

**INTERNATIONAL PATENT LAW:
COOPERATION, HARMONIZATION
AND AN INSTITUTIONAL ANALYSIS OF WIPO AND THE WTO**

by

Alexander James Stack

**A thesis submitted in conformity with the requirements
for the degree of Doctor of Juridical Science
Graduate Department of the Faculty of Law
University of Toronto**

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ABSTRACT

This work considers international cooperation or harmonization in patent law and analyzes the two main international patent law governance institutions: the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO).

A welfarist approach is adopted, proposing that international patent law should improve global welfare, subject to assumptions that the preferences of the world population are heterogeneous, that governments try to maximize the welfare of their citizens, and that international legal organization faces collective action problems.

Normatively desirable patent law harmonization reconciles strong reasons for preserving diversity (including the static and dynamic satisfaction of local preferences and adapting to unpredictable change) with strong reasons for cooperation (reducing duplication in patent prosecution, and reconciling imbalanced national externalities, incentives to innovation and costs). The last

reason leads to a system of national treatment and minimum standards. The risks presented by the skewed nature of invention are addressed in the international patent system through a form of regional insurance.

These reasons for cooperation present two linked but separable collective action problems, supporting the existence of two international institutions to govern patent cooperation. WIPO is best positioned to address duplication in patent prosecution. The WTO is best positioned to address imbalanced national externalities, incentives and costs. However, both the WIPO and the WTO are needed to provide a comprehensive international governance system.

Questions about the WTO dispute resolution system, the TRIPs Council, and the WTO's legitimacy are addressed by advocating a trade stakeholders' model. Whether international patent law should be seen as a multilateral obligation or a nexus of bilateral obligations is explored.

Given diverse national preferences and high uncertainty surrounding the welfare effects of specific patent policies, the process of harmonization is inevitably a political process. This political aspect directly connects the topic of patent law harmonization with the institutional analysis of WIPO and the WTO. The implementation of welfare-enhancing patent law cooperation is best guarded by a process with a wide range of political inputs and transparency. Ultimately, only good international governance can deliver on the potential of the international

patent system to promote international innovation, economic growth and world-wide prosperity.

ACKNOWLEDGEMENTS

I would like to deeply thank my wife Carolyn, who has been patient and supportive while I have been researching and writing this thesis. I also owe a debt of gratitude to my parents-in-law, Richard and Mary Anne Hassard, without whom I would not have been able to complete this work, and my parents Stephen and Maureen Stack, who have always supported my academic adventures.

I would also like to thank the regular members of my committee, Ed Iacobucci and Ariel Katz, for many reviews, suggestions and encouragement. I would also like to thank Andrew Green and Robert Howell, who were members of my examination committee and made several suggestions that strengthened this thesis. I have also been fortunate in being able to discuss my ideas with many people, including Abraham Drassinower, Norman Siebrasse, Arnold Weinrib and Brian Gray.

David Dyzenhaus and Kaye Joachim of the law school's graduate studies administration were steadfast in their understanding and support during the difficult periods of the doctoral process.

Finally, I would like to express my deep gratitude to Michael Trebilcock, my primary thesis advisor, who showed remarkable patience and friendship during this process. Without Michael's guidance, this thesis would not have been possible, and it has significantly benefited from Michael's insight and thoughtfulness.

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LIST OF ABBREVIATIONS

- AIPLA – American Intellectual Property Law Association
- AIPPI – The International Association for the Protection of Intellectual Property
(Association Internationale pour la Protection de la Propriété
Intellectuelle)
- ARIPO – African Regional Intellectual Property Organization
- BIRPI – Bureaux Internationaux Reunis pour la Protection de la Propriété
Intellectuelle
- CIPO – Canadian Intellectual Property Office
- DSU – Dispute Settlement Understanding
- DSB – Dispute Settlement Body
- EPO – European Patent Office
- FICPI – The International Federation of Intellectual Property Attorneys
(Fédération Internationale des Conseils en Propriété Industrielle)
- GATT – General Agreement on Tariffs and Trade
- IGO – International Governmental Organization
- IIPA – International Intellectual Property Alliance
- IPC – Intellectual Property Committee
- ITO – International Trade Organization
- JPO – Japanese Patent Office
- NGO – Non-Governmental Organization
- OAPI – Organisation Africaine de la Propriété Intellectuelle
(African Intellectual Property Organization)
- PCT – Patent Cooperation Treaty
- PLT – Patent Law Treaty
- SPLT – Substantive Patent Law Treaty
- TRIPs – Trade-Related Intellectual Property Rights
- UN – United Nations
- UNCTAD – United Nations Conference on Trade and Development
- UNESCO – United Nations Education Scientific and Cultural Organization
- USPTO – United States Patent and Trademark Office
- USTR – United States Trade Representative

WIPO – World Intellectual Property Organization

WTO – World Trade Organization

INTRODUCTION

I.1 The Main Questions

Patent law harmonization – the convergence of national patent laws – has been a topic of ongoing tension and concern since the late 1800's. This thesis explores two questions from a utilitarian point of view:

- 1) When is patent harmonization well-founded?
- 2) What is the role of international institutions – WIPO and the WTO - in furthering such harmonization?

This thesis analyzes harmonization and cooperation in the international patent regime and the international institutional features which could help to facilitate international cooperation.

“International patent law” is seen as cooperative action by states to better provide an international public good - patent law - to its citizens. This cooperation is what is meant by harmonization in the broadest sense. In approaching these questions, this thesis starts from a utilitarian or welfarist approach. It also attempts to take seriously institutional constraints on the shape and functioning of the international system. To paraphrase Eric Posner, I look to identify institutional and legal reforms that are compatible with empirical conditions that underlie the modern state system and reflect what we know of patent policy.¹ Such conditions inevitably create collective action problems that

¹ E.A. Posner, “International Law: A Welfarist Approach”, (2006) 73(2) U. Chi. L. Rev. 487 at 543.

limit the ability of states to provide international public goods. According to Posner:

“The function of international law is to correct these problems and enable people to obtain public goods of regional and global scale.”²

The goal of this thesis is to follow this approach in the specific context of the international patent regime.

I.2 A Range of Positions and Questions

The two questions stated above generalize and encapsulate many more specific questions and controversies in the international patent law field.

On the one hand, calls for increased harmonization to high levels of patent protection are constant, with many patent owners, practitioners and government officials asserting that a unified global patent law is unquestionably beneficial, an obvious development and will inevitably occur.³ Unification of national patent laws was reportedly the original goal of U.S. negotiators in the Uruguay Round.⁴ Pressure for unification of patent laws is not new: the (US) President’s

² E.A. Posner, *Ibid.* at 491.

³ G.J. Mossinghoff and V.S. Kuo “World Patent System Circa 20XX, A.D.” (1998) 38 IDEA 529; R.L. Campbell, “Global Patent Law Harmonization: Benefits and Implementation” (2003) 13 Ind. Int’l & Comp. L. Rev. 605; *Report of the President’s Commission on the Patent System* (Washington, G.P.O. November 17, 1966); K. Cuenot, “Perilous Potholes in the Path Towards Patent Law Harmonization” (1999) 11 J. Law & Pub Pol’y 101; J. Sulston, “International Patent Law Harmonization, Development, and Policy Space for Flexibility” (http://www.wipo.int/export/sites/www/meetings/en/2006/scp_of_ge_06/presentations/scp_of_ge_06_sulston1.pdf) (accessed August 20, 2007) at 1, 2 (“world harmonization of IP is extremely desirable” “Nevertheless, harmonization is obviously desirable in the long term, provided that at the same time the world becomes more egalitarian”;

⁴ M.P. Ryan, *Knowledge Diplomacy* (Washington: The Brookings Institution, 1998) at 94.

Commission on the Patent System called for a global patent system in 1966.⁵

This model of unified patent law aspires to a situation where an inventor may obtain a patent at low cost that is effective in all countries of the world⁶ (taking as its model copyright law) and even further may be enforced world-wide through one enforcement process before a single court system (unlike copyright).⁷

Taking the desirability and inevitability of such a system as a given,⁸ these commentators usually focus on evaluating various national patent laws to sift for a desirable international model law, or discussing how a unification agreement might be most effectively reached. Ongoing harmonization and unification has such momentum that even some commentators who are nominally opposed to patent law unification are at least for the purposes of discussion conceding the

⁵ *Report of the President's Commission on the Patent System*, *supra* note 3, recommendation XXXV, at 56.

⁶ See *Report of the President's Commission on the Patent System*, *supra* note 3:

“The Commission believes that the ultimate goal in the protection should be the establishment of a universal patent, respected throughout the world... and obtained quickly and inexpensively on a single application”

⁷ Many advocates of a universal patent foresee a world patent court, where all patent disputes are necessarily taken and whose judgments are enforced world-wide (see Mossinghoff & Kuo *supra* note 3 at 553; Campbell *supra* note 3 at 531).

Another approach would be for patent law to be sufficiently harmonized so that an infringement action applying this harmonized law could be pursued in a single national court, and the result applied by national courts worldwide pursuant to treaty. Another alternative would be for the infringement action to be brought in a single national court, which would apply the local laws of the various states for which the plaintiff would like a result. (See generally R.C. Dreyfuss, “An Alert to the Intellectual Property Bar: The Hague Judgments Convention” (2001) U. Ill. L. Rev. 421 and R.C. Dreyfuss and J.C. Ginsburg, “The Role of National Courts: Draft Convention on Jurisdiction and Recognition of Judgments in Intellectual Property Matters”, (2002) 77 Chi.-Kent. L. Rev. 1065, describing the proposed Hague Conference on Private International Law Convention on Jurisdiction and the Recognition of Foreign Judgments).

