

Commission on Intellectual Property Rights

Study Paper 1a

Intellectual Property and Economic Development: Lessons from American and European History

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EXECUTIVE SUMMARY

The relationship between intellectual property rights and economic development has attracted a great deal of attention from economists, but their conclusions have been ambivalent and offer little definitive guidance for policy makers. My paper explores the economic history of patents and copyrights in the United States, Europe and Japan, and highlights the lessons that are relevant to the experience of developing countries today. The study offers policy options regarding key issues in national intellectual property regimes and legislation, the broader policy framework, and the international arena.

National Intellectual Property Regimes and Legislation

1. The economic history of Europe and America underlines the importance of democratization, in order to assure access to property rights to all members of society. Both patents and copyrights were introduced in Europe in the form of privileges that limited access to special classes of society. Even when these systems were reformed, the design and administration served to perpetuate the advantages of privileged individuals and favoured high valued capital intensive methods of production.

The United States stands out as having established one of the most successful intellectual property systems in the world. Secure patents were universally acknowledged as an important factor in early economic growth. At least one part of its industrial and economic success owes to a democratization of access to intellectual property. To give just one example: fees were deliberately set at an affordable level and encouraged broad-based participation in the inventive activity. When Britain followed the U.S. example and reformed its system to facilitate patenting by the working class, the benefits were immediately evident.

1. It is important to encourage domestic innovation through effective mechanisms to disseminate information.

In England, the vast majority of patents were obtained by urban inventors, in part because the complexity of the system gave an advantage to those who were actually resident in

London. In contrast, the United States implemented policies such as transparent and predictable rules, and the prompt publishing of information regarding patent grants and expired patents. Patent volumes were made freely available to public institutions such as libraries, the patent office established branches throughout the country, and the records were meticulously kept. As a result, when markets expanded in America, the major response came from relatively ordinary individuals living in rural areas, who contributed a plethora of important and incremental inventions that enhanced productivity growth in both capital-intensive and labour-intensive industries.

3. Patents and copyrights warrant very different treatment. The analysis of the appropriate policies towards copyright is complicated because, in addition to economic questions, copyrights have implications for basic rights. The first Article of the U.S. Constitution included a clause to promote the progress of science and useful arts by securing for limited times to authors and inventors the rights to their respective writings and discoveries. But, despite their common basis in the Constitution, the United States has always followed very different policies towards patents and copyrights. The scope of copyrights was more abbreviated in the United States relative to the European countries and the American term of copyright was one of the shortest in the world next to Greece. Copyrights were always more circumscribed because of concern about the protection of the public interest. Although American copyright laws were adopted directly from the British Statute of Anne, there were significant differences that were related to the undeveloped state of American literature. Today the United States is notorious for denouncing acts of copyright piracy in countries like Taiwan and China. This is somewhat ironic, since the US itself was notorious as a copyright pirate for a hundred years. In the paper I discussed the costs and benefits, and conclude that the US likely benefited from its piracy. In short, the continual expansion of copyright grants today at the prompting of producers threatens longstanding efforts to balance private and social interests in a direction that promises to reduce social welfare and learning in developing countries.

4. IPR management should incorporate limits on proprietors' rights of exclusion. The United States has strenuously opposed policies such as compulsory licences that limit patents, although copyright policies allow for compulsory licences in certain industries. At the same time, these policy instruments have been widely used by the majority of other developed countries since the earliest years of the Venetian patent grants. Germany stipulated both working requirements and compulsory licences; and so did Britain in the early twentieth century. Moreover, even the U.S. enforces quite stringent antitrust remedies that have overturned corporate rights not only to patents, but also to trade secrets and know-how, in order to ensure the assimilation of the technology. The moral here is obvious.

5. Within the categories of patents and copyrights, different levels of protection may be appropriate for different sectors, as part of a more general industrial policy.

The majority of developed countries have exempted particular industries from patent protection in accordance with their needs at the particular time. For instance, the French in 1791 did not allow patents to issue for medicines. Britain countered German competition in chemicals by not offering product patents in this area. Thus, history reveals a policy of discretionary grants in order to promote industrial development in specific areas. Moreover, the European and Japanese experience suggests that developing countries should distinguish between different types of patent grants. Domestic innovation and diffusion in these countries are likely to benefit from patents of introduction or utility models, which are directed towards the protection of incremental inventions with shorter duration than the current full patent term of twenty years.

6. Policy makers need to pay more attention to other means of appropriation and

rewards such as data encryption, unfair competition laws, and private contracts. . The discussion of appropriability tends to be somewhat myopic in its focus on state provided patents and copyrights. American copyright piracy during the 19th century did not lead to ruinous competition. Publishers were able to appropriate returns through a number of strategies, including first mover advantages, reputation, and price and quality discrimination. The dominant firms cooperated in establishing private rights of exclusion in foreign-authored books, which were tradeable. Such practices suggest that publishers were able to simulate the legal grant through private means, although at higher cost since such rights were not enforceable at law. Courts were also able to offer more individualized protection through alternative doctrines in contract laws, misappropriation, and unfair competition. These alternatives may increase the costs to proprietors, but may also result in a net increase in social welfare

Broader Policy Framework

2. The impact of intellectual property rights will depend on their institutional context. This implies that changes in IPR rules must occur in tandem with developments in the legal system, the market system, and cultural norms. IPRs also have to be assessed within a broader policy context that includes trade policies and antitrust

1.

In the United States, the laws were enforced by courts that explicitly attempted to implement decisions that promoted economic growth and social welfare. Their instrumental policies were consistent with an economy that included a free market as a central feature. Trade in IP contracts flourished owing to the security of property and contracts. In contrast, in France and England, the legal system led to insecurity which was reflected in much lower numbers of patents and assignments. Developing countries that adopt strong IPRs will find that the benefits are likely to be minimal unless these contextual institutions are also reformed. The high resource costs required for such strong systems may be minimized through institutional innovations such as a registration system with provisions for opposition.

3. The movement to harmonize intellectual property rights has led to a race to the top. For many of today's developing countries, harmonization has meant the exogenous introduction of rules and standards that may be ill-suited to their particular circumstances. Discussions to harmonize patents have reflected American efforts. The first international patent convention was held in Austria in 1873, at the suggestion of U.S. policy makers, who wanted to be certain that their inventors would be adequately protected at the International Exposition in Vienna that year. Subsequent revisions of international patent legislation have been towards the American model, such as the introduction of examinations, lower fees, and the weakening of provisions for compulsory licences and working requirements.

In contrast, France took the lead in the harmonization of copyright laws. France was foremost of all nations in the protection it accords to literary property. During the Ancien Regime, the rhetoric of authors' rights had been promoted by French owners of book privileges as a way of deflecting criticism of monopoly grants and of protecting their profits. Publishers in Britain and America had tried the same strategies but were defeated by the courts in the landmark cases *Donaldson v. Beckett* and *Wheaton v. Peters*.

The Berne Convention has drawn from French laws, most notably in the declaration of moral rights. Today Berne recognizes the right of disclosure, the right of retraction, the right of attribution, and the right of integrity. These rights all infringe on the public domain relative to economic rights. In short, the self-interested rhetoric of the owners of monopoly privileges in 17th century France now shapes international copyright laws in the twenty first century. History has its ironies.

In yet another irony, the United States for over one hundred years resisted foreign pressures to alter its international copyright laws in order to protect its infant publishing industry and in so doing provides a model for developing countries in the 21st century. It should be clear that, if outcomes are held to be efficient when they are aligned with the

preferences and interests of the constituent members of the global economy, developing countries today should resist harmonization as not only inefficient, but harmful to their interests.

CONCLUSIONS

The world today is obviously different from previous centuries, but this does not imply that the questions and answers are entirely novel. Patent and copyright systems have continually evolved in the past several hundred years. Some of these changes implemented technical improvements such as a move towards patent examination systems. Others such as the extension of copyrights to foreign nationals, the general strengthening of copyright protection, product exemptions, and the use of compulsory licences, involved adaptations that seem related to the stage of economic development.

When other countries wished to establish their own patent and copyright systems, they looked towards the historical experience of the early industrializers. However, they also indulged in a *wise eclecticism* and adopted measures that were more appropriate for their own particular circumstances and stage of industrial and economic development. Today, those same countries are attempting to impose strong patent and copyright policies in a manner that is designed more to protect their domestic industry than to promote strategies that will further social welfare in developing countries. Although such tendencies should be resisted, at the same time, policy recommendations for developing countries should focus on alternatives that are feasible as well as desirable.

The reality of the matter is that, given the existing international political economy, countries that engage in outright piracy are likely to be subject to punitive sanctions. Political economic problems require political economic solutions. The policies of Britain towards its colonies are instructive. During the nineteenth century British administered a two-tiered international intellectual property system that attempted to address the needs of its colonies. The 1847 Foreign Reprints Act allowed colonies to import the works of British authors without copyright protection, and also allowed legal price discrimination with significantly lower prices for overseas editions. The current tendency towards uniformly strong IP regimes will only be restrained if some of the developed countries similarly use their influence to provide countervailing power to the 'one size fits all' pressure group.

INTRODUCTION

At the start of 2002 developing countries realize that social and economic development require policies that are consistent with integration into the global economy. The question of intellectual property rights (IPRs) has attracted especially close attention in recent years. A current World Bank Report highlights the role of knowledge and the contributions of intellectual property rights in social and economic progress.¹ Among the developing countries themselves "a greater attention to the protection and enforcement of intellectual property rights is clearly evident. There is an enhanced and more widespread awareness of the importance of intellectual property in general."² Nevertheless, intellectual property policies have been a source of dissension between developed and developing countries, as well as within the developed countries themselves. Controversy has centered around intellectual property rights for a number of reasons.

Intellectual property includes patents and copyrights, as well as trademarks, trade secrets, geographical indications, industrial designs and *sui generis* rights. One of the primary reasons for their current status in international policy agendas is that global trade in IPRs themselves as well as trade in associated goods and services account for a substantial and increasing amount of revenues. Second, IPR coverage has expanded to incorporate software, genetic material, business methods, digital information and plant varieties, and a key question is the nature of protection that should be accorded new technologies through

conventional property rights. For example, the United States has granted patents for genetically modified animals, but rejected property rights in databases; whereas European authorities have protected rights in databases, but resisted the patenting of life forms.

Third, disagreement surrounds the nature of property rights in intellectual output. The United States IPR system is based on an instrumentalist approach: that is, it adopts a pragmatic market orientation, with statutory rights that are designed to facilitate trade, innovation and social welfare; but other jurisdictions have favoured more philosophical ideas of inherent rights of personalty or "moral rights" which cannot be extinguished or alienated. The debate about the nature of property rights has far reaching implications for the design of patent institutions, such as the extent to which producer rights persist beyond the first sale, and whether the validity of copyright depends on statutory restrictions such as compliance with formalities.

A fourth area of controversy is the extent to which property rights can legitimately be infringed upon or restricted by stipulations such as working requirements or compulsory licences. For instance, in United States compulsory licences have been routinely been granted to limit the extent of copyrights, but proposals to include similar restrictions in the patent statutes have always been rejected. At the same time, licences to compel access to entire portfolios of patented technologies have frequently been applied in consent decrees to settle cases brought under antitrust laws. Compulsory licences have been more readily included in patent legislation in most other countries including developed countries such as the United Kingdom, but the number of patents affected tends to be quite small.

Property is based on rights of exclusion; hence, IPRs are valuable only if they are well-defined and enforced, which implies that the legal system is integrally related to the intellectual property system. Part of the policy discussion today relates to the willingness of developing countries to devote resources to the enforcement of rights that will benefit property owners in other countries. The United States and the World Trade Organization have adopted strategies to assist developing countries in establishing the institutions that will ensure that property rights are protected, leading some to question whether such policies amount to coercion or contract.

Finally, despite a century of discussion and debate, global policies towards intellectual property still differ. Among the significant questions that remain unanswered is the extent to which a uniform and strong intellectual property system is necessary for the promotion of social and economic development. In the past three decades the number of parties to international treaties has almost doubled. Membership of the World Intellectual Property Organization today stands at 175 countries; 110 of these have signed the Patent Cooperation Treaty and 147 have acceded to the Berne Convention for literary and artistic works. In 1999 alone there were 68 new signatories to WIPO treaties, and 60 in 2000, 56 percent of whom were developing countries.³ The United States is acknowledged as the country that offers the strongest protection to patent holders and, as the world's foremost economic power, possesses considerable bargaining leverage which it has used to promote global patent rights. Negotiations at the multilateral level to harmonize IPR policies have reflected U.S. interests, some have argued, at the expense of smaller countries.⁴

Despite the importance of these issues, the state of research and our ability to reach useful conclusions remain unsatisfactory.⁵ Machlup's study of the patent system concluded that we had only a very limited basis for evaluation: "If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it."⁶ A plethora of theoretical and empirical work on the subject since then, but this observation still stands. For instance, some have estimated and found a positive

relationship between strong intellectual property regimes and economic growth.⁷ At the same time, a number of studies fail to find the expected relationship between foreign investment and IPR protection. Others have been more agnostic, pointing to the econometric and data measurement problems that characterize cross-country studies. Little attention has been paid to copyrights and other forms of intellectual property even in developed countries, and even less empirical evidence has attempted to further our understanding of their role in developing economies despite their increasingly important role in today's economies. Under these circumstances, an account of the historical experience of the developed countries may be useful for understanding the implications of some of the current policy proposals that have been recommended to address the role of intellectual property rights in social and economic development.

This study analyzes the evolution of patents and copyrights in the major European countries and Japan. The first section examines the early patent systems of England, France and Germany, Spain and the United States. England and France were early leaders in industrialization and in the grant of royal privileges that led to monopolies. They developed patent legislation that ostensibly reformed the abuses prevalent under the privilege system, but the inefficiencies of the earlier regimes persisted. On the other hand, the United States created a distinct break with then existing patent institutions. The U.S. Constitution provided protection to inventors for limited times in order to promote social and technical progress. Congress enacted a series of legislation that created the world's first modern patent system, and American judges employed an instrumentalist policy to ensure that property rights were well enforced. Follower countries such as Japan attempted to emulate the industrial success of the American patent systems, but also crafted provisions that reflected their own priorities and interests.

The final part of the patent section considers the evolution of international patent laws, and the movement towards harmonization that culminated in the patent conventions of the nineteenth and twentieth centuries. The nineteenth century featured a great deal of debate and turmoil about intellectual property rights, ranging from whether the entire system should be abolished through to the desire to obtain perfect uniformity in international legislation and rights. As the nation that led the world in the grant of patents and inventive activity, the United States then, as now, placed itself at the center of the patent controversies as the champion for liberal treatment of patentees throughout the world. Consequently, the harmonization of patent laws inexorably evolved towards the American ideal of stronger property rights in inventions.

The second section deals with the history of copyrights in England, France and the United States. Copyrights have largely been overlooked by economists as an area of study, but this facet of intellectual property holds a number of valuable insights that can enhance our understanding of institutions and their role in economic development. Consumers in both developed countries and developing countries share similar concerns about the potential for copyright protection to encroach on the public domain. The public goods nature of copyright works is more evident than in the case of patents, and the regulation of such works also has implications for access to information and learning, freedom of speech and the degree of democracy. Moreover, the incentive rationale for patent protection as an inducement to engage in creative activity is likely lower for the works of artists and musicians; rather, copyright has always been a question of the protection of profits to their publishers. Indeed, publishers injected and promoted the idea that copyrights are granted for the benefit of authors, in order to promote their own interests. The American experience in the nineteenth century is instructive, since it provides rare evidence regarding the likely costs and benefits of weak enforcement for property rights in literary and artistic works.

The last section examines the lessons that can be drawn from the experience of the now developed countries during the period when they themselves were undergoing

industrialization. Obviously, the world today is quite different from the nineteenth century, but many of the significant questions that remain unresolved at present were initially posed during the earlier period. In keeping with the objectives of this study, the discussion is directed towards policy options regarding key issues in national intellectual property regimes, the broader policy framework, and the international arena. For many of today's developing countries, intellectual property harmonization has meant the exogenous introduction of rules and standards that may be ill-suited to their particular circumstances. In direct contrast, the major lesson that one derives from the economic history of Europe and America is that intellectual property institutions best promoted the progress of science and arts when they evolved in tandem with other institutions and in accordance with the needs and interests of social and economic development in each nation.

SECTION ONE: PATENTS

I. PATENT INSTITUTIONS IN THE MAJOR EUROPEAN NATIONS

IA. BRITISH PATENT SYSTEM

Britain stands out for having established a patent system which has been in continuous operation for a longer period than any other in the world.⁸ The Statute of Monopolies in 1624 offered a grant of a patent for fourteen years for "the sole making or working of any manner of new manufacture within this realm to the first and true inventor..."⁹ The "first and true inventor" was interpreted to include importers of inventions that had been created abroad, and patent agents frequently applied for patents under their own names on behalf of inventors from overseas. Thus, the primary emphasis of this feature of the patent grant was on diffusion, rather than on incentives for creativity.

Another important feature of the British patent system was that it established significant barriers in the form of prohibitively high costs that limited access to property rights in invention. These constraints favoured the elite classes of those with wealth or exceptional technical qualifications. Inventors who wished to obtain protection throughout the realm had to contend with the bureaucracy of three patent systems, and to pay fees that ranged from £100 for an English patent to £300 for property rights that extended to Ireland and Scotland.¹⁰ Potential patentees were well advised to obtain the help of a patent agent to aid in negotiating the numerous steps and offices that were required for pursuit of the application in London.

The cumbersome process of patent applications (variously described as "mediaeval" and "fantastical") afforded ample material for satire, but obviously imposed severe constraints on the ordinary inventor who wished to obtain protection for his discovery.¹¹ The complicated system also effectively inhibited the diffusion of information and made it difficult, if not impossible, for inventors outside of London to readily conduct patent searches. Before 1852 patent specifications were open to public inspection on payment of a fee, but they were not printed, published or indexed. Since the patent could be filed in any of three offices in Chancery, searches of the prior art involved much time and inconvenience. It is hardly surprising that the defenders of the early patent system included patent agents and patent lawyers.¹²

The defects and contradictions of the British system led to numerous investigations and calls for institutional reform, especially after 1829. The Crystal Palace Exhibition in 1851 contributed to the official recognition of the need for legislation to meet some of these longstanding criticisms. In 1852 the patent laws were revised in the first major adjustment of the system in two centuries.¹³ The patent application process was rationalized in one Patent Office, and fees were adjusted. A renewal system was adopted, so patentees initially paid £25 and later installments of £50 (after three years) and £100 (after seven years) to maintain the patent for a full term of fourteen years. Provision was made for the printing and publication of the patent records. The 1852 reforms undoubtedly

instituted improvements over the former opaque procedures, and the lower fees had an immediate impact on the numbers of patent applications. Nevertheless, the system retained many of the former features that had implied that patents were in effect viewed as privileges rather than merited rights, and only temporarily abated expressions of dissatisfaction.

One source of dissatisfaction that endured until the end of the nineteenth century was the state of the common law regarding patents. For instance, the law specified that patents were to be granted for inventions that were new and useful, and courts did not hesitate to enforce both of these conditions. Utility under the patent law was regarded as unrelated to the commercial success of the patented invention.¹⁴ Moreover, "if part of an invention is found to be meritorious and part useless, the patent is likewise void."¹⁵ The question of utility was decided by judges as well as juries, and led to decisions that were at times arbitrary.¹⁶ Since the legal system was unpredictable, patent rights could not be regarded as settled unless the patent had been contested in court with a favourable outcome.¹⁷

Other constraints on the market for inventions related to policies towards trade in intellectual property rights such as patent assignments. Ever vigilant to protect an unsuspecting public from fraudulent financial schemes on the scale of the South Sea Bubble, ownership of patent rights was limited to five investors (later extended to twelve). Nevertheless, the law did not offer any relief to the purchaser of an invalid or worthless patent, so potential purchasers were well advised to engage in extensive searches before entering into contracts.¹⁸ When coupled with the lack of assurance inherent in a registration system, the purchase of a patent right involved a substantive amount of risk and high transactions costs -- all indicative of a speculative instrument. 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.¹⁹

In 1883 new legislation introduced procedures that were somewhat simpler, with fewer steps. The fees fell to £4 for the initial term of four years, and the remaining £150 could be paid in annual increments.²⁰ For the first time, applications could be forwarded to the Patent Office through the post office. This statute introduced opposition proceedings, which enabled interested parties to contest the proposed patent within two months of the filing of the patent specifications.²¹ Compulsory licences were introduced in 1883 (and strengthened in 1919 as "licences of right") for fear that foreign inventors might injure British industry by refusing to grant other manufacturers the right to use their patent. In 1907 patentees who manufactured abroad were required to also make the patented product in Britain.

