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Patent Law Harmonication in the Age of Globalization

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PATENT LAW HARMONIZATION IN THE AGE OF GLOBALIZATION:
THE NECESSITY AND STRATEGY FOR A PRAGMATIC OUTCOME

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While international patent law harmonization has been an issue in progress since the conclusion of the Paris Convention in 1883, it is facing new challenges due to its rising prominence in a knowledge-based economy and the world’s growing sensitivity to the patent system’s social and economic role in society. Since their beginning, patent laws have been inherently diverse for several reasons: territoriality, and distinct policy goals and cultural backgrounds of each nation. However, as globalization intensified the problem of fragmented patent laws, arguments for harmonizing patents laws obtained dominant support in international communities. This paper
addresses the need to harmonize patent laws among countries within the growing trend of globalization. The paper further examines implementing measures that realize the harmonization of patent laws. To answer questions regarding the level and order at which harmonization should take place, it is necessary to divide harmonization into four categories according to the procedural–substantive and legislative–administrative standpoint. Even though substantive and legal harmonization might be the final goal of harmonization, it costs too much and takes too long. Rather, as a practically plausible alternative based on cost-benefit analysis, it is worth focusing on a modest harmonization — administrative and substantive harmonization for “Work-sharing.” To implement work-sharing with minimum costs and delay, it is necessary to scrutinize several strategies that promote language-based cooperation, offshore outsourcing, regional patent system, and combination with PCT. Within the undeniable trend of globalization, it is essential to find broad and innovative international cooperation that can benefit all participating countries.

1. INTRODUCTION

“Good fences make good neighbors”–Robert Frost

Patent systems are designed with the objectives to incentivize innovation, development, and commercialize inventions. Initially, the effectiveness of patent law was restricted to national boundaries so as to encourage local inventive and innovative activities. Later on, the concern grew beyond national territories paralleling the expansion of industrialization and international trade. As intellectual property continues to grow as a component of global trade,

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4 id.
the costs of worldwide protection and enforcement have soared. Accordingly, patent holders continue to seek ways to acquire and maintain their exclusive rights more efficiently in an integrated world marketplace. They also bear increasing frustration because of the need to pursue multiple actions for infringement in cross-border disputes. Under the bedrock principle of territoriality, successive litigations can trigger different applications of domestic and international patent norms to the same set of facts, which can lead to conflicting judgments and arguably irreconcilable outcomes. At this stage, proposals to further harmonize domestic patent laws at the international level have understandably attracted considerable attention. The 1883 Paris Convention on Industrial Property Protection was a reflection of earlier days' concerns. The dramatic turning point in recent phases of development concerning international patents was the Trade Related International Property Agreements (TRIPS), which laid down substantive principles that applied to all members of the WTO. TRIPS had substantial international impact because it signaled the inevitability of a more harmonized and stronger global patent system.

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6 See id.


8 See id.


11 id.

12 id.
Nowadays, it is apparent that most countries and companies consider patents a very important tool for economic development. For example, international patent applications have increased by 75% in the last 10 years. In this situation, a fragmented patent system fails to provide effective and efficient protection, and the resulting dissatisfaction provides the basis for discussing international patent harmonization. Accordingly, developed countries have initiated international discussions to harmonize several issues of domestic discretion such as the technical character of inventions, the definition of prior art and exclusions from patentability. They also argue that only by adopting strong intellectual property protection can developing countries hope to attract foreign direct investment essential to their economic development. Many developing countries, however, are strongly against this idea, claiming that harmonization would only benefit a few developed countries at the expense of the developing countries. For example, one research points out that the United States was the major beneficiary of the TRIPS agreement, whereas developing countries were major contributors. Moreover, they claim that it is still arguable whether a strong intellectual property regime would actually lead to foreign direct investment. For these reasons, the 1950s saw a great number of newly independent developing countries fighting to free themselves from the bondage of the Paris Conventions to which their colonial masters had committed them. Although membership of the conventions may have served the economic interests of the colonialists, the newly independent nations did not believe that it served theirs.

To confront these conflicts, it is necessary to scrutinize the economic aspect of patent harmonization from a global economy’s points of view. Based on this analysis, it is imperative to review the necessity of harmonization, and create a strategy that realizes harmonization with minimum costs and conflicts. In this article, we will discuss the economic aspects of patents in

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14 **WIPO**, **Supra** Note 3, at 10.
15 **PAUL GOLSTEIN**, *INTELLECTUAL PROPERTY: THE TOUGH NEW REALITIES THAT COULD MAKE OR BREAK YOUR BUSINESS* 183 (Portfolio, 2007).
17 *id.*
18 **GOLSTEIN**, **Supra** Note 15, at 183.
19 *id.*
the international arena, and focus on the strategies adopted by the patent system in the globalizing world economy. Through this research, it is possible to find rationales and measures to implement the harmonization of patent systems between countries with different patent laws.\(^\text{20}\)

2. **GLOBALIZATION AND HARMONIZATION**

A. **THE INHERENT DIVERSITY OF PATENT SYSTEM**

Patent laws are inherently diverse for three reasons. The first reason is due to the centuries-old principle of territoriality. The seventeenth century Dutch scholar Ulrich Huber identified three precepts of modern territoriality doctrine: (1) a state’s laws have force within the state’s boundaries; (2) anyone found within the state’s boundaries is subject to the state’s authority; (3) comity will discipline one sovereign’s exercise of authority to respect the territorial competence of other sovereigns.\(^\text{21}\) As synthesized by Professor Harold Maier, these precepts “state that acts of foreign sovereigns should, when appropriate, give effect within another state’s territory and that courts of all nations should indulge a presumption against the extraterritorial impact of law.”\(^\text{22}\) Thus, according to the territoriality principle, intellectual property rights are protected only within and in accordance with the legal rules of the jurisdiction where they have been granted.\(^\text{23}\) This territoriality of patent law is well evidenced in the United States. For example, the latest Patent Act adopted in 1952 contains language suggesting that its scope is limited to the U.S. territory.\(^\text{24}\) It provides that the grant of a patent confers a “right to exclude others from making, using, offering for sale, or selling the invention throughout the United States.” Thus, “whoever without authority makes, uses or sells any

\(^{20}\) id.

\(^{21}\) PAUL GOLDSTEIN, INTERNATIONAL INTELLECTUAL PROPERTY LAW: CASES AND MATERIALS 7 (Fountain Press, 2008).

\(^{22}\) See id.


\(^{24}\) GOLDSTEIN, Supra Note 21, at 183.
patented invention, *within the United States* during the term of the patent therefore, infringes the patent.” Even before the adoption of this language, courts consistently held that patent law is territorial in scope. In *Dowagiac Manufacturing Co. v. Minnesota Moline Plow Co.* case, the Court said that “[t]he right conferred by a patent under our law is confined to the United States and its territories. . . and infringement of this right cannot be predicated of acts wholly done in a foreign country.” In short, as the legal rights and protection of patents are limited within their jurisdiction by territoriality, countries naturally develop and maintain their patent laws differently from one another.

Second, patent law’s inherent diversity is also attributed to governments’ use of patent law as a policy tool for economic growth. Assuming there is a stable set of preferences within each jurisdiction, it is generally agreed that the diverse laws tailored to each jurisdiction better accommodate those individual preferences than a uniform set of laws imposed across all jurisdictions. Thus, in making patent laws, every country decides for itself what intellectual assets to protect within its borders, and adopt patent policies in connection with the preferences of its society. In other words, the standard for patents should be intimately tied to a nation’s economic goals, and especially to its industries’ technological potentials and the types of innovation it hopes to foster. In this sense, patent law is established on the foundation of its national policy. Thus, to have a valid patent, an applicant must incorporate administrative formalities which must be satisfied to create or perfect a patent. Also, government officials determine whether the application is fit for a patent according to national standards. One can see the difference between patent rights and copyrights in the sense that copyrights do not require formalities to obtain legal rights and a court do not have to second-

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25 See id.
27 Goldstein, *Supra* Note 15, at 183.
28 id.
32 See id.
guess the administrative decisions of a foreign government. Thus, the patent law is an important policy tool that is closely related with the economic goal and strategic priority of the government.

Third, a nation’s a cultural factor makes each patent system unique. According to Luigi, Paola, and Luigi (2006), culture has a direct impact on expectations and preferences, which in turn have an impact on economic outcome. Although economists have been reluctant to rely on culture as a possible determinant of economic phenomena, there are countervailing historical arguments. Adam Smith viewed a theory of Moral Sentiments as an integral part to the wealth of nations, and John Stuart Mill regarded cultural constraints as sometimes more important than even the pursuits of personal interest. A powerful example of cultural impact on the patent system is the different approaches to the notion of “property.” Historically Western societies have emphasized property rights as one of natural rights. John Locke believed that every man has an inherent property interest in his own person and asserted that “life, liberty, and property” are the inalienable rights of a just society. Consistent with this notion, the law has long held intellectual property under the general heading of “property.” Intellectual property is even analogized to that of tangible property. Professor Richard Epstein (2004) furthers this argument by contending that patents deserve much the same protection as real estate. The analogy between tangible property and intellectual

33 GOLDSTEIN, Supra Note 21, at 37.
34 Luigi Guiso, Paola Sapienza, and Luigi Zingales, Does Culture Affect Economic Outcomes?, 20 JOURNAL OF ECONOMIC PERSPECTIVES 23, 23 (2006) (According to Luigi, Paola, and Luigi, in the context of identifying casual link between culture and economy, culture can be defined as “those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation.”).
35 See id, at 23.
36 See id, at 24.
38 See id. (The first use of the term “intellectual property” in a reported legal decision can be traced to an 1845 patent case in which the court observed that “a liberal construction … given to a patent” will encourage “ingenuity and perseverance” and “only in this way can we protect intellectual property, the labors of the mind, productions and interests as much a man’s own, and as much the fruit of his honest industry, as the wheat he cultivates, or the flocks he rears.” Prof. Justin Hughes, in a recent Southern California Law Review article, notes that “the courts and legislatures had regularly discussed copyrighted works as ‘property’ throughout the seventeenth, eighteenth, and early nineteenth centuries, with the adjectival concepts of ‘artistic,’ ‘literary,’ and ‘intellectual’ orbiting around the property notion.”)
39 id.
property remains arguable, but it is apparent that this historical and cultural backdrop can have the effect of strengthening the patent regime. On the other hand, certain cultures emphasize commonality. The Chinese believed for centuries that inventions and creative works belonged to the community or the government and should be freely shared.\textsuperscript{40} Therefore, the entire concept of intellectual property protection is quite new to the Chinese society because the traditional Chinese culture does not consider it as private.\textsuperscript{41} Many Chinese business entities, in reality, were not aware of their intellectual property rights and the need to seek protection; likewise many infringers were unaware that their activities infringe other’s private rights.\textsuperscript{42} Many countries in Asia have similar traditions, so it is understandable for them to be reluctant to have stronger patent regimes. This cultural issue is believed to have substantial effects on the development of patent systems.

