); A47G 21/18 (20060101); F21V 33/00 (20060101); F21V 033/00
Claims	44 Claims 3 independent
Infringing Technology	Lighted artificial ice cubes that were designed, as a novelty item, to be placed in beverages
Arguments of the court (irreparable harm)	"Potential customers in the United States were buying infringing devices sold and imported by Defendant, instead of purchasing the products sold by Plaintiffs. Plaintiff VanderShuit went through the time and expense of developing the patented device and obtaining legal protections for his invention in the form of a patent, trademark and copyright. Defendant has no such protection and seeks to poach customers in the United States in violation of Plaintiffs' rights. The Court believes that an injunction is necessary in order to prevent Defendant from continuing to sell and import its infringing products in the future"
Scope of injunction	The parties disagreed as to the scope of the injunction.

6. 3M Innovative Proprs. Co. v. Avery Dennison Corp., 2006 U.S. Dist. LEXIS 70256 (D. Minn. Sept. 25, 2006).

Parties	Innovative Proprs. Co. v. Avery Dennison Corp.
Citation	2006 U.S. Dist. LEXIS 70256 (D. Minn. Sept. 25, 2006).
Patent(s)	5,897,930 Multiple embossed webs
Current International Class	C09J 7/02 (20060101); B29C 59/02 (20060101); A61F 013/02 ();

	E04F 015/16
Claims	12 Claims 2 independent
Infringing Technology	EZ Series Fleet Marketing Film
Arguments of the court (irreparable harm)	"3M has spent nearly five years litigating to protect its interest in this patent"
Litigation costs	
Unwillingness to license	"and has consistently refused to execute a licensing agreement with Avery" Having lost at trial, Avery wants to force 3M to grant a license that 3M refused to grant before trial. The Court will not disturb 3M's determination that its business interests will not be served by the licensing of this product"
7. Transocean Offshore Deepwater Drilling, Inc. v. GlobalSantaFe Corp.	
Parties	Transocean Offshore Deepwater Drilling, Inc. v. GlobalSantaFe Corp. Patent
Citation	2006 U.S. Dist. LEXIS 73366, 13-14 (E.D.N.Y. Sept. 28, 2006)
Patent(s)	6,047,781 Multi-activity offshore exploration and/or development drilling method and apparatus Continuation B63B 35/44 (20060101); E21B 7/12 (20060101); E21B 19/00 (20060101); E21B 15/00 (20060101); E21B 15/02 (20060101); E21B 019/20 30 claims 7 independent
Current International Class:	6,056,071 Multi-activity offshore exploration and/or development drilling method and apparatus Continuation B63B 35/44 (20060101); E21B 7/12 (20060101); E21B 19/00 (20060101); E21B 15/00 (20060101); E21B 15/02 (20060101); E21B 007/12 42 claims 10 independent
Current International Class	6,068,069 Multi-activity offshore exploration and/or development drilling method and apparatus Continuation B63B 35/44 (20060101); E21B 19/00 (20060101); E21B 15/00 (20060101); E21B 15/02 (20060101); E21B 007/12 26 claims 6 independent
Claims	6,085,851 Multi-activity offshore exploration and/or development drill method and apparatus B63B 35/44 (20060101); E21B 7/12 (20060101); E21B 19/00 (20060101); E21B 15/00 (20060101); E21B 15/02 (20060101); E21B 015/02 (); B63B 035/44 13 claims 2 independent
Infringing Technology	Deep water drilling rigs
Scope of injunction (contended)	"Transocean asks the court to enter a permanent injunction prohibiting [GSF]

	<p>“from making, using, selling, offering to sell or importing the Development Drillers I and II, or any drilling rigs not more than colorably different, in the United States for the term of the patents.”</p> <p>“Asserting that the injunction Transocean seeks is overly broad, GSF argues that the injunction should be limited to prohibit only actual operations on one well by the Development Drillers”</p>
Small component	<p>“the structures on GSF’s Development Driller rigs that the court found to infringe the apparatus claims of the patents-in-suit (...)are not small components of those rigs but, instead, structures that are related to the rigs’ core functionality”</p>
Compulsory licenses	<p>“the court is persuaded that if it does not enter a permanent injunction, it will force a compulsory license on Transocean that will not contain any of the commercial business terms typically used by a patent holder to control its technology or limit encroachment on its market share”</p>
Other arguments	<p>“GSF has not only used the Development Driller rigs equipped with the infringing structure to compete for the same customers and contracts as Transocean, but also to win contracts over competing bids from Transocean.”</p>
Willingness to license	<p>“Nor is the court persuaded that the mere fact that Transocean is willing to consider licensing its invention to GSF and others on “fair grounds” is sufficient to defeat Transocean’s request for a permanent injunction. It is undisputed that Transocean makes and markets deep water drilling rigs equipped with the patented invention”</p>