It is worth noting that a number of the proposals for change were explicitly drawn from the American system, including lower fees and examinations for novelty. The 1852 patent reform bills had included calls for an examination system but this was amended in the House of Commons and the measure was not included in the final version. Opponents were allegedly reluctant to vest examiners with the necessary discretionary power, and pragmatics pointed to the shortage of a cadre of officials with the required expertise. The 1883 act provided for the employment of "examiners" but their activity was limited to ensuring that the material was patentable and properly described. Indeed, it was not until 1905 that the British system included an examination for novelty, and even then the process was not regarded as stringent as in other countries.

Changes in the British patent system were in part motivated by the realization that England's early industrial and technological supremacy was threatened by the United States and other nations in Europe. The debate about patent rights in this period was far ranging, and (like today) explicitly linked questions of trade, comparative advantage and intellectual property. Proposals had ranged from the creation of a national fund to reward

inventors through the abolition of any property rights in inventions; however, policies that emerged from this era of activism were far from optimal. Legal advances in the nineteenth century were inevitably piecemeal and incomplete, consisting as they did of compromises between those with vested interests in maintaining rents under the former system, inventors (especially those of limited means) who stood to benefit from improvements, and manufacturers and politicians who wished to deter short-run foreign competition even if at high costs in the long run. These conflicts were also apparent in the twentieth century. Between 1919 and 1949 chemical products were excluded from patent protection to ward off the threat posed by the superior German chemical industry. Until 1977, licences of right enabled British manufacturers to compel foreign patentees to permit the use of their patents on pharmaceuticals and food products.

IB. FRENCH PATENT SYSTEM

The early French policies towards inventions and innovations in the eighteenth century are worth a close examination because they were based on an extensive array of rewards and incentives, and illustrate the relative benefits and costs of alternative routes to statutory grants of intellectual property rights.²² During this period inventors or introducers of inventions could benefit from titles, pensions that sometimes extended to spouses and offspring, loans (some interest-free), lump-sum grants, bounties or subsidies for production, exemptions from taxes, or monopoly grants in the form of exclusive privileges. Exclusive rights could extend to a specific region or throughout the entire kingdom, and their term varied from five years to perpetuity.

Alternatives to formal privileges illustrate the advantages and disadvantages of awards that were administered by the state on a case by case basis. On several occasions, prior examination by a committee of qualified individuals was required before applicants could receive awards. On the other hand, it was evident that a system of grants and privileges could be arbitrary and based on non-economic criteria.²³ Eighteenth century correspondence and records provide numerous examples of awards that were made based on court connections.²⁴ At the other end of the spectrum large sums were awarded to the "deserving" on the basis of age or family need.²⁵ Members of the scientific community who examined applications were not necessarily qualified to assess their potential commercial value.²⁶ Even if the privilege was commercially successful, active trade in the rights was inhibited because permission had to be obtained first.²⁷ Moreover, the administrative and opportunity costs of such a system were nontrivial on the part of both supplicants and the state bureaucracy.²⁸ Applicants were well aware of the political dimension of invention.²⁹ They were also aware that promises made as inducements were not necessarily enforceable once the inventor had made fixed investments.³⁰

This complex network of state policies towards inventors and their inventions was replaced after the outbreak of the French Revolution. The modern French patent system was established according to the laws of 1791 (amended in 1800) and 1844. The Revolutionary Assembly intended to avoid the excesses involved in previous grants of privileges, and proclaimed that it had drafted the outlines of a system that created a distinct break with the past. But in effect, as Alexis de Tocqueville pointed out, many features of the institutions of the ancien régime survived the revolution, and this was no less evident in the workings of the patent system.

The decree of 1790 declared the natural right of the inventor to obtain property rights in patents since "every discovery or invention, in every type of industry, is the property of its creator; the law therefore guarantees him its full and entire enjoyment."³¹ Patentees could file through a simple registration system without any need to specify what was new about their claim, and could persist in obtaining the grant even if warned that the patent was likely to be invalid. The inventor could obtain a patent for a period of five, ten or fifteen years, and the term could only be extended through legislative action.³² Protection extended to all methods and manufactured articles but excluded theoretical or scientific

discoveries without practical application, financial methods, medicines, and items that could be covered by copyright. On each patent document the following caveat was printed: "The government, in granting a patent without prior examination, does not in any manner guarantee either the priority, merit or success of an invention."³³

Although the legal rhetoric implied that the primary intent of the legislation was to recognize the natural rights of inventors, the actual clauses led to results that were different and reflected former mercantilist policies. In an obvious attempt to limit international diffusion of French discoveries, until 1844 patents were voided if the inventor attempted to obtain a patent overseas on the same invention.³⁴ On the other hand, the first introducer of an invention covered by a foreign patent would enjoy the same "natural rights" as the patentee of an original invention or improvement, although the term would expire at the same time as any foreign patent on the item. In order to qualify for a patent of importation, the applicant had to have obtained practical knowledge of how the item worked through personal risk and effort, although he was not obliged to prove that the invention had been patented elsewhere nor to even state its country of origin.³⁵ The rights of patentees were also restricted if the invention related to items that were controlled by the French government, such as printing presses and firearms.³⁶

The statutes placed another limit on the rights of inventors in the form of working requirements because "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."³⁷ Patentees therefore had to put the invention into practice within two years from the initial grant, or face a tribunal which had the power to repeal the patent unless the patentee could point to unforeseen events which had prevented his complying with the provisions of the law.

The 1791 statute stipulated patent fees that were costly, ranging from 300 livres through 1500 livres, based on the declared term of the patent. The 1844 statute maintained this policy since fees were set at 500 francs (\$100) for a five year patent, 1,000 francs for a 10 year patent and 1500 for a patent of fifteen years, payable in annual installments.³⁸ The high price of protection led to difficulties among ordinary inventors, whose correspondence included pleas for extensions or for a waiver of the tariffs, or resigned acknowledgments that they were forced to let the patent right expire for want of funds.³⁹ Nante, a master locksmith who obtained a 10 year patent on a lock was obviously better connected with influential friends. His file includes a letter of recommendation from a count, as well as a letter Nante addressed to the King, which was forwarded to the patent officials. Nante stated that he could not meet the patent fees and asked to be given the patent for free. The Bureau of Arts and Manufactures paid the 800 francs on his behalf, ostensibly because locks enhanced security and this was beneficial to social welfare.⁴⁰

The French patent statutes included a statement regarding the right of the public to view patent specifications, which echoed the "bargain" theory of patents that underlay American and British grants. In return for the limited monopoly right, the patentee was expected to describe the invention in such terms that a workman skilled in the arts could replicate the invention and this information was expected to be "rendue publique." However, since no provision was made for the publication or diffusion of these descriptions, the statutory clause was a dead letter. At least until the law of April 7 1902, specifications were only available in manuscript form in the office in which they had originally been lodged, and printed information was limited to brief titles in patent indexes.⁴¹ The attempt to obtain information was also inhibited by restrictions placed on access - viewers had to state their motives; foreigners had to be assisted by French attorneys; and no extract from the manuscript could be copied until the patent had expired.

The state remained involved in the discretionary promotion of invention and innovation through policies beyond the granting of patents. In the first place, the patent statutes did

not limit their offer of potential appropriation of returns only to property rights vested in patents. If the inventor of a discovery of proven utility wished, it was possible to make a gift of the invention to the nation in exchange for an award from the funds that were set aside for the encouragement of industry. Second, institutions such as the Société d'encouragement pour l'industrie nationale were established.⁴² The society consisted of eminent scientists and industrialists who awarded a number of medals each year to stimulate new discoveries in areas they considered to be worth pursuing, and also to reward deserving inventors and manufacturers. In 1856 the Society gave out sixty five prizes, including twelve gold medals, six of platinum, and twenty four medals of silver. It also made cash awards, such as 10,000 francs to combat diseases threatening vineyards. The recipients ranged from horticulturalists, to manufacturers of cutlery, and the head physician in a military hospital.⁴³ Third, the award of assistance and pensions to inventors and their families continued well into the nineteenth century.

As a result, inventors had an incentive to direct their attention to rent seeking activities in addition to productive efforts to commercialize their discoveries. The "privilege mentality" could be detected in the records for Felix Lemaistre of Paris, who invented a shoe that could be made in one piece without sewing, and tried to get the state to purchase the invention. His file includes a letter from the Under-Secretary of State rejecting Lemaistre's proposal to have the government take over the invention: "It is your own responsibility to manage the exploitation of your invention, or else you should interest a few investors in advancing you the necessary capital."⁴⁴

Patent assignments were filed in the office of the Prefect for the district, but since there was no central source of information it was difficult to trace the records for specific inventions. Like patents themselves, assignments and licences were issued with a caveat emptor clause. Indeed, according to one nineteenth century source, they evinced a "remarkably hazardous and uncertain nature."⁴⁵ This was partially due to the nature of patent property under a registration system, and partially to the uncertainties of legal jurisprudence in this area. The case law suggested that the burden of proof of validity was on the purchaser of a patent in the case of "vices apparents" such as a lack of novelty. The purchaser could be protected if the exchange involved "vices cachés" (hidden flaws), but it was not evident which specific circumstances would qualify, and the jurisprudence contained conflicting decisions. The patentee was advised to draw up a contract explicitly stating what was implicit, that the trade was conducted without any guarantees. For both parties, the uncertainties associated with the exchange likely reduced the net expected benefits from trade.

The basic principles of the modern French patent system were evident in the early French statutes and were retained in later revisions.⁴⁶ Since France during the ancien régime was likely the first country to introduce systematic examinations of applications for privileges, it is somewhat ironic that commentators point to the retention of registration without prior examination as the defining feature of the "French system."⁴⁷ In 1910 fees remained high, although somewhat lower in real terms, at one hundred francs per year. If the patent was assigned the annual fees for the entire term of the patent had to be paid in advance. Working requirements were still in place, and patentees were not allowed to satisfy the requirement by importing the article even if the patentee had manufactured it in another European country. However, the requirement was waived if the patentee could persuade the tribunal that the patent was not worked because of unavoidable circumstances. The list of acceptable reasons that could be presented to the courts to justify inaction included a lack of capital, political or commercial crises, the availability of superior inventions which rendered the patentee's unprofitable, high price of raw materials, or competition from infringers.⁴⁸ Thus, with a modicum of ingenuity this particular restriction could be evaded, but the time costs and uncertainty could not be avoided.

IC. GERMAN PATENT SYSTEM

The "patent controversy" of the nineteenth century about the merits of intellectual property protection was reflected in debates among the states that comprised the German alliance. The German Empire was founded in 1871, and in the first six years each state adopted its own policies. Alsace-Lorraine favoured a French style system, whereas others such as Hamburg and Bremen did not offer patent protection. However, after strong lobbying by supporters of both sides of the debate, Germany passed a unified national Patent Act of 1877.⁴⁹ The German patent system later influenced legislation in a number of countries, including that of Argentina, Austria, Brazil, Denmark, Finland, Holland, Norway, Poland, Russia and Sweden.

The 1877 statute created a centralized administration for the grant of a federal patent for original inventions. Industrial entrepreneurs succeeded in their objective of creating a "first to file" system, so patents were granted to the first applicant rather than to the "first and true inventor," but in 1936 the National Socialists introduced a first to invent system. Applications were initially examined by consultants to the Patent Office who were expert in their field, but due to conflicts of interest examiners became permanent employees of the Patent Office in 1891. During the eight weeks before the grant patent applications were open to the public and an opposition could be filed denying the validity of the patent. German patent fees were deliberately set high to eliminate protection for trivial inventions, with a renewal system that required payment of 30 marks for the first year, 50 marks for the second year, 100 marks for the third, and 50 marks annually after the third year. In 1923 the patent term was extended from fifteen years to eighteen years.

German patent policies encouraged diffusion, innovation and growth in specific industries. Patents could not be obtained for food products, pharmaceuticals or chemical products, although the process through which such items were produced could be protected. It has been argued that the lack of restrictions on the use of innovations and the incentives to patent around existing processes spurred productivity and diffusion in these industries. The authorities further ensured the diffusion of patent information by publishing claims and specification before they were granted. The German patent system also facilitated the use of inventions by firms, with the early application of a "work for hire" doctrine that allowed enterprises access to the rights and benefits of inventions of employees.

Although the German system was close to the American patent system, it was in some ways more stringent, resulting in patent grants that were lower in number, but likely higher in average value. The patent examination process required that the patent should be new, nonobvious, and also capable of producing greater efficiency. Like the United States, once granted, the courts adopted an extremely liberal attitude in interpreting and enforcing existing patent rights. Penalties for wilful infringement included not only fines, but also the possibility of imprisonment. Unlike U.S. policies, German patents were subjected to working requirements. The grant of a patent could be revoked after the first three years if the patent was not worked, if the owner refused to grant licences for the use of an invention that was deemed in the public interest, or if the invention was primarily being exploited outside of Germany. However, in most cases, a compulsory licence was regarded as adequate.

After 1891 a parallel and weaker version of patent protection could be obtained through a *gebrauchsmuster* or utility patent (sometimes called a petty patent), which was granted through a registration system.⁵⁰ Patent protection was available for inventions that could be represented by drawings or models with only a slight degree of novelty, and for a limited term of three years (renewable once for a total life of six years). About twice as many utility patents as examined patents were granted early in the 1930s. Patent protection based on co-existing systems of registration and examination appear to have served distinct but complementary purposes. Remedies for infringement of utility patents also included fines and imprisonment.

II. UNITED STATES

II.A. U.S. PATENT SYSTEM

The United States stands out as having established one of the most successful patent systems in the world. Over six million patents have been issued since 1790, and American industrial supremacy has frequently been credited to its favourable treatment of inventors and the inducements held out for inventive activity. Researchers have found a strong relationship between manufacturing productivity and patenting in the United States, and also in part credit the design of the American patent system for the relatively balanced growth experienced during its early industrial period.⁵¹

The first Article of the U.S. Constitution included a clause to "promote the progress of science and useful arts by securing for limited times to authors and inventors the rights to their respective writings and discoveries." Congress quickly complied by passing a patent statute in April 1790.⁵² The United States is noted for creating in 1836 the first modern patent institution in the world, a system whose features differed in significant respects from those of other major countries. The historical record indicates that the legislature's creation of a uniquely American system was a deliberate and conscious process. The laws were enforced by a judiciary which was willing to grapple with difficult questions such as the extent to which a democratic and market-oriented political economy was consistent with exclusive rights. Courts explicitly attempted to implement decisions that promoted economic growth and social welfare.⁵³

The primary feature of the "American system" is that all applications are subject to an examination for conformity with the laws and for novelty.⁵⁴ An examination system was set in place in 1790, when a select committee consisting of the Secretary of State (Thomas Jefferson), the Attorney General and the Secretary of War scrutinized the applications. These duties proved to be too time-consuming for highly ranked officials who had other onerous duties, so three years later it was replaced by a registration system. The validity of patents was left up to the district courts, which had the power to set in motion a process that could end in the repeal of the patent. However by the 1830s this process was viewed as cumbersome, and the statute that was passed in 1836 set in place the essential structure of the current patent system. In particular, the 1836 Patent Law established the Patent Office, whose trained and technically qualified employees were authorized to examine applications.⁵⁵ The French had opposed examination in part because they were reluctant to create positions of power that could be abused by office holders, but the characteristic U.S. response to such potential problems was to institute a policy of checks and balances. Employees of the Patent Office were not permitted to obtain patent rights. In order to constrain the ability of examiners to engage in arbitrary actions, the applicant was given the right to file a bill in equity to contest the decisions of the Patent Office with the further right of appeal to the Supreme Court of the United States.

American patent policy likewise stands out in its insistence on affordable fees. The legislature debated the question of appropriate fees, and the first patent law in 1790 set the rate at the minimal sum of \$3.70 plus copy costs. In 1793 the fees were increased to \$30, and were maintained at this level until 1861. In that year, they were raised to \$35, and the term was changed from fourteen years (with the possibility of an extension) to seventeen years (with no extensions.) The 1869 Report of the Commissioner of Patents compared the \$35 fee for a US patent to the significantly higher charges in European countries such as Britain, France, Russia (\$450), Belgium (\$420) and Austria (\$350). The Commissioner speculated that both the private and social cost of patenting were lower in a system of impartial specialized examiners, than under a system where similar services were performed on a fee-per-service basis by private solicitors. He pointed out that in the U.S. the fees were not intended to exact a price for the patent privilege or to raise revenues for the state - the disclosure of information was the price of the patent property right - rather, they were imposed merely to cover the administrative expenses of the

Office.56

The basic parameters of the U.S. patent system were transparent and predictable, in itself an aid to those who wished to obtain patent rights. In addition, American legislators were concerned with ensuring that information about the stock of patented knowledge was readily available and diffused rapidly.⁵⁷ As early as 1805 Congress stipulated that the Secretary of State should publish an annual list of patents granted the preceding year, and after 1832 also required the publication in newspapers of notices regarding expired patents. The Patent Office itself was a source of centralized information on the state of the arts. However, Congress was also concerned with the question of providing for decentralized access to patent materials. They debated policies such as ensuring "Copies of such Specification together with similar Models to be made at the public Expence, and lodged in ... each State."⁵⁸ The Patent Office also maintained repositories throughout the country, where inventors could forward their patent models at the expense of the Patent Office. Rural inventors could apply for patents without significant obstacles aided by policies that allowed submissions by mail free of postage.

American laws employed the language of the English statute in granting patents to "the first and true inventor." Nevertheless, 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.⁵⁹ American patent laws provided strong protection for citizens of the United States, but varied over time in its treatment of foreign inventors.⁶⁰ Americans could not obtain patents for imported discoveries, but the earliest statutes of 1793, 1800 and 1832, restricted patent property to citizens or to residents who declared that they intended to become citizens.⁶¹ As such, while an American could not appropriate patent rights to a foreign invention, he could freely use the idea without any need to bear licensing or similar costs that would otherwise have been due if the inventor had been able to obtain a patent in this country. In 1836, the stipulations on citizenship or residency were removed, but were replaced with discriminatory patent fees: foreigners could obtain a patent in the U.S. for a fee of three hundred dollars, or five hundred if they were British. After 1861 patent rights (with the exception of caveats) were available to all applicants on the same basis without regard to nationality.⁶² During the proceedings to celebrate the centenary of the U.S. patent system, this liberality was noted as one of its essential features: "Our law gives to all men of all nations the same privileges, and recognizes to the fullest extent the international character of property in inventions. In this respect ... the United States may claim to have led the world and to be leading it still."⁶³

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."⁶⁴ Such provisions proved to be temporary aberrations and were not included in subsequent legislation. Working requirements or compulsory licences were regarded as unwarranted infringements of the rights of "meritorious inventors," and incompatible with the philosophy of U.S. patent grants.⁶⁵ Patentees were not required to pay annuities to maintain their property, there were no opposition proceedings, and once granted a patent could not be revoked unless there was evidence of fraud.

One of the advantages of a system that secures property rights is that it facilitates contracts and trade. Assignments provide a straightforward index of the effectiveness of the American system, since trade in inventions would hardly proliferate if patent rights were uncertain or worthless. An extensive national network of licensing and assignments

developed early on, aided by legal rulings that overturned contracts for useless or fraudulent patents. In 1845 the Patent Office recorded 2,108 assignments, which can be compared to the cumulative stock of 7188 patents that were still in force in that year. By the 1870s the number of assignments averaged over 9000 per year, and this increased in the next decade to over 12,000 contracts recorded annually.⁶⁶ It is clear that this flourishing market for patented inventions provided an incentive for further inventive activity for inventors who were able to appropriate the returns from their efforts, and also linked patents and productivity growth.

II.B. PATENT ENFORCEMENT AND ANTITRUST POLICY

Property rights are worth little unless they can be legally enforced in a consistent, certain, and predictable manner.⁶⁷ A significant part of the explanation for the success of the American intellectual property system relates to the efficiency with which the laws were interpreted and implemented. United States federal courts from their inception attempted to establish a store of doctrine that fulfilled the intent of the Constitution to secure the rights of intellectual property owners.⁶⁸ The judiciary acknowledged that inventive efforts varied with the extent to which inventors could appropriate the returns on their discoveries, and attempted to ensure that patentees were not unjustly deprived of the benefits from their inventions.