⁸ “Curiously, the implications of this debate [unification of laws] have generally not been considered in the area of patent law. With few exceptions, the international patent community has taken as a given the value of creating uniform patent law on a global scale.” J.F. Duffy, “Harmony and Diversity in Global Patent Law” (2002) 17 Berkeley Tech. L. J. 685 at 686.

issue and writing about how a unified patent system might best be structured to promote developing countries' needs.⁹ The Standing Committee on the Law of Patents at WIPO is presently conducting negotiations for a Substantive Patent Law Treaty whose goal is "to pursue a 'deep harmonization' of both the law and practice" concerning not just the drafting, filing and examination of patent applications, but also "cornerstone requirements of patentability, such as novelty, nonobviousness, sufficiency of description, and drafting and interpretation of claims."¹⁰ As noted by Duffy, "In the post-TRIPS world, harmonization continues to be a shibboleth in patent circles, and diversity a flaw to be remedied."¹¹

On the other hand, since the signing of the TRIPs Agreement, in which developing countries agreed to strengthen their patent laws to a world minimum standard that generally reflects developed country norms, a storm of controversy has arisen about the effect of this harmonization on economic progress as well as on more specific issues such as health (most dramatically, the availability of

⁹ See J.H. Barton, "Issues Posed by a World Patent System" (2004) 7(2) *Journal of International Economic Law* 341 (reprinting a chapter from K. Maskus and Reichman, eds., *International Public Goods & Transfer of Technology* (Cambridge: Cambridge University Press, 2004)). See also Sulston, *supra* note 3.

¹⁰ K.M. Hauda [Office of Legislative and International Affairs, USPTO], "The Role of the United States in World-wide Protection of Industrial Property" in F. Gotzen (ed.), *The Future of Intellectual Property in the Global Market of the Information Society* (Brussels: Bruylant, 2003), at 91, 97: "This approach was adopted in an attempt to avoid the controversial hurdles to agreement that were found in the past." See also P. Baechtold [Head Patent Law Section, Patent Policy Department, WIPO], "The Future Role of WIPO, in the Area of Industrial Property" in *The Future Role of Intellectual Property* at 139, 142-43 (stressing need to cover other topics such as patentable subject matter, the requirement of technical character of an invention, exceptions from patentability, novelty grace period and issue of equivalents). See also K. Kamata [Japan Intellectual Property Association] "The Rationale and Benefits of Patent Law Harmonization" (http://www.wipo.int/export/sites/www/meetings/en/2006/scp_of_ge_06/presentations/scp_of_ge_06_kamata.pdf) (accessed August 20, 2007).

¹¹ Duffy, *supra* note 8 at 688.

HIV treatments and other essential medicines) and agriculture. While these writings come from diverse human rights and development perspectives and often focus on the political maneuvering and interest group lobbying that led to the TRIPs Agreement, one can abstract from these writings a deep skepticism about the wisdom of harmonizing patent laws internationally, at least between developed and developing countries.¹²

Those writings opposed to the TRIPs Agreement often focus on the fairness of the process by which the TRIPs Agreement came into being. Inevitably, questions are raised about the institutions where international patent law is made. Questions are raised about the function of two parallel organizations responsible for international patent law – the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO). While some authors are confidently predicting the removal of TRIPs from the WTO system,¹³ United States officials are simultaneously and publicly questioning the future viability of WIPO.¹⁴ Less dramatic but related questions are also being asked. Why did norm-creation in international patent law “move” from WIPO to

¹² See P. Yu, “TRIPs and its Discontents” (2006) 10 Marq. Intell. Prop. L. Rev. 369 at 371-379 for an overview.

¹³ J.R. Saul, *The Collapse of Globalism and the Reinvention of the World* (Toronto: Viking Canada, 2005) at 181:

“There will be a restructuring of the WTO in the next few years. When it happens, a central demand will be for the removal of TRIPS. This will be broadly embraced – except by the direct beneficiaries – because the growing rebellion against these rules is making them increasingly unenforceable.”

¹⁴ “Patent Law Harmonization Talks Stall; Brazil, Argentina, India Oppose Compromise” (www.uspto.gov/main/homepagenews/bak2005jun14.htm) (accessed July 21, 2005), a news release from the USPTO, quotes the Director of the Office of International Relations at the U.S Patent and Trademark Office:

“WIPO appears to be facing a serious identity crisis, underscoring the need to consider alternative approaches for achieving harmonization so that we can realize efficiencies and better patent quality worldwide. Our users have spoken in no uncertain terms about their need for progress in this area.”

the world trading system? Is it appropriate for the WTO, primarily a trade-based organization, to deal with patent law and policy? Is there room for a continuing role for WIPO?¹⁵ Why does patent law have such a strange double-international institution structure, and is this justified? And perhaps most importantly, how should international patent harmonization be organized going forward?

This thesis abstracts and generalizes these controversies to the two questions given above: when is patent harmonization well-founded, and what is the role of institutions in furthering such harmonization?

In particular, this study also addresses an issue that has not been widely addressed: the foundations for patent harmonization amongst developed countries, as opposed to between developed and developing countries. In doing so, it addresses the position of smaller developed countries in the context of increasing economic integration, sometimes with much larger neighbours. In this respect, many of the specific examples and discussions involve Canada and the United States, where patent harmonization may be considered between partners of very different scale.

I.3 The Basic Argument

The general argument developed in this study is centered around the following five propositions:

¹⁵ See D.J. Halbert, "The World Intellectual Property Organization: Past, Present and Future" (2007) 54 J. Copyright Soc'y U.S.A. 253 at 253: "Given the powerful enforcement mechanisms available through the TRIPs Agreement, WIPO's relevance as an organization is threatened as states 'forum shop' seeking the best protection for their 'property.'"

1. International law should improve global welfare
2. Citizens of states have heterogeneous preferences: in general, this is best served by diversity, or having each state set its own regimes
3. Harmonization is well-founded if and only to the extent that (a) the benefit of harmonization/cooperation outweighs the costs of a loss of heterogeneity; or (b) a state wishes to harmonize regardless of other states' cooperation.¹⁶ Harmonization should be tailored to match the justification.
4. Each type or reason for harmonization will present collective action problems, reflecting heterogeneity of preferences between citizens of domestic welfare maximizing states, as well as problems arising from the specific type of harmonization.
5. International institutions should be designed to address these collective action problems.

Implicit in this approach is an assumption that the content of promulgated rules or norms is affected by the characteristics of the rule-making institution. In brief, these five principles when applied in the specific area of international patent law result in the following:

1. **International law should improve global welfare:** It is assumed as a background premise that patent protection (at least in developed

¹⁶ Or, in other words, the harmonization is in a state's self-interest. The assessment of whether a harmonization measure is in a state's interest assumes a reasonable range of behaviour by other states.

countries) encourages a higher and more desirable rate of innovation and increases welfare over the long term.

2. **Citizens of states have heterogeneous preferences:** patent law is an area where there is high heterogeneity of preferences between states – not only between least developed countries, developing countries, and developed countries, but also between states at similar levels of development. This results in high costs for the loss of heterogeneity, not only in a static sense, but perhaps more critically in a dynamic sense – the loss of the ability of a heterogeneous system to better meet preferences over time.
3. **Reasons for harmonization:** balanced against high heterogeneity between states are three strong reasons for harmonization that provide substantial benefits: recognition of foreign patentees (which addresses imbalances in externalities and incentives to innovate and the skew nature of patents by the reciprocal recognition of foreign patent applicants); reduction in prosecution costs (reducing duplicative work in patent offices to reduce public and private costs); and integration-driven harmonization (where a state is self-motivated to bring its patent practices in line with those of another state regardless of international cooperation).
4. **Collective action problems:** cooperation in respect of the recognition of foreign patentees involves difficult up-front negotiations, the need to compensate countries for entry into a welfare-enhancing international

ordering that is not in their self-interest, and ongoing disputes.

Cooperation to reduce duplication in patent prosecution is largely in each country's self interest, and dispute resolution is largely unnecessary as there is no strong reason to defect and it is easy to detect defection, but can involve difficult up-front negotiations.

Integration-driven harmonization, being (as used in this study) unilateral action does not have serious collective action problems.

5. **International institutional design:** the main international institutions of the World Trade Organization and World Intellectual Property Organization have evolved in response to the several grounds for cooperation, and are generally justified on those grounds. The two institutions reflect the need to address two different collective action problems associated with the two grounds for international cooperation: the recognition of foreign patentees, and the reduction of duplication in prosecution costs.

A key but basic point is that patent law is a field with both high levels of heterogeneity in preferences between citizens of different states and high levels of benefits to be gained from cooperation and harmonization. Furthermore, there is a great deal of uncertainty surrounding the welfare effects of patent policies at a detailed level. As a result, it is unsurprising that international patent cooperation is a highly contested and politicized field. Generally, unsophisticated or non-nuanced calls for the unification of patent laws cannot be justified on welfare grounds.

I.4 Methodological Discussion

This thesis studies patent harmonization from a welfarist and institutional point of view. It is hoped that considering the welfarist motivations that underlie harmonization, and the institutions that inevitably affect the specific outcomes of harmonization efforts, will shed light on important issues related to these complex efforts.¹⁷

This work is in a sense complementary to works such as those of Sell, Ryan, and Braithwaite and Drahos that discuss the complex politics and history behind the signing of the TRIPs Agreement.¹⁸ It heavily abstracts international patent cooperation, which can seem to reduce such cooperation to impersonal mechanisms with an air of inevitability. However, the speed and intensity of these mechanisms are provided by the impetus of actual actors such as the Intellectual Property Committee (IPC) and the International Intellectual Property

¹⁷ There are also philosophical arguments for harmonization that will not be dealt with in this thesis. J. Bhagwati, "The Demands to Reduce Diversity among Trading Nations" in J.N. Bhagwati and R.E. Hudec, eds., *Fair Trade and Harmonization: Prerequisites for Free Trade? Vol. 1: Economic Analysis* (Cambridge: The MIT Press, 1996) 9 at 9-20 identifies a number of philosophical arguments for harmonization: a notion of obligation to people in other countries; an obligation to humanity as a whole; distributive justice; and fairness, defined as "the implied norm of fairness seems to imply simply that, no matter what the economic or other justifications for the existence of such differential standards may be ... they evidently constitute a lack of *symmetry* in the environment faced by competing firms in the industry of different nations and hence ipso facto are unacceptable." (at 19)

¹⁸ J. Braithwaite and P. Drahos, *Global Business Regulation* (Cambridge: Cambridge University Press, 2000) [hereinafter GBR]; P. Drahos and J. Braithwaite, *Information Feudalism: Who Owns the Knowledge Economy?* (New York: The New Press, 2002); Ryan, *supra* note 4; S. Sell, *Power and Ideas: North-South Politics of Intellectual Property* (Albany: State University of New York Press, 1998); S. Sell, *Private Power, Public Law: The Globalization of Intellectual Property Rights* (Cambridge: Cambridge University Press, 2003)

Alliance (IIPA), representing patent and copyright industry interests respectively.¹⁹ In examining the political and economic implications of a patent-generated profit flow between states, it should be remembered that the actual extent to which a country such as the United States focuses on such profit flows in its international relations depends as much upon the efforts of concerned companies, lobbyists and other policy entrepreneurs as on strict welfare calculations.