**B. THE EFFECT OF GLOBALIZATION ON PATENT SYSTEM**

For the reasons discussed above, the patent system should be \textit{country-specific}. It is easily understandable that each country has unique national policy and cultural backgrounds. However, in fact, country-specific patent laws did not cause serious problems until the 18\textsuperscript{th} century when business and innovation activities were restricted to the domestic market and international trade was not a common practice. Industries and inventors who sought protection beyond the domestic boundaries could file for a patent in the corresponding jurisdiction but even this was a rare practice. However, as the world became more and more globalized, there was an increasing movement of economic resources beyond one’s national border. International trade exploded, and movements of capital and labor became more liberal.\textsuperscript{43} Moreover, beginning in the 19\textsuperscript{th} century, countries and businesses increasingly recognized the value of the intellectual property system as a tool for technological

\textsuperscript{40} LEI FANG, \textit{CHINESE PATENT SYSTEM AND ITS ENFORCEMENT} 12 (2005), http://www.sutherland.com/files/Publication/7d59443f-8187-4680-b24a34de34553642/Presentation/Publication/Attachment/ce106e5e-d8f4-496f-a09bce892161dafb/Chinese%20Patent.doc.

\textsuperscript{41} \textit{id}.

\textsuperscript{42} \textit{id}.

\textsuperscript{43} WORLD TRADE ORGANIZATION (WTO), \textit{INTERNATIONAL TRADE STATISTICS} (2008), \textit{available at} http://www.wto.org/english/res_e/statis_e/its2008_e/its08_charts_e.htm
developments. Consequently, securing patent protection in foreign countries became one of the many concerns for business and governments, and it caused several problems that never existed before.

**Limited Patent Protection**

First and foremost, patent protection was not guaranteed in foreign countries because of different rules governing subject matter and novelty. For example, in the U.S., Congress intended patentable subject matter to "include anything under the sun that is made by man." However, for the rest of the world, the scope of patentable subject matter was quite narrow. According to Joseph Straus (1996), in 1988, pharmaceutical products were not patentable in 49 countries, animal species in 45, methods for the treatment of the human or animal body in 44, plant varieties in 44, biological processes for the production of plant varieties or animal species in 42, food products in 35, computer programs in 32, chemical products in 22, pharmaceutical processes in 10, processes for the manufacture of food in 9, and microorganisms in 9 of a total 92 states in Paris Convention. The companies that invented the above-mentioned products not only failed to obtain patent protection in countries that declared the subject matter unpatentable, but also had to suffer from the importation of copied products which were manufactured in those countries where the product is not protected by patents. Moreover, countries may also have different criteria for novelty, thus filing a patent in one country often bars the applicant from obtaining a patent in others. This happens in some countries where they have a rule of absolute novelty to obtain a patent: any public disclosure of the invention, even by the inventor, is generally a bar to obtaining a patent protection. Unlike the U.S. or Canada, other countries rejected the argument for a grace period, and the inventor could not secure his or her patent protection in these countries. In short, different domestic patent laws may prevent inventors from exploiting their patents to achieve commercial gain in international markets.

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Application Costs

Also, obtaining multiple patents in this fragmented patent system can inevitably demand substantial costs for multi-national corporations that are running business throughout the world. Today, with the growing trend of globalization, the activities of multinational corporations are increasing in volume and importance. The Top 500 multi-national corporations account for nearly 70 percent of the worldwide trade, and this percentage has steadily increased over the past twenty years.\(^48\) For them, having and maintaining patents in every jurisdiction is a crucial but costly investment. A survey by the Korea Intellectual Property Office (KIPO) revealed that Korean businesses identify the most serious hurdles in applying for foreign patents as the high price (63%).\(^49\) This notion is strongly evidenced by the empirical data of WIPO. WIPO estimated roughly that patenting in 2 major countries (US and Japan) costs approximately $16,000 to $19,000.\(^50\) If a company wants to obtain and maintain patents in 7 major countries,\(^51\) it must pay approximately $60,000. If the company wants to have broader protection by obtaining patents in 15 countries\(^52\), it should be ready to pay around $120,000. Considering that this is the estimated cost just for a single patent, one can imagine the enormous expenditures for multi-national companies in order to obtain and maintain hundreds or thousands of patent pools. Similarly, one research data shows how one of the world’s major research-based pharmaceutical companies is estimated to spend between


\(^{49}\) KOREA INTELLECTUAL PROPERTY OFFICE (KIPO), *THE SURVEY ON INTELLECTUAL PROPERTY-RELATED ACTIVITIES IN KOREA 84-85* (KIPO, 2009)

\(^{50}\) WORLD INTELLECTUAL PROPERTY ORGANIZATION (WIPO), *WORLD PATENT REPORT: A STATISTICAL REVIEW 51-58* (2008), available at http://www.wipo.int/export/sites/www/ipstats/en/statistics/patents/pdf/wipo_pub_931.pdf (The patenting costs are based on estimates sourced from Global IP Estimator (http://www.globalip.com/). They include filing, examining, prosecution, granting costs and the international phase for PCT scenarios. They do not include in-house and pre-filing costs. The figures shown above are based on typical cost schedules which are indicative only; actual costs will vary widely depending on the many options that are available to applicants and the many differences in costs and fees (including legal and translation costs) around the world. The last maintenance year is 10 years from filing. See appendix B for further details regarding the methodology used.)

\(^{51}\) See id. (China, European Patent Office (validation in France, Germany and United Kingdom), Japan, United States of America, Republic of Korea).

\(^{52}\) See id. (Australia, Brazil, Canada, China, European Patent Office (validation in, France, Germany and United Kingdom), Israel, India, Japan, Mexico, United States of America, Republic of Korea, Russian Federation, Singapore).
$750,000 and $1,000,000 to obtain comprehensive world-wide patent protection for an important chemical compound, and how the figure is growing at a rate of 10% each year.\footnote{Raymond J. Keating, Patent Reform: Protecting IP, Enabling Innovation, & Bolstering Entrepreneurship 18 (The Small Business & Entrepreneurship Council, February 2008), available at http://www.sbecouncil.org/uploads/SBEC%20polseries%20IPPatents02081.pdf (Gerald J. Mossinghoff, former assistant secretary of commerce and commissioner of patents and trademarks, noted in testimony before the U.S. Senate Judiciary Committee on July 26, 2005).}

**Examination Delay**

Moreover, business globalization has triggered striking internationalization in the world of patent protection,\footnote{Hisamitsu Arai, WIPO Intellectual Property Handbook: Policy, Law and Use 13 (WIPO Publication No.489 (E)), available at http://www.wipo.int/about-ip/en/studies/publications/wipo_pub_489/.} and the increasing number of patent applications beyond borders triggered an increase in workload and backlogs in patent offices. In 1985, there were 1.2 million patent applications filed worldwide.\footnote{id.} The number of patent applications had more than doubled in only a decade, so that it reached to 2.79 million in 1995.\footnote{id.} The expansion of non-residential filing was the main reason for this increase. Domestic patent applicants stayed relatively stable at about 0.72 million over the course of the decade.\footnote{id.} By contrast, applications by foreign inventors rose fourfold during the same period, from 0.5 million in 1985 to 2.07 million in 1995. The real problem from this trend is that many of these increased applications are actually duplicated application. Nearly 242,000 applications were duplicated among the trilateral offices (U.S, EU, and Japan) in 2006.\footnote{id.} These duplicated applications are also subjected to all the required steps of obtaining a patent including search and examination,\footnote{id.} which substantially contributes to patent backlog and depreciation of patent quality.\footnote{id.} In fact, the USPTO currently has an unexamined patent application backlog of over 750,000. Patent application pendency – the time between when an application is filed and when it receives a final disposition – currently stands at 34 months on average). See also WIPO, Supra Note 13, at 44 (In Japan, there were 888,198 pending patent application in 2007, and it has 32.4 month of average pendency time.).
the total number of pending patent applications, i.e. patent backlogs across the world is estimated at around 4.2 million in 2007. The United States Patent and Trademark Office (USPTO) had the largest backlog (28.4% of the world total) in 2007, and the backlog at the patent office of the US has increased at a faster rate than that of any other similarly sized patent office. According to a study by London Economics released on behalf of the United Kingdom Intellectual Property Office (UKIPO), the cost to the global economy by the delay in processing patent applications may be as much as £7.65 ($11.4) billion each year. While admitting the seriousness of the matter, the US Department of Commerce commented that “delay, uncertainty, and poor quality at the front end ultimately make private investments in innovation less likely and undermine the potential for economic growth and job creation.”

Uncertainty and Unpredictability

The fragmented patent system that causes the uncertainty on delays and unpredictability of enforcement can be a grave concern for business society. Delays causing uncertainty may be particularly problematic for startups with high growth potential because such delays and uncertainty can cause difficulty in securing patents and venture funding in a timely fashion. Moreover, the uncertainty associated with patent delay imposes significant costs not only to patent applicants but also to potential competitors. These competitors cannot know where to focus their research and development investments until they know precisely what a patent applicant has been able to claim as its inventive territory. Accordingly, companies in this situation may make fewer investments in innovation that are potentially misdirected and wasteful.

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61 WIPO, Supra Note 13, at 44.
62 See id. (The number of pending applications by patent office in 2007: US (1,178,090), Japan (888,198), EU(550,079), Republic of Korea (445,944)); WIPO, Supra Note 13, at 45 (between 2006 and 2007, examination pendency time also increased from 43.9 to 45.3 months at the European Patent Office (EPO), 31.8 to 32.4 months at the patent office of Japan, and 31.3 to 32.0 months at the patent office of the US).
63 RAI, GRAHAM & DOMS, Supra Note 60, at 4.
64 id.
65 id.
66 RAI, GRAHAM & DOMS, Supra Note 60, at 5.
67 id.
68 id.
Another great concern for multi-national corporations is the unpredictability in patent enforcement or validity. In fact, costly infringement suits on parallel patents have become common. If a patent office grants a patent that is subsequently invalidated or subject to invalidation proceedings, not only does the office waste its own time, the time and money of the applicant, and that of the applicant’s competitors, but such a later-invalidated patent also distorts the market. Often, this type of problem occurs as a result of the examination’s failure to possess the most relevant prior art at the time the patent is granted. And, patent litigation in a fragmented system with large institutional and cost differences can lead to a proliferation of litigation tactics and strategies that cause hold-up problems and wasteful duplication. Although different results are technically possible in that national patents are independent of one another, inconsistent outcomes in that different parties win in different locations can complicate global marketing efforts. Furthermore, legal uncertainty also generates the following indirect transaction costs such as (1) costs of collecting information, (2) costs of legal disputes, (3) costs of setting incentives for pushing through legal claims, and (4) other transaction costs.