Numerous reported decisions before the early courts declared that, rather than unwarranted monopolies, patent rights were "sacred" and to be regarded as the just recompense to inventive ingenuity. Supreme Court Justice Joseph Story, the acknowledged patent expert of the antebellum courts, indicated in *Lowell v. Lewis* (1817) that "the proper duty of the court" was to ensure "that wrongdoers may not reap the fruits of the labor and genius of other men." For, "the inventor has a property in his invention; a property which is often of very great value, and of which the law intended to give him the absolute enjoyment and possession ... involving some of the dearest and most valuable rights which society acknowledges, and the constitution itself means to favor."

Early courts had to grapple with a number of difficult issues, such as the appropriate measure of damages, disputes between owners of conflicting patents, and how to protect the integrity of contracts when the law altered. Changes inevitably occurred when litigants and judiciary both adapted to a more complex inventive and economic environment. However, the system remained true to the Constitution in the belief that the defense of rights in patented invention was important in fostering industrial and economic development. If inventive activity was indeed responsive to material incentives during early American industrialization, then the legal system played an important part in stimulating greater technical change by reinforcing the effectiveness of the patent system.

Economists such as Joseph Schumpeter have linked market concentration and innovation, and patent rights are often felt to encourage the establishment of monopoly enterprises. Thus, an important aspect of the enforcement of patents and intellectual property in general depends on competition or antitrust policies. The attitudes of the judiciary towards patent conflicts are primarily shaped by their interpretation of the monopoly aspect of the patent grant. The American judiciary in the early nineteenth century did not recognize patents as monopolies, arguing that patentees added to social welfare through innovations which had never existed before, whereas monopolists secured to themselves rights that already belong to the public.⁶⁹ Ultimately, the judiciary came to openly recognize that the enforcement and protection of all property rights involved trade-offs between individual monopoly benefits and social welfare.

The passage of the Sherman Act in 1890 was associated with a populist emphasis on the need to protect the public from corporate monopolies, including those based on patent protection, and raised the prospect of conflicts between patent policies and the promotion of social welfare through industrial competition. Firms have rarely been charged

directly with antitrust violations based on patent issues. At the same time, a number of landmark restraint of trade lawsuits have involved technological innovators.⁷⁰ In the early decades of the 20th century these included innovative enterprises such as John Deere & Co., American Can and International Harvester, through to the numerous cases since 1970 against IBM, Xerox, Eastman Kodak and, most recently, Intel and Microsoft.⁷¹ The evidence suggests that, holding other factors constant, more innovative firms and those with larger patent stocks are more likely to be charged with antitrust violations.⁷²

A growing fraction of cases involve firms jointly charged with antitrust violations that are linked to patent based market power and to concerns about "innovation markets."⁷³ Significantly, sanctions under antitrust laws are far more stringent than patent law remedies: patentees who are charged under antitrust law may face treble damages, forced divestitures and compulsory licensing, compared to the simple invalidation of the patent grant under patent laws. In 1994 the FTC was troubled by the research implications of a merger between Sensormatic Electronics and the Knogo Corporation, both of which produce electronic surveillance source labels to protect against shoplifting.⁷⁴ The consent decree prohibited Sensormatic from acquiring patents belonging to Knogo, and imposed a ten year ban on Sensormatic's purchasing similar patents. In Wright Medical Technology, the FTC ordered the firm to transfer patents, trade secrets and business know-how related to orthopaedic finger implants to the Mayo Foundation.⁷⁵ The agency further stipulated that the latter should be able to sublicense these assets in perpetuity, and Wright Medical was then required to provide technical assistance to the Mayo sublicensee (a future competitor of Wright) in order to ensure an effective transfer of technology. In short, the scope of patent rights in the United States was circumscribed by judicial oversight in order to promote social welfare, and by antitrust policies to ensure a competitive environment in current and future markets for products and innovation.

III. PATENTS IN FOLLOWER COUNTRIES

III.A. SPANISH PATENT SYSTEM

The French patent laws were adopted in its own colonies, but also diffused to other countries through its influence on Spain's system since the Spanish Decree of 1811.⁷⁶ The Spanish experience during the nineteenth century is instructive since this country experienced lower rates and levels of economic development than the early industrializers. Like its European neighbours, early Spanish rules and institutions were vested in privileges which had lasting effects that could be detected even in the later period. The per capita rate of patenting in Spain was lower than other major European countries, and foreigners filed the majority of patented inventions. Between 1759 and 1878, roughly one half of all grants were to citizens of other countries, notably France and (to a lesser extent) Britain. Thus, the transfer of foreign technology was a major concern in the political economy of Spain.

This dependence on foreign technologies was reflected in the structure of the Spanish patent system, which permitted patents of introduction as well as patents for invention.⁷⁷ Patents of introduction were granted to entrepreneurs who wished to produce foreign technologies that were new to Spain, with no requirement of claims to being the true inventor. Thus, the sole objective of these instruments was to enhance innovation and production in Spain. Since the owners of introduction patents could not prevent third parties from importing similar machines from abroad, they also had an incentive to maintain reasonable pricing structures. Introduction patents had a term of only five years, with a cost of 3000 reales, whereas the fees of patents for invention varied from 1000 reales for five years, 3000 reales for ten years, and 6000 reales for a term of fifteen years.⁷⁸ Patentees were required to work the patent within one year, and about a quarter of patents granted between 1826 and 1878 were actually implemented.⁷⁹ Since patents of introduction had a brief term, they encouraged the production of items with high expected profits and a quick payback period, after which monopoly rights expired, and the

country could benefit from diffusion.

III.B. JAPANESE PATENT SYSTEM

Japan emerged from the Meiji era as a follower nation which deliberately designed institutions to emulate those of the most advanced industrial countries. Accordingly, in 1886 Takahashi Korekiyo was sent on a mission to examine patent systems in Europe and the United States. The Japanese envoy was not favourably impressed with the European countries in this regard. Instead, he reported: "... we have looked about us to see what nations are the greatest, so that we could be like them; ... and we said, 'What is it that makes the United States such a great nation?' and we investigated and we found it was patents, and we will have patents."⁸⁰ The first national patent statute in Japan was passed in 1888, and copied many features of the U.S. system, including the examination procedures.

However, even in the first statute, differences existed that reflected Japanese priorities and the "wise eclecticism of Japanese legislators."⁸¹ For instance, patents were not granted to foreigners, protection could not be obtained for fashion, food products, or medicines, patents that were not worked within three years could be revoked, and severe remedies were imposed for infringement, including penal servitude. After Japan became a signatory of the Paris Convention a new law was passed in 1899, which amended existing legislation to accord with the agreements of the Convention, and extended protection to foreigners. The influence of the German laws were evident in subsequent reforms in 1909 (petty or utility patents were protected) and 1921 (protection was removed from chemical products, work for hire doctrines were adopted, and an opposition procedure was introduced). The Act of 1921 also permitted the state to revoke a patent grant on payment of appropriate compensation if it was deemed in the public interest. Medicines, food and chemical products could not be patented, but protection could be obtained for processes relating to their manufacture.

The modern Japanese patent system is an interesting amalgam of features drawn from the major patent institutions in the world. Patent applications are filed, and the applicants then have seven years within which they can request an examination. Before 1996 examined patents were published prior to the actual grant, and could be opposed before the final grant; but at present, opposition can only occur in the first six months after the initial grant. Patents are also given for utility models or incremental inventions which are required to satisfy a lower standard of novelty and nonobviousness and can be more quickly commercialized. It has been claimed that the Japanese system favours the filing of a plethora of narrowly defined claims for utility models that build on the more substantive contributions of patent grants, leading to the prospect of an anti-commons through "patent flooding."⁸² Others argue that utility models aid diffusion and innovation in the early stages of the patent term, and that the pre-grant publication of patent specifications also promotes diffusion.

IV. PATENT HARMONIZATION

Today very few developed countries would seriously consider eliminating statutory protection for intellectual property, but in the second half of the nineteenth century the "patent controversy" pitted advocates of patent rights against an effective abolitionist movement. For a short period the latter group was 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 common welfare." The movement achieved its greatest victory in Holland, which repealed its patent legislation in 1869.⁸³ Moreover, it was only in response to international pressures that Switzerland adopted measures to recognize patent rights. The abolitionists based their arguments on the benefits of free trade and competition and viewed patents as part of a protectionist strategy analogous to tariffs. Instead of monopoly awards, the efforts of

inventors could be rewarded by alternative means, such as stipends from the government, payments from private industry or associations formed for that purpose, or simply through the lead time that the first inventor acquired over competitors by virtue of his prior knowledge.

The decisive victory of the patent proponents shifted the focus of interest to the other extreme, and led to efforts to attain uniformity in intellectual property rights regimes across countries. Part of the impetus for change occurred because the costs of discordant national rules became more burdensome as the volume of international trade in industrial products grew over time. Americans were also concerned about the lack of protection accorded to their exhibits in the increasingly more prominent World's Fairs. Indeed, the first international patent convention was held in Austria in 1873, at the suggestion of U.S. policy makers, who wanted to be certain that their inventors would be adequately protected at the International Exposition in Vienna that year. It also yielded an opportunity to protest the provisions in Austrian law which discriminated against foreigners, including a requirement that patents had to be worked within one year or risk invalidation.

International conventions proliferated in subsequent years, and their tenor tended to reflect the opinions of the convenors.⁸⁴ Their objective was not to reach compromise solutions that would reflect the needs and wishes of all participants, but rather to promote preconceived ideas. The overarching goal was to pursue uniform international patent laws, although there was little agreement about the finer points of these laws. It became clear that the goal of complete uniformity was not practicable, given the different objectives, ideologies and economic circumstances of participants. Nevertheless, in 1884 the International Union for the Protection of Industrial Property was signed by Belgium, Portugal, France, Guatemala, Italy, the Netherlands, San Salvador, Serbia, Spain and Switzerland.⁸⁵ The United States became a member in 1887, and a significant number of developing countries followed suit, including Brazil, Bulgaria, Cuba, the Dominican Republic, Ceylon, Mexico, Trinidad and Tobago and Indonesia, among others.

The United States was the most prolific patenting nation in the world, many of the major American enterprises owed their success to patents and were expanding into international markets, and the U.S. patent system was recognized as the most successful. It is therefore not surprising that patent harmonization implied convergence towards the American model despite resistance from other nations.⁸⁶ Countries such as Germany were initially averse to extending equal protection to foreigners because they feared that their domestic industry would be overwhelmed by American patents. Ironically, because its patent laws were the most liberal towards patentees, the United States found itself with weaker bargaining abilities than nations who could make concessions by changing their provisions. Among the resolutions which the Vienna Convention adopted, the United States opposed the convention's support of compulsory licences that were deemed in the public interest, and was instrumental in ensuring that the convention did not approve compulsory working requirements. The U.S. consistently pressed for the adoption of reciprocity (which would ensure that American patentees were treated as favorably abroad as in the United States) but this principle was rejected in favor of "national treatment" (American patentees were to be granted the same rights as nationals of the foreign country). This likely influenced the U.S. tendency to use bilateral trade sanctions rather than multilateral conventions to obtain reforms in international patent policies.

It was commonplace in the nineteenth century to rationalize and advocate close links between trade policies, protection, and international laws regarding intellectual property. These links were evident at the most general philosophical level, and at the most specific, especially in terms of compulsory working requirements and provisions to allow imports by the patentee. For instance, the 1880 Paris Convention considered the question of imports of the patented product by the patentee. According to the laws of France, Mexico and Tunisia, such importation would result in the repeal of the patent grant. The Convention inserted an article that explicitly ruled out forfeiture of the patent under these

circumstances, which led some French commentators to argue that "the laws on industrial property... will be truly disastrous if they do not have a counterweight in tariff legislation."⁸⁷ The movement to create an international patent system elucidated the fact that intellectual property laws do not exist in a vacuum, but are part of a bundle of rights that are affected by other laws and policies.

SECTION TWO: COPYRIGHTS

I. COPYRIGHTS IN EUROPE

I. A. COPYRIGHTS IN FRANCE

In the early years of printing, books and other written matter became part of the public domain when they were published. Like patents, the grant of book privileges originated in the Republic of Venice in the fifteenth century, a practice which was soon prevalent in a number of other European countries. Donatus Bossius, a Milan author, petitioned the duke in 1492 for an exclusive privilege for his book. He successfully argued that he would be unjustly deprived of the benefits from his efforts if others were able to freely copy his work, and was given the privilege for a term of ten years. However, authorship was not required for the grant of a privilege, and printers and publishers obtained monopolies over existing books as well as new works. For instance, in 1479 three printers were given the exclusive right to print the breviary of the diocese of Wurzburg. Since privileges were granted on a case by case basis, they varied in geographical scope, duration, and breadth of coverage, as well as in terms of the attendant penalties for their violation. Grantors included religious orders and authorities, universities, political figures, and the representatives of the Crown.

The French privilege system was introduced in 1498 and was well-developed by the end of the sixteenth century.⁸⁸ Privileges were granted under the auspices of the monarch, generally for a brief period of two to three years although the term could be as much as ten years. Protection could be obtained for new books or translations, maps, type designs, engravings and artwork. Petitioners paid formal fees and informal gratuities to the officials concerned. Since applications could only be sealed if the King were present, petitions had to be carefully timed to take advantage of his route or his return from trips and campaigns. It became somewhat more convenient when the courts of appeal such as the Parlement de Paris began to issue grants that were privileges in all but name, although this could lead to conflicting rights if another authority had already allocated the monopoly elsewhere. The courts sometimes imposed limits on the rights conferred, such as stipulations about the prices that could be charged. Privileges were property that could be assigned or licenced to another party, and their infringement was punished by a fine and at times confiscation of the output of "pirates."

After 1566, the Edict of Moulins required that all new books had to be approved and licenced by the Crown. Favoured parties were able to get renewals of their monopolies that also allowed them to lay claim to works that were already in the public domain. By the late eighteenth century an extensive administrative procedure was in place that was designed to restrict the number of presses and facilitate surveillance and censorship of the publishing industry.⁸⁹ Manuscripts first had to be read by a censor, and only after a permit was requested and granted could the book be printed, although the permit could later be revoked if complaints were lodged by sufficiently influential individuals. Decrees in 1777 established that authors who did not alienate their property were entitled to exclusive rights in perpetuity. Since few authors had the will or resources to publish and distribute books, their privileges were likely to be sold outright to professional publishers. However, the law made a distinction in the rights accorded to publishers, because if the author sold his right the privilege was only accorded a limited duration of at least ten years, the exact term to be determined in accordance with the value of the work. Once the publisher's term expired the work passed into the public domain. The fee for a privilege was thirty six

livres. Approvals to print a work, or a "permission simple" which did not entail exclusive rights could also be obtained after payment of a substantial fee. Between 1700 and 1789, a total of 2,586 petitions for exclusive privileges were filed, and about two thirds were granted.⁹⁰ The result was a system that resulted in "monopoles odieux," higher prices and greater scarcity, large transfers to officials of the Crown and their allies, and pervasive censorship. It likewise disadvantaged smaller book producers, provincial publishers, and the academic and broader community.

The French Revolutionary decrees of 1791 and 1793 replaced the idea of privilege with that of uniform statutory claims to literary property, based on the principle that "the most sacred, the most unassailable and the most personal of possessions is the fruit of a writer's thought."⁹¹ The subject matter of copyrights covered books, dramatic productions and the output of the "beaux arts" broadly including designs and sculpture. Authors were required to deposit two copies of their books with the Bibliothèque Nationale or risk losing their copyright. Some observers felt that copyrights in France were "of all property rights the most humble and the least protected," since they were enforced with a care to protecting the public domain and social welfare.⁹² Although France is associated with the author's rights approach to copyright and proclamations of the "droit d'auteur," these ideas evolved slowly and hesitatingly, mainly in order to meet the self-interest of the various members of the book trade.⁹³ During the Ancien Régime, the rhetoric of authors' rights had been promoted by French owners of book privileges to deflect criticism of monopoly grants and to protect their profits; the same arguments were used by their critics as a means of attacking the publishers' monopolies and profits. This language was retained in the statutes after the Revolution, so the changes in interpretation and enforcement may not have been universally evident.

By the middle of the nineteenth century, French jurisprudence and philosophy tended to explicate copyrights in terms of rights of personality but the idea of the moral claim of authors to property rights was not incorporated in the law until early in the twentieth century. The droit d'auteur first appeared in a law of April 1910, which declared that "l'alienation d'une oeuvre d'art n'entraîne pas, a moins de convention contraire, l'alienation du droit de reproduction." In 1920 visual artists were granted a "droit de suite" or a claim to a portion of the revenues from resale of their works. Subsequent evolution of French copyright laws led to the recognition of the right of disclosure, the right of retraction, the right of attribution, and the right of integrity.⁹⁴ These moral rights are perpetual, inalienable, and thus can be bequeathed to the heirs of the author or artist, regardless of whether or not the work was sold to someone else. The self-interested rhetoric of the owners of monopoly privileges had now emerged as keystone of the "French system of literary property" that would shape international copyright laws in the twenty first century.

I.B. COPYRIGHTS IN ENGLAND

England similarly experienced a period during which privileges were granted, such as a seven year grant from the Chancellor of Oxford University for an 1518 work. In 1557, the Worshipful Company of Stationers, a publishers' guild, was founded on the authority of a royal charter and controlled the book trade for the next one hundred and fifty years. This company created and controlled the right of their constituent members to make copies, so in effect their "copy right" was a private property right that existed in perpetuity, independently of state or statutory rights. Enforcement and regulation were carried out by the corporation itself through its Court of Assistants. The Stationers' Company maintained a register of books, issued licences, and sanctioned individuals who violated their regulations. Thus, in both England and France copyright law began as a monopoly grant to benefit and regulate the printers' guilds, and as a form of surveillance and censorship over public opinion on behalf of the Crown.⁹⁵

The English system of privileges was replaced in 1710 by a copyright statute (the

"Statute of Anne".) The statute "wholly ignored the authors of books, and certainly was not intended to confer any additional rights on them."⁹⁶ Rather, it was intended to restrain the publishing industry and destroy its monopoly power. According to the law, the grant of copyright was available to anyone, not just to the Stationers. Instead of a perpetual right, the term was limited to fourteen years, with a right of renewal, after which the work would enter the public domain. The statute also permitted the importation of books in foreign languages.

Subsequent litigation and judicial interpretation added a new and fundamentally different dimension to copyright. In order to protect their perpetual copyright, publishers tried to promote the idea that copyright was based on the natural rights of authors or creative individuals and, as the agent of the author, those rights devolved to the publisher. If indeed copyrights derived from these inherent principles, they represented property that existed independently of statutory provisions and could be protected at common law. The booksellers engaged in a series of strategic litigation that culminated in their defeat in the landmark case, *Donaldson v. Beckett* [98 Eng. Rep. 257 (1774)]. The court ruled that authors had a common law right in their unpublished works, but on publication that right was extinguished by the statute, whose provisions determined the nature and scope of any copyright claims. This transition from publishers' rights to statutory authors' rights implied that copyright had transmuted from a straightforward licence to protect monopoly profits into an expanding property right whose boundaries would henceforth increase at the expense of the public domain.

Between 1735 and 1875 fourteen Acts of Parliament amended copyright legislation. Copyrights were extended to sheet music, maps, charts, books, sculptures, paintings, photographs, dramatic works and songs sang in a dramatic fashion, and lectures outside of educational institutions. Copyright owners had no remedies at law unless they complied with a number of stipulations which included registration, the payment of fees, the delivery of free copies of every edition to the British Museum (delinquents were fined), as well as complimentary copies for four libraries, including the Bodleian and Trinity College. The ubiquitous Stationers' Company administered registration, and the registrar personally benefited from the monetary fees. Charges included 5 shillings when the book was registered and an equal amount for each assignment and each copy of an entry, along with one shilling for each entry searched. Foreigners could only obtain copyrights if they presented themselves in a part of the British Empire at the time of publication. The book had to be published in the United Kingdom, and prior publication in a foreign country - even in a British colony - was an obstacle to copyright protection. The term of the copyright in books was for the longer of 42 years from publication or the lifetime of the author plus seven years, and after the death of the author a compulsory licence could issue to ensure that works of sufficient public benefit would be published. The "work for hire" doctrine was in force for books, reviews, newspapers, magazines and essays unless a distinct contractual clause specified that the copyright was to accrue to the author. Similarly, unauthorized use of a publication was permitted for the purposes of "fair use." Only the copyright holder and his agents were allowed to import the protected works into Britain.