8. Visto Corp. v. Seven Networks, Inc.

Parties	Visto Corp. v. Seven Networks, Inc.
Citation	2006 U.S. Dist. LEXIS 91453, (E.D. Tex. Dec. 19, 2006).
Patent(s)	5,857,201 Enterprise connectivity to handheld devices
Current International Class	G06F 17/30 (20060101); H04L 29/08 (20060101); H04L 29/06 (20060101); G06F 017/30
Claims	19 claims 2 independent
Patent (s)	6,324,542 (continuation of the 5,857,201) Enterprise connectivity to handheld devices
Current International Class	G06F 17/30 (20060101); H04L 29/08 (20060101); H04L 29/06 (20060101); G06F 017/30
Claims	40 claims 6 independent
Infringing Technology	
Arguments of the court Irreparable harm	<p>“Although future damages may compensate Visto for an <i>approximate</i> loss, that does not make them adequate in the sense that they are a suitable proxy for injunctive relief. What makes legal remedies inadequate under the circumstances of this case is the inability to calculate the plaintiff’s future</p>

	losses with precision"
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9. Novozymes A/S v. Genencor Int'l, Inc

Parties	Novozyymes A/S v. Genencor Int'l, Inc
Citation	No. 05-cv-160-KAJ (D. Del. 2007)
Patent(s)	Patent 6,867,031 on amylase variants
Current International Class	C12N 9/28 (20060101); C12N 9/26 (20060101); C11D 3/38 (20060101); C11D 3/386 (20060101); D06L 1/14 (20060101); D06L 1/00 (20060101); C12N 009/28 (); C12N 015/56
Claims	5 claims 3 independent claims
Infringing Technology	
Arguments of the court Irreparable harm	"Novozyymes has suffered irreparable harm because of Genencor's infringement of Novozymes's right to exclude others from practicing its patent. Contrary to Genencor's argument (D.I. 209 at 37, 39), the Supreme Court in <i>eBay</i> did not state that loss of the right to exclude could not be irreparable harm. Rather, the Court simply rejected the proposition that the patentee's right to exclude should always lead to injunctive relief for patent infringement"
Damages not adequate (Lost profits not available)	"Because Novozymes markets its technology by licensing it to a subsidiary, the legal remedy of lostprofits damages is not available. Even if it were, the statutory right to exclude represents a benefit that, under these circumstances, cannot be equated by an award of cash. These are head-to-head competitors, and Novozymes has a right, granted by Congress, not to assist its rival with the use of proprietary technology"
Independent invention	"Thus, while Spezyme Ethyl infringes Novozymes's patent, Genencor and EBS apparently developed the enzyme on their own"
Factors that amount to willful infringement	"the most relevant <i>Read</i> factor here is the question of "whether the [**50] infringer, when he knew of the other's patent protection, investigated the scope of the patent and formed a good-faith belief that it was invalid or that it was not infringed." <i>Read</i> , 970 F.2d at 827. Genencor's decision to continue infringing without a good faith belief in the '031 patent's invalidity is the basis for my finding of willful infringement, and it supports an award of enhanced damages.

10. O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.

Parties	O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.
Citation	No. 04-32, 2007 WL 869576 (E.D.Tex. March 21, 2007)
Patent(s)	6,259,615 High-efficiency adaptive DC/AC converter
Current International Class	H02M 7/505 (20060101);

(2)	H02M 7/5387 (20060101); H02M 7/523 (20060101); H05B 41/282 (20060101); H05B 41/28 (20060101); H05B 41/285 (20060101); H05B 41/392 (20060101); H05B 41/39 (20060101); H02M 003/24 (); H02M 003/335
Claims	19 claims 4 independent
Patent(s)	6,804,129; continuation application of U.S. patent 6,396,722, which itself is a continuation application of U.S. patent 6,295,615, on a high-efficiency adaptive DC/AC converter
Current International Class (2)	(11) H02M 7/505 (20060101); H02M 7/5387 (20060101); H02M 7/523 (20060101); H05B 41/39 (20060101); H05B 41/282 (20060101); H05B 41/28 (20060101); H05B 41/285 (20060101); H05B 41/392 (20060101); H02M 003/335 (); H02M 003/24 (); H05B 037/02
Claims	30 claims 4 independent
Infringing Technology	
Arguments of the court Irreparable harm Direct competitors	the court "has recognized the high value of intellectual property when it is asserted against a direct competitor in the plaintiff's market".
	"Because BITEKs co-defendants purchase in the same market, O2 micro will suffer irreparable harm absent an injunction directed towards them"
When Defendant is a foreign company	Defendants are foreign companies so plaintiff has "little assurance that it could collect monetary damages"