71 See id.

72 DIETMAR HARHOFF, ECONOMIC COST-BENEFIT ANALYSIS OF A UNIFIED AND INTEGRATED EUROPEAN PATENT LITIGATION SYSTEM 14-18 (Institute for Innovation Research, Technology Management and Entrepreneurship, 2009), available at http://convenzioni.confindustria.it/Aree/DocumentiPINT.nsf/B79578C0259E50E5C12576D2003B5C8F/$File/litigation_system_en_Harhoff.pdf (Harhoff points out three kinds of problems in fragmented system: 1) wasteful duplication: whenever multiple litigation is undertaken, resources are wasted on duplication without generating concomitant benefits; 2) raising the cost for appropriating returns from patented inventions in Europe: leaving aside the cost of litigation, cross-border commerce is made more difficult and costly when diverging outcomes (patent protection in some, no patent protection in other EU Members States) prevail; 3) delay and hold-up: the system can be used to delay decisions in infringement cases or to raise the costs of entrants seeking access to the market; this may either reduce innovation incentives or the level of competition in a way that is welfare-reducing)

73 Reichman & Dreyfuss, Supra Note 10, at 124.

74 See id.

C. THE DREAM OF HARMONIZATION

In the age of globalization, proposals to further harmonize domestic patent laws at the international level\(^76\) have understandably attracted considerable attention.\(^77\) Originally, the term “harmonization” was widely used in the conflicts-of-laws context, as a synonym for “unification.” Projects for the unification or harmonization of laws in general have been pursued since the middle of the 19th century, when the Italian Minister of Justice Pasquale Stanislao Mancini sought to convene a conference for the harmonization of private international law.\(^78\) In this sense, “international patent harmonization” originally means the creation of uniform patent laws throughout the world. Sherwood(1993) argues that “a uniform intellectual property system makes sense for the world.”\(^79\) This idea is further supported by Radack(1997) as he stated that “the phrase [patent harmonization] refers to efforts to make individual national patent laws around the world more uniform.”\(^80\) This idea of a uniform patent system is more

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\(^79\) ROBERT M. SHERWOOD, WHY A UNIFORM INTELLECTUAL PROPERTY SYSTEM MAKES SENSE FOR THE WORLD 68 (Wallerstein et. al., National Academy Press, 1993)

clearly supported by the term “true harmonization” (the label introduced in 1993 by Assistant Secretary of Commerce Bruce Lehman) under which patent applicants would complete one prosecution for global protection. Under the concept of “true harmonization,” a patent, after completing one prosecution in one patent office, would be granted full effect in all treaty states. Former Japanese Patent Office commissioner, Hisamitsu Arai also agreed with this idea by arguing that “Might it not be possible . . . for a patent granted by the Japanese Patent Office in response to an application filed in Japan to be recognized internationally as well?” The advocates of true harmonization believe that it will create a uniform patent law system that simplifies the law, making it easier to receive and enforce patents in many jurisdictions while reducing administrative costs. The United States’ uniform patent system, successfully maintained since 1790, is a testament to this effect.

The majority of the international patent community is and has been supportive of the idea of uniformity, recognizing the value of creating a uniform patent law on a global scale. Participating countries in the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO) have a number of treaties and agreements in place that articulate the concept of international harmonization of patent laws – the Paris Convention for the Protection of Industrial Property (Paris Convention), the Patent Cooperation Treaty (PCT), the Patent Law Treaty (PLT), the Trade-Related Aspects of Intellectual Property Rights (TRIPS), and WIPO Treaties. However, while admitting that the harmonization of fragmented patent laws can solve many problems in the age of globalization, progress toward harmonization is slow, costly and noisy. As discussed before, diversity of country-specific patent laws is natural and valuable in itself. Thus, a consolidation of existing patent systems into a single monolith

81 HAROLD WEGNER, PATENT HARMONIZATION ON THE PACIFIC RIM 20 (Asia Pacific Legal Institute, May 1995)
82 See id.
83 ARAI, Supra Note 54, at 59.
85 See id, at 687.
87 id.
would impoverish the field: it would be a mass extinction of legal species.\textsuperscript{88} Then, the question remains: to what level and order should harmonization take place?\textsuperscript{89} In other words, the relevant policy decision should determine to what extent inter-jurisdictional diversity and competition should be sacrificed to achieve global uniformity.\textsuperscript{90} Starting from the next chapter, this paper will discuss the strategy for harmonization, which includes categorizing patent law and scrutinizing the possibilities and benefits of cooperation.

3. INTERNATIONAL COOPERATION FOR HARMONIZATION

A. THE CATEGORIZATION OF HARMONIZATION

“Harmonization” is a very general and broad concept. The harmonization of patent laws can include every single measure that enforces the diverse patent system to work in harmony. To analyze the strategies for harmonization, the Korea Intellectual Property Office (KIPO) divides patent law harmonization into four categories according to a procedural–substantive and legislative–administrative standpoint (Figure 4).\textsuperscript{91} At first, patent law harmonization can be classified into a procedural or substantive focus. Procedural issues deal with forms and processes to file applications, whereas substantive cooperation covers standards and rules for granting and enforcing patents. For example, PCT is a famous treaty on procedural harmonization, whereas TRIPs is a cooperation which focuses on substantive issues. One can also categorize a certain cooperation based on its legal or administrative criteria—whether it requires the changing of patent laws or not. For example, the patentability requirement is a legislative (legal) element because it is clearly written in the patent laws. On the other hand, decision making by examiners or the actual search and examination are administrative (practical) processes, which the patent office has much discretion within its legal

\textsuperscript{88} See id, at 726.
\textsuperscript{89} Reichman & Dreyfuss, Supra Note 10, at 126.
\textsuperscript{90} Duffy, Supra Note 84, at 688.
\textsuperscript{91} KOREA INTELLECTUAL PROPERTY OFFICE (KIPO), A STUDY ON MUTUAL RECOGNITION OF PATENT EXAMINATION 5 (2008).
framework. The administrative (practical) aspects of a patent system could also be an important issue for harmonization because a Patent Office’s rulemaking, adjudication, or enforcement of a specific regulatory agenda can strongly influence the actual operation of patent law.\textsuperscript{92}

< Figure 4: The Four Categories of Patent Harmonization\textsuperscript{93}>

(*SHARE: Strategic Handling of Applications for Rapid Examination\textsuperscript{94}, **Triway\textsuperscript{95} )


\textsuperscript{93} See id, at 5.

\textsuperscript{94} Trilateral Cooperation, Strategic Handling of Applications for Rapid Examination – SHARE, available at http://www.trilateral.net/projects/worksharing/share.html (Strategic Handling of Applications for Rapid Examination (SHARE) is a USPTO proposed concept in which each office will give priority to examining applications for which it is the office of first filing. This arrangement will maximize work sharing by eliminating timing imbalances that currently affect the availability of search and examination results from other offices, in turn reducing redundancy. The Office of Second filing will use the search and examination results from the Office of First Filing " to the maximum extent practicable", a concept endorsed by the Trilateral Offices. The Offices will explore approaches for a pilot project, including the incorporation into the pilot of the EPO's FOCUS project.).

\textsuperscript{95} Trilateral Cooperation, Triway, available at http://www.trilateral.net/projects/worksharing/triway.html (Triway is a USPTO "search sharing proposal" in which a corresponding application must be filed in each of the Trilateral Offices and each application must be ready for examination (e.g. a request for examination must be filed, if one is necessary). This must include any required request for expedited examination, if appropriate. Searches will be conducted prior to substantive examination and shared among the offices and applicant, who will have an opportunity to amend or withdraw. The Trilateral Offices agreed at the November 2007 Trilateral Pre-conference to undertake a limited pilot programme.).
B. PROCEDURAL HARMONIZATION

Procedural harmonization focuses on providing a filing tool for applicants to file foreign patents and suggesting other Patent Offices a route for effective processing of patent applications if they are willing to exploit work done by others. Thus, procedural harmonization deals with requirements relating to form and methods of patent applications. It does not deal with requirements of patentability in substantive patent law. Rather, it focuses on providing tools which allow many countries to effectively deal with the requirements of their substantive patent laws. The international community has been quite successful in realizing procedural harmonization. For example, the Patent Cooperation Treaty (PCT) provided procedural enhancements to the international intellectual property regime. Signed in 1970, the PCT greatly streamlined and simplified the process for securing patent protection in multiple countries as many as 142 countries in 2010. Specifically, PCT created a uniform legal route to file an international patent application to several countries by a single domestic filing. It also allows filing a single application, performing an international prior art search and giving international publication. For further discussion, it is necessary to know about PCT procedure here.

The PCT procedure consists of two main phases: the “international phase” and “national phase.” The first step of the international phase consists of (1) the applicant’s filing of the international application and its processing by the “receiving Office”, (2) the

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101 WIPO, THE PCT APPLICANT’S GUIDE, available at http://www.wipo.int/pct/guide/en/gdvol1/pdf/gdvol1.pdf (The expression “national phase” is used even if the Office before which it takes place is a regional Office. The expressions “international phase” and “national phase” are not actually used in the PCT, but they are convenient, short expressions which have become customary and are therefore used in this Guide.).
establishment of the international search report and written opinion by one of the “International Searching Authorities (ISA)”, and the publication of the international application and the international search report by the International Bureau of WIPO. The optional step includes (1) the establishment of a supplementary international search which may be carried out by one or more of the ISAs resulting in a supplementary international search report, and (2) the international preliminary examination which concludes with the establishment of the international preliminary report on patentability by one of the “International Preliminary Examining Authorities (IPEA)”.

On completion of the international phase, an applicant must carry out further actions in each of the national Offices where the applicant wishes to receive a patent on the basis of his international application.

In particular, the applicant must pay the national Offices the required national fees, furnish them with any requisite translations, and appoint a representative (patent agent) where required. An applicant must take these steps within a fixed time to move the application forward in the national phase. This procedure and time limits are described in figure 5.

< Figure 5: The Procedure and Time Limits of PCT>

102 id.
103 id.
104 id.
105 id.
This process helps the applicant by not having to apply for multiple patents in multiple jurisdictions. The PCT is considered the most successful mechanism in international patent cooperation, reflected in its growing number of patent applications. There is not much opposition to procedural harmonization, even though the modification of patent laws is required of participating nations. Thus, it is widely accepted that a uniform patent application process can benefit inventors throughout the world. However, it is also true that procedural harmonization’s economic benefits are not significant because the examination results conducted within these frameworks are typically a set of individual national patents that remain separately enforceable under local laws. Thus, as long as national Patent Offices decide whether to grant a patent and PCT merely provides another convenient route for multiple applications, the problems from a fragmented patent system—limited patent protection and unpredictability—cannot be solved by mere procedural harmonization. Many provisions in PCT clarifies this point: Article 27(5) expressly states that “[n]othing in this Treaty and the Regulations is intended to be construed as prescribing anything that would limit the freedom of each Contracting State to prescribe such substantive conditions of patentability as it desires.” The “Notes on the PCT” further explain that “conditions of patentability include novelty, inventive step (non-obviousness), industrial applicability, certain subject matter (for example, foods and beverages, chemical products, pharmaceutical products, and plant or animal varieties, are not patentable in some countries).”