The Commission that reported on the state of the copyright system in 1878 felt that the laws were "obscure, arbitrary and piecemeal" and were compounded by the confused state of the common law.⁹⁷ The report discussed but did not recommend an alternative to the grant of copyrights, in the form of a royalty system where "any person would be entitled to copy or republish the work on paying or securing to the owner a remuneration, taking the form of a royalty or definite sum prescribed by law." The public would benefit from early access to cheap editions, whereas the main cost would be to the publishers whose risk and return would be negatively affected.

The piecemeal nature of the numerous laws that were simultaneously in force led to conflicts and unintended defects in the system. For instance, it resulted in a peculiar

version of the first sale doctrine where, if a painting or photograph were sold without any written contractual allocation of the copyright, neither party retained the copyright and it was lost altogether. Some of the penalties were disproportionate when applied outside the context to which they had originally been levied. A £2 fine originally directed towards dramatic performances was applied to each dramatic song performed without permission at nonprofit events, giving some enterprising individuals the incentive to purchase powers of attorney from composers in order to make a profession of pursuing amateur performers and successfully collecting the fine on the spot.

The Commission noted that the implications for the colonies were "anomalous and unsatisfactory." The publishers in England practiced price discrimination, modifying the initial high prices for copyrighted material through discounts given to reading clubs, circulating libraries and the like, benefits which were not available in the colonies. In 1846 the Colonial Office acknowledged "the injurious effects produced upon our more distant colonists" and passed the Foreign Reprints Act in the following year. This allowed the colonies who adopted the terms of British copyright legislation to import cheap reprints of British copyrighted material with a tariff of 12.5 percent, the proceeds of which were to be remitted to the copyright owners. However, enforcement of the tariff seems to have been less than vigorous since, between 1866 to 1876 only £1155 was received from the 19 colonies who took advantage of the legislation (£1084 from Canada which benefited significantly from the American reprint trade). The Canadians argued that it was difficult to monitor imports, so it would be more effective to allow them to publish the reprints themselves and collect taxes for the benefit of the copyright owners. This proposal was rejected, but under the Canadian Copyright Act of 1875 British copyright owners could obtain Canadian copyrights for Canadian editions that were sold at much lower prices than in Britain or even in the United States.

The Commission made two recommendations. First, the bigger colonies with domestic publishing facilities should be allowed to reprint copyrighted material on payment of a licence to be set by law. Second, the benefits to the smaller colonies of access to British literature should take precedence over lobbies to repeal the Foreign Reprints Act, which should be better enforced rather than removed entirely. Some had argued that the public interest required that Britain should allow the importation of cheap colonial reprints since the high prices of books "are altogether prohibitory to the great mass of the reading public" but the Commission felt that this should only be adopted with the consent of the copyright owner. They also devoted a great deal of attention to what was termed "The American Question" but took the "highest public ground" and recommended against retaliatory policies.

II. COPYRIGHTS IN THE UNITED STATES

II.A. U.S. COPYRIGHTS

Despite their common source in the intellectual property clause of the U.S. Constitution, copyright policies provided a marked contrast to the patent system in the United States.⁹⁸ In the period before the Declaration of Independence individual American states recognized and promoted patenting activity, but copyright protection was not considered to be of equal importance, for a number of reasons. First, in a democracy the claims of the public and the wish to foster freedom of expression were paramount. Second, to a new colony, pragmatic concerns were likely of greater importance than the arts, and the more substantial literary works were imported. Demand was sufficiently shallow that an individual could saturate the market with a first run printing, and most local publishers produced ephemera such as newspapers, almanacs, and bills. Third, it was unclear that copyright protection was needed as an incentive for creativity, especially since a significant fraction of output was devoted to works such as medical treatises and religious tracts whose authors wished simply to maximize the number of readers, rather than the amount

of income they received.

In 1783, Connecticut became the first state to approve an "Act for the encouragement of literature and genius" because "it is perfectly agreeable to the principles of natural equity and justice, that every author should be secured in receiving the profits that may arise from the sale of his works, and such security may encourage men of learning and genius to publish their writings; which may do honor to their country, and service to mankind." Although this preamble might seem to strongly favour authors' rights, the statute also specified that books were to be offered at reasonable prices and in sufficient quantities, or else a compulsory licence would issue.

The earliest federal statute to protect the product of authors was approved on May 31 1790, "for the encouragement of learning, by securing the copies of maps, charts, and books to the authors and proprietors of such copies, during the times therein mentioned."⁹⁹ John Barry obtained the first federal copyright when he registered his spelling book in the District Court of Pennsylvania and early grants reflected the same utilitarian character.¹⁰⁰ Policy makers felt that copyright protection would serve to increase the flow of learning and information, and by encouraging publication would contribute to democratic principles of free speech. The diffusion of knowledge would also ensure broad-based access to the benefits of social and economic development.¹⁰¹

In the case of patents, the rights of inventors, whether domestic or foreign, were widely viewed as coincident with public welfare. In stark contrast, policymakers showed from the very beginning an acute sensitivity to trade-offs between the rights of authors (or publishers) and social welfare. The protections provided to authors under copyrights were as a result much more limited than those provided by the laws in many European countries based on moral rights. Of relevance here are stipulations regarding first sale, work for hire, and fair use. Under a moral rights-based system, an artist or his heirs can claim remedies if subsequent owners alter or distort the work in a way that allegedly injures the artist's honor or reputation. According to the first sale doctrine, the copyright holder lost all rights after the work is sold. In the American system, if the copyright holder's welfare were enhanced by nonmonetary concerns, these individualized concerns could be addressed and enforced through contract law, rather than through a generic federal statutory clause that would affect all property holders. Similarly, "work for hire" doctrines repudiated the right of personality in favor of facilitating market transactions. For example, in 1895 Thomas Donaldson filed a complaint that Carroll D. Wright's editing of Donaldson's report for the Census Bureau was "damaging and injurious to the plaintiff, and to his reputation" as a scholar. The court rejected his claim and ruled that as a paid employee he had no rights in the bulletin; to rule otherwise would create problems in situations where employees were hired to prepare data and statistics.

This difficult quest for balance between private and public good is most evident in the copyright doctrine of "fair use" that (unlike with patents) allowed unauthorized access to copyrighted works under certain conditions. Joseph Story ruled in [*Folsom v. Marsh*, 9 F. Cas. 342 (1841)]: "we must often, in deciding questions of this sort, look to the nature and objects of the selections made, the quantity and value of the materials used, and the degree in which the use may prejudice the sale, or diminish the profits, or supersede the objects, of the original work." One of the striking features of the fair use doctrine is the extent to which property rights were defined in terms of market valuations, or the impact on sales and profits, as opposed to a clear holding of the exclusivity of property. Fair use doctrine thus illustrates the extent to which the early policy makers weighed the costs and benefits of private property rights against the rights of the public and the provisions for a democratic society. If copyrights were as strictly construed as patents, it would serve to reduce scholarship, prohibit public access for noncommercial purposes, increase transactions costs for potential users, and inhibit learning which the statutes were meant to promote.

Nevertheless, like other forms of intellectual property, the copyright system evolved to encompass improvements in technology and changes in the marketplace.¹⁰² The subject matter, scope and duration of copyrights expanded over the course of the nineteenth century to include musical compositions, plays, engravings, sculpture, and photographs. By 1910 the original copyright holder was granted derivative rights such as to translations of literary works into other languages; to performances; and the rights to adapt musical works, among others. Congress also lengthened the term of copyright several times, although by 1890 the term of copyright protection in Greece and the United States were the most abbreviated in the world. New technologies stimulated change by creating new subjects for copyright protection, and by lowering the costs of infringement of copyrighted works. In [Edison v. Lubin, 122 F. Cas. 240 (1903)], the lower court rejected Edison's copyright of moving pictures under the statutory category of photographs. This decision was overturned by the appellate court: "[Congress] must have recognized there would be change and advance in making photographs, just as there has been in making books, printing chromos, and other subjects of copyright protection."

Copyright enforcement was largely the concern of commercial interests, and not of the creative individual.¹⁰³ Indeed, some courts explicitly repudiated the focus on authors, such as in the case involving two telegraph companies, National Telegraph News Co. v. Western Union Telegraph Co.: "Is the enterprise of the great news agencies, or the independent enterprise of the great newspapers, or of the great telegraph and cable lines, to be denied appeal to the courts, against the inroads of the parasite, for no other reason than that the law, fashioned hitherto to fit the relations of authors and the public, cannot be made to fit the relations of the public and this dissimilar class of servants? Are we to fail our plain duty for mere lack of precedent? We choose, rather, to make precedent -- one from which is eliminated, as immaterial, the law grown up around authorship..."¹⁰⁴ Assignees were granted the same rights as authors, ensuring that uncertainty about enforcement would not inhibit trade in copyrights.

In 1909 Congress revised the copyright law and composers were given the right to make the first mechanical reproductions of their music. However, after the first recording, the property right was transformed into a liability rule: that is to say, anyone could subsequently make their own recording of the composition on payment of a fee that was set by the statute at two cents per recording. In effect, the statute permitted a compulsory licence to issue for copyrighted musical compositions. The next major legislative change in 1976 similarly allowed compulsory licences to issue for works that are broadcast on cable television. The prevalence of compulsory licences for copyrighted material is worth noting for a number of reasons: they underline some of the statutory differences between patents and copyrights in the United States; they reflect economic reasons for such distinctions; and they are also the result of political compromises among the various interest groups that are affected. In particular, they highlight the priority accorded to diffusion and the public domain.

The debate about the scope of patents and copyrights often underestimates or ignores the importance of allied rights that are available through other forms of the law such as contract and unfair competition. A noticeable feature of the case law is the willingness of the judiciary in the nineteenth century to extend protection to noncopyrighted works under alternative doctrines in the common law. More than 10 percent of copyright cases dealt with issues of unfair competition, and a further 7.7 percent with contracts; a further 12 percent encompassed issues of right to privacy, trade secrets, and misappropriation.¹⁰⁵ For instance, in *Keene v. Wheatley et al.*, 14 F. Cas. 180 (1860), the plaintiff did not have a statutory copyright in the play that was infringed.¹⁰⁶ However, she was awarded damages on the basis of her proprietary common law right in an unpublished work, and because the defendants had taken advantage of a breach of confidence by one of her former employees. Similarly, the courts offered protection against misappropriation of information, such as occurred when the defendants in *Chamber of Commerce of Minneapolis v. Wells et al.*, 111 N.W. 157 (1907) surreptitiously obtained

stock market information by peering in windows, eavesdropping, and spying.

Several other examples relate to the more traditional copyright subject of the book trade. E. P. Dutton & Company published a series of Christmas books which another publisher photographed, and offered as a series with similar appearance and style but at lower prices. Dutton claimed to have been injured by a loss of profits and a loss of reputation as a maker of fine books. The firm did not have copyrights in the series, but they essentially claimed a right in the "look and feel" of the books. The court agreed: "the decisive fact is that the defendants are unfairly and fraudulently attempting to trade upon the reputation which plaintiff has built up for its books. The right to injunctive relief in such a case is too firmly established to require the citation of authorities."¹⁰⁷ In a case that will resonate with academics, a surgery professor at the University of Pennsylvania was held to have a common law property right in the lectures he presented, and a student could not publish them without his permission.¹⁰⁸ Titles could not be copyrighted, but were protected as trade marks and under unfair competition doctrines.¹⁰⁹ In this way, in numerous lawsuits G. C. Merriam & Co, the original publishers of Webster's Dictionary, restrained the actions of competitors who published the dictionary once the copyrights had expired.¹¹⁰

II.B. INTERNATIONAL COPYRIGHTS IN THE UNITED STATES

The U.S. was long a net importer of literary and artistic works, especially from England, which implied that recognition of foreign copyrights would have led to a net deficit in international royalty payments. The Copyright Act implicitly recognized this when it specified that "nothing in this act shall be construed to extend to prohibit the importation or vending, reprinting or publishing within the United States, of any map, chart, book or books ... by any person not a citizen of the United States."¹¹¹ Thus, the statutes explicitly authorized Americans to take free advantage of the cultural output of other countries. As a result, it was alleged that American publishers "indiscriminately reprinted books by foreign authors without even the pretence of acknowledgement."¹¹² The tendency to reprint foreign works was encouraged by the existence of tariffs on imported books that ranged as high as 25 percent.¹¹³

The United States stood out in contrast to countries such as France, where Louis Napoleon's Decree of 1852 prohibited counterfeiting of both foreign and domestic works. Other countries which were affected by American piracy retaliated by refusing to recognize American copyrights. Despite the lobbying of numerous authors and celebrities on both sides of the Atlantic, the American copyright statutes did not allow for copyright protection of foreign works for fully one century.¹¹⁴ As a result, the nineteenth century offers a colorful episode in the annals of intellectual property, as American publishers and producers freely pirated foreign literature, art, and drama. Since a significant part of the debate about IPRs today relate to speculations regarding the impact of piracy on the predator countries themselves, it is worth considering the effects on book prices, authors, publishers and the general public.

An analysis of prices does not support the notion that American books were suffering from unfair price competition with cheaper foreign books. The results suggest that, after controlling for the type of work, the cost of the work, and other variables, the prices of American books were lower than prices of foreign books. American book prices may have been lower to reflect lower perceived quality or other factors that caused imperfect substitutability between foreign and local products.¹¹⁵ This is not surprising, since prices are not exogenously and arbitrarily fixed, but vary in accordance with a publisher's estimation of market factors such as the degree of competition and the responsiveness of demand to its determinants. According to one seller: "The book-purchasing public has not been seriously affected by the act, inasmuch as the ordinary law of supply and demand is sufficient to protect the general public against unfair prices..."¹¹⁶ The reading public appears to have gained from the lack of copyright, which increased access to the products

of more developed markets in Europe, and in the long run this likely improved both the demand and supply of domestic science and literature.¹¹⁷

According to observers, professional authorship in the United States was discouraged because it was difficult to compete with established authors such as Scott, Dickens and Tennyson, and as a result "much of beauty, value and interest was lost to the world."¹¹⁸ In G H Putnam's view, "an international copyright is the first step towards that long-awaited-for `great American novel.'"¹¹⁹ This argument is somewhat suspect on its face, for a number of reasons. First, it supposes that the highest valued product was deterred, rather than works at the margin. Second, it also assumes that there was a high degree of substitutability between cheap reprints of foreign works and domestic books. Third, if the claim were true, one would expect that domestic authors would respond to the competition by accepting lower royalties and less favourable contracts. Instead, one observes over time higher royalties and better terms being offered to American writers.¹²⁰

Whether native authors were deterred by foreign competition would also depend on the extent to which foreign works prevailed in the American market. Early in American history the majority of books were reprints of foreign titles.¹²¹ However, nonfiction titles written by foreigners was less likely to be substitutable for nonfiction written by Americans; consequently, the supply of nonfiction soon tended to be provided by native authors. From an early period grammars, readers, and juvenile texts were also written by Americans.¹²² Geology, geography, history and similar works would had to be adapted or completely rewritten to be appropriate for an American market, which reduced their attractiveness as reprints. Thus, publishers of schoolbooks, medical volumes and other nonfiction did not feel that the reforms of 1891 were relevant to their undertakings.¹²³ On the other hand, foreign authors dominated the field of fiction for much of the century. One study estimates about fifty percent of all fiction best sellers in antebellum period were pirated from foreign works.¹²⁴ In 1895 American authors accounted for two of the top ten best sellers but by 1910 nine of the top ten were written by Americans.¹²⁵ This fall over time in the fraction of foreign authorship may have been due to a natural evolutionary process, as the development of the market for domestic literature over time encouraged specialization.

Academic and religious books are less likely to be written for monetary returns, and their authors probably benefited from the wider circulation that lack of international copyright encouraged. However, the writers of these works declined in importance relative to writers of fiction, a category which grew from 6.4 percent before 1830 to 26.4 percent by the 1870s. The growth in fiction authors was associated with the increase in the number of books per author over the same period. Improvements in transportation, and the increase in the academic population probably played a large role in enabling individuals who lived outside the major publishing centers to become writers despite the distance.¹²⁶ As the market expanded, a larger fraction of writers could become professionals.

Although the results do not support the hypothesis that the lack of copyright protection discouraged authors, this does not imply that intellectual property policy in this dimension had no costs. It is likely that the lack of foreign copyrights led to some misallocation of efforts or resources, such as in attempts to circumvent the rules. Authors changed their residence temporarily when books were about to be published in order to qualify for copyright.¹²⁷ Others obtained copyrights by arranging to co-author with a foreign citizen. T H Huxley adopted this strategy, arranging to co-author with "a young Yankee friend ... Otherwise the thing would be pillaged at once."¹²⁸ An American publisher suggested that Kipling should find "a hack writer, whose name would be of use simply on account of its carrying the copyright." Harriet Beecher Stowe proposed a partnership with Elizabeth Gaskell, so they could "secure copyright mutually in our respective countries and divide the profits."¹²⁹

It is widely acknowledged that copyrights in books tended to be the concern of publishers

rather than of authors (although the two are naturally not independent of each other).¹³⁰ As a result of lack of legal copyrights in foreign works, publishers raced to be first on the market with the "new" pirated books, and the industry experienced several decades of intense, if not quite "ruinous" competition. These were problems that publishers in England had faced before, in the market for books that were uncopyrighted, such as Shakespeare and Fielding.¹³¹ Their solution had been to collude in the form of strictly regulated cartels or "printing congers." The congers created divisible alienable property in books, such as a one hundred and sixtieth share in Johnson's Dictionary that was sold for £23 in 1805. Cooperation resulted in risk sharing and a greater ability to cover expenses. The unstable races in the United States similarly settled down during the 1840s to collusive standards that were termed "trade custom" or "courtesy of the trade."

The industry achieved relative stability because the dominant firms cooperated in establishing synthetic property rights in foreign-authored books. American publishers made payments (termed "copyrights") to foreign authors to secure early sheets, and other firms recognized their exclusive property in the "authorized reprint". Advance payments to foreign authors not only served to ensure the coincidence of publishers' and authors' interests - they were also recognized by "reputable" publishers as "copyrights."¹³² These exclusive rights were tradable, and enforced by threats of predatory pricing and retaliation. Such practices suggest that publishers were able to simulate the legal grant through private means.

However, private rights naturally did not confer property rights that could be enforced at law.¹³³ The case of *Sheldon v. Houghton* 21 F. Cas 1239 (1865) illustrates that these rights were considered to be "very valuable, and is often made the subject of contracts, sales, and transfers, among booksellers and publishers." The very fact that a firm would file a plea for the court to protect their claim indicates how vested a right it had become. The plaintiff argued that "such custom is a reasonable one, and tends to prevent injurious competition in business, and to the investment of capital in publishing enterprises that are of advantage to the reading public." Henry Houghton, who purchased the initial synthetic right from O. W. Wight, had formed a partnership with Sheldon & Co of New York to publish, print and market the "Household Edition" of Charles Dickens' works. In 1865 Houghton decided to terminate the contract, which Sheldon contested in court because the market value of the publication right had increased under the partnership to some thirty thousand dollars.

The court pointed out that "if anything which can be called, in any legal sense, property, was transferred to this partnership, it must have been that incorporeal right to publishing this edition of Dickens." However, this was based on the custom of the trade, which "is very far from being a legal custom, furnishing a solid foundation upon which an inviolable title to property can rest, which courts can protect from invasion. ... It may be an advantage to the party enjoying it for the time being, but its protection rests in the voluntary and unconstrained forbearance of the trade. I know of no way in which the publishers of this country can republish the works of a foreign author, and secure to themselves the exclusive right to such publication ... For this court to recognize any other literary property in the works of a foreign author, would contravene the settled policy of Congress." Thus, synthetic rights differed from copyrights in the degree of security that was offered by the enforcement power of the courts. Nevertheless, these title-specific rights of exclusion decreased uncertainty, enabled publishers to recoup their fixed costs, and avoided the wasteful duplication of resources that would otherwise have occurred.