Normatively, this thesis takes an instrumental view that international law should maximize or at least improve global welfare, subject to realistic constraints. These constraints – which may be described as institutional constraints – involve three positive assumptions:²⁰

- (1) that the preferences of the world population are heterogeneous;
- (2) that governments try to maximize the welfare of their citizens²¹ and ignore the welfare of non-citizens; and
- (3) that international legal organization and enforcement are constrained by collective action problems.

Part I of the thesis explores the implications of the first positive assumption of heterogeneity of preferences, while Part II largely involves the

¹⁹ The IPC was formed to coordinate members' policy positions in respect of intellectual property, and originally included Pfizer, Merck, IBM, General Electric, DuPont, Warner Communications, Hewlett-Packard, Bristol-Myers, FMC Corporation, General Motors, Johnston & Johnston, Monsanto, and Rockwell International. See Ryan, *supra* note 4 at 69; Sell, *supra* note 18 at 137). The IIPA represented copyright interests, and its members included the American Association of Publishers, Motion Picture Association of America, Recording Industry Association of America, American Film Marketing Association, National Music Publishers' Association, and the Computer and Business Equipment Manufacturers' Association. (Ryan, *supra* note 4 at 70)

²⁰ E.A. Posner, *supra* note 1 at 499.

²¹ Albeit often imperfectly, perhaps maximizing the welfare of a subpopulation of their citizens, such as an elite or government supporters, creating agency costs.

implications of the third positive assumption. The second assumption, that governments are domestic welfare maximizers, is a constant assumption throughout.

“Harmonization” is a term that can have many meanings. The narrowest definition might be “countries negotiating agreements to follow the same substantive regulations.”²² I refer to this as unification rather than harmonization, and perceive it as the strongest form of harmonization. Leebron uses a broader definition: “making the regulatory requirements or governmental policies of different jurisdictions identical, or at least more similar.”²³ Perhaps the broadest definition is from Hansson: “Harmonization ... is defined as the coordination of economic policy actions and measures in order to reduce international differences in such actions.”²⁴

Some literature approaches the subject by listing and analyzing types or levels of harmonization. For example, Sykes divides international harmonization into six levels: pure regulatory competition (as analyzed by Tiebout,²⁵ essentially an absence of cooperation); mutual deference or recognition agreements (agreeing when a jurisdiction’s laws apply); minimal or essential requirements agreements (agreeing to minimum standards); regulatory forbearance

²² A.O. Sykes. “The (Limited) Role of Regulatory Harmonization in International Goods and Services Markets” (1999) 2 J. Int’l Econ. L. 49 at 50. D.W. Leebron “Lying Down with Procrustes: An Analysis of Harmonization Claims” in J. Bhagwati & R. Hudec, eds., *Fair Trade and Harmonization: Prerequisites for Free Trade? Vol. 1: Economic Analysis* (Cambridge: The MIT Press, 1996) 41 at 47 refers to this as “zero-margin harmonization”.

²³ Leebron, *supra* note 22 at 43.

²⁴ G. Hansson, *Harmonization and International Trade* (London: Routledge, 1990) at 1

²⁵ See C.M. Tiebout, “A Pure Theory of Local Expenditures” (1956) 64 J. Pol. Econ. 416

agreements (agreements on when governments should not regulate); agreements on non-homogeneous regulatory targets; and agreement on uniform regulatory targets.²⁶ Similarly, Leebron provides a list of possible forms of harmonization: rule harmonization, where the states agree to adopt specific rules; harmonizing government policies (such as keeping inflation low); harmonizing principles to constrain the factors that are taken into account when making policies or rules; and harmonization of institutional structures and procedures.²⁷ The first three forms of harmonization form a sort of continuum, while the fourth is often used to reinforce the other forms of harmonization.

This thesis uses harmonization in the spirit of the broad definition of Hansson. For example, if states agree to a minimum patent term of 20 years, that is seen as a harmonization measure even if all states actually set their patent terms to varying lengths greater than 20 years. Similarly, actions by patent offices to increase reliance on work done in foreign patent offices is also seen as harmonization as, following Hansson, it is a coordination of economic (or at least administrative) policy to reduce international differences in prosecution. This broader conception also encompasses a wide range of possible levels or types of harmonization as described by Leebron and Sykes, several of which appear in the patent field.

As a working matter, this thesis' use of "harmonization" begins to blend with cooperative action by states to better provide patent law. As a strict matter,

²⁶ A.O. Sykes, "Regulatory Competition or Regulatory Harmonization? A Silly Question?" (2000) 3(2) J. Int'l Econ. L. 257

²⁷ Leebron, *supra* note 22 at 44-46.

international cooperation and harmonization are not identical, since states could cooperate without harmonizing (e.g. they could agree to a measure that better provides patent law to their citizens but increases the difference between national laws). That difference is recognized. However, as a practical matter, international cooperation in patent law usually does involve harmonization as broadly defined, particularly between industrialized states, and it would be cumbersome to repeatedly reiterate the difference between harmonization and cooperation.

Leebron discusses several normative justifications for harmonization.²⁸ First, agreements might be reached on an interface to allow two different systems to interact or communicate (for example, in telecommunication). Second, greater harmonization might internalize negative externalities. This justification (which is often seen elsewhere in the literature, particularly in respect of environmental issues) is not directly applicable in patent law, which creates positive externalities in other countries.²⁹ A form of negative externalities does exist in intellectual property law, labelled by Leebron as the leakage of unilateral rules, in which goods from one jurisdiction leak into a second jurisdiction undermining the second jurisdiction's laws. For example, the United States and Canada both have special border procedures in place to raise barriers against the importation of goods that infringe American or Canadian intellectual property

²⁸ Leebron, *supra* note 22 at 51-66

²⁹ See the related discussion on the capture of externalities in chapter one.

laws.³⁰ However, this is largely an issue for copyright and trademark law, and is a fairly minor issue in the patent law arena.

Leebron discusses the argument that harmonization is necessary to promote fairness in international trade. As noted elsewhere by Bhagwati, some argue that competition is unfair if a rival company faces lower burdens because of different laws or practices.³¹ However, in the absence of some neutral or objective baseline for the relevant government action, it is difficult for claims of unfairness to be normatively defensible.³²

Leebron also notes two types of economies of scale – economic and political – that can justify harmonization. From an economic point of view, harmonization can encourage ease of access into markets thus allowing efficient-scale manufacturing and distribution. From a political point of view, government activities can also benefit from a cost and/or performance perspective from economies of scale. As will be noted later, these may be seen in patent office cooperation in the area of patent prosecution. Finally, Leebron argues that harmonization can sometimes minimize or eliminate the ability of states to choose rules for predatory or beggar-thy-neighbour purposes.

Sykes lists a number of arguments that can be used to support the idea of diversity of policies among states:

³⁰ See Canadian Trade-marks Act (R.S., 1985, c. T-13) s. 53 and Copyright Act (R.S., 1985, c. C-42) s. 44; in the United States see 19 U.S.C. §1526 and § 1595; 15 U.S.C. §§ 1124-1125; 18 U.S.C. § 2320.

³¹ Bhagwati, *supra* note 17 at 19

³² M.J. Trebilcock and R. Howse, *The Regulation of International Trade*, (3rd edition) (New York: Routledge, 2005) at 508

“One or more of the standard arguments apply: (a) Conditions differ across jurisdictions (tastes, incomes etc.), and hence there is no reason to think that an optimal regulatory policy for one jurisdiction will be optimal for another. (b) As a slight variant, conditions differ among the actors that are subject to regulation. What is optimal for one pair of transactors, for example, may not be optimal for another, and regulatory competition may allow them to pick the regime that maximizes their welfare. (c) The optimal regulatory policy is unknown, and regulatory competition will allow experimentation that reveals information about what is optimal. (d) Regulation is subject to capture and rent-seeking that leads it towards suboptimality, and such wasteful regulation can be disciplined by capital movements under regulatory competition.”³³

Sykes’ point (a) is a main point in this thesis.³⁴ Point (c) is used in this thesis, but developed in a somewhat different manner. I argue, similarly to Sykes, that regulatory experimentation can better reveal underlying preferences, although I claim the argument is more applicable to a package of innovation policy than pure patent law.³⁵ However, a deeper question in patent law is the revelation of constantly changing or dynamic preferences. Even if states have perfect information about present preferences, changes in industry – whether new industries created through invention or the maturation of already-established industries – will often render the knowledge of present preferences obsolete.

³³ Sykes, *supra* note 26 at 259-260

³⁴ Point (b) is not of general importance in patent law, as patent applicants are automatically subject to the laws of the jurisdiction in which the applicant wishes to obtain a patent. Similarly, an entity constrained by a third party’s patent(s) is subject to the laws of the jurisdiction in which the entity chooses to do business. Sykes’ point (b) largely reduces to Sykes’ point (a) in the patent context.