Moreover, contrary to our intuitive expectation, an application through PCT is ineffective even in reducing costs and expediting the process. For example, WIPO shows that the costs using PCT is higher than direct application, especially when only a few countries are involved (Table 3). The contributing factors behind the high costs include high default fees

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107 *id.*
108 WIPO, *Supra* Note 13, at 27 (The number of patent application filed through the Patent Cooperation Treaty (PCT) in 2008 was approximately 163,600, representing a 2.3% increase from the previous year.).
109 Reichman & Dreyfuss, *Supra* Note 10, at 88.
111 *id.*
112 WIPO, *Supra* Note 76, at 51.
of international preliminary examinations compared to national examination fees, Offices' failure to provide sufficient opportunity for discussion between the agent and examiner before a final report is established, and the fact that many elected Offices do not give significant attention to the international reports.\textsuperscript{113} Furthermore, KIPO argues that PCT is relatively slow and the patent may have a reduced enforceable life span because the life of a patent is calculated from the date of its first filing.\textsuperscript{114} According to WIPO, in 2009, 26\% of international applications were published without an attached International Search Report (ISR)\textsuperscript{115} because of delayed search. Also, in the same year, over 6\% of ISRs were delivered more than 30 months after the priority date. International Authorities are mainly responsible for the delays because they often are unable to timely begin the international search or international preliminary examination as a result of delays in receiving information, documents or fees from the applicant or receiving Office. Part of the delay is also due to the time expended in application processing within the Office, including any Office correspondence with the applicant. Receiving Offices and International Authorities in different regions send documents in paper form and via surface mail, which also contributes to the delay.\textsuperscript{116}

< Table 3: The Comparison of Costs between Direct and PCT Applications >

<table>
<thead>
<tr>
<th></th>
<th>2 Countries\textsuperscript{117}</th>
<th>7 Countries\textsuperscript{118}</th>
<th>15 Countries\textsuperscript{119}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Direct</td>
<td>PCT</td>
<td>Direct</td>
</tr>
<tr>
<td>Costs</td>
<td>$16,971</td>
<td>$19,406</td>
<td>$59,397</td>
</tr>
</tbody>
</table>

\textsuperscript{113} WIPO, \textit{Supra Note} 110, at 39–40.  
\textsuperscript{115} WIPO, \textit{Supra Note} 110, at 6 (“ISR”: international search report: a report established by the International Searching Authority for every international application (subject to limited exceptions) listing the disclosures considered relevant to novelty or inventive step according to the definitions under the Treaty, which are intended to be sufficiently broad as to embrace the definitions of relevant prior art which apply in any Contracting State).  
\textsuperscript{116} WIPO, \textit{Supra Note} 110, at 29–30.  
\textsuperscript{117} WIPO, \textit{Supra Note} 50, at 58 (The United States of America and Japan).  
\textsuperscript{118} See \textit{id} (China, European Patent Office (validation in France, Germany and United Kingdom), Japan, the United States of America, and Republic of Korea).  
\textsuperscript{119} See \textit{id} (Australia, Brazil, Canada, China, European Patent Office (validation in, France, Germany and United Kingdom), Israel, India, Japan, Mexico, the United States of America, Republic of Korea, Russian Federation, and Singapore).
C. **Substantive Harmonization**

The problems and limitations of procedural harmonization call for substantive harmonization. It is possible to think of two kinds of substantive harmonization—legal and administrative. *Substantive and legal harmonization* are often called “deep Harmonization,” concerning not just the drafting, filing, and examination of patent applications, but also the cornerstone requirements of patentability. Specifically, “deep harmonization” means the adoption of identical rules concerning the amount of information revealed by patent disclosure, and the criteria to determine a novel and useful invention when a technical advance meets the requirement for an “inventive step” (non-obviousness). It would also entail agreement on the priority of inventorship (whether a patent is awarded to the first to invent or the first to file), and whether inventors will be accorded a grace period permitting publication prior to filing. Moreover, “deep harmonization” requires a comprehensive attention on many post-grant issues. The anticipated advantage of this substantive and legal harmonization is the simple and rapid procedures, simplicity of access, proximity to courts, legal clarity and predictability. In this sense, *substantive and legal harmonization* are essential elements for the ultimate goal of harmonization—“One patent application and global protection.”

Two notable international agreements were concluded with regard to substantive and legal harmonization: the Paris Convention for the Protection of Industrial Property (Paris Convention) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). The Paris Convention, concluded in 1883 and amended in 1900, 1911, 1925, 1934, 1956, 1967 and 1993, is considered to be the first multilateral agreement in the field of patent laws. It guarantees national treatment, allowing the inventors from any signatory nation to

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121 *id*.
122 *id*.
123 Reichman & Dreyfuss, *Supra* Note 10, at 124.
126 Mengistie, *Supra* note 100, at 18.
claim priority in other nations based on the filing date of its first application, as embodied in Article 4.  

Article 4(A)(2) of the Paris Convention ties its requirement of patent priority to an "application for a patent ... in one of the countries of the Union." Article 4(A)(2) provides that "any filing that is equivalent to a regular national filing under the domestic legislation of any country of the Union or under bilateral or multilateral treaties concluded between countries of the Union shall be recognized as giving rise to the right of priority." However, the Paris Convention’s lack of minimum standards of patent protection led the countries to discuss the TRIPS agreement, accomplishing a major step toward legal-substantive patent law harmonization. It established a set of minimum international standards of protection in some 150 participating countries. Particularly, the TRIPS Agreement sweeps away national limitations on patents protection by stating in the first sentence of Article 27(1) that “patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve inventive step and are capable of industrial application.” However, the TRIPS left ample room for national variations and approaches, which are often collectively deemed “the TRIPS flexibilities.” Its very first article guarantees that “Members shall be free to determine the appropriate method of implementing the provisions of this Agreement within their own legal system and practice.” Similarly, Article 27(2), which generally mandates that patents shall be available in all fields of technologies, allows countries to create exceptions from patentability “necessary to protect ordre public or morality”—a standard understood to “depend to a certain degree on the particular culture of a country or

127 Takashi, *Supra* note 96, at 8.
128 *GOLDSTEIN, Supra* Note 21, at 400.
129 *See id.*
130 *See TRIPS Agreement, supra* note 110, arts. 27–34.
131 *GOLDSTEIN, Supra* Note 21, at 370.
133 *See TRIPS Agreement, supra* note 110, art. 1.1.
134 *See id.*, art. 27.2.
Unlike prior Intellectual Property conventions, The TRIPs Agreement provided an effective dispute settlement mechanism. Countries failing to comply with the TRIPS Agreement standards could be subjected to trade retaliation if WTO’s dispute settlement mechanism determined the existence of a case of non-compliance with the Agreement.

However, substantive and legal harmonization is not an easily attainable goal. The harmonization of substantive law will necessarily result in high financial and social costs in order to modify domestic legal systems, and change patent law’s established and widely accepted working methods. Patent law harmonization would be a hot political issue in national congress, resulting in heated debates and conflicting interests among various lobbying groups. Considering the growing importance and recognition of patent law, reaching a consensus throughout the world would be more difficult than the challenges faced in 1994 for TRIPs. For example, it has been long recognized that US’s priority rule of first-to-invent has hampered international harmonization and caused US inventors to pay high costs; nonetheless, legal change has been discussed in vain for almost 50 years. In fact, systematic efforts to replace the first-to-invent rule with a first-to-file rule date to the 1966 Report of the President’s Commission on the Patent System, To Promote the Progress of Useful Arts in an Age of Exploding Technology. Congress is continuing its discussion to change towards a first-to-file system in the Patent Reform Act 2011. Moreover, the suggestion for substantive and legal harmonization is not easily acceptable to the country that has not had competitive system for patent protection, mainly developing countries. It is apparent that the implementation of substantive and legal harmonization, such as the TRIPS Agreement, involves the amendment of existing legislations, the adoption of new ones, the strengthening of Intellectual Property Rights administration, and the development of an enforcement capacity. These entail a huge financial cost especially for the developing countries. In order to appreciate the problem, a UNCTAD study shown in table 4 demonstrates the required reform and the estimated cost in selected countries.

135 Duffy, Supra Note 84, at 705; See also DANIEL GERVASI, THE TRIPS AGREEMENT: DRAFTING HISTORY AND ANALYSIS ¶ 2.134, at 149 (1998) (referring specifically to the morality standard and describing the ordre public standard by reference to the principles necessary to sustain the institutions of a “given society”).
136 id.
137 id.
138 GOLDSTEIN, Supra Note 21, at 386.
139 See id.
140 WORLD INTELLECTUAL PROPERTY OFFICE (WIPO), THE IMPACT OF THE INTERNATIONAL PATENT SYSTEM ON DEVELOPING COUNTRIES: A STUDY BY GETACHEW MENGISTE 33 (Aug 2003), available at
<Table 4: UNCTAD Case study related to estimated costs for reform and capacity building>  

<table>
<thead>
<tr>
<th>Country</th>
<th>Reforms Needed</th>
<th>Costs in US $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>Draft new laws, improve enforcement</td>
<td>$250,000 one time plus $1.1 million annually</td>
</tr>
<tr>
<td>Chile</td>
<td>Draft new laws, train staff administering IPR laws</td>
<td>$718,000 one time plus $837,000 annually</td>
</tr>
<tr>
<td>Egypt</td>
<td>Train staff administering IPR laws</td>
<td>$1.8 million</td>
</tr>
<tr>
<td>India</td>
<td>Modernize Patent Office</td>
<td>$5.9 million</td>
</tr>
<tr>
<td>Tanzania</td>
<td>Draft new laws, develop enforcement capability</td>
<td>$1.0 ~ 1.5 million</td>
</tr>
</tbody>
</table>

Also, developing countries would not favor international obligation for legal harmonization because it limits their discretion and policy tools. Because developing countries do not have much patent backlogs or innovative industries, they want their patent policy to be as flexible as possible to encourage economic developments. They believe that every country must design its patent system according to its level of industrial development, but a global substantive harmonization will constrain its government from using the patent as a tool to devise particular economic and industrial policies.\(^\text{142}\) For example, it is reported by WIPO that the TRIPS Agreement in fact restricts the freedom of developing countries from fine-tuning their patent systems in line with their level of techno-economic development.\(^\text{143}\) In this sense, Reichman and Dreyfuss(2007) furthers this argument by arguing that “it is unwise to move to deep substantive harmonization [because] these standards challenged the technological catch-up strategies of all the developing countries and saddled them with social costs they are struggling to absorb.”\(^\text{144}\)

\(^{141}\) See id.


\(^{143}\) WIPO, Supra Note 141, at 33.

The widely accepted fundamental assumption is that the action for harmonization is a necessary and urgent matter. Although substantive and legal harmonization is necessary to overcome the problems caused by internationalization and globalization, it is a goal difficult to realize because it requires too much time and effort. Considering the limited capacity of patent offices and the increasing number of patent backlogs, it is imperative to deliver meaningful outcomes in a very near-term timeframe.\textsuperscript{145} If too much time is delayed, the fragmented patent system can jeopardize the patent system itself and continue a vicious cycle of uncertainty and economic waste. This argument is supported by three evidences: First, the growing number of international applications and the importance of patents. As discussed earlier, the number of patent applications has more than doubled in only a decade,\textsuperscript{146} and applications by foreign inventors rose fourfold during the same period, from 0.5 million in 1985 to 2.07 million in 1995.\textsuperscript{147} International Monetary Fund (IMF) statistics shows that the trade in goods enjoyed an average per-annum growth of 6.9\%.\textsuperscript{148} By contrast, the trade in patents grew an average of 12.5\% per annum, or nearly twice as fast.\textsuperscript{149} Coupled with this increasing number of international patent applications, it is estimated that 2 million pending files in examination within the EPO, JPO and USPTO could be 4 million in 10 years.\textsuperscript{150} Moreover, developing countries are recognizing the importance of intellectual property rights and increasingly depending on patents. Patent filing from China is exploding with a 28.1\% average annual growth rate from 2003 to 2007, Brazil with 10.8\%, Mexico with 8.0\%, Hong Kong with 10.9\%, and Korea with a 9.3\% annual growth rate. This growing recognition inevitably aggravates the problems in the international patent system, and augments the urgent necessity for harmonizing patent laws. The development of advanced technologies also supports harmonization in a near timeframe.\textsuperscript{151} Many applications these days treat the patentability of inventions relating to frontier technologies such as information technology, biotechnology and nanotechnology. But in many cases the patentability of these new techniques cannot be

\textsuperscript{146} id.
\textsuperscript{147} ARAI, Supra Note 54, 13–14.
\textsuperscript{148} id.
\textsuperscript{149} id.
\textsuperscript{150} FIVEIPOFFICES WEBSITE, OBJECTIVE, available at http://www.fiveipoffices.org/obj.html.
appropriately decided under the existing guidelines. These new developing techniques demand highly specialized knowledge, and each Patent Office is required to cooperate internationally to issue patentability criteria in a timely manner,\textsuperscript{152} and foster or regulate relevant industries.\textsuperscript{153} But without an effort for harmonization, the different level and breadth of patent protection distorts the world market, and hinder the growth of new innovations. Considering the speed of technological advancements in this innovative society, it is necessary to cooperate in this new frontier field.