11. Commonwealth Scientific & Industrial Research Organisation v. Buffalo Technology Inc.

Parties	Commonwealth Scientific & Industrial Research Organisation v. Buffalo Technology Inc.
Citation	492 F. Supp. 2d 600, 600-02 (E.D. Tex. 2007)
Patent(s)	5487069 on a Wireless LAN
Current International Class	H04L 5/02 (20060101); H04L 12/28 (20060101); H04L 1/18 (20060101); H04L 1/16 (20060101); H04L 1/00 (20060101); H04B 007/01
Claims	72 claims 10 independent
Infringing Technology	
Previous bargaining	"In 1998, the Institute of Electrical and Electronics Engineers ("IEEE") contacted CSIRO to request assurance that CSIRO would license its patent to companies

	wanting to implement the IEEE's 802.11a standard on reasonable and non-discriminatory ("RAND") terms once the IEEE approved the 802.11 standard, which pertains to WLANs. CSIRO agreed" CSIRO contacted companies using its patent but they refused to license it.
Arguments of the court A research institution	CSIRO is the principal scientific research organization of the Australian Federal Government: "CSIRO is a research institution and relies heavily on the ability to license its intellectual property to finance its research and development. The revenue from licensing its intellectual property is used to fund further research and development for frontier projects"
Arguments of the court Competition	"CSIRO has shown that its harm is not merely financial. While CSIRO does not compete with Buffalo for marketshare, CSIRO does compete internationally with other research groups--such as universities--for resources, ideas, and the best scientific minds to transform those ideas into realities"
Arguments of the court Reputation	"CSIRO's reputation is an important element in recruiting the top scientists in the world (...) "Delays in funding result in lost research capabilities, lost opportunities to develop additional research capabilities, lost opportunities to accelerate existing projects or begin new projects" "Its reputation as a research institution has been impugned just as another company's brand recognition or good will may be damaged"
Small components v. essential patents	"Buffalo's infringing use of CSIRO's technology is not limited to a minor component of the technology. The '069 patent is the core technology embodied in the IEEE's 802.11a and 802.11g standards"

12. Johns Hopkins University v. Datascope Corp.

Parties	Johns Hopkins University v. Datascope Corp.
Citation	No. 05-0759, 2007 WL 2682001 (D. Md. Aug. 9, 2007)
Patent(s)	5,766,191 Percutaneous mechanical fragmentation catheter system (Continuation)
Current International Class	A61B 17/22 (20060101); A61M 1/00 (20060101); A61B 017/22
Claims	7 claims 2 independent
Patent(s)	6,824,551 Percutaneous mechanical fragmentation catheter system (Continuation)
Current International Class	A61B 17/22 (20060101); A61M 1/00 (20060101); A61B 017/22
Claims	39 claims 3 independent
Patent(s)	7,108,704 Percutaneous mechanical fragmentation catheter system

	(Continuation)
Current International Class	A61B 17/22 (20060101); A61B 6/00 (20060101)
Claims	52 claims 2 independent
Infringing Technology	ProLumen device
Arguments of the court	Direct and only competitor.
Irreparable harm	
Incentives to infringe	"If the plaintiffs do not obtain injunctive relief, others may be encouraged to infringe their patents and risk litigation, thus devaluing the plaintiff's property...as the "principal value of a patent is its statutory right to exclude, the nature of the patent grant weighs against holding that monetary damages will always suffice to make the patentee whole"...
Plaintiff's manufacturing capacity	Plaintiffs have sufficient manufacturing capacity to meet the demand currently met by Datascope.

13. Verizon Services Corp. v. Vonage Holdings Corp.

Parties	Verizon Services Corp. v. Vonage Holdings Corp.
Citation	(Fed. Cir. Sept. 26, 2007)
Patent(s) The patents (specification shared) provide a server for enhanced name translation, which can be used but is not limited to implement an internet telephone. The invention is "particularly advantageous for processing of voice telephone communications through the internet".	6,282,574, Method, server and telecommunications system for name translation on a conditional basis and/or to a telephone number Continuation
Current International Class	H04Q 3/00 (20060101); H04L 12/64 (20060101); H04L 29/12 (20060101); H04L 29/06 (20060101); H04M 15/00 (20060101); H04M 7/00 (20060101); H04M 3/493 (20060101); H04M 3/487 (20060101); G06F 015/16
Claims	30 claims 9 independent
Patent(s)	6,104,711 Enhanced internet domain name server
Current International Class	H04L 12/64 (20060101); H04L 29/06 (20060101); H04M 7/00 (20060101); H04M 15/00 (20060101); H04L 29/12 (20060101); H04Q 3/00 (20060101); H04M 3/493 (20060101); H04M 3/487 (20060101); H04L 012/64
Claims	37 claims 7 independent
Patent(s)	6,359,880 Public wireless/cordless internet gateway Divisional application
Current International Class	H04Q 7/26 (20060101); H04M 7/00 (20060101); H04Q 7/38 (20060101); H04L 012/66
Claims	14 claims 3 independent
Infringing Technology	Telephone service using the Voice over IP

	(VoIP) technology
Arguments of the court Stays and inventing around	One factor that is relevant to the balance of the hardships required by the Supreme Court's decision in eBay was not considered by the district court, namely whether the district [court should have allowed time for Vonage to implement a workaround that would avoid continued infringement of the '574 and '711 patents before issuing its injunction. Verizon had a cognizable interest in obtaining an injunction to put an end to infringement of its patents; it did not have a cognizable interest in putting Vonage out of business. However, as Verizon points out, Vonage made no request for a workaround period to the district court, and Vonage has already had several months since the district court's judgment to implement a workaround"