³⁵ For further discussion of competitive politics, see Trebilcock and Howse and Breton. These authors argue that “competitive markets should not be allowed to subordinate the value of competitive politics via regulatory harmonization.” M.J. Trebilcock and R. Howse, “A Cautious View of International Harmonization: Implications from Breton’s Theory of Governments” in G. Galeotti, P. Salmon & R. Wintrobe, eds., *Competition and Structure* (Cambridge: Cambridge University Press, 2000) 386 at 411; M.J. Trebilcock and R. Howse, “Trade Liberalization and Regulatory Diversity: Reconciling Competitive Markets with Competitive Politics” (1998) 6 *European J. of L. and Econ.* 5 at 8-9; see generally A. Breton, *Competitive Governments* (Cambridge: Cambridge University Press, 1996)

Finally, point (d) is rejected as a serious factor in patent law. While capture and rent-seeking is a salient concern in patent law, it is difficult to see how capital movements can reliably discipline such behavior in a normatively desirable manner.³⁶

In another paper, Sykes discusses the costs of regulatory heterogeneity, which “create[s] actual or potential impediments to trade at the border. By an ‘impediment’, I mean a measure that increases the cost to foreign firms of serving a particular export market.”³⁷ This definition does not map accurately onto patent law, which primarily imposes costs on domestic citizens and all competitors of a patentee, whether domestic or foreign. However, several factors discussed by Sykes which do apply include: the costs associated with gaining familiarity with local laws, labeled information costs,³⁸ redundancy costs,³⁹ seen in patent prosecution where roughly similar work is performed in different countries; and a “loss of scale economies and input economies,”⁴⁰ which is particularly relevant to the issue of local working requirements.⁴¹

³⁶ Further to this point, it is unclear whether in patent law the international regime may be used to constrain rent-seeking at the national level, or whether national regimes may be used to constrain rent-seeking at the international level. Rent-seeking occurs in both international and national arenas.

³⁷ Sykes, *supra* note 22 at 51.

³⁸ Sykes, *supra* note 22 at 55.

³⁹ Sykes, *supra* note 22 at 54.

⁴⁰ Sykes, *supra* note 22 at 54-55.

⁴¹ Generally, a working requirement is a requirement in patent law that the invention must be practiced in a country for the patent to be maintained as valid. Traditionally, this has meant that goods incorporating an invention must be manufactured in a country; and in some cases the importation of goods incorporating the invention would void the patent. More recently, this has been interpreted by some as a requirement only that the invention be supplied to consumers in a country without regard to source.

Sykes concludes that only in exceptional cases is international harmonization the best normative option.⁴² Similarly, Trachtman concludes that:

“The debate over ‘competition versus harmonization’ in regulatory policy often confuses the pertinent alternatives. ... neither pure regulatory competition nor compete regulatory harmonization is desirable or feasible where important international cross-border effects of regulation arise. Instead, a considerable degree of cooperation is almost always needed, yet non-homogeneity of regulatory policies is almost always desirable as well. This proposition holds virtually regardless of the subject matter of regulation.”⁴³

These various approaches and commentaries discuss harmonization and diversity in global law and regulation, but not in the specific area of patent law. The high-level approach of Alesino and Spolaore adopted in this thesis, which weighs the benefits of harmonization versus the costs of a loss of diversity in national patent laws, is consistent with these other analyses of international harmonization and legal diversity. Alesino and Spolaore group the benefits of constructing legal regimes of a larger size into four categories:

- (1) lower per capita costs of providing public goods;
- (2) the larger size of the economy;
- (3) regional insurance; and
- (4) redistributive schemes.⁴⁴

⁴² Sykes, *supra* note 22 at 51-52 and Sykes, *supra* note 26 at 263.

⁴³ Sykes, *supra* note 26 at 257

⁴⁴ A. Alesina and E. Spolaore, *The Size of Nations* (Cambridge: The MIT Press, 2003) at 3-4. A fifth benefit, greater military power, is not applicable in the case of patents.

These will be further discussed in Part I of the thesis. In part II, which concentrates on how international institutions can promote international cooperation in the patent field, several approaches are taken to analyze collective action problems and institutional design. Game theory is used to analyze the type of public goods being provided by international patent cooperation, sorting public goods by their rivalry, excludability, and aggregation technology.⁴⁵ Consideration of the type of underlying game gives a rough prognosis for the likelihood of successful international collective action; however, further analysis of the details of cooperation heavily influences the likelihood of success.⁴⁶

International institutions may be analyzed from a normative or positive viewpoint. Following the approach of Keohane, international institutions normatively should act to decrease transaction costs for international cooperation.⁴⁷ International institutions can contribute to international cooperation by providing information, reducing information asymmetries, monitoring compliance, increasing iterations, facilitating issue linkages, defining cheating (and hence raising reputational costs), and assisting in dispute resolution between states. Following Trebilcock, three factors are used to investigate the behaviour of international institutions: the interests of various concerned interest groups; ideas and thinking; and the structure of regulation

⁴⁵ T. Sandler, *Global Collective Action* (Cambridge: Cambridge University Press, 2004) at 38-39; 47-68 [hereinafter GCA]

⁴⁶ Sandler, GCA *supra* note 45 at 74; 213.

⁴⁷ R.O. Keohane, *After Hegemony* (Princeton: Princeton University Press, 1984, 2005) at 85-109

making institutions.⁴⁸ Following North, these drivers of institutional behaviour cannot be fully appreciated without viewing them in a historical context.⁴⁹

I.5 International Law – A Rationalist Approach

It is important to clarify the international law framework used in this thesis. In doing so, I am attempting to construct an approach that will be useful for the task at hand: investigating international patent law. I do not purport to adopt a scheme that accounts for international law as a whole, nor for any particular subject other than patent law.

As noted earlier, this paper takes a welfarist view of international law and institutions utilizing a rationalist approach.⁵⁰ Under this approach, “international patent law” understood as cooperative actions by states to provide patent law (and related international public goods) to their citizens, should normatively improve global welfare. However, international patent law is constrained: states have heterogeneous preferences, and act as domestic welfare maximizers.

⁴⁸ M.J Trebilcock, “The Choice of Governing Instrument: A Retrospective”, in P. Eliadis, M.M. Hill and M. Howlett, eds, *Designing Government: From Instruments to Governance* (Montreal: McGill-Queen’s University Press, 2005) at 69-72.

⁴⁹ D.C. North, *Institutions, Institutional Change and Economic Performance* (Cambridge: Cambridge University Press, 1990) at vii (“History matters.”), 131-140; D.C. North, *Understanding the Process of Economic Change* (Princeton: Princeton University Press, 2005) at 1-9.

⁵⁰ Other approaches of course exist. I would adopt the words of Guzman “Rational choice provides a parsimonious and workable description of states that allows consideration of a whole range of international legal structures. ... Other approaches – including efforts to disaggregate the state and constructivist models – also hold promise, but at present seem incapable of providing a set of foundational assumptions from which we can derive predictions about behavior. They are most likely to be valuable, therefore, as supplements to or refinements of rational choice models.” A.T. Guzman, “The Promise of International Law” (2006) 92 Va. L.R. 533 at 563.

These interact with the underlying economics and politics of patents to produce collective action problems. The function of international law is to address these collective action problems so that the public receives international public goods.

What is State Interest?

The rationalist approach is based on states, acting to promote their state interests, as the central actors in international ordering. However, a conception of “state interests” needs to be developed. This thesis models states as domestic welfare maximizers. By this statement, I mean that states acting in their perceived self-interest loosely promote the welfare of their own citizens.

There are agency problems between the state and its citizens. At a high level, there is a difference between how a democracy is concerned for its citizens versus how a dictatorship is concerned with its citizens. Democracies are usually modeled as furthering the welfare of the “median citizen”; while dictatorships may be concerned with national welfare only to the extent that it furthers elite power (i.e. avoids rebellion) and creates greater opportunities for self-enrichment.⁵¹ Still, as is argued by Posner and by Alesina and Spolaore, for some subjects both democracies and dictatorships may be presumed to be acting to promote their domestic industries’ welfare.⁵² Patent law, which is essentially an area of

⁵¹ See E. Posner, *supra* note 1 at 505; R. Congleton, “The Median Voter Model” in C.K. Rowley and F. Schneider, eds., *The Encyclopedia of Public Choice* (Boston: Kluwer Academic Press, 2004) (available at <http://rdc1.net/forthcoming/medianvt.pdf>) and M. Olson, *Power and Prosperity: Outgrowing Communist and Capitalist Dictatorships* (New York: Basic Books, 2000).

⁵² E.A. Posner, *supra* note 1 at 512-513; Alesina and Spolaore, *supra* note 44 at 69, 70 (“Even a dictator who does not need the support of the majority of the population to stay in power will nonetheless need to provide some minimum level of well-being to at least a fraction of his subjects in order to ensure his political survival.”)

economic regulation, would seem to be one such topic: even a dictatorship is interested in increasing its domestic economy even if it is only to increase its self-enrichment. In any case, this thesis focuses largely on developed, industrialized countries which are mostly democratic.

To bring content to a state's self-interest in the patent law field, it is usually sufficient to talk of the interests of domestic industry, sometimes counterbalanced by consumer concerns. As Braithwaite and Drahos write: "states are often best conceived as agents of other actors, particularly private corporations."⁵³ In general, this is supported by public choice theory within the state: patent-sensitive industries are the special interests with the time, resources and interest to educate and lobby the government, or more precisely the patent office and international trade officials, about their needs and point of view.⁵⁴ Of course, there are the further questions of whether patent-sensitive industries themselves can be separated into more and less motivated groups. It seems likely that this is the case, albeit determined by the issues at hand. The literature on the move of international patent negotiations from WIPO to the WTO and the negotiation of TRIPs heavily emphasizes the role of the pharmaceutical industry, as opposed to patent-concerned industry in general.⁵⁵ However, evidence from the United States suggests that for important domestic patent issues a wider range of

⁵³ Braithwaite and Drahos, GBR, *supra* note 18 at 484.

⁵⁴ The patent office and international trade officials are the national institutions most directly involved in international patent cooperation. Patent-sensitive industries will lobby and influence many national institutions: government administrators, legislators, courts, etc. etc. For public choice theory, see generally D.C. Mueller, *Public Choice III* (Cambridge: Cambridge University Press, 2003) and Olson, *infra* note 98.