In short, it is imperative to find a practical and effective way to remedy the increasing number of multiple applications and unpredictable validity in this globalized world. Admitting that substantive-legal harmonization is necessary but hard to achieve soon, it becomes necessary to consider substantive-administrative measures as the alternative implementing method. Because administrative measures do not necessarily require the changing of laws, they can be attained much easier with relatively low costs. They do not require concluding treaties or conventions which are accompanied by political debate or rectification in congress, but are rather implemented by the cooperation among some interested Patent Offices. Because of this feature, the substantive-administrative harmonization should focus on the patent prosecution process, excluding the enforcement or infringement which necessarily requires the legal basis. The primary goal of this measure is known as “Work-sharing.”\textsuperscript{154} Work-sharing is an important part of patent law harmonization in the sense that it helps Patent Offices to better understand each other’s work methods,\textsuperscript{155} and gradually make each country practically harmonize its patent system with one another by rulemaking, adjudication and enforcement, without amending patent laws. Therefore, the director of the USPTO David Kappos affirms that “harmonization allows us to maximize the vital tool for reducing pendency and improving quality and that is with work-sharing.\textsuperscript{156}”

\textsuperscript{152} id.
\textsuperscript{153} id.
\textsuperscript{154} KIPO, Supra Note 91, at 5.
4. STRATEGIES FOR WORK-SHARING

A. THE STAGE OF WORK-SHARING

The purpose of work-sharing is simple but strong: “to eliminate unnecessary duplication of work among the offices, and enhance patent examination efficiency and quality.”\(^{157}\) If an applicant files a patent application to a patent office, the application will be examined through the following procedure: filing, prior-art search, office action, and patent decision.\(^{158}\) If the applicant files the application to multiple patent offices, each patent office will examine the application independently, following its own patent laws and administrative rules to determine patentability. It is inefficient and wasteful in multiple applications for patent granting authorities to do virtually the same work day after day on hundreds of thousands of patent applications each year.\(^{159}\) Thus, in order to secure efficient and reliable examination, it is necessary to share the information in each and every stage of this examination procedure such as search strategies, search results, and examination results for applications directed to the same invention.\(^{160}\) Technically, as a process of sharing information, patent work-sharing necessarily implicates deferred examination for a significant percentage of patent applications. For patent applications with a foreign origin, this means a “second office” must await information processed and provided by a “first office.”\(^{161}\)

One can think of three kinds of work-sharing based on the kinds of information that is shared between the first and second offices.\(^{162}\) First, Patent Offices can share and mutually exploit the information of searching prior arts. This process is called “Search sharing.” By using information from other offices, a particular office can reduce search time and reinforce the

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\(^{157}\) KAZENSKE, Supra Note 145, at 1.

\(^{158}\) KIPO, Supra Note 91, at 5.

\(^{159}\) Quinn, Supra Note 156.


\(^{162}\) KIPO, Supra Note 91, at 5.
search result of prior art. The “Triway Project” suggested by USPTO is a typical example of this kind of sharing. Second, it is possible for offices to share the examination information including office action in the process of examination. This is called “Action sharing.” Through action sharing, a second office can use it as a basis for decision making, or construct other points of view, or anticipate the result of patent decision or office action. The “New Route” suggested by JPO or the “SHARE” project proposed by USTPO are examples of action sharing. Finally, it is possible for an office to cooperate with other offices by sharing its final decision. This is called “decision sharing.” The second office can use the decision of the first office as a basis for deciding whether to grant a patent. From the applicant’s point of view, decision sharing allows him to anticipate the decision of the patent application. Patent Prosecution Highway(PPH) is a typical example of this process. The three types of work-sharing are shown in figure 6, and the paper will discuss these three kinds of sharing in detail.

< Figure 6: Three kinds of Work-sharing between Patent Offices>
Search Sharing

All national patent laws and TRIPS Agreement require novelty to obtain patent. When an applicant seeks patent protection in multiple jurisdictions, each of the Patent Offices performs a separate and independent novelty search on the same invention. Each Patent Office performing a search would cover all documents available before the latest filing date, thereby covering any document which is relevant in any territory. And, subject to a few exceptions, prior art that would defeat novelty in one jurisdiction will also defeat novelty in others, which means that each of the multiple offices is searching roughly the same body of prior art and comparing it to the same invention. In this background, search sharing means mutually exploiting the strategy and result of a search. The second office can fully recognize the first office’s search result, or it can just refer to the result in its own search of prior art. Search sharing has a limited role only in prior-art search, and Patent Offices still retain the ultimate responsibility and discretion to decide granting patents. Thus, search sharing could be a fair starting point for broader work-sharing because it only provides information necessary for decision-making and differing national laws of novelty would present no barrier to such a search. Also, even if the search examiner lacks experience in the appropriate field of law of one or other countries, search sharing most likely does not pose a significant technical problem. Moreover, the language is not a big impediment for search-sharing considering patent examiners practically depends on the universal language such as drawings, pictures, and math formula to find relevant prior arts, rather than reading the full description of publications. Thus, for patent examiners, extensive databases of prior-art, advanced searching strategies, and trustworthy relevant information are useful and important. These can be provided by search-sharing. One of the apparent advantages of search sharing is that it can effectively reduce the costs for applicants and Patent Offices considering that the cost of a comprehensive, coordinated search that is conducted in two or more offices will inevitably be greater than the

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163 ICC, Supra Note 60, at 4.
164 id.
165 id.
166 ICC, Supra Note 160, at 2.
167 See id., at 6.
Furthermore, search sharing could solve the problem of later-invalidated patents caused by different prior-art search.\footnote{169}{id.}

In fact, this search-sharing is already realized within the PCT structure. According to PCT, after an application is filed, an authorized International Searching Authority (ISA) conducts an international search to find the most relevant prior art documents regarding the claimed subject matter.\footnote{170}{WIPO, Supra Note 110, at 9.} This search results in an International Search Report (ISR), and a written opinion regarding patentability.\footnote{171}{id.} The drafters of the PCT expected that Examining Offices would be able to make substantial economies since the system renders superfluous all or most of the work involved in searching, and issuing an international preliminary examination report.\footnote{172}{id.} However, under the current system many designated and elected Offices do not consider the international search as that of high quality, and repeat the search when the application enters the national phase.\footnote{173}{United Kingdom Intellectual Property Office (UKIPO), Informal Consultation on Reform of the Patent Cooperation Treaty (PCT) 7, available at http://www.ipo.gov.uk/consult-pct.pdf.} Thus, to overcome this problem of PCT and realize the working search-sharing system, it is necessary to institutionalize the exploitation or recognition of search reports by Patent Offices. This requires embedding trust and confidence in the quality of the examinations based on the examiner, data base, and search strategy of other Patent Offices. As trust and credibility improves, so will the utility of search-sharing from mere reference to full recognition of the prior-art search report. Accordingly, an efficient and reliable work-sharing is plausible.

This argument is widely supported by international organization and practitioners. In agreeing with the necessity and viability of this search sharing, International Chamber of Commerce (ICC) argues that “continued and improved cooperation between patent offices of an early coordinated comprehensive search would create efficiencies for patent offices.”\footnote{174}{ICC, Supra Note 160, at 2.} Former Commissioner of the Japan Patent Office, Hisamitsu Arai also supported this argument.\footnote{168}{id.}
by maintaining that “the first stage [toward global patent] is to get agreement on the sharing and mutual recognition of prior-art search results.”  

Emphasizing the necessity of search-sharing among three countries – U.S., EU and Japan, Arai wrote this: “There is, for example, an application pending in the U.S. for a patent on a DNA sequence. This is a single patent, but it is expected that it will cost the patent office about 9,100 dollars to ascertain whether or not the same basic application has already been filed, or the information is already commonly known. It would be very wasteful to have to duplicate this effort in Japan and Europe. If one patent office has conducted a prior-art search, it would make sense for the other jurisdictions to recognize those search results. An ordinary filing in Japan currently costs 191 dollars, and it is impossible for the JPO to hope to break even even if it has to spend about 9,100 dollars just for ascertaining patentability. Likewise, business would prefer not to spend the time and money filing the same application in three different regions.”

In reality, many international efforts are under way to implement search sharing. Since 2005, UK Intellectual Property Office contracted with the Danish Patent and Trade Mark Office and the Netherlands Intellectual Property Office for mutual exploitation of search results. And, within the framework of Trilateral Cooperation by three major patent offices in patent application—the European, Japanese, and the US, the “Triway” project suggested by USPTO is targeting to promote work-sharing by eliminating certain timing issues. It also provides applicants and Offices with the Trilateral Offices’ search results within a short period of time to give applicants and Trilateral Offices an opportunity to share and consider all

175 ARAI, Supra Note 54, at 60.  
176 id.  
177 UNITED KINGDOM INTELLECTUAL PROPERTY OFFICE (UKIPO), THE PATENT OFFICE CORPORATE PLAN 2005  
178 See id; See also Trilateral Cooperation, The objective of Trilateral Cooperation, available at http://www.trilateral.net/about/objectives.html: This long lasting co-operation is aimed at;  
  • Improving the quality of examination processes and reducing the processing time of patent applications  
  • Improving the quality of incoming applications  
  • Developing common infrastructure and compatible data for electronic business systems and search tools  
  • Solving common problems related to the protection of industrial property rights;  
  • Harmonizing practices of the three Offices  
  • Promoting the dissemination of the technical information contained in patents;  
  • Deepening awareness of the benefits of the patent system; and  
  • Exploiting the full potential of work performed by the other Trilateral Offices in search, examination, documentation and electronic tools
of the Trilateral search results. The pilot program was tested among three countries from 2008 to 2009. Later on, as South Korea and China gained leverage in the patent field, the five major patent offices with high filing numbers have started a meeting called “IP5.” Since October 2008, the Five IP Offices (IP5) have been engaged in ten collaborative projects known as the Foundation Projects, including projects of “Common Access to Search and Examination Results (One Portal Dossier)”.

Moreover, as search-sharing is the fair starting point for further harmonization, other work-sharing mechanisms that will be discussed later – decision sharing or action sharing such as PPH or One-route, are based on the search-sharing as well.