It was not until 1891 that the Chace Act granted copyright protection to selected foreign residents.¹³⁴ Thus, after a century of lobbying by interested parties on both sides of the Atlantic, based on reasons that ranged from the economic to the moral, copyright laws only changed when the United States became more competitive in the international market for literary and artistic works. However, the act also included significant concessions to printers' unions and printing establishments in the form of "manufacturing clauses." First,

a book had to be published in the U.S. before or at the same time as the publication date in its country of origin. Second, the work had to be printed here, or printed from type set in the United States or from plates made from type set in the United States. Copyright protection still depended on conformity with stipulations such as formal registration of the work. These clauses resulted in U.S. failure to qualify for admission to the international Berne Convention until 1988, more than one hundred years after the first Convention.¹³⁵

After the copyright reforms in 1891, both English and American authors were disappointed to find that the change in the law did not lead to significant gains.¹³⁶ Foreign authors realized they may even have benefited from the lack of copyright protection in the United States. Despite the cartelization of publishing, competition for these synthetic copyrights ensured that foreign authors were able to obtain payments that American firms made to secure the right to be first on the market. It can also be argued that foreign authors were able to reap higher total returns from the expansion of the market through piracy. The lack of copyright protection may have functioned as a form of price discrimination, where the product was sold at a higher price in the developed country, and at a lower or zero price in the poorer country. Returns under such circumstances may have been higher for goods with demand externalities or network effects, such as "bestsellers" where consumer valuation of the book increased with the size of the market. Authors were also able to appropriate returns from complementary products whose demand increased with the diffusion of the pirated good. For example, Charles Dickens, Trollope, and other foreign writers were able to gain considerable income from lecture tours in the extensive United States market.¹³⁷

III. HARMONIZATION OF COPYRIGHT LAWS

In view of the strong protections of inventors under the U.S. patent system, to foreign observers its copyright policies appeared to be all the more reprehensible. The Report of the 1878 British Commission on Copyrights noted: "the original works published in America are, as yet, less numerous than those published in Great Britain. This naturally affords a temptation to the Americans to take advantage of the works of the older country ... Were there in American law no recognition of the rights of authors, no copyright legislation, the position of the United States would be logical. But they have copyright laws; they afford protection to citizen or resident authors, while they exclude all others from the benefit of that protection. The position of the American people in this respect is the more striking, from the circumstance that, with regard to the analogous right of patents for invention, they have entered into a treaty with this country for the reciprocal protection of inventors."¹³⁸

The United States, the most liberal in its policies towards patentees, had led the movement for harmonization of patent laws. In marked contrast, its copyright grants in general were more abridged than in the rest of the world. Throughout the history of the U.S. system the term of copyright grants to American citizens were among the shortest in the world, and the validity of copyright depended on strict compliance with statutory requirements. As mentioned here, its failure to recognize the rights of foreign authors was also unique among the major industrial nations. Throughout the 19th century unsuccessful proposals to reform the law and to acknowledge foreign copyrights were repeatedly brought before Congress. In marked contrast to its leadership in patent conventions, the United States declined an invitation to a pivotal copyright conference in Berne in 1883. It attended but refused to sign the 1886 agreement of the Berne Convention and failed to do so until 1988.

Other countries had long recognized the rights of foreign authors in national laws and bilateral treaties, but France stood out in its favourable treatment of domestic and foreign copyrights as "perhaps, the foremost of all nations in the protection it accords to literary property."¹³⁹ This was especially true of its treatment of foreign authors and artists. For instance, France allowed copyrights to foreigners conditioned on manufacturing clauses in 1810, and granted foreign and domestic authors equal rights in 1852. In the following

decade France entered into almost two dozen bilateral treaties, prompting a movement towards multilateral negotiations, such as the Congress on Literary and Artistic Property in 1858. In parallel fashion to the status of the United States in patent matters, France's influence was evident in the subsequent evolution of international copyright laws.

The International Literary and Artistic Association, which the French novelist Victor Hugo helped to establish, conceived of and organized the Convention which first met in Berne in 1883. The Berne Convention included a number of countries that wished to establish an "International Union for the Protection of Literary and Artistic Works." France, Belgium, Britain, Germany, Spain, Haiti, Italy, Switzerland and Tunisia ratified the 1886 agreement. The preamble declared their intent to "protect effectively, and in as uniform a manner as possible, the rights of authors over their literary and artistic works." The actual Articles were more modest in scope, requiring national treatment of authors belonging to the Union and minimum protection for translation and public performance rights. It authorized the establishment of a physical office in Switzerland, whose official language would be French. The convention was revised in 1908 to extend the duration of copyright and to include modern technologies. Of equal significance with such specific provisions is the underlying property rights philosophy which was decidedly from the natural rights school. Based on this reasoning, Berne abolished compliance with formalities as a prerequisite for copyright protection. In 1928 the Berne Convention followed the French precedent and acknowledged the moral rights of authors and artists.

The Universal Copyright Convention (UCC) was adopted in 1952 and formalized in 1955, as a complementary agreement to the Berne Convention. The UCC membership included the United States, and many developing countries that did not wish to comply with the Berne Convention, since they viewed its provisions as overly favourable to the developed world.¹⁴⁰ Members of the Berne Convention also became signatory members of the UCC, which is subject to the conditions of Berne. The four stipulations of the Universal Copyright Convention were that member nations could not grant preferential treatment for domestic works relative to foreign works; formal copyright notice must appear in all copies of a work; the term of copyright protection must exceed the life of the author plus an additional 25 years; and members were required to grant an exclusive right of translation for a seven-year period to other members of the UCC.

Despite the quest for harmonization, countries differed in the extent to which multilateral provisions governed domestic legislation. The Berne Convention declared that protection of literary and artistic work should not be subject to formalities, since the creative act itself was the source of the property right. Nevertheless, only a few countries complied with the letter of the law, and most kept stipulations such as deposit requirements through other types of legislation or regulations. In 1990 the majority of countries in the world still had a legal deposit system, even if deposits were not included in their copyright legislation. When the United States finally joined the Berne Convention it complied by removing prerequisites for copyright protection such as registration, and also lengthened the term of copyrights. However, it still has not introduced legislation in accordance with Article 6bis, which declares the moral rights of authors "independently of the author's economic rights, and even after the transfer of the said rights."

SECTION THREE: LESSONS FROM HISTORY

"It is only by considering the trend of legal development that we can make sure of the direction in which efforts toward improvement can be guided most effectively." Brander Matthews (1890).

I. INTRODUCTION

The twenty first century evinces vast advances over previous eras in many dimensions, but the one that stands out the most is the course of technological progress broadly defined. Technologies have transformed both consumption and production. Knowledge intensive industries account for an increasing fraction of national output in the developed countries and have led to claims of a "new economy." Dramatic new frontiers have been attained in pharmaceuticals and biotechnology, information and digital technologies, telecommunications, electronics, and the Internet. At the same time, it is evident that access to such technologies is unequally distributed, and that the majority of innovations originate from the largest industrial nations. Endogenous growth models encouragingly suggest that technological change is not exogenous, but can be induced through effective policies, and proposals to bridge this divide have become a global priority.

Debates about economic and social progress have long included questions about the appropriate institutions to promote creations in the material and intellectual sphere. Scholars such as Douglass North have suggested that intellectual property systems had an important impact on the course of economic development.¹⁴¹ Numerous economic studies have analyzed intellectual property rights from both a theoretical and empirical perspective.¹⁴² The question of property rights is especially important because ideas and information are public goods characterized by nonrivalry and nonexclusion. Once the initial costs are incurred, ideas can be reproduced at zero marginal cost and it may be difficult to exclude others from their use. Thus, in a competitive market public goods may suffer from underprovision or may never be created because of a lack of incentive on the part of the original provider if he bears the initial costs but is unable to appropriate the benefits.

Such market failure can be ameliorated in several ways, for instance through government provision, rewards or subsidies to original creators, private patronage, through the creation of private rights of exclusion, and through state grants of property rights such as patents and copyrights. Patents and copyrights allow the initial producer a limited period during which he is able to benefit from a monopoly right. Patent and copyrights can also be traded in the market place, a process which assigns value and allows transactors to allocate resources to their optimal use. Intellectual property ultimately adds to the public domain and disclosure requirements promote diffusion, so overall welfare improves if the social benefits of diffusion outweigh the social costs of temporary exclusion. However, the analysis becomes more complex when the producers belong to different countries from the consumers.

Both theory and empirical research fail to reach definitive conclusions about whether the optimal policy for developing countries is to import intellectual property legislation and institutions along with other products of developed countries. An empirical study of current proposals for international patent harmonization estimated that the net effect would be a welfare loss, but with large transfers to the United States and a few other developed countries.¹⁴³ However, within the United States itself public interest groups have voiced concern about the extension of intellectual property to areas formerly in the public domain. Producer lobby groups in developed countries contend that enforcement is not simply a static distributional issue, because weak property rights may lead to dynamic consequences that retard technological development and cultural change in infringing countries. It is impossible to prove or disprove these claims, given the difficulties in estimation of intertemporal costs and benefits.

Network models, on the other hand, imply that the social welfare of producers may benefit from weak enforcement, since more extensive use of the product increases the value to all users. Under these circumstances, even the IPR owner may benefit from the positive externalities created by piracy. Also in this vein, price discrimination of non-private goods across pirates and legitimate users can result in net welfare benefits for society and for the individual firm.¹⁴⁴ In the absence of royalties, firms may appropriate returns through ancillary means, such as the sale of complementary items. In a variant of

the durable-goods monopoly problem, it has been shown that piracy can theoretically increase the demand for products by ensuring that producers can credibly commit to uniform prices over time.¹⁴⁵ If the cost of imitation increases with quality, infringement can also benefit society if it causes firms to adopt a strategy of producing higher quality commodities.¹⁴⁶ It has been argued in the context of copyright enforcement which is directed to high-value purchasers that "either no enforcement or relatively extensive enforcement is the best policy."¹⁴⁷ Such ambivalence on the part of economic models suggests that policy makers would be well advised to supplement their findings with practical insights drawn from historical experience.

II. HISTORY LESSONS

The division between the United States and Europe is more than geographical. The United States today is the most powerful nation on earth but, as Engerman and Sokoloff have pointed out, in the 17th century its standard of living was lower than that of many South American and West Indian countries.¹⁴⁸ Even on the eve of the Declaration of Independence the United States was an undistinguished developing country with an agricultural economy, rural population, and few pretensions to local cultural output. How did this former colony make the transition from follower to a leading economy in the course of one century? According to the Japanese envoy who was quoted above, the answer could be found in its intellectual property system.

This conclusion is somewhat overstated, since analysts have pointed to a number of other causal variables including the relatively equal distribution of income, an educated and enterprising populace, and favourable factor endowments. Nevertheless, it is clear that Americans of the time also thought that an effective intellectual property system was a critical factor in attaining economic and social development. Policy makers were informed about the alternatives, but deliberately departed from existing models and established institutions that were unique in their day. Similarly, when Japan was attempting to industrialize it copied many features from the American system, but incorporated other principles that were more appropriate to their needs. The world today is obviously different from the period of early American economic development, but this does not imply that the questions and answers are entirely novel.

* National Intellectual Property Regimes and Legislation

At the most general level, the experience in Europe and America underlines the importance of democratization: that is, successful policies assured access to property rights and to the return from individual efforts to all members of society. Both the British and French patent systems reflected their origins in royal privilege well into the nineteenth century. In effect, the British system advantaged groups who had more wealth or access to private information and capital, and favored inventors of more capital-intensive devices as opposed to smaller incremental inventions in labor-intensive industries. Despite a series of changes in the laws, these patterns characterized patenting and trade in technological information in Britain until late in the century and beyond.

In contrast, the United States was concerned about fashioning a system that induced enterprise from all members of society regardless of their social class or income. Consequently, when markets expanded, relatively ordinary individuals responded to these increases in profit opportunities. It is noteworthy that the remarkable advances in early American technology were associated with a process of democratization among both the creators of incremental inventions and the "great inventors."¹⁴⁹ Moreover, even among the relatively disadvantaged class of women inventors, a far greater number in the United States were able to obtain patents and profit from their ideas than was the case in England.¹⁵⁰

In practical terms, this translates into policies that encourage widespread participation. For instance, both the American and English experience indicate that an important aspect of the patent grant is the fees that are charged. The United States deliberately set fees at an affordable level, and when Britain reformed its system to facilitate patents by the "working class" the benefits were immediately evident. A significant number of the developing countries assessed very high fees when they established patent systems (especially given their low per capita incomes.)¹⁵¹ Many of the societies in Central and South America, regardless of their colonial origins, levied the highest fees in the world for patent protection. The high costs might have been due to a number of factors, including the wish to raise revenues, a conviction that patent rights would be sought more by foreigners than by natives, and a desire to limit exclusive rights to valuable inventions. Nevertheless, the net impact of high fees was to insulate businessmen with considerable resources from competition and to perpetuate inequalities in wealth and enterprise.¹⁵²

The historical experience also implies that patents and copyrights warrant very different treatment.¹⁵³ Economic efficiency depends on an appropriate balance between access and incentives. The American system of intellectual property likely enhanced public welfare by making a marked distinction between its early copyright and patent laws. The patent system early on discriminated between foreign and domestic inventors, but within a few decades changed to protect the right of any inventor who filed for an American patent regardless of nationality. The copyright system, in contrast, encouraged piracy on an astonishing scale for one hundred years, in defiance of the recriminations and pressures exerted by other countries. The American patent system required an initial search and examination that ensured the patentee was the "first and true" creator of the invention in the world, whereas copyrights were granted through mere registration. Patents were based on the assumption of novelty and held invalid if this assumption was violated, whereas copyrights made no assumption of novelty. Patents were granted for a shorter period than copyrights. Unauthorized use of patented inventions was prohibited, whereas "fair use" of copyrighted material was permissible if certain conditions were met.¹⁵⁴ A copyright holder was also granted the right to derivative works, whereas the patent holder was not. These stipulations may all be explained in terms that suggest the overall intellectual property system maximized net social benefits. Patented inventions involved greater initial investments, effort, and originality than copyrighted products and thus justified the stronger degree of protection.¹⁵⁵ The transactions costs of trying to verify that a poem (say) is original would be far higher than the determination of originality for a patented device, hence the registration of a copyright rather than an examination system was economically rational.

Similarly, the conditions of the "fair use" doctrine of copyrights weighed the benefits of diffusion against the costs of exclusion. Fair use is not allowed in the case of patents because the disincentive effect is likely to be higher, and the costs of negotiation between the patentee and potential users would generally be lower because the market for patents is more narrow. The fair use argument may be extended to the distinction drawn between foreign patentees (whose rights were protected) and foreign authors (whose rights were not). Consider the counterfactual, or a world in which the rights of foreign patentees were not recognized. Americans could freely copy the inventions of foreigners, but foreign inventors would have little incentive to meet the needs of the American market. Given dramatic differences between factor endowments and the needs of American industry, the ability to copy freely was likely of minimal benefit. On the other hand, there would be a class of important discoveries that the United States would wish to adopt and avoid the costs of identifying or adapting. The U.S. initially charged English inventors a much higher fee than domestic inventors paid, which served as a filter to select out higher valued patents. By protecting the rights of foreigners, the system gave overseas inventors an incentive to create or adapt their inventions specifically for the American market.

The analysis of the appropriate policies towards copyright is complicated because, in addition to economic questions, copyrights have implications for basic rights. Even in cases where a strong copyright might be necessary to provide the incentives to create, it might be advisable to place limits on the power of exclusion, in order to promote social and democratic ends such as the diffusion of knowledge and the progress of learning. This subtle approach to the balancing of private and social welfare is more likely to be attained in a utilitarian market based model of copyright grants which balances social costs and benefits, rather than under the absolutist moral rights system adopted by the Berne Convention. Scholars have been concerned that modern technologies such as digital music have disturbed this balance by reducing existing consumer rights and facilitating enforcement that infringes on the public domain and on social welfare.¹⁵⁶ The history of the earliest copyright grants also illustrates the danger that strong state regulation and enforcement of copyrights can serve as a means of censorship.

Within the categories of patents and copyrights, different levels of protection may be appropriate for different sectors, as part of a more general industrial policy. Historically, the majority of developed countries other than the United States exempted particular industries from protection. The French statute of 1791 exempted medicines from patent grants. England countered continental supremacy in chemicals by not offering patent protection for such products, and until recently issued compulsory licences for pharmaceuticals and food products. Similarly, Germany (emulated by Japan) did not issue patents for food products, pharmaceuticals or chemical products, although firms could obtain protection for innovations in the manufacturing processes. Consequently, there is ample historical precedent to justify following a policy of discretionary grants across sectors or products. Nevertheless, criticisms have been levied against developing countries like India (which did not offer patent protection for drugs, chemicals and alloys, optical glass, or semiconductors), Thailand (which did not allow patents for chemicals, drugs, food and beverages, and agricultural machinery) and Brazil (chemicals, drugs, and foodstuffs were not protected before the 1990s) for not offering universal patent protection.¹⁵⁷

Historically, another distinction was made between different types of patent grants. Utility models or petty patents have been touted as a new type of property right, but Germany introduced this "diluted patent right" in the nineteenth century. Germany created a two-tier system that distinguished between the high-value/high-cost grant of a full patent that today is likely to be dominated by multinationals, and the lower-value/low-cost utility model. In the case of the utility patent, the cost of administration was low because, unlike regular patents, they were not subject to an initial examination. In both Germany and Japan, they proved to be an effective way of allowing residents to participate in the patent system and created an incentive for the commercialization of follow-on inventions. Like any other right of exclusion they were subject to abuse, but clearly the potential harm was lower than in the case of full patents because of their short life. Spanish "introduction patents" patents served the same purpose of promoting the transfer of technology and commercialization as well as diffusion.

One of the major justifications for stronger patent grants is to serve as an incentive for new and useful inventions. Today, most research and development is carried out in the developed countries, and its citizens obtain the vast majority of patents filed throughout the world. The average value of patents in these countries is higher than those granted in the developing countries, based on the value of the underlying ideas as well as the value of the patent protection accorded to the invention. Thus, developing countries do not need to subscribe completely to the incentive rationale by offering strong patent rights with the current duration of twenty years. Instead, they are more likely to create incentives for domestic ingenuity as well as diffusion through a two tier system that allows weaker patents for incremental inventions with a shorter term.

Another way to encourage domestic innovation is through effective mechanisms to

disseminate information. In its early laws, France stipulated that patent descriptions were to be made available to the public, but since no specific procedure for their publication was introduced, the effect was to limit diffusion. Similarly, England administered patent information in such a convoluted fashion that it was prohibitively expensive to obtain. The American system stands out in its insistence on a rationalized record-keeping system, prompt publication of information, free distribution to libraries and patent offices, and the adherence to predictable rules and procedures. Today much is made of the benefits of information on the Internet, but the reality is that such information is likely to be of little use to the majority of the population in developing countries, and the commitment of public organizations to the supposedly elementary aspects of provision and diffusion may play a much more effective role in the democratization of innovation.

The current emphasis on increasing the level of protection accorded to the owners of patents and copyrights tends to distract attention from other means of appropriation and rewards. Lobbyists for stronger intellectual property rights point to the adverse consequences that would occur if artists and inventors are not able to appropriate returns because of weak patents or copyrights. However, even in developed countries, patent and copyright protection is not regarded as significant in many industries.¹⁵⁸ During the nineteenth century, American publishers of unprotected reprints were able to appropriate returns from a variety of strategies, including privately created tradeable rights of exclusion ("synthetic copyrights") and through lead time or first mover advantages. The more "reputable" publishers were able to secure greater returns because of they offered products that were more likely to be free of defects, thus leading to appropriation through reputation.¹⁵⁹

Legal decisions evolved in the direction of formalized protection of trade secrets and well-developed common law doctrines of unfair competition that attained similar ends.¹⁶⁰ In France the law of private contracts strengthened an uncertain system of property rights. Britain adopted legislation that permitted price discrimination in the colonies, especially designed to favour the least developed countries, but price discrimination may have been a strategy that likewise increased the returns to British copyright owners relative to weakly enforced property rights.¹⁶¹ The historical experience of developed countries suggest that alternatives to patents and copyrights work best when they exhibit a market orientation. Although some researchers have recommended the use of nonmarket policy instruments such as state grants and prizes, the abundant evidence from France during the Age of Enlightenment and from developing countries today illustrates the inefficiencies and corruption that may be associated with their use.