⁵⁵ See, for example, Ryan *supra* note 4 at 69 and Braithwaite and Drahos, GBR, *supra* note 18 at 61, 69 (noting especially the role of Pfizer)

industrial interests are engaged.⁵⁶ The dominance of pharmaceutical interests at the international level is more likely due to a rational indifference by the leaders of other patent-sensitive industries to the extension of patent law to developing countries rather than a lack of organization.⁵⁷

In the patent field, industry interests are tied to the views of professionals, specifically patent agents and lawyers, and their professional organizations.⁵⁸ Patent law is a highly technical field, both in law and subject matter, and generally industry must turn to professional advice to understand how to advance their interests in a sophisticated manner. In turn, the views of professionals and their organizations are influenced by a desire to advance their clients' interests.

It is likely that the influence and level of activity of consumer interests has varied over time. It is probably more accurate to speak of purely domestic industry or consumer interests in the 1800's, when the idea of domestic economies was strongly entrenched (and often backed by the reality of national

⁵⁶ See G.B. Dinwoodie and R.C. Dreyfuss, "Diversifying without Discriminating: Complying with the Mandates of the TRIPs Agreement" (2007) 13 Mich. Telecomm. & Tech. L. Rev. 445 at 445 and 447, citing Burk and Lemley Policy Levers *supra* note 89 and D.L. Burk and M.A. Lemley, "Is Patent Law Technology-Specific?" (2002) 17 Berkeley Tech. L.J. 1155.

⁵⁷ Patents – and often specific patents rather than portfolios of patents – are more important to pharmaceutical companies than other industries. See Ryan *supra* note 4 at 22; Braithwaite and Drahos, GBR, *supra* note 18 at 61; and Dreyfuss and Dinwoodie *supra* note 56 at 445. There is empirical evidence that pharmaceutical patents are more valuable than patents in other industries: see J. Bessen and M. Meurer, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovation at Risk* (Princeton: Princeton University Press, 2008) at 108 (Table 5.3). Also, there are many multinational pharmaceutical companies, there is an international trade in pharmaceuticals (including a trade in active ingredients), and pharmaceutical companies are accustomed to working and lobbying in an intensely political climate.

⁵⁸ Within the community of patent professionals and industry there are individuals who can be identified as the champions of the linkage of intellectual property and trade. See Braithwaite and Drahos, GBR *supra* note 18 at 20-204.

tariffs)⁵⁹ than to speak of purely domestic industry and consumer interests today. When the adoption of patent law or its extension into new fields is in question, consumer interests are engaged, but in respect of the details of patent law once it is established, consumer interests are attenuated. In the patent debates of the 1800's, consumer interests were often directly involved, as the efficacy of patent laws themselves were often in debate.⁶⁰ In contrast, by the 2000's in the developed countries consumer interests may be regarded as attenuated for most reasonable patent issues.⁶¹ In the industrialized countries, patent law has been widely accepted, and the impact of most modern patent law questions – how is the doctrine of equivalents defined, how is the patent office performing, how are monetary remedies assessed - consumer interests are too diffuse to be particularly relevant in respect of state action.⁶² Active consumer interest on patent issues is likely limited to only a few issues with a direct impact or high profile, such as pharmaceutical regulation or patents for higher life forms.

For example, in 1987, the Canadian government introduced a bill for the purpose of weakening the compulsory licensing regime for pharmaceuticals, and

⁵⁹ See Alesina and Spolaore, *supra* note 44 at 189, for a chart of average tariff rates over time.

⁶⁰ Please see footnote 367 and associated text.

⁶¹ See Braithwaite and Drahos, GBR *supra* note 18 at 72 “Consumer organizations have not been players in the globalization of intellectual property.”, or at 499: “Mass rallies attracted as many as 500,000 into Indian streets in 1993 after the implications of the TRIPS agreement of the GATT became clear, but during the many years that this intellectual property agreement was being negotiated, there was no involvement from the Indian consumer movement, indeed no serious involvement from any national or international consumer movement. There were simply too few consumer movement antennae, already busy detecting too many other things.”

⁶² A.B. Jaffe and J. Lerner, *Innovation and Its Discontents: How Our Broken Patent System is Endangering Innovation and Progress, and What to do About It* (Princeton: Princeton University Press, 2004) at 20-21. In many cases, the effect of changing patent doctrines on consumers is also highly uncertain, further blunting the influence of consumer interests.

allowed Canadian patent officials to add various technical amendments that the officials had been seeking for some time.⁶³ The result was a revolutionary change to the fundamentals of the Canadian patent system, including:

- changing the patent term from 17 years from the issue date to 20 years from the date of filing,
- moving from a first-to-invent regime to a first-to-file regime,
- publication of patent applications at 18 months from the priority date instead of keeping patent applications confidential until issue,⁶⁴ and
- the introduction of deferred examination.

Although these massive changes to fundamental patent law policy comprised the majority of the bill, the voluminous record of Parliamentary and Senate committee hearings⁶⁵ contains scant mention of the substantive changes to the *Patent Act*, with consumer and public interest groups focusing almost exclusively on the topic of pharmaceutical prices and the compulsory licensing of pharmaceutical patents. The one witness who attempted to discuss general patent policy was the president of the Patent and Trademark Institute of Canada,

⁶³ Bill C-22: *An Act to amend the Patent Act and to provide for certain matters in relation thereto*, Second Session, 33rd Parliament, 35 Elizabeth II, 1986.

⁶⁴ The priority date is explained further in footnote 121.

⁶⁵ Canada. Parliament. Senate. Special Committee on the Subject-Matter of Bill C-22. *Proceedings of the Special Committee of the Senate on the Subject-matter of Bill C-22* (Ottawa: Queen's Printer, 1987) and Canada. Parliament. House of Commons. Legislative Committee on Bill C-22, *An Act to Amend the Patent Act and to Provide for Certain Matters in Relation Thereof. Minutes of proceedings and evidence of the Legislative Committee on Bill C-22, an Act to amend the Patent Act and to provide for certain matters in relation thereto* (Ottawa: Queen's Printer, 1987).

a professional association of patent and trade-mark agents and lawyers, and not a representative of consumer interests.⁶⁶

However, in the 2000's consumer interests may well be important in the developing countries. They are facing the same basic question and arguments that faced the now-industrialized countries in the late 1800s: whether patent law itself is justifiable.

There is also the issue of whether industry's perceived self-interest – what industry will advocate - is actually in the industry's self interest. Generally, this point is subsumed under the overarching uncertainty that surrounds the impact of patent law on domestic economies.

One implication of a rationalist, state-centered model is that states are usually not altruistic or concerned with the welfare of citizens of other states. Once again, this is probably a reasonable assumption in the patent law field. While surely the health of foreign markets that pay royalty streams to domestic patent-holders is a concern, this is a matter of economic policy writ large. Within patent law itself a country's underlying (albeit unrealistic) desire would be for its patent-owners to capture as much consumer value and positive externalities as possible from foreign countries.

⁶⁶ Statement of George Fisk, President of the Patent and Trade Mark Institute of Canada, Bill C-22, *Minutes of Proceedings and Evidence of the Legislative Committee*, House of Commons, Issue No. 6, Tuesday January 27, 1987, p. 6:9:

In the time from the enactment of the [pharmaceutical compulsory] licensing provisions in 1969 to September 4, 1986, which was the latest date I could get, only 107 different drugs have been licensed under the compulsory licensing provisions. In the same time over 400,000 Canadian patents have issued, dealing with everything conceivable – all sorts of technology – ...⁶⁶
Interestingly, this witness was accused by committee members of attempting to distract the committee from pharmaceutical regulation.

Altruism in respect of developing countries by developed countries is a more contentious issue. As a positive matter, I will claim that a serious interest on the part of the developed countries in the redistribution of wealth to the developing countries does not at present exist.⁶⁷ Whether it normatively should is a question beyond the scope of this thesis. Naturally, it is possible that the interests of citizens in the developed countries might change so that altruistic urges towards developing countries are given a higher priority, and this will in the future be necessary to include in an analysis of developed state interests.

Industry Interests, Transnational Networks and NGOs

When filling the state-interest blank with domestic patent-sensitive industry interests, it should be kept in mind that industry interests are themselves often transnationally influenced. It is impossible to ignore the role of transnational non-governmental organizations (“NGOs”) – particularly industry or professional NGOs as opposed to civil society NGOs - in the patent field. Unlike in some areas of international law, NGOs have played an important role for more than a century in the patent field. Industrial interests were regarded as crucial to having

⁶⁷ Of course, there may be situations where the welfare of developing countries may be improved with little impact on the interests of developed countries, in which case the weak altruistic interest may become relatively important. An example of this may be the Doha Agreement (World Trade Organization, Declaration on the TRIPS Agreement and Public Health, WT/MIN(01)/DEC/2, 41 I.L.M. 755 (2002)), where the rules for the international trade of pharmaceuticals produced under a compulsory license were relaxed for developing countries. The cost of this relaxation to developed country citizens, or even pharmaceutical companies, was small, so there was ultimately no strong interest to prevent an altruistic response.

the Paris Convention signed in the 1800's.⁶⁸ Today, many industries are multinational, and a state's domestic patent-sensitive industries might well be foreign owned. Perhaps more interestingly, patent law has a long history of international organizations of patent-concerned companies and professionals, who by communicating with each other can transmit ideas and viewpoints, and even coordinate lobbying in numerous jurisdictions.⁶⁹ They form international epistemic communities, "loose collections of knowledge-based experts who share certain attitudes and values and substantive knowledge, as well as ways of thinking about how to use that knowledge."⁷⁰ While this does not imply that industries will ignore their own interests for some international group interest, it does suggest that, for example, bargaining may occur where industries in different nations agree to promote each other's concerns.⁷¹

Descriptively, there has been writing on the spread of ideas or norms encapsulated in international law through transnational networking.⁷² At a high level, these writings suggest that people from various countries – government officials and bureaucrats, or simply individuals – meet in international fora, where

⁶⁸ See Penrose, *infra* note 357 at 42-59 and R.C. Moy, "The History of the Patent Harmonization Treaty: Economic Self-Interest as an Influence" (1993) 26 J. Marshall L. Rev. 457 at 478-479.

Paris Convention for the Protection of Industrial Property 20 March 1883, 828 U.N.T.S. 107, last revised at Stockholm, July 1967.

⁶⁹ Such as the AIPPI (The International Association for the Protection of Intellectual Property) or FICPI (The International Federation of Intellectual Property Attorneys).