**Decision Sharing**

Decision sharing refers to the second office’s sharing the final decision of the first office and using it as a basis to decide whether to grant a patent in the second office. This is often called mutual exploitation of examination results. Many of these advantages arise in the Second Office where patent examiners can use examiner’s opinion, information on examination, prior-art search, and office action as reference material. Even though the final decision on patentability solely depends on the Second Office and the information from the initial Office is of limited use due to their distinction in substantive patent law, the initial Office’s examination is helpful to construct a rationale for granting or rejecting an application. Thus, when applications are filed in multiple patent offices, decision sharing could significantly reduce the

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  - Common Documentation (lead: EPO)
  - Common Hybrid Classification (lead: EPO)
  - Common Access to Search and Examination Results (lead: JPO)
  - Common Application Format (lead: JPO)
  - Common Training Policy (lead: KIPO)
  - Mutual Machine Translation (lead: KIPO)
  - Common Examination Practice Rules and Quality Management (lead: SIPO)
  - Common Statistical Parameter System for Examination (lead: SIPO)
  - Common Approach to Sharing and Documenting Search Strategies (lead: USPTO)
  - Common Search and Examination Support Tools (lead: USPTO)
181 KIPO, *Supra* Note 91, at 33.
A Powerful example of decision sharing is the Patent Prosecution Highway (PPH), which is a set of initiatives that provides accelerated patent prosecution procedures in second patent offices by sharing information about decisions. Specifically, under the PPH, an applicant receiving a ruling from the Office of First Filing (OFF) that at least one claim in his application is patentable may request that the Office of Second Filing (OSF) fast track the examination of corresponding claims in corresponding applications filed in the OSF. Overwhelming evidence proves that international applicants such as multi-national corporations can enjoy quicker and reliable patentability determinations in multiple jurisdictions through PPH. Also, the application costs to “enter the highway” is approximately only 20 ~ 30% of the cost incurred in pursuing examination through its current program. For the participating Offices, the PPH process avoids redundant work, involves claims that are fewer in number and narrower in scope, and reduces pendency.

182 LONDON ECONOMICS, ECONOMIC STUDY ON PATENT BACKLOGS AND A SYSTEM OF MUTUAL RECOGNITION – FINAL REPORT TO THE INTELLECTUAL PROPERTY OFFICE 77 (2010).

183 American Intellectual Property Law Association, Patent Prosecution Highway: A Key Strategy for Reducing Patent Backlogs (May 24, 2010), available at http://www.aipla.org/Template.cfm?Section=Press_Releases&Template=/ContentManagement/ContentDisplay.cfm&ContentID=25150; See also http://www.uspto.gov/patents/init_events/pph/index.jsp (As of October, 2010, USPTO made an PPH agreement with 13 countries: Australia, Austria, Canada, Denmark, EU, Finland, Germany, Hungary, Japan, South Korea, Singapore, Spain, United Kingdom.); See also http://www.jpo.go.jp/torikumi_e/t_torikumi_e/patent_highway_e.htm (JPO (Japan Patent Office) made with 13 countries: the United States, South Korea, the United Kingdom, Germany, Denmark, Finland, Russia, Austria, Singapore, Hungary, Canada, EU, and Spain.); See also http://www.ipo.gov.uk/p-pph-kipo-agree (The UKIPO (United Kingdom Intellectual Property office) has only 3 agreements with the United States, Japan, and Korea.).


185 AIPLA REPORTS, AIPLA MEETING OF PATENT FILERS, USPTO, AND JPO CONFIRMS GREAT SUCCESS OF PPH 1 (May 20, 2010), http://www.aipla.org/Content/ContentGroups/About_AIPLA1/AIPLA_Reports/20106/100520AIPLAReports.pdf (Representatives of Microsoft and IBM confirmed the performance statistics of the USPTO and JPO. Microsoft’s statistics for its use of PPH in Japan as the Office of second filing showed: 73% allowance rate for PPH cases, 1.25 Office Actions from PPH-request to allowance, 1.9 months from PPH request to first Office Action, and 8.7 months from PPH request or examination to allowance. Consistent with Microsoft’s numbers was IBM’s experience in Japan: 86.7% allowance rate for PPH cases, 1.3 Office Actions from PPH-request to allowance, 49 days from PPH-request to first Office Action.).

186 See id (The USPTO statistics showed: 93% allowance rate for PPH cases, compared to a 44% rate for non-PPH cases, 1.7 actions per disposal for PPH cases, compared to 2.7 actions for non-PPH cases, 20% reduction in the number of claims, and 18-month decrease in pendency for some technologies. JPO also cited the speed of the PPH process, noting that PPH applications in the JPO, as the Office of second filing, have averaged a 1.9 month pendency to first action, compared to 29.3 month pendency for non-PPH applications. From first to final action,
However, the usefulness of decision sharing should be limited because multiple applications will not be examined until the First Office entirely finishes examination. In other words, because the examination in multiple Patent Offices should be processed not parallel but serially, the total time for obtaining multiple patents might be longer and all claims in the office of second filing must be limited to the claim scope allowed in the office of first filing, which could result in narrower claims than if prosecuted separately in each country.187 Thus, the decision sharing’s utility depends on several issues between two countries such as substantive standard, trust of examination, and language. First of all, decision sharing is useful when substantive patent law is harmonized. Understandably, decision sharing would be especially useful for patent examiners when they receive examination results from countries with similar rules and standards as their own. If two countries share a similar rule of patentability, the second office could dramatically reduce the need for further examination. This is evidenced in a KIPO report where a Japanese applicant who used a PPH to file his second application to Korea, where the substantive patent law is almost identical to that of Japan, gained huge benefits from using PPH.188 One case example shows that an applicant in Japan obtained a patent decision from Korea in only 28 days by using PPH.189 Moreover, decision-sharing should be based on trust and confidence as that required in search-sharing. The increased amount of information in decision sharing requires the whole examination process to be viewed with wider and broader trust. Even though countries may differ in their substantive law, a country could issue patents by decision-sharing if it strongly believes and confides in the quality of patents granted in other countries. Israel is an excellent example. If an applicant for an Israeli patent successfully obtained a patent on a parallel application filed in any other patent office on a published list, Article 17(c) of the Israeli Patents Law requires the Israeli Patent Office to “deem” the application compliant with the basic validity requirements of Israeli law (including novelty, non-obviousness, and enablement).190 Currently, Israel’s list of acceptable Patent Offices includes the USPTO, the European Patent Office (EPO), and the national patent offices of Austria, Germany, Denmark, the United Kingdom, Norway, Sweden,

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188 KIPO, *Supra* Note 91, at 79.
189 See id.
Russia, Japan, and Canada. Thus, a party seeking an Israeli patent may choose one of eleven foreign patent offices within which most of the examination can occur. Without trust, applicants could abuse Israel’s decision-sharing as a backdoor to hastily obtain an Israel patent; this would eventually result in a deterioration of the patent’s quality, a concern that led the European Parliament to refuse the draft for a mutual recognition patent system. The other consideration is language. Language may be one of the most practical and fundamental hurdles in discussing harmonization. Countries require patent applications to be written in their own language and issue office actions and decisions in their own language as well. To share decisional information, examiners must understand patent applications written in highly technical and specialized terms, and examiner opinions which define the legal rights and scope of patents. Decision sharing is impossible if examiners cannot understand the documentation. Thus, to facilitate decisions sharing between countries using different languages, accurate translations should be elaborated in advance. In short, participating countries could enjoy the benefits of decision sharing if they find similarities in their patent laws, demonstrate strong trust, and agree on a same language. The effective use of decision-sharing will lead to mutual recognition of patents, which will be discussed later.

**Action Sharing**

“Action sharing” defines the process in which offices share information about prior-art search result and office action. In action-sharing, OFF (Office of First Filed) has priority to conduct the first action in searching and examining prior art. Action sharing is sharing information between searching prior-art and concluding examination, but it can be particularly helpful in particular case such as when the examining speed of two offices is so different that it is difficult for the offices to timely use the information to share the workload. In this case, this structure of action sharing is helpful to synchronize examination. For example, a 2004 study conducted by the Trilateral Offices showed that for USPTO-JPO/JPO-USPTO cross-filings, USPTO produced first action results prior to JPO first action in about 90% of cases, whereas JPO produced first action results prior to USPTO first action in only about 10% of cases.

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192 See id.

193 PETER N. FOWLER, INTERNATIONAL POLICIES AND NORMS TO ADDRESS EMERGING IP CHALLENGES 16 (Mar.
study revealed that the timing of the availability of Office of First Filing (OFF) search and examination results relative to Office of Second Filing (OSF) pendency is far from optimal, posing a major obstacle to work-sharing.\textsuperscript{194} Given the high volume of JPO-USPTO filings, this disparity represented a significant loss to the USPTO in potential efficiency gains.\textsuperscript{195} Based on this notion, USPTO proposed a program known as SHARE, or Strategic Handling of Applications for Rapid Examination. Under SHARE, the Office of Second filing will use the search and examination results from the Office of First Filing “to the maximum extent practicable” to eliminate timing imbalances.\textsuperscript{196} This action sharing synchronizes time for efficient examination and improves the quality of examination in the Second Filing Office by using the information from OFF as a basis for its decision process, constructing other points of view or anticipating the result of patent decision or office action.\textsuperscript{197} As one can see in this case, action sharing could be an additional consideration when there is particular time-difference or difficulties that make cooperation inefficient. Thus, it is desirable to apply action sharing on a case-by-case basis.

\textit{Summary}

In short, search-sharing is the most viable and practical way of work-sharing. It only provides information and resources to decide patentability, and many Patent Offices may feel much more comfortable in joining this cooperation as long as Patent Offices still retain their discretion and authority to administer the examination process. To realize search-sharing, it is necessary to construct trust and confidence in the search results done by counterparts. Decision sharing is built on the foundation of search sharing. In decision sharing, examiners in the Second Office could enjoy a larger amount of reference data and record produced by other Offices. However, unless the patent law is similar, the examination is trustworthy, and the examiners could understand the record, the availability of this information would be substantially limited. In this situation, decision sharing could be harmful by delaying the examining procedure until the end of the first office’s examination. On the other hand, action

\textsuperscript{194} \textit{id.}
\textsuperscript{195} \textit{id.}
\textsuperscript{196} TRILATERAL OFFICE, SHARE, available at http://www.trilateral.net/projects/worksharing/share.html.
\textsuperscript{197} KIPO, Supra Note 91, at 33.
sharing functions as a supplementary tool. If one could find specific conditions that fit its use, such as different examination speeds between two offices, it could be used on a case-by-case basis. These three work-sharing mechanisms are summarized in table 5. Based on this analysis, one suggests a step-by-step approach. Starting from search sharing, countries with common backgrounds and interests could push towards decision sharing. In this process of harmonization, offices could consider supplement harmonization by action sharing. Former Commissioner of the Japan Patent Office Hisamitsu Arai introduced a 4-stage-approach toward true harmonization and global patents: the first stage consists of countries’ agreeing on the sharing and mutual recognition of prior-art search results; the second stage is to recognize each other’s patents; the third stage is to implement trilateral patents between U.S., Europe, and Japan; and the fourth stage is to extend worldwide in order to provide a truly global patent system.198 This notion is well consistent with the arguments in this paper because it suggests that harmonization’s trajectory begins from search sharing to decision sharing, and from administrative to legislative harmonization.