DENIED INJUNCTIONS

14. Sundance, Inc. v. Demonte Fabricating Ltd.

Parties	Sundance, Inc. v. Demonte Fabricating Ltd.
Citation	No. 02-73543, 2007 WL 37742 (E.D. Mich. Jan. 4, 2007)
Patent(s)	5026109 on a Segmented cover system
Current International Class	B60J 7/02 (20060101); B60J 7/06 (20060101); B60D 025/06
Claims	18 claims 3 independent
Infringing Technology	Quick Draw system
First instance	Injunction denied
	"Not only did Sundance delay in filing suit and seeking injunctive relief, the market for tarp systems contains many other competitors and non-segmented cover systems have a larger percentage over segmented systems. Moreover, as DeMonte points out, [*8] the segmented cover is but one feature of its Quick Draw system. Thus, it cannot be said that Sundance's licensees are losing sales to DeMonte expressly because of its infringement of the segmented cover. It is possible that lost sales are due to a desire for other features of the Quick Draw system or are sales lost to other competitors in the marketplace. Sundance simply cannot tie alleged lost sales to the nature of DeMonte's infringement"
Willingness to license	"Indeed, Sundance licenses the '109 patent to others, and offered to license it to DeMonte prior to filing suit against it, thus demonstrating that money damages are adequate. Their conduct against DeMonte and others (Aero) indicates an interest only in obtaining money damages against accused infringers"
Interest of customers and employees	"due to the fact that a injunction would harm third parties (DeMonte's employees and customers) and given the nature of the marketplace, this factor does not weigh in Sundance's favor"
Appeal	Injunction granted (No. 02-73543, 2007 WL

	3053662 (E.D. Mich. Oct. 19, 2007))
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15. z4 Techs. v. Microsoft Corp.

Parties	z4 Techs. v. Microsoft Corp.
Citation	434 F.Supp.2d 437 (E.D. Tex. June 14, 2006)
Patent(s)	Patents 6,044,471 Method and apparatus for securing software to reduce unauthorized use
Current International Class	G06F 1/00 (20060101); G06F 21/00 (20060101); H04L 009/32
Claims	45 claims of which 26 independent
	6,785,825, Method for securing software to decrease software piracy
	176 claims 48 independent
Average Claims	111/48
Irreparable harm	Any harm from future infringement could be compensated through a reasonable royalty. While z4 had argued that monetary damages for future infringement were not an adequate remedy because they could not compensate z4 for the loss of "its right to exclude Microsoft", the Court deemed z4's argument as implying "that a violation of the right to exclude under the patent act can never be remedied through money". On the contrary, the eBay rule established that the right to exclude alone is not sufficient to support a finding of injunctive relief and cannot lead to conclude that remedies other than an injunction cannot adequately compensate a patent holder.
Monetary damages are not adequate	"when an infringer saturates the market for a patented invention with an infringing product or damages the patent holder's good will or brand name recognition by selling infringing product or damages".
Balance of hardships	"the potential hardships Microsoft could suffer if the injunction were granted outweigh any limited and reparable hardships that z4 would suffer in the absence of an injunction" because the patent covered a very small component of the software products that infringe upon this patent."Although it is impossible to determine the actual events that would follow the deactivation of Microsoft's product activation serves, it is likely that the market would see an increase in pirate versions of the software".

16. Paice LLC v. Toyota Motor Corp,

Parties	Paice LLC v. Toyota Motor Corp.
Citation	Paice LLC, v. Toyota Motor Corp., et al. CV-211-DF., 16, August 2006.
Patent(s)	Patent 5,343,970 on a Hybrid electric vehicle
Current International Class	B60L 11/12 (20060101); B60K 6/04 (20060101); B60K 6/00 (20060101); B60L 11/02 (20060101); B60K 23/04 (20060101); B60T 1/00 (20060101); B60T 1/10 (20060101);