⁷⁰ Braithwaite and Drahos, GBR *supra* note 18 at 501

⁷¹ Ryan, *supra* note 4 at 107, 118

⁷² See H.H. Koh, "The 1998 Frankel Lecture: Bringing International Law Home" (1998) 35 Hous. L. Rev. 623; H.H. Koh, "Why Do Nations Obey International Law?" (1997) 106 Yale Law Journal 2599; H.H. Koh, "Transnational Legal Process" (1996) 75 Neb. L. Rev. 181

they are exposed to a norm-forming decision making or debating process. They then return to their domestic settings while maintaining and spreading the international norms they have internalized through their international activities.

I think it would be difficult to deny the influence of such processes, particularly in the intellectual property field. One need only look at the response of much of the Canadian intellectual property community to the *Harvard Mouse* decision to see that.⁷³ As such, these processes can provide a salient input into the formation of the “state interest”. However, I would hurry to limit my adoption of this model.

First, proponents of the transnational networking approach often go on to say that through international participation, domestic individuals internalize a norm of obeying international law in general, which then is spread by those individuals in their home countries.⁷⁴ My view, in contrast, is that individuals might become convinced of the “rightness” of an international norm or feature of international law, but that is not the same as adopting a norm of obeying international law in general. For example, it is plausible that after interacting with individuals from countries where patents for higher life forms are accepted (and the debate over their acceptability is “history” and no longer contentious), an individual from a country where the question is undecided might be persuaded by

⁷³ In the *Harvard Mouse* case (*Harvard Mouse v. Canada (Commissioner of Patents)* [2002] 4 S.C.R. 45; (2002) 21 C.P.R. (4th) 417), the Supreme Court of Canada ruled that the Canadian *Patent Act* did not authorize patents for “higher life forms”. Much of the reaction by the Canadian patent profession was dismay at this ruling, which put Canada off-side all other industrialized countries in the granting of patents on higher life forms, but without any clear articulation of why this development was undesirable. There was a concern that the ruling turned Canada into a bit of a cultural backwater within the legal community.

⁷⁴ See Koh, *supra* note 72 at 2603 (Why Do Nations Obey), 184 (Transnational Legal Process) and 655, 677 (Bringing International Law Home)

this unofficial international norm. It is difficult to extend this to a simple acceptance of international norms in general, or to international patent norms in general. Much of the writing in this area comes from the area of human rights, where it is assumed as a matter of background that international fora adopt progressive and desirable ideas.⁷⁵ In contrast, I would focus on the ideas themselves to see if they are normatively persuasive.

Second, it is difficult to perceive this effect as overcoming truly strong domestic interests in the patent field. These domestic interests can include the local economy and local politics, but can also include the legal system and culture. Among other factors, the importance of patent laws on the local political agenda is important: even in the face of widespread policy agreement about the desirability of a change in patent law, there still needs to be a strong enough proponent of the change to propel it onto the legislative agenda. Often, government officials or bureaucrats are unable to supply this impetus.

Third, such transnational interaction and norm generation/transmittal in the patent field takes place in multiple fora, some of which may not interact and may transmit radically different transnational ideas. A meeting of FICPI (Fédération Internationale des Conseils en Propriété Industrielle), AIPPI (International Association for the Protection of Intellectual Property), the AIPLA (American Intellectual Property Law Association) or the intellectual property section of the International Bar Association may encourage the sharing of ideas very different from those spread at a WIPO or WTO meeting, which in turn may be very

⁷⁵ i.e. the theory of Koh, *supra* note 72 does not specify the normative basis of the international standards, focusing instead on the norm of following international norms.

different than those created at a meeting of civil society NGO's concerned with development. It is my impression that these worlds do not often intersect: it is rare to see representatives from development NGOs at international meetings of intellectual property professionals, and vice versa.

Anne-Marie Slaughter goes beyond a robust multilateralism by proposing that networks of national officials (judges and bureaucrats) form transnational networks.⁷⁶ They would have democratic legitimacy from their national offices, but would also be socialized to a globalist orientation. Once again, I do not adopt this approach as a significant part of this thesis, although I do accept that such socialization can occur among, for example, various national patent office officials. It should be noted that patent law is a field where such behaviour would have high importance: since much of patent law and practice is not captured in legislation, judicial and administrative decisions are of correspondingly greater importance. For example, in some cases, patent office officials can effectively change substantive patent law through their decisions on prosecution. Patents for business method and software patents often first attain acceptability in a jurisdiction following their allowance by officials in a patent office, albeit this decision is subject to later judicial review.

Reputation

In discussing state interests in cooperation in the patent law field, this thesis will identify several broad categories of interest: an interest in accepting

⁷⁶ A. Slaughter, *A New World Order* (Princeton: Princeton University Press, 2004)

international patent-driven profit flows; an interest in decreasing the costs to run the patent prosecution system; an interest in obtaining greater domestic incentives by exposing domestic actors to the influence of foreign patent laws; an interest in gracefully handling the effects of skewed, valuable patents, and an interest in avoiding economic sanctions or other retaliation. Should an interest in maintaining a reputation for honouring international commitments be added to this list, and how?

Within a rationalist framework, authors such as Guzman argue that reputation is often underestimated.⁷⁷ In part, this is because there is presently no good theory of reputation.⁷⁸ The possible rationalist consequences of breaching a treaty are retaliation, loss of reciprocity (a constrained type of retaliation), and a loss of reputation.⁷⁹ He notes that “Where states simply cannot be excluded from a public good, reciprocity will obviously not work well.”⁸⁰ Guzman argues that compliance with international law is affected both by immediate payoffs, but also by concerns for its reputation for living up to its commitments, which operate as a “form of collateral” for future international commitments.⁸¹ He notes that the larger the stakes, the less reputation matters:

⁷⁷ A.T. Guzman, “Reputation and International Law” (2006) 34(2) Ga. J. Int’l & Comp. L. 379.; Guzman, Promise of International Law, *supra* note 50.

Outside of a rationalist framework, reputation is often cited as a reason why countries obey international law even in contradiction of their own interests.

⁷⁸ Guzman, “Reputation and International Law” *supra* note 77 at 383.

⁷⁹ Guzman “The Promise of International Law” *supra* note 50 at 554.

⁸⁰ Guzman “The Promise of International Law” *supra* note 50 at 554.

⁸¹ A. Guzman, “A Compliance Based Theory of International Law” (2002) 90 Calif. L.R. 1823 at 1849. More formally, Guzman models international interaction as an infinitely repeated prisoner’s dilemma game, in which compliance allows a state to escape future prisoner’s dilemmas (at 1846).

the reputational concerns are those most likely greatly outweighed. On the other hand, in matters of “small stakes”, reputation may matter more: it may outweigh the small stakes. Reputation and international law may matter more in areas of international economic issues (like patent law) than in war, peace, alliances, or human rights.⁸²

A state may be seen as having multiple reputations, divided by subject area (i.e. a country may have a good reputation in respect of trade law and a poor reputation in respect of environmental law), but also between formal and informal compliance or obeying the letter and spirit of the law. For example, a state may have strong and enforceable patents, informally satisfying the spirit of international cooperation to provide patents of a minimum strength, while breaching some aspect of an international patent law agreement (and perhaps even having the reputation of indifference to the letter of international agreements).⁸³

Difficult questions arise over compliance with informal norms or expectations of behaviour. As noted by Guzman, under a rationalist view reputation depends on the existence of an obligation “in the eyes of other states rather than the conventional requirements of state practice and a sense of legal obligation felt by the breaching state.”⁸⁴ Only in that case can the question of whether a state is likely to breach its obligations come into play. For example, as

⁸² Guzman, A Compliance Based Theory, *supra* note 81 at 1883-1886.

⁸³ For example, foreign states have complained for many years that foreign inventors are disadvantaged under United States patent law by rules that allow evidence of earlier dates of invention only for activities within the United States. See footnote 705. Despite this, the United States still has the reputation of providing strong and enforceable patents.

⁸⁴ Guzman, A Compliance Based *supra* note 82 at 1825.

argued below, around the turn of the century the Netherlands and Switzerland eventually came into compliance with an informal international norm for a substantive patent law. Reputational concerns are mentioned by authors analyzing these situations, especially in the case of the Netherlands. However, these were cases of gross non-compliance – no patent law at all, or a patent law that is severely restricted and effectively no patent law for important subject-matters. It is easy to posit an informal norm to “have a substantive patent law.” It is a more debatable point as to whether a widely held informal “norm” of a detail of patent law may be violated with reputational consequences, and if so what the reputational consequences would be. Equivalently, it is difficult to tell whether an informal international “norm” of a detail of patent law creates an obligation in the eyes of other states. For example, there is an international norm for a first to file patent prosecution system, with only one defector – the United States, which has a first to invent system. Does that give rise to a reputational concern for the United States? Similarly, Canada is a defector on patents for higher life forms – the only defector among the industrialized countries - is there a reputational effect?

Further complicating the reputation question is the behaviour of private actors. The literature generally discusses reputation in terms of a state’s reputation among other states. However, do private actors care about the violation of international patent law? If so, do they retaliate for violations? For example, in respect of the International Monetary Fund, it has been argued that it is the reaction of private actors that encourages compliance, not formal rules of

dispute resolution between states.⁸⁵ Even if a country suffers no discernable state-based retaliation for non-compliance, it may be possible that it will still suffer retaliation by private actors in the form of a withdrawal of investment.⁸⁶

I.6 Organization of the Thesis, and a Brief Synopsis

Part I of this thesis, comprising chapters 1 to 3, discusses when harmonization is well-founded, analyzing the fundamental trade-off between the benefits of harmonization and the costs of a loss of diversity. Part II, comprising chapters 4 to 6, contains an analysis of the two main international institutions that order international patent law – the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO). Chapter 4, situated at the beginning of Part II, discusses the history of international patent law, showing consistency with the theories of Part I and setting the factual frame work for Part II.

⁸⁵ B.A. Simmons, “International Law and State Behavior: Commitment and Compliance in International Monetary Affairs” (2000) 94 Am. Pol. Sci. Rev. 819 at 820.