< Table 5: Three Kinds of Work-sharing >

<table>
<thead>
<tr>
<th></th>
<th>Search-sharing</th>
<th>Action-sharing</th>
<th>Decision-sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Applicability</strong></td>
<td>Universal</td>
<td>Case-by-base</td>
<td>Limited</td>
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<tr>
<td><strong>Condition to</strong></td>
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<tr>
<td><strong>Enhance Usefulness</strong></td>
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<tr>
<td><strong>Shared Information</strong></td>
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<td></td>
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<tr>
<td></td>
<td>Small</td>
<td>Middle</td>
<td>Large</td>
</tr>
<tr>
<td><strong>Advantage</strong></td>
<td>Broad cooperation</td>
<td>Tailored application</td>
<td>Maximum information sharing</td>
</tr>
<tr>
<td><strong>Disadvantage</strong></td>
<td>Small advantage and effect</td>
<td>Need to investigate timing imbalance in examination procedure</td>
<td>Serial, not parallel, examination</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>Triway, IP5, UKIPO</td>
<td>One-Route, SHARE</td>
<td>PPH, Israel Patent Law</td>
</tr>
</tbody>
</table>

198 ARAI, *Supra* Note 54, at 60.
B. SUGGESTIONS FOR EFFECTIVE WORK-SHARING

Currently, as we can see above examples of Trilateral Cooperation or IP5 Cooperation, the most important criterion for finding partners to harmonize is the number of applicants. As a result, the US, EU and Japan are leading the discussion for harmonization or work-sharing. It is understandable that these offices have direct interests for harmonization due to their high number of patent applications, duplicated filing, and patent backlogs; therefore, once harmonization is realized, its influence on these offices would be substantial. However, work-sharing has universal applicability which can be applied more broadly and widely than only within five offices. More offices can participate in this cooperation, and more diverse forms of cooperation can be considered. The following are the suggestions which might be useful and attainable cooperation based on the strategy of work-sharing.

Language-based Cooperation

Language may be one of the most fundamental impediments in achieving harmonization. For applicants, a substantial portion of the application costs consists of the cost in translating files. When applying for a patent in the US or Japan, the translation costs sum up to 36% of the total application cost.\footnote{WIPO, Supra Note 50, at 51.} Moreover, for Patent Offices, work-sharing assumes that the shared information is written in a language that the patent examiner can understand. If the material is written in a language that the examiner cannot understand even a well defined work-sharing mechanism or database would not work. In fact, the vast range of languages in the patent system most likely hampers harmonization: within the IP 5 circle, there are 6 languages—English, Japanese, French, Germany, Korean, and Chinese.\footnote{European Patent Office, Filing an application, available at http://www.epo.org/patents/Grant-procedure/Filing-an-application.html (Three official languages in EPO: English, French, and Germany)} And, there are 23 official languages only within the European Union.\footnote{EUROPA, EU at a glance, available at http://europa.eu/abc/european_countries/languages/index_en.htm (23 official languages: Bulgarian, Czech, Danish, Dutch, English, Estonian, Finnish, French, German, Greek, Hungarian, Irish, Italian, Latvian, Lithuanian, Maltese, Polish, Portuguese, Romanian, Slovak, Slovene, Spanish and Swedish)} To confront this linguistic diversity that delays and impairs cooperation, countries have depended on machine translation. In 2008, IP 5 offices announced a project for “Mutual Machine Translation” to help offices overcome the language barrier of patent information and allow greater access to each other’s patent
information. In 2010, The EPO and Google signed a Memorandum of Understanding to improve access to patent translations in multiple languages. But considering that patent applications and decisions are highly technical and sophisticated documents that should describe the legal rights and scope of patents, machine translations do not seem to be a prominent solution. Chisum and Farmer (2008) worried that inventive step can be lost in transition, and they cared about the legal impact of patent translation error on claim scope. Considering this, a pragmatic outcome would be expected if countries with same language could discuss harmonization with one another; for examples, English groups (e.g. the U.S, England, Canada, and Australia), Spanish groups (e.g. Spain, Mexico, Argentina, and Chile), French groups (e.g. France, Canada, Switzerland, and Belgium) and Chinese groups (China, Taiwan, and Singapore). In general, because countries with same language tend to share common cultural backgrounds and legal heritage, it may be easy to find common denominator for cooperation. In fact, two kinds of inter-governmental institutions in Africa are discussing harmonization based on their common language: OAPI (Organisation Africaine de la Propriété Intellectuelle: The African Intellectual Property Organization) is an institution composed of 16 countries who use French, and ARIPO (African Regional Intellectual Property Organization) is an institution that consists of 16 English-speaking countries. Another example is the “Vancouver Group”, where the UK, Canada, and Australia launched discussion group from 2008 to discuss mutual exploitation of patents. Based on the their recognition of common backgrounds for cooperation among them – similar sized developed countries, similar legal heritage, long standing relationship, they announced to enhance efficiency of the IP system and productivity of offices – in the interest of our customers and the community. Even though their discussion is still remained in the primitive stage, they have enough potential to expect more meaningful results soon beyond work-sharing.

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205 http://www.oapi.int/.
206 http://www.aripo.org/.
207 KIPO, Supra Note 91, at 12.
The Offshore Outsourcing of Patent Examination

With search-sharing being recognized as the easiest and most realizable option to reduce work and cost, new forms of cooperations are emerging: the offshore outsourcing of patent examination. *Outsourcing* is the generic term used when companies contract out certain business functions—usually in non-core areas—to an external supplier, eliminating the need to maintain an internal staff to perform that function.\(^{209}\) *Offshore outsourcing* is the contracting of these business functions to companies in other countries that can provide lower-cost.\(^{210}\) Management can consider offshore outsourcing to improve flexibility, reduce costs, and concentrate on core areas. This principle can also be applied to patent examination areas. From Patent Office’s point of view, prior-art searching is not a core function because it provides patent examiners with preliminary information to base their examination. Thus, if another country can perform the prior-art search more efficiently with lower costs, both participating countries could benefit from the overall efficiency resulting from the cooperation. The countries that are outsourcing their work can benefit from reduced costs and shortened examination times, which can lead to the improvement of patent quality. The countries who are outsourced can expect fee income and improved expertise. Outsourcing in patent examination is already taking place in the real world, as UKIPO will begin outsourcing to India beginning in 2011, specifically in answering telephone inquiries at first and expanding to search and examination afterwards.\(^{211}\) On the other hand, Danish Patent Office is one of the leading Office in the specialization of searching and providing information for examination. Danish Patent Office offers fast opinions on patentability of inventive ideas, and it also provides opinions on the validity of existing patents, which a patentee’s competitors or other Patent Offices might use when deciding whether to challenge an issued patent.\(^{212}\) Both services are extraordinarily fast, advertising ten working days as the normal benchmark for completing the

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\(^{210}\) See id.

\(^{211}\) UK-IPO to Outsource to India, available at http://groups.google.com/group/ipkat_readers/browse_thread/thread/c0d809dd2c527f09?pli=1.

\(^{212}\) Abramowicz & Duffy, *Supra* Note 190, at 1570.
services. Moreover, the Danish Office advertises a general set of “business services” touted as “combin[ing] our search competencies with our knowledge about practices within the areas of rights and legislation.” Like a private law firm, the Danish Office urges potential clients to “[t]ake advantage of us being an authority” and having “more than a hundred experts at your disposal.” Also similar to a law firm, the Office charges its customers by the hour for its professional services. Apparently, the development of IT technology makes offshore outsourcing easier, faster, and more plausible. As convenient and safe movement of vast information becomes possible with the help of IT technologies, patent examination’s quality and overall efficiency can be dramatically improved by offshore outsourcing.

**Regional Patent System**

A regional patent system can be described as a regionally limited global patent system. It can be analogized to the comparison made between regional economic integration and global economic integration. As regional economic integration is a practical reaction to the wave of globalization, a regional patent system is the pragmatic solution to the problems in the age of globalization. Theoretically, a regional patent system is introduces a new patent which can be recognized in its member states. In this sense, regional patent system is not a mutual recognition system, but a multilateral form of unilateral recognition. EU and ASEAN are examples of this regional patent system. The operation of the European patent and the on-going discussion in ASEAN, suggests several prerequisite conditions in order to successfully introduce a regional patent system.

First and foremost, there should be a fundamental motivation and agreement to construct a *common market and free trade*. Intellectual property and patents have been long recognized as one of the most important features of the common market agreement. Differences between national laws in the intellectual property field may constitute protectionist barriers to the free movement of goods and services that distort competition and undermine the

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213 See id., at 1571.
215 id.
216 id. (charging hourly rates of DKK 1050, equivalent to approximately $190).
single market. For example, a member state with extremely strict counterfeiting laws could easily take action for counterfeiting against products coming from a member state whose laws were less stringent. Moreover, as regional economic integration will promote the construction of common market and free trade, the problem caused by globalization will be intensified in that region. Accordingly, countries that initiated the regional integration agreement will subsequently have interests in the common patent system. Another important condition for the regional patent system is the existence of a common denominator and a higher standard of patentability. In an optimal regional patent system, the regional patent should be fully recognized after translation, and the patentability rule should be the common denominator of national patent laws that can fully meet the requirement of national rules. Also, the standard and quality of regional patents should be high enough to satisfy the national standards of all member states. A final and recurrent consideration to highlight in the regional patent system is the language. Although the economic integration union will result in diverse languages the regional patent system cannot support all languages. Thus, it is necessary to set an official language which is interchangeable, universal, and easily translated in a reasonable price and speed. For example, there are 26 official languages in the European Union, but the patent application should be written in three languages—English, French, and German. Even though Spain and Italy strongly criticize this condition, it is witnessed that works from all over Europe are well processed and reviewed with excellent translations.

A notable example of the regional patent system is the European Patent Convention. Since the early stages of the European Community, the fear that national intellectual property rights would be abused to restrict trade within the European Community led the European Commission to seek for solutions in the fields of patents, designs and trademarks. As a result, in 1973, over twenty states met at the diplomatic conference in Munich to discuss the introduction of a European patent grant procedure, and the conference concluded with the

218 See id.
220 WEILER & KOCJAN, Supra Note 217, at 1.
signing of the European Patent Convention by sixteen participants. The convention declared that its purpose is to strengthen co-operation between the European states to protect inventions; furthermore, it would ensure that the states could guarantee such protection through a single procedure and standard rules that that issues and governs patents. The proceedings in the European Patent Convention not only include a preliminary search but also a complete examination against a specific standard of invention for all applications filed in the European Patent Office. Upon completing the examination stage and determining patentability, a copy of the patent application is transferred to the Patent Office in each of the individual countries that were designated in the original application. The application is then translated (if required) and the national Office issues a patent. In effect, although an applicant files a single patent application, which is completed and prosecuted in the European Patent Office, it results in as many separate and distinct patents as the countries that were designated in the original application. Another good example of the regional patent system is the ASEAN (Association of South East Asian Nations) Patent System. In 1995, seven Member states of ASEAN declared the “ASEAN Framework Agreement on Intellectual Property Cooperation.” In this agreement, the member states recognized the importance and need for regional cooperation in intellectual property among the surrounding countries. Moreover, According to Article 1(4), Member States can explore the possibility of setting up an ASEAN patent system, including an ASEAN Patent Office, if feasible, to promote the region-wide protection of patent and to develop a regional and international protection system for patents. Based on this agreement, ASPEC (ASEAN Patent Examination Co-operation Programme) was established in 2008 and announced two objectives: reduce work and faster turnaround time; and improve search and examination procedures.