* Broader Policy Framework

Property rights have value only within an appropriate institutional context. The legal system comprises an important aspect of an intellectual property regime, since the value of any property right to its owner depends on his ability to enforce his claims. Article 41 of the TRIPS agreement specified that member countries should institute measures to prosecute infringements and to establish remedies that would serve to deter potential infringers.¹⁶² This underlines the fact that intellectual property rights depend on a broader institutional context that extends beyond patent or copyright regimes per se. It also implies that changes in IPR rules must occur in tandem with developments in the courts, the judiciary, the legal system, and society in general.

The United States from the very beginning was fortunate to possess a remarkable cohort of judges and legal practitioners who adopted an instrumentalist approach that interpreted the law in ways that favoured economic development. As was evident in the proliferation of intellectual property rights and extensive trade in assignments, early jurisprudence enhanced the security of contracts and ensured the appropriation of returns. However, the judiciary was very much aware of the needs of the community as well, and tempered their

interpretations of property rights to ensure that a balance would be maintained between private welfare and social welfare. As the economy developed, the number of cases in equity jumped, since equity allowed decisions that incorporated delicate adjustments to the rights of all parties concerned. Judges were careful not to apply the remedy of preliminary injunctions in cases where the cost to society in the form of a halt to important enterprises would outweigh the benefits to the patent holder. This careful calculus ensured that the legal system reinforced the rights of intellectual property holders while minimizing the costs of exclusion.

To other countries that wish to emulate the success of the United States in patenting, the prescription necessarily includes similar attention to legal institutions. However, the experience of other developed countries such as England are cautionary. England possessed a judicial and legal system that extended back for centuries, and its common law influenced the progress of numerous countries in the world. Nevertheless, judges interpreted the intellectual property laws in a manner that reinforced the existing class system, and hindered market transactions. The legal system was notorious for its inconsistency, arbitrary decisions, and uncertainty. For developing countries with a much inferior stock of legal resources, a desideratum of any reform of the IPR system must include a transfer of educational technology to retrain judges and other participants in the legal system. Obviously, in practical terms this is likely to require a long term evolutionary process of building legal capital. This provides at least one reason to suggest that policies to strengthen intellectual property rights are unlikely to succeed in the short run.

The United States has up to this date refused to implement the provision for moral rights that harmonization under the Berne Convention implies. The reason is that compliance is incompatible with the fundamental rationale of its copyright system, and enforcing the Berne legislation would require widespread changes not just in copyrights, but in related institutions such as contract law, the operation of markets for the affected products, the insurance industry, industries where collective innovation is characteristic, and so on. Again, the policy implications militate against adopting rules that are not in accord with the overall institutional environment, and suggest that exogenously determined policies may produce unintended or unexpected distortions.

The American doctrine was (and still is), at least at the rhetorical level, based on the notion that patents do not confer monopoly rights, and that patent policies and competition are consistent because they both further social welfare. However, by the middle of the nineteenth century, American companies used patent-based dominance of their industry to gain significant market power. In response, the United States soon established a common law that inhibited incursions by patentees on the public welfare. It eventually passed stronger antitrust legislation than was the case in Europe, where the monopoly nature of patents was openly acknowledged but less inhibited by antitrust restrictions. For developing countries, where most of the private benefits of patents accrue to foreign enterprises, it is all the more critical to introduce policies to ensure that the anticompetitive costs of patent and copyright protection are minimized. Patent grants by their very nature are technical and often unrelated to specific products, so it is inherently difficult to make predictions about their impact on social welfare. On the other hand, ex post application of remedies to anticompetitive practices may lead to uncertainty among applicants, and may in some cases be employed too late to compensate for losses during the period when competition was reduced. In short, antitrust policies should be employed in such a way that the rules are clear, well-defined and applied in a predictable fashion.

Throughout the eighteenth and nineteenth centuries, intellectual property policy was conducted as an integral part of trade and industrial policy. Alexander Hamilton, the foremost economic strategist of the American Revolutionary period, advocated piracy of technologies from Europe and the protection of domestic manufacturing. The "patent controversy" of the next century was waged between free trade/patent abolition groups

and protectionist/patent supporters. Britain allowed its colonies to overlook copyright protection in favour of remuneration to authors from tariff receipts. Most notably, the American publishing industry was subsidized for over a hundred years by copyright laws that encouraged the cheap reproduction of the literary and artistic works of the rest of the world, while tariffs of 25 percent on imported works sheltered and encouraged the manufacture of these works in the United States itself. Later, when the 1891 reforms finally recognized the right of foreigners to obtain copyrights in the United States, manufacturing clauses ensured that it would not be at the expense of American industry. Thus, today's linkage of intellectual property rights and trade in the TRIPS agreement simply formalizes a longstanding reality. Those who object to TRIPS should do so based on the specific terms of the agreement, not on the link itself.

A final aspect of this discussion of the "broader policy framework" relates to the need to explicitly integrate discussions of the cultural context of IPR regimes. France influenced the trend towards extensions in the power of exclusion granted to authors and artists because of the rhetoric of early philosophical treatises from an era when efforts were being made to overturn the arbitrary power of an absolutist monarchy. The United States created institutions that accorded well with the needs of an economic and political democracy based on a belief in individual rights and a free market orientation. However, such institutions may function less effectively in other societies with alternative values, such as states which are not liberal democracies or communities in which additions to knowledge and innovations are regarded as a public good.¹⁶³ Scholars of China in particular fault the attempt to dictate western IPR precepts to a country where Confucian philosophy and traditional values still prevail.¹⁶⁴ At the very least, attempts to institute Western-style intellectual property regimes should begin with an understanding that effective reforms may require fundamental social and cultural changes that are unlikely to occur overnight, even with the strongest of political wills on the part of developing countries.

* International Framework of Intellectual Property Rules and Agreements

The quest for harmonization in intellectual property rights has resulted in a "race to the top," directed by the efforts and self interest of the countries which have had the strongest property rights.

Theoretical models do not offer persuasive support for intellectual property harmonization. In some circumstances, uniform policies may be detrimental even to the developed countries if it skews the allocation of resources.¹⁶⁵ Moreover, such developed countries as Canada which have net inflows of intellectual property may also be harmed by stronger international intellectual property rights.¹⁶⁶ It should be clear that, if outcomes are held to be efficient when they are aligned with the preferences and interests of the constituent members of the global economy, harmonization is not only inefficient, it is likely to be harmful.¹⁶⁷

As outlined here, the movement to harmonize patents was driven by American efforts to ensure that its extraordinary patenting activity was remunerated within as well as beyond its borders, whereas the United States ignored international conventions to unify copyright legislation. Nevertheless, the harmonization of copyrights proceeded, promoted by France and other civil law regimes which urged stronger protection for authors based on their "natural rights," although at the same time they infringed the rights of foreign inventors. The net result was that, at the international level, pressure was applied to establish strong patents and strong copyrights, although no individual developed country at the time adhered to both concepts simultaneously.

In the international sphere, the preferences and interests of the United States have been to replicate its domestic policies towards patent holders, which have been the most liberal in

the world. From the very beginning of the movement towards international harmonization of patent laws, deep divisions have occurred regarding the extent to which restrictions should be placed on the rights of patentees. These involved stipulations about working requirements and compulsory licences for patentees, which the United States has consistently and strenuously opposed. These efforts have been successful in the context of patent harmonization, as seen in the history of revisions to the Paris Convention since 1883. With each successive meeting, restrictions on patent rights were weakened. At the 1883 Convention, "parallel imports" were permitted and members were allowed to stipulate that the patent should be exploited. In 1911 patent rights could be revoked only after three years and only if the patentee was unable to justify why the patent was idle. At present, TRIPS contains a weak provision that "members may provide limited exceptions to the exclusive rights conferred by a patent, provided that such exceptions do not unreasonably conflict with a normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interests of third parties."¹⁶⁸

At the same time, these policy instruments have been widely used by other developed countries since the earliest years of the Venetian patent grants. France incorporated working requirements in its 1844 statutes; Germany stipulated both working requirements and compulsory licences; and so did Britain in the early twentieth century. During the colonial period, such statutory exceptions to patent and copyrights were also prevalent among the American states. The United States itself incorporated working requirements in its 1832 and 1836 patent statutes. At present, U.S. copyright policies allow for compulsory licences in certain industries. As noted here, consent decrees in U.S. antitrust actions have led to large scale infringements of patent rights that have involved not only exclusive compulsory licences, but also the forced transfer of trade secrets and know-how. The argument can be made that the United States has been over zealous in its application of compulsory licencing within its own borders, and over zealous in its efforts to prohibit other nations from using such restrictions to promote their own interests.

A large part of the movement for harmonization can be attributed to political factors. Apart from the effect on foreigners, a number of arguments can be made against outright "piracy" such as the deleterious effect on local industries, the misallocation of resources to counterfeiting, and the consequent fall in quality. However, the evidence from the U.S. publishing industry prior to the recognition of international copyrights in 1891 suggests that the "infant industry" argument might apply to IPRs as well as to trade. Far from being deterred by the reprinting of foreign literary and artistic works, their ready availability promoted domestic output to the extent that, by the turn of the century, the balance of trade was moving in favour of the United States. At this point, self interest dictated reforms in the copyright laws although the provisions still included protection of U.S. manufacturers and printers. In the same way, the least developed countries may possibly benefit from weak enforcement, especially since at that level the diversion of scarce resources to IPR regimes may result in a net loss.

The reality of the matter is that, given the existing international political economy, countries that engage in outright piracy are likely to be subject to punitive sanctions. The policies of Britain towards its colonies are instructive. During the nineteenth century British administered a two-tiered international intellectual property system that attempted to address the needs of its colonies. In 1847 Britain passed the Foreign Reprints Act which allowed colonies to import the works of British authors without copyright protection, and also allowed legal price discrimination with significantly lower prices for overseas editions. Political economic problems require political economic solutions, and the current tendency towards inexorably stronger IPRs will only be restrained if some of the developed countries acknowledge the different needs of the developing countries and use their influence to provide countervailing power to the "one size fits all" lobby.

CONCLUSION

The United States Constitution authorized an intellectual property system that has had a disproportionate impact on the course of global economic history, and the stipulations of that eighteenth century document can still be recognized in today's international treaties. The framers of the world's first modern patent system paid close attention to the provision of broad access to, and strict enforcement of, property rights in new inventions, coupled with the requirement of public disclosure. The early patent regime was extremely effective at stimulating the growth of a market for technology and promoting technical change. Another reason for its success, however, has been its flexibility and its utilitarian nature. Intellectual property institutions were from the outset in a state of continual evolution, and have undergone a number of fundamental modifications. Much of the change came through formal legislation or judicial initiatives and reinterpretation inspired by changing circumstances, but also important were innovations in the structure of the market for patented technologies (and more recently in copyrighted materials) made directly by private agents responding to economic opportunities. That such adjustments so often proved to be constructive owed partly to the virtues of having a market as a central feature of the intellectual property system, and partly to the democratic structure of political institutions.

Some of the changes in the American and European intellectual property regimes this study assessed, such as the introduction of the examination of patent applications or additions to the subject matter of copyrights, implemented what might be thought of as technical improvements. However, others such as the extension of copyrights to foreign nationals, the general strengthening of copyright protection, product exemptions, and the use of compulsory licences, involved adaptations that seem related to the stage of economic development. This analysis of the evolution of intellectual property regimes in Europe and the United States raises questions about the desirability of applying the same system to all places at all times. Indeed, the major lesson that one derives from this aspect of the economic history of Europe and America is that intellectual property rights best promoted the progress of science and arts when they evolved in tandem with other institutions and in accordance with the needs and interests of social and economic development in each nation. In short, the historical record suggests that appropriate policies towards intellectual property are not independent of the level of development nor of the overall institutional environment.

1 World Bank, World Development Report - Knowledge for Development, New York, Oxford University Press, 1999.

2 World Intellectual Property Organization (WIPO) Annual Report for 2000, p. 23. Available at www.wipo.org.

3 World Intellectual Property Rights Organization, Annual Report 2000, available at www.wipo.org.

4 The WIPO in particular seems to adopt a somewhat one-dimensional perspective: "Every country needs a well-developed and healthy intellectual property system for economic and social

well-being. Intellectual property protection encourages the use and further development of local inventive and artistic talents and assets; nurtures and safeguards local intellectual property assets such as traditional knowledge and folklore; and attracts investment, providing a stable environment in which investors, both local and foreign, can be confident that their intellectual property rights will be respected.

In addition, an intellectual property infrastructure allows participation in the exchange of commercially valuable information at the international level, as promoted by WIPO, including the quick and easy access to information on new technology, such as the international patent applications and abstracts available under the PCT."

"Beyond national boundaries, a well-functioning intellectual property system contributes to greater stability and security for protected rights in an increasingly competitive global marketplace, allowing efficient enforcement of those rights. In addition, the system can aid in combating illegal activities such as counterfeiting and piracy." See www.wipo.org.

5 For an excellent survey of key research in this area, see Keith E. Maskus, *Intellectual Property Rights in the Global Economy*, Institute for International Economics, Washington, D.C., 2000.

6 Machlup, *An Economic Review of the Patent System*, Wash., DC, US Govt Printing Office, 1958, p. 80.

7 David M. Gould and William C. Gruben, "The Role of Intellectual Property Rights in Economic Growth," *J. of Dev. Econ*, vol. 48, 1996, 323-350, estimate the relationship between patent regimes and growth among more open economies.

8 The standard references for the economic history of the early British patent system are Macleod, Christine, *Inventing the Industrial Revolution*, Cambridge, UK: Cambridge University Press, 1988 and Harold Dutton, *The Patent System and Inventive Activity during the Industrial Revolution, 1750-1852*, Manchester, UK: Manchester University Press, 1984. See also B. Zorina Khan and Kenneth L. Sokoloff, "Two Paths to Industrial Development and Technological Change," in *Technological Revolutions in Europe, 1760-1860*, (eds.) Maxine Berg and Kristine Bruland, London, Edward Elgar, 1998. More generally, Joel Mokyr, *The Lever of Riches: Technological Creativity and Economic Growth*. NY: Oxford University Press, 1990, provides a long term perspective on the course of technological change.

9 21 Jac. I. C. 3, 1623, Sec. 6. In Britain before this period a series of common law decisions (as opposed to statutory rules) had dealt with the requirements of patents for invention. For example, the 1602 case *Darcy v. Allin* held: "Where any man by his own charge and industry or by his wit or invention doth bring any new trade into the realm, or any engine tending to the furtherance of trade that never was used before; and that, for the good of the Realm; that in such cases the King may grant to him a monopoly patent for some reasonable time until the subjects may learn the same..."

10 The complexity of the system is evident in the fact that nobody seems to have had a clear idea of the specific costs, and estimates ranged from £274 to £350.

11 For instance, Jeremy Bentham, who favoured the grant of patents, noted: "A new idea presents itself to some workman or artist... He goes, with a joyful heart, to the public office to ask for his patent. But what does he encounter? Clerks, lawyers, and officers of state, who reap beforehand the fruits of his industry. This privilege is not given, but is, in fact sold for from £100 to £200 - sums greater than he ever possessed in his life. He finds himself caught in a snare which the law, or rather extortion which has obtained the force of the law, has spread for the industrious inventor. It is a tax levied upon ingenuity, and no man can set bounds to the value of the services it may have lost to the nation." From the

Works of Jeremy Bentham, cited in Moureen Coulter, *Property in Ideas*, p. 76.

12 According to *The Times* of 1864, "the only persons who are benefited by [the patent system] are the Patent agents and lawyers" (cited in Coulter, p. 147).

13 The 1852 law did not apply to British colonies, which were able to adopt legislation suited to their individual circumstances.

14 According to *Badische Anilin und Soda Fabrik v. Levinstein*, 4 R. P. C. 462, 466: "I do not think that it is a correct test of utility to enquire whether the invented product was at the time of the patent likely to be in commercial demand or capable of being produced at a cost which would make it a profitable venture."

15 *United Horsenail Co. v. Stewart*, 2 R.P.C. 132.

16 For instance, Justice Grove instructed the jury in *Young v. Rosenthal*, 1 R.P.C. 41 that if the invention "is not as good as those existing before, or no better than those existing before in any particular point, then you would say it is not useful."

17 According to an editorial in 1862, "there can be no doubt that a large amount of property is bound up in patent rights, and that the utmost uncertainty exists as to the legal value of that property" (*Newton's London Journal*, cited in Coulter, p. 140).

18 The case law on licences was more convoluted. See for instance *Lawes v. Purser*, 6 Ell. and Bl. 930, where a licensee refused to continue payments on the grounds that the patent was void. It was held that the licensee could not make such a defense as long as the contract for the invalid patent had been executed without fraud.

19 See the first report of the Commissioner of Patents, 1853. The patent agency of Munn & Co. noted with some complacency: "From January 1, 1865 to the 1st of December, the whole number of applications for patents to the British Patent Office will not have exceeded three thousand. Within the same period the applications made by Munn & Co. to the United States Patent Office number at least three thousand five hundred; thus showing that our professional business considerably exceeds the entire business of the British Patent Office." *Scientific American* v. 13, 23 Dec. 1865, p. 415.

20 Despite the relatively low number of patents granted in England, between 1852 and 1880 the patent office had made a profit of over £2 million (Report of the Commissioners of Patents for 1880).

21 The patent would be refused if the idea had been stolen, if it had previously been patented in Britain, or if the patent specification was different from the description in the provisional patent. See 46 and 47 Vic. C. 57, 1883.

22 Excellent assessments of such issues during the Enlightenment include Liliane Hilaire-Perez's thesis, "Inventions et Inventeurs en France et en Angleterre au XVIIIe siècle," and her book *L'invention technique au siècle des Lumières*, Paris : Albin Michel, 2000. For the nineteenth century, see Khan and Sokoloff, "The Innovation of Patent Systems in the Nineteenth Century: A Comparative Perspective," Unpublished manuscript (2001).

23 A law of October 16, 1791 created the Bureau of Consultation of Arts and the Trades which consisted of 30 members drawn from various academies. They were to examine and report on the inventions, making recommendations about the rewards to offer to inventors. In 1797 this committee was replaced by the National Institute of the Sciences and Arts. The Minister of the Interior was also authorized to propose to the National Assembly any major discoveries which had been made either in France or imported to France "particulièrement lorsque ces découvertes feront dues a des travaux pénibles, ou a voyages longs et périlleux." [Sec. V of Law of 1791]. Under this law Coste d'Arnobat received 5,000 livres on the 29th of December for the importation of rhubarb into France. F/12/2424 "Encouragement donné aux artistes et aux inventeurs de 1786 à 1793."

24 F12/992, No. 239 (Oct. 1781). M. le Chevalier de Gruyère (painter and gilder of the buildings belonging to the King's brother) requested a privilege for the manufacture of a vegetable-based cosmetic rouge. He was willing to pay 1.2 million livres for the grant. His application was supported by influential women at court.

25 Archives Nationales, F12/992, No. 3376. M. le Chevalier asked for a pension as recompense for two machines he invented to safely pulverize colours. With the old method of manufacture 1200 men died each year from lead poisoning. His letter begins: "Chevalié, père de douze enfants vivants, quatre filles et huit garçons." An official Report of February 1783 notes that "les douze enfants paroissent bien élevés, le plus jeune a 13 ans,

et le père et la mère ont une bonne conduite et paroissent aisés dans leur ménage."

26 The Abbe (acute) de Mandre invented a motor that could pull a train of thirty boats on the river. The Academy of Sciences found the motor to be "new and ingenious" but opined that the value was not large enough to warrant a significant reward. The motor however proved to be a useful invention. The Abbe made nothing from the invention and died in obscurity. (Mccoy 115)

27 See F12/992 (1787). Les Sieurs Defevres et Cie had to request permission to purchase a fifteen year privilege from Dubusques.

28 For instance, see F/12/4824, which includes about three inches of documents relating to help accorded to a single individual, Albert Charles, an English machinist who introduced new methods of textile manufactures, including cotton carding machines, that he learned in Manchester. Albert Charles was given a pension of 500 francs per year from 1840 until his death in 1852. After his death his widow was given annual sums in recognition of the "services signales rendus a l'industrie par Monsieur son mari." The files include in tabular form the biography of Charles each year from his birth in 1764. The table notes the facts of his contributions as well as the evidence to support each fact. Also included are the annual letters that the widow sent to claim her pension, which was increased from 300 francs in 1867 to 400 francs in 1868.