	B60K 006/04
Claims	40 claims of which 5 independent
Patent	6,209,672
Current International Class	B60K 6/00 (20060101); B60K 6/04 (20060101); B60K 006/04
Claims	33 claims of which 7 independent
Patent (s)	6,554,088, a continuation in part of the '672 patent.
Current International Class	B60K 6/04 (20060101); B60K 6/00 (20060101); B60L 15/20 (20060101); B60H 1/32 (20060101); F02B 37/18 (20060101); F02B 37/00 (20060101); F02B 37/12 (20060101); F02B 37/16 (20060101); F01N 3/20 (20060101); F02D 41/00 (20060101); F02M 35/10 (20060101); B60K 006/04 (); B60L 011/02
Claims	9 claims of which 1 independent
Infringing technology	hybrid transmission system of cars
First instance Irreparable harm Probability to license	the court considered that licensing efforts can also be aided by monetary relief plus findings on validity and infringement of its patents. What most likely would be affected is the bargaining position of the plaintiff.
First instance Small component	Patent concerns a small component of the final product. Since the vehicles were introduced to the market during the 2006 model year, "enjoining their sales will likely interrupt not only defendant's business but that of related businesses, such as dealers and suppliers. The burgeoning hybrid market could also be stifled as the research and expense of bringing its product line to market would be frustrated."
Appeal Ongoing royalties and voluntary v. compulsory licenses	"We use the term ongoing royalty to distinguish this equitable remedy from a compulsory license. The term "compulsory license" implies that <u>anyone</u> who meets certain criteria has congressional authority to use that which is licensed. <i>See, e.g.</i> , 17 U.S.C. § 115 ("When phonorecords of a nondramatic musical work have been distributed . . . under the authority of the copyright owner, <u>any other person</u> . . . may, by complying with the provisions of this section, obtain a compulsory license to make and distribute phonorecords of the work." (emphasis added)). By contrast, the ongoing-royalty order at issue here is limited to one particular set of defendants; there is no implied authority in the court's order for any other auto manufacturer to follow in Toyota's footsteps and use the patented invention with the court's imprimatur" (footnote 13) "Perhaps the most apparent restriction imposed by § 283 is that injunctions granted thereunder must "prevent the violation of any right secured by patent." We have previously held that this statutory language limits the scope of activities that may be enjoined. <i>See, e.g., Joy Techs. v. Flakt, Inc.</i> , 6 F.3d 770, 777 (Fed. Cir. 1993) (holding that noninfringing acts may not be enjoined). The more difficult question raised by this case, however, is whether an order <u>permitting</u> use of a patented invention in exchange for a

	<p>royalty is properly characterized as <u>preventing</u> the violation of the rights secured by the patent (...)"</p> <p>"Under some circumstances, awarding an ongoing royalty for patent infringement in lieu of an injunction may be appropriate. In <u>Shatterproof Glass Corp. v. Libbey-Owens Ford Co.</u>, 758 F.2d 613, 628 (Fed. Cir. 1985), this court upheld a 5% court-ordered royalty, based on sales, "for continuing operations." Although the parties in that case contested the amount of the royalty, styled a "compulsory license" by the court, there was no dispute as to the district court's authority to craft such a remedy. See <i>id.</i> In the context of an antitrust violation, "mandatory sales and reasonable-royalty licensing" of relevant patents are "well-established forms of relief when necessary to an effective remedy, particularly where patents have provided the leverage for or have contributed to the antitrust violation adjudicated." <u>United States v. Glaxo Group Ltd.</u>, 410 U.S. 52, 59 (1973)"</p> <p>"But awarding an ongoing royalty where "necessary" to effectuate a remedy, be it for antitrust violations or patent infringement, does not justify the provision of such relief as a matter of course whenever a permanent injunction is not imposed. In most cases, where the district court determines that a permanent injunction is not warranted, the district court may wish to allow the parties to negotiate a license amongst themselves regarding future use of a patented invention before imposing an ongoing royalty. Should the parties fail to come to an agreement, the district court could step in to assess a reasonable royalty in light of the ongoing infringement (...)In this case, the district court, after applying the four-factor test for a permanent injunction and declining to issue one, imposed an ongoing royalty <i>sua sponte</i> upon the parties. Thus, this court is unable to determine whether the district court abused its discretion in setting the ongoing royalty rate. Accordingly, we think it prudent to remand the case for the limited purpose of having the district court reevaluate the ongoing royalty rate.</p>
<p>District Court on remand, 609 F. Supp. 2d 620; 2009 U.S. Dist. LEXIS 32723</p>	<p>"the Court has given the parties full and fair opportunity to set their own ongoing royalty rate. Having failed to come to an agreement, the Court finds, based on the evidence submitted at the evidentiary hearing, that significant changes in the legal relationship between the parties as well as other economic factors justify the imposition of a different royalty rate to compensate Paice for Toyota's continued, voluntary, and willful infringement.</p>