224 id.
225 id.
226 id.
Cooperation with Developing Countries

Many developing countries have strongly opposed the idea of a few developed countries driving patent harmonization forward. Specifically, developed countries want to protect their inventive ideas and check the competition of developing countries. In contrary, developing countries with low inventive capacity and unfamiliarity with intellectual property rights were unable to secure enough patents to guarantee the possibility of future development. Thus, developing countries find little merit in participating in negotiations; they consider patent law harmonization as an attempt to solidify or even widen the technical barrier and economic gap among countries. In this situation, work-sharing is an attractive subject to start discussing harmonization with developing countries. First, developing countries can receive valuable technical information from developed countries when they share information on application and prior-art search. Most patent laws require the patent description to disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.227 Similarly, prior-art search by other offices will disclose all relevant patents, publications, or products that existed before. If developing countries can take part in sharing such information and access an extensive database operated by developed countries, the resultant disclosure of comprehensive patent documents and research reports would be valuable resources for the developing countries’ technical development. Also, the shared information can facilitate foreign investment by advancing the identification, selection, negotiation, acquisition and transfer of foreign technology. Moreover, work-sharing will alleviate the burden on national offices of developing countries as they often lack the requisite manpower, information, documentation, and financial resources to complete the patents protection.228 Thus, shared information about prior-art will help improve patent quality by avoiding duplication of local inventive efforts and reorient them to invent around any patented invention.229 In summary, work-sharing can not only contribute the developing countries’ economic development, but it can also help developing countries overcome the problem of failing to maintain a competitive patent regime due to their lack of information on alternative sources of technology.230

227 WIPO, Supra note 4, at 12
228 id.
229 id.
230 id.
Combination with Procedural Harmonization (PCT Reform)

Since its adoption in Washington in 1970, the PCT has achieved great success in meeting its objectives. In particular, it has succeeded in simplifying and rendering more economical the protection of inventions throughout the world. An important factor in the PCT’s success has been its *procedural* focus to obtain legal protection for inventions. Even though this procedural focus is not so helpful to solve the patent problems in the globalized age, this limitation could encourage countries to join this treaty with too much burden. Thus, to maximize the effect of procedural harmonization it is necessary to consider combining it with substantive harmonization. From the standpoint of work-sharing, PCT can be a useful vehicle that implements the work-sharing mechanism. Excluding the hardest part of harmonization – substantive and legal harmonization – it is necessary to synthesize and to create a synergy between procedural harmonization and work sharing. As discussed earlier, many work-sharing mechanisms have already been implemented within the PCT framework but the substantive cooperation did not receive much attention and credit. Thus, combining PCT with work-sharing is to accredit and trust to fill the structure within PCT. In this sense, the suggestion by WIPO director general Francis Gurry to reform PCT is consistent with this suggestion\(^\text{231}\), and there are several ways to reform PCT as well as to realize work-sharing within PCT: (1) combining search-sharing to make search report and preliminary examination more compliant and consistent; and (2) combining decision-sharing to make international examination more complete, relevant and useful.\(^\text{232}\)

The Evolution to Mutual Recognition

The ultimate and ideal cooperation of work-sharing, especially decision-sharing, is a mutual recognition of patents. Mutual recognition of patents is based on the agreement between two or more Patent Offices to validate each other’s patents, accrediting other Patent Offices that the methodology of the examination is sound and that the procedures are functioning accordingly.\(^\text{233}\) From the standpoint of harmonization, mutual recognition is an

\(^{231}\) UKIPO, *Supra* Note 173, at 4.

\(^{232}\) id.

\(^{233}\) The UNESCO definition of *Mutual Recognition*: Agreement by two or more institutional bodies to validate
advanced form of cooperation than that of mere information-sharing on the examination process and can be considered as a bridge between legal and administrative harmonization. As mentioned in the previous discussion on decision-sharing, Patent Offices must build stronger trust and confidence regarding examination, similarity of patentability standards, and interchangeability of language to realize mutual recognition. Thus, mutual recognition may or may not require a change in substantive law for its implementation, and mutual recognition is not easily attainable as the substantive harmonization of patent law is hard to achieve. Mutual recognition’s expected benefits in reduced costs and enhanced predictability will be great since Patent Offices theoretically would not conduct any further examination of any application where the same claims have previously been examined by another patent office. The UK Intellectual Property Office (UKIPO) estimated that the mutual recognition system reduces the amount of time spent on duplicate applications by 25%, which will reduce the backlog by 9 backlog months (19%) after 5 years. As a result, it is expected that mutual recognition could achieve savings between £6 ($8.9) billion and £23 ($34.3) billion per annum.

5. CONCLUSION

Globalization is a double-edged sword for innovation. It can give innovative companies the opportunity to go beyond national boundaries, but at the same time jeopardize their innovation without proper protection. It can even destroy the virtuous cycle of patents and innovation and eventually cause “the patent crisis.” This worry is intensified in the United States. Traditionally, with its relatively experienced patent office, excellent trial courts, specialized appellate court, and a Supreme Court poised to add a generalist perspective, the

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234 LONDON ECONOMICS, Supra Note 182, at 5.
235 See id, at 77.
236 See id, at xiv.
237 id.
238 The world “Patent Crisis” is come from the book The Patent Crisis and How the Courts Can Solve It (BURK & LEMLEY, Supra Note 29).
United States uniquely possesses the kind of institutional infrastructure needed to build and maintain a strong patent law system. Even so, all the proponents for change can agree that its patent law badly needs reform in this age of globalization. The risk and cost of litigation is rising rapidly, creating a drag on innovation and imposing disincentives to invest in creative production. Two studies by the National Academies, a publication by the Federal Trade Commission, criticism from numerous legal and economics scholars, and a number of

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240 See id.


242 See id; NAT’L RESEARCH COUNCIL, REAPING THE BENEFITS OF GENOMIC AND PROTEOMIC RESEARCH: INTELLECTUAL PROPERTY RIGHTS, INNOVATION, AND PUBLIC HEALTH (2006) (considering the effects of patenting and licensing practices in the fields of genomics and proteomics and steps that the NIH can take to promote productivity and innovation); NAT’L RESEARCH COUNCIL, A PATENT SYSTEM FOR THE 21ST CENTURY (2004) (offering seven criteria for evaluating the present patent system and seven recommendations for designing a more effective patent system).


244 Reichman & Dreyfuss, Supra Note 10, at 103; See, e.g., ADAM B. JAFFE & JOSH LERNER, INNOVATION AND ITS DISCONTENTS 35 (2004) (contending that patents are now available “to pretty much anyone who asks[s] for one, despite the legal tests or novelty and nonobviousness,” arguing that the trend “now undermines rather than fosters the crucial process of innovation”); Rochelle Dreyfuss, Pathological Patenting: The PTO as Cause or Cure, 104 Mich. L. Rev. 1559, 1578 (2006) (“[A] strong argument can be made that the observed problems are not caused merely by the implementation of the law, but also by its articulation: by an institutional failure to keep patent law and policy abreast with developments at the technological frontier.”); Keith E. Maskus & Jerome H. Reichman, The Globalization of Private Knowledge Goods and the Privatization of Global Public Goods, in INTERNATIONAL PUBLIC GOODS AND TRANSFER OF TECHNOLOGY UNDER A GLOBALIZED INTELLECTUAL PROPERTY REGIME 24 nn.85–88 (Keith Maskus & Jerome H. Reichman eds., 2005) (citing critical articles by Professors Rai, Kesan, Merges, Lemley, Heller & Eisenberg, Barton and others); Robert P. Merges, As Many as Six Impossible Patents before Breakfast: Property Rights for Business Concepts and Patent System Reform, 14 BERKELEY TECH. L.J. 577, 615 (1999) (proposing “common-sense starting points to deal with the problem of business concept patents”). In reality, Professors Jaffe and Lerner are more optimistic than they sound, because they think the problems stem from how the patent law is applied and not from what it provides. ADAM B. JAFFE & JOSH LERNER, INNOVATION AND ITS DISCONTENTS 35 (2004), at 5–6.
judges have offered various diagnoses and asserted prescriptions for change, often in contradiction to one another. One of the suggested solutions to confront this serious crisis is greater international collaboration. In this sense, a 2004 National Academy of Sciences (NAS) report concluded that the United States, Europe, and Japan should further harmonize patent examination procedures and standards to reduce redundancy in the search and examination functions and eventually achieve mutual recognition of results.

As one can see in this movement, the United States, as well as most countries, recognizes the problem caused by globalization and expects harmonization to provide a foundation to solve these problems. This consensus leads to the important and pragmatic question, which is on what level and order the harmonization should take place and how to implement it. To solve this problem fundamentally, the international community should cooperate toward deep harmonization—substantive and legal harmonization. However, the effort toward deep harmonization is hard, expensive, and time-consuming. Rather, we have to recognize that “there is room for effective, quality-enhancing collaboration between Patent Offices without substantive patent law harmonization,” as suggested by Alison Brimelow, the President of the European Patent Office. This is the reason why we focus on substantive and administrative harmonization, i.e. work-sharing as a relatively easy, economic, and viable alternative. There are many strategies under the title of “work-sharing.” The important feather in patent policy is recognizing that there are no mutually exclusive strategies, and conducting a “policy-mix” to better fit the interests of countries and its partnering communities. Many strategies and proposals could complement other harmonizing efforts. Specifically, it is necessary to combine procedural with substantive, legal with administrative, and bilateral with...

245 See id; See, e.g., In re Fisher, 421 F.3d 1365, 1379–80 (Fed. Cir. 2005) (Rader, J., dissenting) (disagreeing with the majority’s position on utility standards); Univ. of Rochester v. G.D. Searle & Co., 358 F.3d 916, 919–30 (Fed. Cir. 2004) (considering and rejecting Rochester’s position on the written description requirement); Integra Lifesciences I, Ltd. v. Merck KGaA, 331 F.3d 860, 863–64 n.2 (Fed. Cir. 2003) (disagreeing with the dissent’s position on the scope of infringement liability), vacated, 545 U.S. 193 (2005).

246 Reichman & Dreyfuss, Supra Note 10, at 104.

247 See id.

248 STANTON, GOODYEAR, ROSS, SKOLER AND HORN, Supra Note 155, at xxi.

249 Reichman & Dreyfuss, Supra Note 10, at 126.

multilateral harmonization. For example, PCT’s procedural harmonization can be reformed and improved by adding substantive harmonization by PPH. Search sharing or action sharing by Triway or SHARE can be operated at the same time with decision sharing by PPH. Furthermore, the patent policy mix should be tailored to specific strategies and partnering countries. For example, if two countries share similar substantive patent laws, decision sharing rather than action sharing would be a more effective tool for harmonization. However, if the countries’ patent laws are substantially different and there are serious discrepancies in work-speed and culture, mere search sharing would be more viable and practically beneficial.

The journey to true harmonization is a long and twisted way. Many strategies will be difficult to implement in order to achieve a global patent system, such as negotiating new treaties, amending national laws, harmonizing examination standards, fostering the mutual confidence of search results, creating interconnected computer systems, and providing more international training for examiners. However, international communities as well as many countries are recognizing its value and taking actions. The European Community has long been debating the merits of instituting a Community Patent and other regions are considering similar projects. The United States, Europe, Japan, and other industrialized countries have discussed the possibility of creating a “limited package” instrument. If such arrangements were to move forward, broader harmonization might eventually trickle down. Globalization is an undeniable trend evidenced by the global expansion of international transactions. In this era, international harmonization of patent law is a natural and reasonable step which will benefit all participating countries. While starting with a single step, it is necessary and important to move forward consistently towards the direction of global patent protection.

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251 See id.
252 See id.
253 Reichman & Dreyfuss, Supra Note 10, at 126.; See also Industrialized Countries to Seek Deal on Global Patent Treaty Outside WIPO, 72 Pat. Trademark & Copyright J. (BNA) No. 1788, at 606 (Oct. 6, 2006).
254 See id.