29 Liliane Hilaire-Perez refers to "La forte liaison qui existe en France au XVIIIe siècle entre technique et politique," (30) and argues that inventors were "plaidoyers (accumulant les preuves), car la technique n'est pas neutre, elle est porteuse des rêves, de revendications, d'ambitions calculées, d'utopies refondatrices et de politiques réalistes." (34) The accuracy of this observation is readily borne out by a perusal of correspondence such as F12/992 (8th October 1777). Les Sieurs De la Fosses invented an improvement in yeast making, and submitted a request for a privilege for thirty years, from "votre sujet, amateur des sciences, qui n'avoir rien de plus précieux q'à s'occuper pour accomplir ses souhaits quant travaillant à tout ce qui pouvoir avoir rapport à votre gloire."

30 The famous textile inventor, John Kay, illustrates the asymmetries involved in individual bargains struck with state authorities. Kay settled in France because of promises to subsidize the transfer of technology and substantially aided in the diffusion of textile machinery. The Society for the Encouragement of Arts and Manufacturing in England promised him a generous award to return there then reneged once he was in London. Kay wrote early in 1761 to Prudaine de Montigny, Conseiller d'Etat in London, to explore the possibility of receiving French financial aid if he again immigrated to Paris. Later that same year, Kay wrote to M. de Brou, Intendant de Rouen, to complain that he was still not receiving the pension he had been promised.

31 See the Decret du 30 Decembre 1790, in the Code des Pensions, 30 Decembre 1790, p. 45.

32 Extensions were rare occurrences: of some 5,000 patents obtained in the first forty years of the system, only twenty were extended. "What makes the government so averse to prolongations, is that they are never demanded but for successful inventions, and such as society at large is most anxious to enjoy. They are detrimental to trade and damp the spirit of enterprise..." Antoine Perpigna, *The French Law and Practice of Patents for Inventions, Improvements, and Importations*, 1852, p. 32.

33 F/12/1028 (1817): Printed on the patent document

34 "The legislators feared the prosperity of their country might be impaired, if foreign countries were allowed to use every new invention as well as France, and thus were enabled to compete with French manufacturers: or they thought the French patentee would be more likely to carry his invention into extensive use in France, if he was ... thus obliged to direct all his means and attention to the success of the French patent." Perpigna, 28. According to Perpigna, "this provision of the law can be evaded with impunity, it is quite useless..." so it was repealed in the 1844 revision of the statutes.

35 "It is necessary to obtain a practical knowledge of its way of working, and for that purpose, to travel and reside some time in the country where it has been invented; to enter, often with risk and never without expense, into different manufactories, and see the machine at work: to study it in its results, and ascertain by inquiries and experiments the most beneficial mode of establishing and using it. All this requires great expense and loss

of time, which the importer must incur, before he can qualify himself to introduce successfully an invention in another country." Perpigna, p. 12. In a dispute the burden of proof for regarding any element of the patent was on the accuser not the patentee.

36 In France printers were required to obtain licences from the government, and weaponry could not be manufactured without permission. Thus, the patentee who wanted to benefit from his invention in these areas could only do so if he obtained further authority from the government. See Perpigna, p. 23.

37 Perpigna, p. 29. In 1762, the king abolished perpetual privileges and limited them to 15 years, and they could only be transferred with royal permission. They would expire if they had not been put to use within one year of the grant. (Harold Parker, 57).

38 Early fees were 300 livres for five years, 800 for 10 years and 1500 for 15 years. Anyone who wished to consult a description paid 12 livres and those who merely wished to consult the index paid 3 livres.

39 [F/12/1025 (1816)]. Jean Bozon sent a letter regarding the difficulties he was having finding the 150 francs that was due to satisfy the patent fees (five year patent for shoes). He asked them to pity "un honnête père de famille." Francois Gury asked on November 4, 1816 for an extension on the payment of the patent fees for his hat invention; six months later he assigned the five year patent to Cousteau, a manufacturer, and it might be speculated whether the sale was partially caused by his difficulties in meeting the annual payments.

40 [F/12/1017A]

41 The law of 1844 only allowed for the publication of the full text of patents that were judged to be important. "C'est donc bien avec la loi de 1902 que le brevet a définitivement perdu son caractère de document d'archives." Brevets d'Invention Français, 1791-1902, p. 12.

42 It was argued that "pour seconder l'industrie dans son développement, pour lui donner tout l'essor dont elle est capable, trois sortes de secours sont nécessaires: les lumières de l'instruction, des encouragements sagement concus et appliqués et l'influence générale de l'esprit public." Cited in Pietrol Redondi, "Nation et entreprise" (p. 201).

43 See the society's report in Louis Figuier, L'année scientifique et industrielle, Hachette, Paris, 1857.

44 [F/12/1025 (1816)] - Lemaistre sold the rights in October of the following year to a négociant in Paris.

45 This section is drawn from Eugene Pouillet, Traité Théorique et Pratique des Brevets d'Invention, Paris, Marchal et Billard, 1879. The phrase is a translation of "comporte un caractère aléatoire tout à fait remarquable," p. 219. "Pour couper court à toute difficulté, le breveté agira sagement en déclarant, dans l'acte, qu'il cède sans garantie; cette clause à pour effet d'exprimer nettement ce qui, selon nous, est sous-entendu dans tout contrat de cession." (P. 225)

46 "French patent law remained for nearly 150 years practically unchanged and unaffected by modern ideas in legislation." Vojacek, A Survey of the Principal National Patent Systems, New York, Prentice-Hall, p. 139.

47 In 1968 a partial examination system was adopted which was similar to the early British reforms along these lines, since it did not include a search for novelty, merely a test for accordance with the law: "[il] se situe à mi-chemin entre la libre délivrance et l'examen préalable ... en effet, l'administration n'avait pas les moyens de pratiquer un tel examen." (P. 21, La Procédure Française de Délivrance des Brevets d'Invention, Yves Marcellin, Editions Cédac, Rosny-Sous-Bois.) The changes were made to give value to patents and to protect the interests of third parties. It was only in 1978 that an examination for novelty was introduced.

48 See Berthold Singer, p. 158.

49 The information on the German system was drawn from Vojacek, A Survey of the Principal National Patent Systems, New York, Prentice-Hall, 1936.

50 George von Gehr, "A Survey of the Principal National Patent Systems from the Historical and Comparative Points of View," John Marshal Law Quarterly, 1936:334-400.

51 See Kenneth L. Sokoloff, "Invention, Innovation, and Manufacturing Productivity Growth in the Antebellum Northeast," in Robert E. Gallman and John Joseph Wallis, eds. *American Economic Growth and Standards of Living before the Civil War*. Chicago: University of Chicago Press, 1992. . See also B. Zorina Khan and Kenneth L. Sokoloff, "Two Paths to Industrial Development and Technological Change," in *Technological Revolutions in Europe, 1760-1860*, (eds.) Maxine Berg and Kristine Bruland, London, Edward Elgar, 1998.

52 For accounts of the development of the American patent system see Bruce Bugbee, *The Genesis of American Patent and Copyright Law*, Washington, D.C., Public Affairs Press, 1967; B. Zorina Khan, "The Fuel of Interest": Patents and Copyrights in American Economic Development, book manuscript (2000); and Khan and Sokoloff, "The Early Development of Intellectual Property Institutions in the United States," *Journal of Economic Perspectives*, vol. 15 (3) 2001: 233-246.

53 "The Constitution of the United States, in giving authority to Congress to grant patents for a limited period, declares the object to be to promote the progress of science and the useful arts, an object as truly national and meritorious, and well founded in public policy, as any which can possibly be within the scope of national protection." *Ames v. Howard*, 1 Sumn. 485 (Mass.) 1833.

54 Although the statutes proposed to grant patents for "new and useful" inventions, in practice the utility claim was never enforced. Courts declared that it was up to the market, not to administrators, to determine what was useful. In the 1817 case, *Lowell v. Lewis*, 15 F. Cas. 1018, Joseph Story charged the jury that the utility of the invention "is a circumstance very material to the interest of the patentee, but of no importance to the public. If it is not extensively useful, it will silently sink into contempt and disregard."⁴³ It was thus the role of the market, rather than the courts, to determine the ultimate success of the patent. This policy was continued by the Patent Office, which also did not attempt to gauge the social or technical value of an invention, deciding conflicting claims predominantly on the basis of novelty.

55 The Patent Office in 1892 numbered over 600 employees, including some 200 specialized technical examiners. The Commissioner of Patents pointed out in his Annual Report for that year: "there is no similar number of men in the world, gathered into one body, performing duties as delicate and difficult as those performed by the examining corps of the Patent Office."

56 Report, 1869, pp. 4-9. The Patent Office was one of the few agencies that was consistently self-supporting financially throughout the century, but this was due to economies of scale in administration rather than to overly high fees or attempts to garner more revenues.

57 When a fire destroyed the Patent Office records in 1836, Congress appropriated \$100,000 for the restoration of the patent records up to that date. See the Act of 1837, Section 4. As early as 1828 the office freely distributed circulars with information about the law relating to patents, and how to apply for a patent. These ad hoc circulars became more extensive and were subsequently entitled the Rules of Practice, and were formalized by the Act of 1870. After 1870 the Patent Office began to publish weekly information on patents granted in the form of an Official Gazette. By 1891 over 3,000 copies of the Gazette were being distributed each week without charge to libraries, depositories, and members of Congress, and a further 3,000 copies were circulated to private subscribers for a nominal fee of \$5 per year.

58 See HR-41 Bill in de Pauw (1977) for details.

59 This question was settled early on: "The inventor must be the original inventor as to all the world, to be entitled to a patent." See *Reutgen v. Kanowrs*, 1 Wash. 188 (Pa) 1804; *Dawson v. Follen*, 2. Wash. 311 (Pa) 1808; *Lowell v. Lewis*, 1 Mass. 190 (Mass.) 1817. According to *Parker v. Stiles*, 5 McLean 61 (Oh) 1849, "The only exception exists in the case of a party obtaining a patent, believing himself to be the original inventor, and his invention is shown to have been known in a foreign country, but not patented there, or described in any printed publication." However, if the invention had been in public use overseas then it was not patentable. See *Shaw v. Cooper*, 32 US 292 1833: "it clearly appears, that it was the intention of the legislature, by a compliance with the requisites of

the law, to vest the exclusive right in the inventor only; and that on condition, that his invention was neither known nor used by the public, before his application for a patent. If such use or knowledge shall be proved to have existed, prior to the application for the patent, the act of 1793 declares the patent void; and as has been already stated, the right of an alien is vacated in the same manner, by proving a foreign use or knowledge of his invention."

60 "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 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." *WHITNEY et al. v. EMMETT et al.*, 29 F. Cas. 1074; 1831.

61 The option of patents for importations was specifically rejected by Congress in its deliberations over the text of the first patent laws: An amendment ordered on December 9, 1790 [HR-121]. Received and read Feb 7, 1791. Vol. vi: Legislative Histories: text of patents bills 41 and 121, Patents Bill [HR-41], February 16, 1790:

"Sec. 6: And be it further enacted, That any person, who shall after the passing of this act, first import into the United States from any foreign country, any art, machine, engine, device or invention, or any improvement thereon, not before used or known in the said States, such person, his executors, administrators and assigns, shall have the full benefit of this act, as if he were the original inventor or improver within the said States. [p. 1631] [fn 42, p. 1631: "The House struck out this section."]

62 Act of 1861, Chap. 88, cl. 10: "all laws now in force fixing the rates of the Patent Office fees to be paid, and discriminating between the inhabitants of the United States and those of other countries, which shall not discriminate against the inhabitants of the United States, are hereby repealed."

63 F. A. Seely, "International Protection of Industrial Property," p. 205, in *Proceedings and Addresses: Celebration of the Beginning of the Second Century of the American Patent System*, Wash. DC, Gedney & Roberts, 1892. Others such as Vaughan (AER 1948) have pointed to this liberality towards foreigners with regard to working requirements as an "evil" of American patent policy.

64 *Tatham et al. v. Lowber et al.*, 23 F. Cas. 721 April 21, 1847.

65 See *Tatham v. Loring*, 5 N.Y. Leg. Obs. 207 (1845). Infringers were punished through the payment of fines and injunctions, but not by criminal penalties, suggesting that the reparation compensated for harm to the inventor rather than to society.

66 Khan and Sokoloff, "The Innovation of Patent Systems in the Nineteenth Century: A Comparative Perspective," Unpublished manuscript (2001). For a synopsis of an extensive project that analyses of the market for assignments, see Naomi Lamoreaux and Kenneth L. Sokoloff, "Long-Term Change in the Organization of Inventive Activity," (NAS Colloquium) *Science, Technology and the Economy* vol 93, Nov. (1996): 1286-92.

67 The discussion of the legal system is based on B. Zorina Khan, "Property Rights and Patent Litigation in Early Nineteenth-Century America," *Journal of Economic History*, v. 55 (1) 1995: 58-97.

68 Thus, Justice Story pointed out (*Blanchard v. Sprague*, 1839), the English courts tended to be hostile towards patent grants, but "In America, this liberal view of the subject has always been taken, and indeed, it is a natural, if not a necessary result, from the very language and intent of the power given to congress by the constitution on this subject ... Patents, then, are clearly entitled to a liberal construction, since they are not granted as restrictions upon the rights of the community, but are granted to `promote science and useful arts'" (my emphasis). According to Justice Baldwin (*Whitney v. Emmet*, 1831), "The silence of the [English] law left a wide field open to the discretion of courts ... But in this

country the law is more explicit. The Constitution ... is a declaration of the supreme law of the land ... which leaves no discretion to the judges to assign or presume any other."

61. "Patentees are not monopolists ... A monopolist is one who, by the exercise of the sovereign power, takes from the public that which belongs to it, and gives to the grantee and his assigns an exclusive use. On this ground monopolies are justly odious ... Under the patent law this can never be done. No exclusive right can be granted for anything which the patentee has not invented or discovered. If he claim anything which was before known, his patent is void, so that the law repudiates a monopoly. The right of the patentee rests entirely on his invention or discovery of that which is useful, and which was not known before. And the law gives him the exclusive use of the thing invented or discovered, for a few years, as a compensation for 'his ingenuity, labor, and expense in producing it.' This, then, in no sense partakes of the character of a monopoly." *Allen v. Hunter*, 6 McLean 303 (1855), cited in Khan, "Property Rights and Patent Litigation" (1995), p. 75.

62. Burchfiel (1991) argues that "A common misconception has been that a patent or copyright, a high market share, or a unique product that competitors are not able to offer suffices to demonstrate market power." The DOJ Antitrust Guide stated that patent pools require "particular scrutiny under the antitrust laws," (cited in *U.S. v. Motor Vehicle Manuf. Assoc. of USA*, 1982).

63. See *United States v. American Can Co.*, 256 U.S. 706 (1921), *United States v. International Harvester Co.*, 274 U.S. 693 (1927), *United States v. United States Steel Corp.*, 251 U.S. 417 (1920), *United States v. United Shoe Mach. Co.*, 247 U.S. 32 (1918). See also Ward Bowman, *Patent and Antitrust Law*, 120-256 (1973).

72B. Zorina Khan, "Federal Antitrust Agencies and Public Policy towards Patents and Innovation," *Cornell Journal of Law and Public Policy*, vol. 9 (Fall) 1999:133-169; B. Zorina Khan, "The Calculus of Enforcement: Legal and Economic Issues in Antitrust and Innovation," *Advances in the Study of Entrepreneurship, Innovation, and Economic Growth*, vol. 12 (1999): 61-106; B. Zorina Khan. *Legal monopoly : patents and antitrust litigation in U.S. manufacturing, 1970-1998*. Cambridge, MA : National Bureau of Economic Research, 1999. Series title: Working paper series (National Bureau of Economic Research) no. 7068.

73 According to the Director of the FTC's Bureau of Competition, "the forward looking emphasis of high tech industries requires an equally forward looking antitrust policy. Frequently, the focus of competition in these industries is not over price but innovation of next generation products. Competition in innovation markets must be protected even where merging parties are not current competitors, and the Commission has brought a number of cases in the past few years in order to protect the innovation process." [William J. Baer, "Report from the Bureau of Competition," before the American Bar Foundation, Washington, DC, April 15, 1999]. For example, see 116 FTC 1381, 116 FTC 1243, 1993 FTC Lexis 214. "An innovation market consists of the research and development directed to particular new or improved goods or processes, and the close substitutes for that research and development," according to Richard J. Gilbert, "The 1995 Antitrust Guidelines for the Licensing of Intellectual Property," ABA Section of Antitrust Law, April 6, 1995, Washington, D.C.

74 *In re. Sensormatic Electronics Corporation*, 1994 FTC Lexis 274, File No. 941-0126.

75 *Wright Medical Technology*, C-3564, March 1995.

76 "[P]ractically all European and most of the Latin American patent laws issued at this period were more or less modeled on the French law." Jan Vojacek, p. 135, *A survey of the principal national patent systems*, New York, Prentice-Hall, 1936. The description of the Spanish system is drawn from Patricio Saiz Gonzalez's excellent study, *Invencion, Patentes e Innovacion en la Espana Contemporanea*, Oficina Espanola de Patentes y Marcas, Madrid, 1999.

77 Thus, the "foreign content" of Spanish technology could be viewed as the sum of inventions patented by foreigners, and patents of introduction obtained by Spaniards for foreign inventions. This implied that roughly two thirds of Spanish patents were drawn from overseas sources.

78 See Patricio Saiz Gonzalez, *Invencion, Patentes e Innovacion*, p. 133. These fees were

set in 1826, and maintained through 1878. During this period, the average annual salary for an official was 4275, and that of an agricultural worker was about 1050 reales. Between 1759-1878, some 77.5 percent of patents were for inventions, and the rest for introductions. Seventy three percent of patents by Spaniards were for inventions, relative to some 80 percent of the patents obtained by French citizens.

79 Only 16.5 percent of foreign patents were implemented, relative to 34.7 percent of Spanish patents, and 12.6 percent of patents obtained by nonresidents. See Patricio Saiz Gonzalez, "Patents, International Technology Transfer and Spanish Industrial Dependence (1759-1878)," p. 11, mimeo, 1999.

80 Cited in "Patents in relation to Manufactures," Story B. Ladd, 12th Census of the United States, vol. X (IV) pp. 751-66.

81 Vojacek, p. 160.

82 Sri Krishna Sankaran, "Patent Flooding in the United States and Japan," IDEA The Journal of Law & Technology, Vol 40 No 3, 2000.

83 This discussion draws from Machlup and Penrose, "The Patent Controversy in the Nineteenth Century," Journal of Economic History, vol. x (1) 1959: 1-29.

84 See Edith Penrose, Economics of the International Patent System, Baltimore, Johns Hopkins Press, 1951. These included Conferences in 1878, 1880 and 1883. Participants of the 1880 conference were drawn from Argentina, Austria-Hungary, Belgium, Brazil, France, Britain, Guatemala, Italy, Luxemburg, Netherlands, Portugal, Russia, San Salvador, Sweden, Norway, Switzerland, Turkey, the United States, Uruguay, and Venezuela. There were also additional meetings in Rome (1886), Madrid (1890-91), Brussels (1897-1900), Washington (1911), The Hague (1925) and London (1934).

85 Recall that neither Switzerland nor the Netherlands at this time had a patent system in place. According to the terms of the Union, nationals of these countries could obtain patents in other countries on equal terms with the citizens of the patent-granting domain.

86 One commentator pointed to "the extremely liberal propositions of the United States, which one could only recognize as approaching the ideal of the future." Cited in Penrose, p. 81.

87 Cited in Penrose, Economics, p. 77.

88 The discussion of the early system of privileges follows Elizabeth Armstrong, Before Copyright: The French Book-Privilege System, 1498-1526, CUP, Cambridge 1990.

89 See Raymond Birn, "The profits of ideas: Privileges en librairie in eighteenth century France," Eighteenth-Century Studies, vol. 4 (2) 1970-71, 131-168; and Robert L. Dawson, The French Booktrade and the "permission simple" of 1777: Copyright and the Public Domain, Voltaire Foundation, Oxford, 1992.

90 See Birn, p. 149.

91 Jane Ginsburg, "A Tale of Two Copyrights: Literary Property in Revolutionary France and America," May, 1990 64 Tul. L. Rev. 991, 996, argues that "the principles and goals underlying the revolutionary French copyright regime were far closer to their U.S. counterparts than most comparative law treatments (or most domestic French law discussions) generally acknowledge. The first framers of copyright laws, both in France and in the U.S., sought primarily to encourage the creation of and investment in the production of works furthering national social goals. This study stops at the end of the Napoleonic era, substantially before the development of personalist doctrines, such as moral rights, by French copyright scholars and courts. These doctrines did provoke theoretical and practical divergences between the French and U.S. copyright regimes."