17. **Praxair, Inc. v. ATMI, Inc.**

<p>Parties</p>	<p>Praxair, Inc, and Praxair Technology Inc, v.</p>
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	ATMI, Inc. and Advanced Technology Materials, Inc.
Citation	Civ. No. 03-1158-SLR (D.C. Delaware, Mar 27, 2007)
Patent(s)	6007609 on a Pressurized container with restrictor tube having multiple capillary passages
Current International Class	F17C 7/00 (20060101); F17C 7/04 (20060101); F17C 13/04 (20060101); B01D 053/04
Claims	Claims 19 of which 2 independent
Patent (s)	6045115 on a Fail-safe delivery arrangement for pressurized containers
Current International Class	F17C 7/00 (20060101); F17C 7/04 (20060101); F16K 1/00 (20060101); F16K 1/30 (20060101); F17C 13/04 (20060101); F16K 031/365
Claims	20 claims of which 3 independent
Irreparable harm	The court based the denial of injunctive relief on Praxair failure to meet the burden of proof: "Praxair has not provided or described any specific sales or market data to assist the court, nor has it identified precisely what market share, revenues, and customers Praxair has lost to ATMI". Praxair failed to prove why it would have difficulties calculating damages going forward and how money damages could not adequately compensate for "lost market share" or any "lost research opportunities".
Monetary damages are not adequate	Although Praxair stated "that it spends \$75 million per year in R&D and that denying protection to its rights to exclude through injunctions it would have "no incentive to innovate" and its patents "would be effectively meaningless" the court however added that "Praxair does not explain why money damages could not suffice to compensate for any lost opportunities to conduct research due to budgetary constraints"
Further developments	Both patents were later declared unenforceable for inequitable conduct (Praxair, Inc. v. ATMI, Inc., 489 F. Supp. 2d 387, 397 (D. Del. 2007)).
Appeal	The CAFC partially reversed decision on unenforceability and inequitable conduct. Since parties came to a settlement where Praxair will not seek an injunction against ATMI, the CAFC did not touch upon the issue.
Dissenting opinion on the Appeal	Dissenting opinion of Judge Lourie "...The Supreme Court, in <i>eBay</i> , did not rule out entitlement to a permanent injunction when one competitor in a two-party market has been found to infringe a patent of another competitor. <i>eBay Inc. v. MercExchange, LLC</i> , 547 U.S. 388, 394, 126 S. Ct. 1837, 164 L. Ed. 2d 641 (2006) ("[W]e take no position on whether permanent injunctive relief should or should not issue in this particular case, or indeed in any number of other disputes arising under the Patent Act."). It held only that the traditional four-factor test should be applied. <i>Id.</i> The district

	<p>court here seemed to be impressed with the fact that both companies were large companies with substantial revenues, and that the infringing materials constituted a small portion of those revenues, implying that the patentee would not be sufficiently harmed by the denial of the injunction (...) However, it is important to recognize that a patent provides a right to exclude infringing competitors, regardless of the proportion that the infringing goods bear to a patentee's total business. Therefore, provided the four-factor test has been met, a patentee should be able to exclude competitors who sell only a small amount of an infringing product or competitors whose sales of an infringing product constitute only a small portion of its sales or of the patentee's sales. Otherwise, the patent right becomes devalued"</p>
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18. MercExchange, LLC v. eBay, Inc.

Parties	eBay Inc and Half.com v. MercExchange LLC.
Citation	WL 2172587, No. 01-736 (E.D. Va. July 27, 2007)
Patent(s)	Patent 5845265 on consignment nodes
Current International Class	G06Q 30/00 (20060101); G06Q 20/00 (20060101); G06F 017/60
Claims	29 claims of which 5 independent
Patents	6202051 on Facilitating internet commerce through internet worked auctions
Current International Class	G06Q 20/00 (20060101); G06Q 30/00 (20060101); G06F 017/60
Average Claims	52 claims of which 8 independent
Balance of hardships	<p>the court considered firstly that potential hardships for MercExchange were likely to be low because the company was willing to license its patents and was not competing with eBay. It also ascertained that the harm of a dubious patent (still the process before the U.S.P.T.O. is ongoing) would impose on the defendant was important. Nevertheless, the court recognized that the third prong did not clearly favor any party because of the uncertainty surrounding the validity of the patent, whether they had been designed around and whether the plaintiff could, in association with other companies, start competing with eBay as well: "With the future so speculative in this continually-developing, complex scenario, the court cannot confidently determine in which party's favor the balance of hardships tips".</p>
Public interest	<p>"...both common sense and caselaw suggest that "the public-interest factor often favors the patentee, given the public's interest in maintaining the integrity of the patent system." Odetics, 14 F. Supp. 2d at 795; see TiVo, 446 F. Supp. 2d at 670 ("The public has an interest in maintaining a strong patent system."). Were the protection of a strong patent system the only relevant consideration, there would not be reason to go through the four-factor test or at least to</p>

	consider the public interest. On the contrary, the district court highlighted “integrity of the patent system will always be a consideration in the public interest analysis” courts should also consider other relevant factors as “the type of patent involved, the impact on the market, the impact on the patent system, and any other factor that may impact the public at large”. In this case, after reviewing these facts, the court concluded against the entry of an injunction.
Further developments	Ongoing PTO reexamination procedures Both patents are continuations of previous applications