⁸⁶ See A. Zahl, “Patenting of ‘Higher Life Forms’ in Canada” (2004) 23(5) Biotechnology Law Report 556 at 556: “Meaningful patent protection is critical to health of the Canadian biotechnology industry.” London (Ontario) Chamber of Commerce: “We believe that [Parliament’s inaction on authorizing higher lifeform patents] is putting Canada at a significant competitive disadvantage when it comes to attracting capital investment. Without the capital investment, Canada’s biotech industry will not be able to continue its current level of research and Canada will not be able to maintain a critical mass of biotech companies.” (http://www.londonchamber.com/news_media/reference_library/?id=135)(accessed March 16, 2008)

It has been widely reported that increased investment in Canada by pharmaceutical companies was connected to the strengthening of Canadian pharmaceutical patents in the late 1980s (see *Canada Split on Drug Patents* New York Times August 24 1987 reporting that Canadian Prime Minister Brian Mulroney stating that brand-name pharmaceutical companies promised to spend an additional \$1.4 billion and create 1,300 new positions in return for strengthened drug patents) In 2005, there were published reports that Microsoft threatened to move jobs from Denmark if Denmark did not support the patentability of software in Europe. Microsoft denied the reports. (see <http://www.boingboing.net/2005/02/15/gates-denmark-suppor.html>) (accessed March 14, 2008)

Part I

Chapter one provides a utilitarian discussion of patent law and the costs from a lack of diversity from the perspective of autarchy. It covers several key building blocks that are used to underpin the analysis in the rest of the thesis. Among the main points are: the placing of patent law in a context of innovation law and policy; that patent law involves the internalization of externalities to the patent holder to provide incentives to innovate; that patents necessarily involve a trade-off between effects that encourage innovation and effects that inhibit innovation; patent law as a private means for fulfilling a public function; the difficulty of textually defining the central legal concepts; that the welfare effects of patent law (including the effects of specific details or doctrines) are uncertain and may be expected to vary over time and between industries; and the importance of patent prosecution and the cost/speed/quality trade-off in patent examination.

Chapter two examines the costs from a loss of diversity between states (equivalently, the value of diversity between states). In doing so the assumption of autarchy or closed-system analysis from chapter one is partially relaxed by recognizing the cross-border incentive effects of foreign patent systems and allowing cross-border communication, holding other aspects of autarchy constant (primarily, a restriction on strategic behaviour on the part of states).

Assuming that greater differences in preferences occur between than within states, the preferred ordering is each state setting its own laws (and thus maximizing its domestic welfare). This specifically seems to hold in the case of

patents. Patent law is an area of high diversity of preferences between states. Under a static analysis, we should expect to see a high heterogeneity in patent law preferences at any given time. A state's patent law preferences will be affected by at least five economic factors: the size of the economy; relative strength in imitation versus innovation; the level of economic development; industrial mix; and complementary innovation policies. Preferences will also vary with political, cultural and legal differences among states. Under a dynamic analysis, diversity in patent law encourages the satisfaction of preferences over time primarily through experimentation, assumedly leading to the discovery of superior practices in the presence of underlying changes to technology and economics and changes to our understanding of the innovation process.

Chapter three discusses the benefits of harmonization to states, and thus provides theories needed to overcome the presumption (from chapter two) that states should choose their patent laws to maximize domestic welfare. The assumption of autarchy is fully relaxed to permit strategic reaction by countries to other countries' patent systems, and particularly the emergence of profit flows between nations based on patents. Three sets of reasons for harmonization are identified: recognition of foreign patentees, reduction of duplication, and integration-driven harmonization.

The recognition of foreign patentees involves two related and sequential arguments for national treatment and minimum standards. Motivations for states to cooperate in allowing patents for foreign entities arise from differences in economic size and innovative capacity, as well as the differing and skewed

values of inventions, leading to an imbalance of externalities and an imbalance of incentives to innovate. Countries providing externalities to other countries have an interest in recapturing some of those externalities (and may retaliate if their interests are not accommodated); while small countries have an interest in obtaining patent protection for their nationals in large-market countries to provide a sufficient domestic incentive to innovate and because of the possibility of large patent-based returns. The simplest solution to this collective action problem that still respects national diversity is a system of national treatment, where foreign patent owners are treated as well as domestic patent owners. However, a system of national treatment will itself be unstable without some concept of minimum standards. Having secured access to foreign patent systems for their nationals, it is then in each country's self interest to minimize the scope and length of their domestic patent laws to minimize their profit outflows. This can lead to a "race to the bottom", or at least a deterioration in the underlying national treatment regime. Minimum standards in patent law, whether informal or formal, are needed to stabilize cooperation on national treatment.

The second basis for harmonization of patent laws via international cooperation is the reduction of duplication in patent prosecution. Costs for patent prosecution are known to be high, and the various patent offices around the world are performing roughly similar work. To the extent that practices in the various countries are harmonized, these costs may be reduced by patent offices and applicants free riding on prosecution before a foreign patent office. Importantly, it is not necessary to harmonize substantive patent laws to the same

extent as prosecution practices to obtain significant reductions in duplication, since in practice both states and applicants are generally satisfied with imperfect or approximate examination. However, there is reason to be concerned with the effects of such harmonization on pendency as well as quality, and putting control of the process in private, applicants' hands, all of which may be socially inefficient.⁸⁷

The third basis for harmonization discussed in this thesis is integration-driven harmonization. In general, a state may move to make its patent laws more similar to those of another state for reasons of its own domestic preference satisfaction. This differs fundamentally from the two bases for harmonization discussed above as it does not depend on international cooperation. This thesis highlights one such reason: the integration of national economies across borders, particularly between countries of disparate size.

Recap of Part I

These three bases for harmonization are related to the four possible benefits of constructing larger legal regimes: lower per capita costs of providing public goods; the larger size of the economy; regional insurance; and redistributive schemes.

Part II

Chapter Four

⁸⁷ See discussion of pendency and quality in text associated with footnotes 291 to 307.

Chapter four describes and analyzes the history of international patent cooperation, with two goals: to reconcile the theoretical analysis of chapters 1 to 3 with historical events, and to introduce the topic of Part II: international institutions.

Chapter 5 discusses the two motivations for international cooperation from chapter 3, the recognition of foreign patentees and the reduction of duplication in patent prosecution, as collective action problems. At a high level, cooperation to provide international public goods will be more or less difficult depending upon the public aspects of the goods. However, a more detailed analysis is needed to understand the prospects for successful cooperation. The reduction of duplication in prosecution provides public goods with structures that suggest a good prognosis for cooperation.

A difficult question in this area is whether patent prosecution or the recognition of foreign patentees are best viewed as regional public goods (RPGs) or global public goods (GPGs).

The recognition of foreign patentees is more complex, with four international public goods being provided by such cooperation. This is a case of joint products (one activity producing multiple international public goods), and the prognosis for cooperation in such situations depends on the ratio of excludable benefits to total benefits. Three of the public goods (reduction in global discord, higher domestic incentives to invent, and reducing the risk of the skewed, highly valuable patent) are excludable, while one (increased inventiveness in other countries) is not, suggesting that prognosis for cooperation on this basis is also

favourable. However, a more detailed discussion suggests that cooperation may well be difficult, consistent with the history discussed in chapter four.

Chapter six considers the institutional features of WIPO and the WTO, which this thesis regards as one joint institution ordering international patent law. WIPO is seen as an appropriate institution to foster cooperation in the area of the reduction of duplication in patent prosecution, a field of cooperation that requires little in the way of adjudicatory dispute resolution, but needs flexibility and an institutional encouragement of experimentation. As a key source of ideas and debate in the area of patent law, it is important that non-governmental organizations and developing countries be allowed access to WIPO proceedings.

The WTO is seen as the appropriate location for cooperation in the area of the recognition of foreign patentees. However, there are difficulties integrating the subject of patent law into the WTO's overall trade-oriented framework. This arises from the multilateral nature of patent law obligations as compared to traditional trade obligations, the uncertain welfare effects of the details of patent law, the difficulty in textually capturing key patent law concepts, and the flexibilities inherent in the TRIPs Agreement. The dispute resolution process is an ill-designed vehicle for the renegotiation or fine-tuning of TRIPs obligations, although it is suitable for adjudicating coordination disputes where both parties prefer a decision to ongoing uncertainty. The TRIPs Council, in contrast, has the institutional features that are desirable for adjusting the TRIPs Agreement as new contingencies arise. However, the political realities of the TRIPs Council dictate that the dispute resolution process will often be forced to promulgate new norms.

Developments in this complex system will ultimately affect the legitimacy of the TRIPs and WTO systems.

A **Conclusion** brings together the primary findings and reformulates the analysis developed in this thesis. It highlights and surfaces eleven main findings or claims about patent harmonization and international governance. A primary point is that international patent law cooperation is heavily political, as opposed to technocratic or value neutral. It is thus important that the theoretical underpinnings of international patent cooperation and governance be explored and understood. Ultimately, only good international governance can deliver on the potential of the international patent system to promote international innovation, economic growth and world-wide prosperity.

PART I – WELL-FOUNDED HARMONIZATION

As noted in the Introduction, this thesis characterizes well-founded international harmonization as involving a trade-off between the benefits of harmonization and the costs of a loss of policy diversity. This Part I discusses the details of this trade-off in the patent field, arguing that patent law is marked by high benefits of harmonization, but also high costs from a loss of policy diversity.

Chapter 1 discusses the economic analysis of patent law, treating countries as autarchies. It then utilizes this autarchic approach to provide a static analysis of the costs from a loss of policy diversity between states.

Chapter 2 extends the examination of the costs from a loss of policy diversity between states to dynamic considerations, and in doing so partially relaxes the assumption of autarchy or closed-system analysis from chapter 1 by allowing cross border communication and recognizing the incentive effects of foreign patent systems, holding other aspects constant.

Chapter 3 discusses the benefits of harmonization, in part by further relaxing the assumption of autarchy to permit reaction by countries to other countries' patent systems, particularly the emergence of profit flows between nations based on patents.