92 E. Laboulaye, 1858, cited in Ginsburg, p. 1012.

93 See Russell J. DaSilva, "Droit Moral and the Amoral Copyright: A Comparison of Artists' Rights in France and the United States," 28 Bulletin of the Copyright Society 1, (1980).

94 The "droit de divulgation" or a publication right; "droit de retrait ou de repentir" or a right to retract or modify the work; the right of integrity or "droit au respect de l'oeuvre" is the right to prevent alteration of the work; and the "droit de la paternité" is the right to be known as the creator.

95 Researchers distinguish between two major systems of copyright. The French system asserts that the author has a moral right or natural right in his artistic creation which extends beyond the sale of the item, potentially in perpetuity. This system of personal or

moral natural rights is contrasted with the English style system which is more concerned with the economic principles underlying the limited grant of a monopoly to authors and their assignees in exchange for the improvement of social welfare from the products of their efforts. See Michael Rushton, *Journal of Cultural Economics*, 22 (1):15-32, 1998, "The Moral Rights of Artists: Droit Moral ou Droit Pécuniaire?"

96 See Feather, p. 64. The English copyright statute was entitled "An Act for the Encouragement of Learning, by Vesting the Copies of Printed Books in the Author's or Purchasers of Such Copies, During the Times Therein Mentioned," 1709-10, 8 Anne, ch. 19.

97 According to a British Commission appointed in 1878, "The law is wholly destitute of any sort of arrangement, incomplete, often obscure, and even when it is intelligible upon long study, it is in many parts so ill-expressed that no one who does not give such study can expect to understand it ... the piecemeal way in which the subject has been dealt with affords the only possible explanation of a number of apparently arbitrary distinctions between the provisions made upon matters which would seem to be of the same nature." Putnam (ed) *Question of Copyright*, second edition, 1896, p. 213.

98 See *Wheaton v. Peters*, 33 U.S. 591, 684 (1834): "It has been argued at the bar, that as the promotion of the progress of science and the useful arts is here united in the same clause in the constitution, the rights of the authors and inventors were considered as standing on the same footing; but this, I think, is a non sequitur?for when congress came to execute this power by legislation, the subjects are kept distinct, and very different provisions are made respecting them."

99 The copyright act required authors and proprietors to deposit a copy of the title of their work in the office of the district court in the area where they lived, for a nominal fee of sixty cents. Registration secured the right to print, publish and sell maps, charts and books for a term of fourteen years, with the possibility of an extension for another like term. As the table in the Appendix shows, amendments to the original act extended protection to other works including musical compositions, plays and performances, engravings and photographs. Legislators refused to grant perpetual terms, but the length of protection was extended in the general revision of the laws in 1831, and 1909.

100 Frederic R. Goff, "The First Decade," p. 1. Charles Evans' bibliography includes some 13,000 items that were published during the same period, indicating that the majority of early authors did not apply for copyright protection. However, filings increased at a rapid rate, and by 1870, when registration was rationalized in one office at the Library of Congress, approximately 150,000 entries had been lodged. Copyright records included icons in American literature such as Harriet Beecher Stowe's *Uncle Tom's Cabin*, which was registered in the District Court of Maine in May 1851, but the majority of copyrights related to items other than books.

101 A report to Congress reflects this pragmatic spirit: "The enactment of copyright legislation by Congress under the terms of the Constitution is not based upon any natural right that the author has in his writings, . . . but upon the ground that the welfare of the public will be served and progress of science and useful arts will be promoted . . .

[Copyright is granted] not primarily for the benefit of the author, but primarily for the benefit of the public . . ." H.R. Report No. 2222, 60th Cong., 2d Sess. 7 (1909).

102 Technological changes in 19th century printing included the use of stereotyping which lowered the costs of reprints, improvements in paper making machinery, and the advent of steam powered printing presses. Graphic design also benefited from innovations, most notably the development of lithography and photography. The number of new products also expanded significantly, encompassing recorded music and moving pictures by the end of the nineteenth century, and commercial television, videorecordings, audiotapes, and digital music in the twentieth century..

103 The fraction of copyright plaintiffs who were authors (broadly defined) was initially quite low, and fell continuously during the nineteenth century. By 1900-1909, only 8.6 percent of all plaintiffs in copyright cases were the creators of the item that was the subject of the litigation. Instead, by the same period, the majority of parties bringing cases were publishers and other assignees of copyrights.

104 119 F. 294 (1902) (my emphasis.)

105 *Baker v. Selden*, 101 U.S. 99 (1880) argued that copyrights (unlike patents) made no

examination for novelty, so to give the author an exclusive right in a method that was described in a book "would be a surprise and a fraud upon the public." To some extent, the application of unfair competition rulings to these species of property is a natural extension of the differences between patents and copyrights. As I pointed out in the section on patent litigation, courts argued that the patent right did not involve monopoly rights, because the patentee created something new (novelty) and dedicated it to the public welfare whereas the monopolist made private what had previously belonged to the public. However, as *Baker v. Selden*, 101 U.S. 99, 102 (1880) emphasized, "novelty of the art or thing described has nothing to do with the validity of the copyright. Copyright, by granting exclusion without novelty, approximates restraint of trade practices more closely than patents. It therefore seems a natural extension of this logic to grant protection for matter that falls outside range of the copyright statutes through laws regarding unfair competition. 106 Similarly, in *Crowe v. Aiken*, 6 F. Cas. 904 (1869), the unauthorized performance of a play was enjoined even though the play was not covered by copyright protection.

107E. *P. Dutton & Company v. Victor W. Cupples & Arthur T. Leon*, 117 App. Div. 172 (1907).

108 *Miller's Appeal*, 15 Wkly. Notes Cas. 27 (1884).

109 For instance, a perpetual injunction was issued against a play entitled "Sherlock Holmes, Detective" not because it was felt to unfairly infringe on any property rights that the plaintiff had in the name of his play "Sherlock Holmes," but because it was likely to deceive the public.

110 Some of these cases include *Merriam v. Ogilvie*, 159 F. 638 (1908) and *Merriam v. Texas Siftings Pub. Co.*, 49 F. 944 (1892).

111 Original Copyright Act, First Congress, Second Session, Chapter 15, May 31, 1790: "An Act for the encouragement of learning, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies, during the times herein mentioned." See Library of Congress, *Copyright Enactments of the United States, 1783-1906*, Wash, DC, 1906. Compiled by Thorvald Solberg.

112 See Feather, p. 154.

113 See Dozer, *Tariff on Books*.

114 John Ruggles was one of the leading authorities in Congress on the patent system and a strong proponent of the 1836 changes in the patent law. He was also a key member of a committee to consider reforming international copyrights, and argued that "American ingenuity in the arts and practical sciences would derive at least as much benefit from international patent laws, as that of foreigners. Not so with authorship and book-making. The difference is too obvious to admit of controversy." Barnes 1974: 71.

115 Demand might have been lower for a number of reasons, such as the claim that "The difficulties of early American authorship are often attributed to American prejudice against American literature," p. 42, Charvat, William, *Literary Publishing in America, 1790-1850*, Phila., University of Pennsylvania Press, 1959. One may ascribe such "prejudice" to the higher perceived quality of foreign literature.

116 Carroll D. Wright, *International Copyright*, p. 44.

117 "The cheap foreign literature has increased the demand for American books by enlarging the circle of readers and cultivating a taste for reading; that an international copyright must ... be a tax on knowledge, and would neither be for the interests of the people nor of the American authors, and will not promote science and the useful arts." Gardiner G. Hubbard, *Science*, Vol. 7, No. 158. (Feb. 12, 1886), pp. 135-137.

118 See Clark, *International Copyright*, p. 49: "Writing as a profession would never be attractive to native talent as long as the average author had to compete with the great masters of England whose works were appropriated without cost." Similarly, "The grant of copyright protection only to American citizens pushed the publishing industry in a direction that injured those who sought to make a living by creative writing in America," p. xxiii, Gilreath.

119 "International Copyright," in *Publishers' Weekly*, Feb. 22 (371) 1879, p. 237. (This affirms my personal conviction that, *Moby Dick* notwithstanding, there was no great American novel in the 19th century.)

120 Many of the earlier books were published at author's risk, or on commission. "Half-

profits" was also a way of sheltering publishers from risk that prevailed until the 1830s. In the 1840s, popular authors received an average of 10 percent, and between 10 to 20 percent. However, there was wide variation in contracts for unknown authors. For instance, as discussed in *Bean v. Carleton et al.*, 12 NYS 519 (1890), Fanny Bean advanced \$900 to publishers George W. Carleton & Co, to be repaid when 2000 copies of the book were sold, on the expectation of further royalties on sales after 2000. Until the 1890s authors had few means of monitoring their publisher; the 1896 decision in *Savage v. Neely* for the first time gave authors the right to inspect accounts of their publishers. The improvements in contractual terms could be due to sample selection, if lower quality authors were selected out of the market. Moreover, these observations do not disprove the counterfactual claim that, if the laws had protected foreign copyrights, even better terms would have prevailed for native writers.

121 According to David Saunders, *Authorship and Copyright*, Routledge, London and NY, 1992

"Harper's first catalogue contained 234 titles of which 90 percent were English reprints, the same pattern being true for Wiley and for Putnam." p. 156

122 See Gilreath, *Federal Copyright Records*, p. xxii.

123 Ginn & Co pointed out in the Wright survey, p. 74, "The question of international copyright law is one which we have not considered very much, as it does not materially affect the schoolbook business. It has almost wholly to do with general literature. Each country has its own methods of teaching, and the school books of one country can not be pirated in another to advantage."

124 Mott, *Golden Multitudes*, p. 92-3.

125 Alice P. Hackett and James Henry Burke, *Eighty Years of Best Sellers, 1895-1975*, New York, Bowker, 1977.

126 For a discussion of the influence of transportation on book distribution, see Zboray, "Antebellum."

127 Marryat lived in the U.S. in 1838 returned to England after the U.S. courts ruled that one also must have the intention to become a citizen. American authors visited Canada in order to satisfy the more lenient British regulations which permitted copyright protection for books whose authors were within the borders of Britain or its colonies at time of publication.

128 p. 70, Simon Nowell-Smith, *International Copyright Law and the Publisher in the Reign of Queen Victoria*, Oxford, Clarendon Press 1968.

129 Coultrap-McQuin, Susan, *Doing Literary Business*, UNC Press, Chapel Hill, 1990, p. 89. Elizabeth Gaskell was not persuaded by the argument.

130 It was a common practice for the publisher to hold the copyright in a book. However, even when authors retained the copyright, publishers were most at risk because they were required to make large fixed investments that might be lost if the sales of the book were low due to piracy.

131 See A. S. Collins, *Authorship in the Days of Johnson*, London, Robert Holden and Co., 1927. Fyfe, "Copyrights and Competition," argues that the "share-book" system survived until the middle of the 19th century in the market for children's books. The system served as a means through which participants could spread and share risk, raise capital, and also control competition.

132 See the exchange between Charles Reade and Ticknor and Fields, p. 372 *Cost Books*. Reade authorized the firm to reprint his work *It is Never Too Late to Mend*. When it seemed that the Appletons would publish another edition, he wrote to Ticknor and Fields that this was unlikely because Appleton would desist when they found out that they would have to publish with a one-month delay behind Ticknor: "They might do the wrong thing for the Tea, but they are too respectable to do it for the Tea leaves!"

133 As late as 1902, this issue was brought before the courts. See *Fraser v. Yack et al.* 116 F. 285 May 6, 1902 "We are of opinion that the contract conferred no rights of proprietorship in the manuscript, but only the right of publication coincidentally with or in advance of the publication of the work in England."

134 *International Copyright Act of 1891*, 26 Stat. 1106.

135 Berne Convention for the Protection of Literary and Artistic Works, opened for signature Sept. 9, 1886, 828 U.N.T.S. 221, S. Treaty Doc. No. 99-27, 99th Cong. (1986) (revised at Paris, July 24, 1979).

136 This section is based on "Results of the Copyright Law," by Putnam, in G H Putnam (ed), *The Question of Copyright*, New York, G P Putnam's Sons, 1896: 162-174. After the change in the copyright law, publishers price discriminated across time rather than across region. They tended to bring out the higher priced, more elaborately bound volumes first, and the cheaper versions only after a year or two.

137 See Lisa Takeyama, "The Welfare Implications of Unauthorized Reproduction of Intellectual Property in the Presence of Demand Network Externalities," *Journal of Industrial Economics*, v. 42 (2) 1994: 155-166.

138 Reprint of Report in Putnam (1890), pp. 269-270.

139 Brander Matthews, "The Evolution of Copyright," in Putnam (1896), p. 336.

140 The original adherents to the UCC were the German Republic, Andorra, Argentina, Australia, Austria, Brazil, Canada, Cuba, Denmark, El Salvador, United States, France, Guatemala, Haiti, Honduras, India, Ireland, Israel, Italy, Liberia, Luxembourg, Monaco, Nicaragua, Norway, Portugal, UK, San Marino, the Holy See, Sweden, Switzerland, Uruguay and Yugoslavia.

141 See North (1981), and Machlup (1958).

142 Theoretical models of the optimal structure of the patent system include examinations of patent scope, the length of protection, and derivative inventions. Empirical studies have estimated the relationship between patents and productivity, patenting and firm size, and the question of appropriability. Economic historians have examined the rate and direction of inventive activity, as well as markets for invention. Schmookler's pioneering empirical work suggested that patenting was systematic and varied with the extent of the market. Kenneth Sokoloff extended this approach, and demonstrated that when previously isolated areas gained access to markets, patenting per capita increased markedly. Other research also established the existence of a rapidly growing market for patented inventions that was supported by strong enforcement from the legal system. Christine MacLeod and Harold Dutton produced extensive accounts of the patent system in Britain.

143 Phillip McCalman, "Reaping what you sow: an empirical analysis of international patent harmonization," unpublished paper, Dept of Economics, UC Santa Cruz, 1999.

144 See Demsetz, "Private Production."

145 Takeyama, "Intertemporal consequences."

146 Pepall and Richards, "Innovation."

147 Harbaugh and Khemka, "Copyright Enforcement." The quote is from the abstract of the paper.

148 Engerman and Sokoloff, "Factor Endowments, Institutions and Differential Paths of Growth among New World Economies," in Stephen Haber (ed), *How Latin America Fell Behind*, Stanford University Press, 1997.

149 Sokoloff and Khan, "Democratization of Invention," *Journal of Economic History*, 1990; and Khan and Sokoloff, "'Schemes of Practical Utility': Entrepreneurship and Innovation among 'Great Inventors' During Early American Industrialization, 1790-1865," *Journal of Economic History*, vol. 53 (2) 1993: 289-307..

150 Khan, "Married Women's Property Laws and Female Commercial Activity: Evidence from United States Patent Records, 1790-1895," *Journal of Economic History*, vol. 56 (2) 1996: 356-88. and "Not for Ornament: Patenting by Nineteenth Century Women Inventors," *Journal of Interdisciplinary History* vol. 33 (2) Fall 2000: 159-195.

151 Khan and Sokoloff, "The Innovation of Patent Systems in the Nineteenth Century: A Comparative Perspective," Unpublished manuscript (2001).

152 It should be noted that the influence of colonial heritage is not nearly so powerful as one might have expected. The general imperial policy of Britain towards its colonies allowed for original legislation in the constituent colonies in accordance with local conditions. There was, for example, enormous diversity in the characteristics of the patent systems of the colonies that remained under British rule at this time.

153 "Notwithstanding this allusion to patents, the mistake should not be made of supposing that patents and copyrights stand on the same basis as to natural exclusive right, for they

do not; the difference between them, in this regard, is radical." P. 86-87, "International Copyright," W E Simonds, in Putnam, G H, *The Question of Copyright*, New York, G P Putnam's Sons, 1896: 77-130.

154 In *Folsom v. Marsh*, 9 F. Cas. 342, 1841, Joseph Story effectively outlined the doctrine of fair use as it is employed in modern decisions. The case dealt with a life of George Washington, which included eleven volumes of Washington's letters, and discussed the existence and ownership of property in letters. Story felt that the defendant's work was of "inestimable value" but did not fall within the range of fair use, and specified that "we must often, in deciding questions of this sort, look to the nature and objects of the selections made, the quantity and value of the materials used, and the degree in which the use may prejudice the sale, or diminish the profits, or supersede the objects, of the original work."

155 Bruce Bugbee, p. 5: cites *Alfred Bell & Co. v. Catalda Fine Arts, Inc* (CA 2 1951) 191 F. 2d 1951 "we have often distinguished between the limited protection accorded a copyright owner and the extensive protection granted a patent owner." And "the Constitution, as so interpreted, recognized that the standards for patents and copyrights are basically different."

156 See, for instance, Jessica Litman, *Digital Copyright*, Prometheus Books, NY, (2001) p. 14, who argues that "copyright is now seen as a tool for copyright owners to extract all potential commercial value from works of authorship, even if that means that uses that have long been deemed legal are now brought within the copyright owner's control." It is interesting to note that the features these scholars find objectionable -- such as the ability of digital copyright owners to control use after the first sale of the item -- would be perfectly in keeping with a moral rights system.

157 See Edwin Mansfield, "Intellectual Property Protection, FDI and Technology Transfer," IFC Discussion Paper No. 19, World Bank, 1994. Mansfield surveyed American multinational corporations and found that, from their point of view as well, IPRs protection "plays a somewhat different role in each of these industries" (Edwin Mansfield, "Unauthorized Use of Intellectual Property: Effects of Investment, Technology Transfer, and Innovation," p. 121, in Wallerstein, Moge and Schoen (eds), *Global Dimensions of Intellectual Property Rights in Science and Technology*, National Academy Press (1991).)

158 Cohen, Wesley, Richard Nelson and John Walsh, "Protecting their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not)," NBER working paper No. 7552] 2000.

159 The reputational effect may partly explain why foreign pharmaceutical firms in Brazil increased their share of the domestic market even in the absence of patent protection. See C R Frischtak, "The Protection of Intellectual Property Rights and Industrial Technology Development in Brazil," in F W Rushing and C G Brown (eds), *Intellectual Property Rights in Science, Technology, and Economic Performance*, Westview, 1990.

160 For arguments that favour the application of trade secrets legislation in developing countries in some contexts, see Stevenson, G, "Trade Secrets: Protecting Indigenous Ethnobiological Knowledge," *NYU J. Intl Law & Policy* vol. 32 (Summer) 2000: 1119-30.

161 David Malueg and Marius Schwartz, "Parallel Imports, Demand Dispersion and International Price Discrimination," Economic Analysis Group Discussion Paper, US Department of Justice, Antitrust Division, August 25, 1993 assess whether international price discrimination and the ban on parallel imports benefit developing countries.

162 "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."

163 See the Roundtable on Intellectual Property and Indigenous Peoples, World Intellectual Property Organization (July 23 and 24, 1998), referring to some of the problems of ensuring that IPRs do not operate to the disadvantage of communities whose innovations are regarded as part of the public domain.

164 William P. Alford, *To Steal a Book is an Elegant Offense*, Stanford, 1995, argues that Chinese behaviour is explicated by its community values. Copying or "plagiarism" are not held to be reprehensible because they are in accordance with principles that revere the ancestral past and ancient customs. Such practices are prevalent in classical Chinese literary and artistic works. Alford argues that, unlike China, Taiwan has succeeded in changing its political institutions and privatizing its culture and this helps to explain its greater success in intellectual property reforms. See also John R. Allison and Lianlian Lin, "The evolution of Chinese attitudes toward property rights invention and discovery," 20 U. Pa. J. Int'l Econ. L. 735, Winter, 1999.

165 Elhanan Helpman, "Innovation, imitation and intellectual property rights," *Econometrica*, vol. 61, 1993; I. Diwan and D. Rodrik, "Patents, Appropriate Technology and North-South Trade," *Journal of International Economics*, vol. 30, 1991, 27-47.

166 McCalman, 1999.

167 For instance, see Alan V. Deardorff, *Economica*, New Series, Vol. 59, No. 233. (Feb., 1992), pp. 35-51. Deardorff attempted to assess the welfare implications of extending patent regimes from a country of innovation producers to a country of innovation consumers. He found that the welfare of the producer increased unambiguously, but the welfare of the consumer country fell, and it was possible for the net effects on global welfare to be negative overall.

168 TRIPS Agreement, Article 30: Exceptions to Rights Conferred.

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