19. Innogenetics, N.V. vs. Abbott Laboratories

Parties	Innogenetics N.V. vs. Abbott Laboratories
Citation	Innogenetics, N.V., v. Abbott Laboratories, 05-C-0575-C, January 3rd, 2007
Patent(s)	5846704 on a “process for typing of HCV isolates”
Current International Class	C12Q 1/70 (20060101); C12Q 1/68 (20060101); C12Q 001/70 (); C12Q 001/68 (); C12Q 019/34
Claims	13 claims of which 1 independent
Irreparable Harm	The district considered the fact that Innogenetics manufactures but does not commercialize the tests, which is done by Bayer. However it concluded that its reputation and market share were at stake. The court considered it improper that a plaintiff’s willingness to license its patents as sufficient to establish that the patent holder would not suffer irreparable harm if an injunction did not issue. “It would denigrate the value of plaintiff’s patent rights to allow defendant to continue to sell plaintiff’s invention as its own in exchange for the same fee it would have paid without a lawsuit”. (emphasis added).
Public Interest	Public interest the court found that plaintiff had “Ample capacity to supply HCV diagnostic products, that plaintiff’s manufacturing process complies with Good manufacturing Practices and that its products comply with FDA labeling requirements”. “Plaintiff proffered evidence that even if it were unable to manufacture the diagnostic product for a short period of time, the risk to public health would be non-existent, for two reasons. First, other diagnostic techniques exist and would suffice, even if they are not as effective as the patented technique. Second, Hepatitis C is a chronic disease that does not require instant genotyping. A delay in obtaining a test would not have any perceptible adverse effect on a person suffering from the disease”. However, the court denied enhanced damages because “defendant’s infringement was not willful.
Appeal	On appeal the court reversed finding abuse of discretion, denying the permanent

	injunction and granting a compulsory license, holding that a reasonable royalty at a high level that includes an entry fee can substitute the injunction.
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20. Amado v. Microsoft

Parties	Carlos Amado vs. Microsoft Corporation
Citation	WL 2172587, No. 01-736 (E.D. Va. July 27, 2007)
Patent(s)	Patent: 5293615 on a Point and shoot interface for linking database records to spreadsheets whereby data of a record is automatically reformatted and loaded upon issuance of a recalculation command
Current International Class	
Claims	21 claims of which 2 independent
Infringement	"The jury found that Access 95 and Excel 95, and Office Professional 95, which includes Access 95 and Excel 95, and all subsequent forms of those products infringe claim 21 of the '615 patent both literally and under the doctrine of equivalents"
Inventing around	"Microsoft continues to sell versions 2002 (XP) and 2003 of Office Professional and Access, which the jury found infringed Amado's '615 patent. However, during the pendency of its appeal, Microsoft designed, implemented, and released a software fix to remove the infringing functionality from its products"
Small component	"Moreover, Amado's patent only covers a very small component of the infringing products - claim 21, the only claim that the jury found Microsoft Office and Access infringed, covers a single feature linking Access and Excel. <i>See eBay</i> , 126 S. Ct. at 1842 (Kennedy, J. concurring) ("When the patented invention is but a small component of the product the companies seek to produce and the threat of an injunction is employed simply for undue leverage in negotiations, legal damages may well be sufficient to compensate for the infringement and an injunction may not serve the public interest"). Thus, Amado's injury can be adequately compensated through monetary damages"

GENERAL ARGUMENTS USED IN POST-eBay CASES

Table 5: Injunctions and incentives to innovate

Cases analyzing the influence of permanent injunctions on incentives	<i>Sanofi v. Apotex</i>
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to innovate

CSIRO v. Buffalo

Table 6: Cases analyzing the “Small-Component” Patent argument⁸⁵⁶

Case	Injunction	Arguments of the court
Amado v. Microsoft	Denied	See above summary
Paice LLC v. Toyota Motor Corp.	Denied	See above summary
z4 Techs., Inc. v. Microsoft Corp.,	Denied	See above summary
Commonwealth Sci. & Indus. Research Organisation v. Buffalo Tech. Inc.	Granted	“The right to exclude becomes more urgent when the product is the invention. This case is not the situation that concerned Justice Kennedy; Buffalo's infringing use of CSIRO's technology is not limited to a minor component of the technology. The '069 patent is the core technology embodied in the IEEE's 802.11a and 802.11g standards. Buffalo's products are designed to provide the wireless functionality of the IEEE's 802.11 and 802.11 g standards. Since Buffalo's infringement relates to the essence of the technology and is not a "small component" of Buffalo's infringing products, monetary damages are less adequate in compensating CSIRO for Buffalo's future infringement”.
Trading Tech Int' Inc v. eSpeed Inc		In this case that “TT offered testimony that the features of MD_Trader that make it patent able over prior art are not simply small components of a larger package, but are the central features that make MD_Trader the popular software program that it is. The balance of hardships weighs in favor of an injunction ”
Broadcomm v. Qualcomm; MPT v. Marathon Levels	Granted	The PTT service is a cutting edge service. The availability of such a service is highly desired by consumers and of benefit to them. QChat has technological advantages over other services, including scalability, reduced [*15] call setup latency, and increased reliability. It is not a " small component " in the analysis for injunctive relief”

Table 7: Cases analyzing compulsory licenses

Case	Injunction	Arguments of the court
Commonwealth Sci. & Indus. Research Organisation v. Buffalo Tech. Inc.	Granted	“A compulsory license will not adequately compensate CSIRO for Buffalo's continued intentional infringement. The royalty payment would be extrapolated from a determination of Buffalo's past sales, which may not adequately reflect the worth of the patent today to Buffalo. Further, such a royalty payment does not necessarily include other non-monetary license terms that are as important as monetary terms to a licensor such as CSIRO”

⁸⁵⁶ **Methodology:** a Lexis search of cases citing eBay Inc. v. MercExchange, L.L.C. Federal and State Cases retrieved 210 cases and further focus through the term “small component” narrowed the search to 8 cases.

<p>Paice V. Toyota</p>	<p>Denied</p>	<p><i>Circuit Judge Rader</i>, concurring “...calling a compulsory license an "ongoing royalty" does not make it any less a compulsory license. To avoid many of the disruptive implications of a royalty imposed as an alternative to the preferred remedy of exclusion, the trial court's discretion should not reach so far as to deny the parties a formal opportunity to set the terms of a royalty on their own. With such an opportunity in place, an ongoing royalty would be an ongoing royalty, not a compulsory license”.</p> <p>“In this case, because the court imposed an ongoing royalty on the parties <i>sua sponte</i> after denying injunctive relief, the parties had no meaningful chance to present evidence to the district court on an appropriate royalty rate to compensate Paice for Toyota's <i>future</i> acts of infringement. Evidence and argument on royalty rates were, of course, presented during the course of the trial, for the purposes of assessing damages for Toyota's <i>past</i> infringement. But pre-suit and post-judgment acts of infringement are distinct, and may warrant different royalty rates given the change in the parties' legal relationship and other factors. When given choices between taking additional evidence or not, and between remanding to the parties or not, a district court may prefer the simplest course—impose its own compulsory license. This simplest course, however, affords the parties the least chance to inform the court of potential changes in the market or other circumstances that might affect the royalty rate reaching into the future.</p> <p>In most cases, the patentee and the infringer should receive an opportunity at least to set license terms that will apply to post-suit use of the patented invention. This general principle has deep roots in both law and policy. Projecting the costs to be incurred for what would otherwise be future acts of infringement is necessarily a speculative exercise, even for the most stable markets and technologies. As licenses are driven largely by business objectives, the parties to a license are better situated than the courts to arrive at fair and efficient terms. After all, it is the parties, rather than the court, that will be bound by the terms of the royalty. Particularly in the case of the patentee, who has proven infringement of its property right, an opportunity to negotiate its own ongoing royalty is a minimal protection for its rights extending for the remainder of the patent term.</p>
<p>Amado v. Microsoft</p>	<p>Denied</p>	<p>“Although these cases show a general disfavor for compulsory licenses, they do not establish a categorical rule, barring any type of compulsory license. In fact, contrary to Amado's assertion, this Court has the authority to issue a "compulsory" license by staying an injunction pending appeal, as recognized by the Federal Circuit (...)”</p> <p>“Thus, even if the stay, in effect, results in a compulsory license, there is no prohibition against allowing such a "compulsory license”</p>

		pending appeal when, as in the instant case, the Court determines that such a stay is appropriate after evaluating the four factors (...) In addition, the Supreme Court recently held that not all patentees are entitled to an injunction against post-trial infringement. eBay, 126 S. Ct. at 1841. District courts applying eBay and following the guidance of Justice Kennedy's concurrence have awarded monetary damage for future infringement based on the jury's reasonable royalty calculation. See, e.g. z4 Techs., Inc., 434 F. Supp. 2d at 442"
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Table 8: Burden of proof to show irreparable injury and inadequacy of legal remedies

Case	Burden of proof	Injunction
Praxair vs. ATMI	Highest: -“Praxair has not provided or described any specific sales or market data to assist the court, nor has it identified precisely what market share, revenues, and customers Praxair has lost to ATMI”. -“Praxair does not explain why money damages could not suffice to compensate for any lost opportunities to conduct research due to budgetary constraints”	Denied
Novozymes	“evidence demonstrated that plaintiff originally secured an 80% market share with its patented product, which fell to approximately 50% after infringing competitor's market entry”.	Granted
Transocean vs. Globalsantafe	the court accorded a permanent injunction where the customer base is small and the defendant has not only used the infringing technology to compete for the same customers and contracts as plaintiff but also to win contracts over competing bids from plaintiff.	
TiVo v. EchoStar	plaintiff was “a relatively new company with only one primary product” and the parties agreed that customers tend to remain loyal to the company from which they obtained their first DVR recorder, “shaping the market to plaintiff's disadvantage and resulting in long-term customer loss”).	Granted

Table 9: Cases subjected to appeal

Sundance Inc. v. DeMonte Fabricating Ltd., 2007 WL 3053662 (E.D. Mich. Oct. 19, 2007)	Injunction granted
MPT Inc. v. Marathon Labels Inc., 2007 WL	Injunction reversed as overly broad

4351745 (Fed. Cir. Dec. 12, 2007)	
Verizon Servs. Corp. v. Vonage Holdings Corp., 503 F.3d 1295 (Fed. Cir. Sept. 26, 2007)	Injunction not an abuse of discretion
Amado v. Microsoft Corp., 517 F.3d 1353 (Fed. Cir. Feb. 26, 2008)	Dissolution of injunction not an abuse of discretion
Ortho-McNeil Pharm. Inc. v. Mylan Labs. Inc., 2008 WL 834402 (Fed. Cir. March 31, 2008)	Injunction affirmed without comment