1. Domestic Patent Law, Autarchic Analysis

This chapter reviews some relevant aspects of purely domestic patent law, treating a country and its patent laws as a closed system or autarchy. It draws heavily from analysis of patent law in the United States, which as a jurisdiction where the costs and benefits of patent law are largely internalized domestically and result from domestic legislation comes closest to being an autarchy in this sense. This chapter sets the framework that will be used in the rest of the thesis.

This chapter then begins the analysis of the costs resulting from a loss of diversity, analyzing these losses from a static point of view while maintaining the assumption of autarchy.

Innovation, defined as the introduction of new products and processes, is a principal source of growth in living standards and the evolution of economic structures, particularly within developed countries.⁸⁸ The collection of laws and policies that affect innovation is often grouped under the term “innovation policy”. Patent law, which grants terms of exclusion over inventions, is a key innovation policy. Burk and Lemley bluntly state that: “Patent law is our primary policy tool to promote innovation, encourage the development of new technologies, and increase the fund of human knowledge.”⁸⁹ As written by Kitch:

⁸⁸ For example, see W.D. Nordhaus, *Invention, Growth and Welfare: a Theoretical Treatment of Technological Change* (Cambridge: MIT Press, 1969) at p.8. Cohen, *infra* note 117 writes at 182: “Since that time, economists have increasingly appreciated the economic significance of technological progress, and it is now common to hear that a firm’s, and industry’s or even a nation’s capacity to progress technologically underpins its long-run economic performance.”

⁸⁹ D.L. Burk and M.A. Lemley, “Policy Levers in Patent Law” (2003) 89 Va. L. Rev. 1575 at 1576.

“Although understanding of the effects of a patent system may be primitive, the issue is important. Many observers believe that technological innovation is the most important source of the increases in economic productivity that have been observed over time. Understanding those conditions that do and do not promote innovation is important for understanding the long-term effects of economic policies. The patent system has been the one key, pervasive institution in capitalist economies addressed to the problem of creating incentives for innovation.”⁹⁰

Patents are concerned with promoting welfare over the long term by promoting growth or dynamic changes. In return, patent law imposes short term or static losses.

Patents of invention, also called utility patents (which should be distinguished from petty patents or design patents)⁹¹ grant exclusive rights to inventions to applicants for a limited period of time. At present, the TRIPs Agreement mandates that patent grants have a minimum term of 20 years from the date the patent application was filed.⁹²

⁹⁰ Kitch, E.W., “Patents” in *The New Palgrave Dictionary of Economics and the Law*, ed. P. Newman, 1998, Stockton Press New York, NY, at 14.

⁹¹ Petty patents generally refers to any type of protection provided to inventions that do not qualify for full utility patents. An example is Australian “innovation patents”, which require a “substantial contribution to the art” rather than non-obviousness, and have a term of eight years (see http://www.ipaustralia.gov.au/patents/what_innovation.shtml) (accessed July 14, 2007). A list of countries recognized by WIPO as having utility models (a variety of petty patent) may be found at http://www.wipo.int/sme/en/ip_business/utility_models/where.htm (accessed July 14, 2007).

Design patents generally protect an item’s appearance or ornamentation. They are also commonly called “industrial designs” or just “designs”. See B.W. Gray and E. Bouzalas, Eds., *Industrial Design Rights: An International Perspective* (London: Kluwer Law International, 2001)

⁹² Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Legal Instruments--Results of the Uruguay Round, 33 I.L.M. 1125, 1197 (1994) [hereinafter TRIPs Agreement], Article 33.

Patents are territorial in scope. If one wishes to have a patent that is effective in the territory of the United States, one must obtain a United States patent. A patent of another country does not extend to acts in the United States. Generally, a patent owner has the exclusive right to make, use, construct, import, offer to sell and to sell the patented invention within the territory.⁹³ Also generally, patent statutes provide patent holders in cases of infringement with a right to monetary compensation, and also to injunctions, both usually in line with the general rules for tort proceedings in the jurisdiction.⁹⁴

Unlike copyrights, which are granted automatically upon the fixation of an original work in material form without the intervention or action of any government agency, patents are never automatically granted upon the creation of an invention. Instead, the patent applicant or potential patent owner (usually a corporation who employs the inventor of the invention) must apply to the appropriate national government agency to be granted a patent. These government agencies are informally referred to as patent offices, although they all have individual names.⁹⁵

At a high level, the standard utilitarian justification for patent laws is that inventions – which are information or knowledge - are a non-excludable (it is difficult to exclude the public from using the good) and non-rivalrous (the use of

⁹³ See TRIPs Agreement, *supra* note 92, Article 28 for example.

⁹⁴ See TRIPs Agreement, *supra* note 92 Articles 44 and 45.

⁹⁵ For example, the informal “Canadian Patent Office” is formally a division of the Canadian Intellectual Property Office (CIPO).

the good does not reduce the amount of the good available to others) good.⁹⁶ In the absence of protection for inventions that are made public, competitors of an innovator will quickly copy any resulting innovation, decreasing the amount of profit available to the original inventor. As a result, there will be an insufficient incentive for society to make investments *ex ante* in developing new ideas.⁹⁷ Innovation is thus one example of a “Public Good”: a good where the private market undersupplies a good relative to the public demand.⁹⁸

In response, society (in the form of national governments) creates an incentive to innovate by providing inventors who disclose their invention to the public a period of exclusivity. This legal entitlement is called a patent. Positive externalities are directed to the patent-holder, thus creating additional *ex ante* incentives to innovate relative to the situation without patent protection.

Most importantly, this line of thinking does not justify policies that capture all positive externalities for the patent-holder. World-first inventions are only a subset of innovation as a whole, which also includes the imitation of others innovations, building on other’s inventions, and duplicate invention at other companies. The diffusion of ideas through imitation is key for the progression of

⁹⁶ It should be noted that while all inventions are non-excludable in the sense that once made public it is impossible to exclude the public from using the invention, it is often possible to commercially exploit an invention while not making it public. For example, an improvement in a manufacturing process can often be kept secret. It should also be noted that even after an invention is revealed to the public, the most efficient or commercially useful method of using an invention may often be kept secret.

⁹⁷ In addition, in cases where an invention is made, there is little incentive to make the invention public, and indeed every incentive to keep the invention a secret. As noted below, inventions have large positive spillovers or externalities, and keeping innovations a secret decreases general welfare.

⁹⁸ For more on public goods, see, for example, M. Olson, *The Logic of Collective Action* (Cambridge, MA: Harvard University Press, 1965) or T. Sandler, *Collective Action* (Ann Arbor: The University of Michigan Press, 1992).

the economy. Patent law impacts not only the creation of patentable, novel inventions, but also impacts the adoption or imitation of both patentable and non-patentable innovations.

For example, in 1993, Statistics Canada carried out an Innovation and Advanced Technology Survey for Canadian manufacturing companies, the results of which are analyzed in a recent book by John Baldwin and Petr Hanel as well as a series of Statistics Canada reports.⁹⁹ The Baldwin and Hanel book, which examines innovation as a whole, describes how important technological spillovers – defined as “a transfer of information and ideas for innovation free of charge, or at a cost lower than the value of information to the innovating firm”¹⁰⁰ – are to overall innovation in the Canadian economy. The 1993 Survey indicates that the majority of companies reported that their most important innovation was not a world-first innovation – 16% indicated that their most important innovation was a world first, while 33% were firsts for Canada, and 51% of companies reported that their most important innovation was not a first in the Canadian marketplace.¹⁰¹ In addition, the survey indicates that all three categories of invention – world-first, Canada-first and other – have a similar likelihood of bringing benefits to the innovating firm.¹⁰²

⁹⁹ Baldwin, John R. and Petr Hanel, *Innovation and Knowledge Creation in an Open Economy – Canadian Industry and International Implications* (New York: Cambridge University Press, 2003). The survey is the 1993 Survey of Innovation and Advanced Technology, carried out by Statistics Canada.

¹⁰⁰ Baldwin, *supra* note 99 at 77.

¹⁰¹ Baldwin, *supra* note 99 at 248 and 215.

¹⁰² Baldwin, *supra* note 99 at 197-199. Note that this does not imply that the innovations all provided the same type of benefit to the firm:

“While firms that produce all three types of innovation report increasing their share of foreign markets as a result of innovation, the effect may differ

Non-world-first innovators source ideas for their innovations from technological spillovers – competitors, trade fairs, professional publications, public R&D institutions, patent office records, and universities and colleges – at a much higher rate than world-first innovators. Baldwin and Hanel report that 33% of world-first innovators report using technological spillovers, while 38% of Canada-first innovators and 55% of non-Canada first innovators report using technological spillovers, with an overall rate for all innovative companies of 46%.¹⁰³ Companies whose most important innovation was a non-Canada-first reported obtaining ideas from competitors 41% of the time, with Canada-first innovators reporting 19% and world-first innovators 11%.¹⁰⁴ Overall, 28% of innovative Canadian companies reported sourcing ideas from competitors.¹⁰⁵ While sourcing ideas for innovation from a competitor may involve licensing or some other market transaction, Baldwin and Hanel comment:

Although some of the knowledge that is derived from competitors may come from joint projects and may be more akin to a market relationship that involves an exchange of resources, most of the spillover here occurs from the observance of the behaviour of competitors and the reverse engineering of competitors' products.¹⁰⁶

Whether a competitor's innovation is legally protected from copying, and thus legally obtainable only through a market transaction (if it is available at all) is

across the types of innovations. More original innovations have a better chance of penetrating export markets."

(Baldwin, *supra* note 99 at 198)

¹⁰³ Baldwin, *supra* note 99 at 76. The standard error was 3%.

¹⁰⁴ Baldwin, *supra* note 99 at 76. The standard error was 3%.

¹⁰⁵ Baldwin, *supra* note 99 at 76. The standard error was 3%.

¹⁰⁶ Baldwin, *supra* note 99 at 75.

directly affected by patent (and trade secret) law. It is thus important to consider patents as impediments to the adoption or imitation of new technology, and not just as a provider of incentives.

The capture of excessive positive externalities by patent-holders can thus impede innovation and domestic welfare in a national economy even while increasing the incentives to invent.¹⁰⁷ Hence, perhaps the central domestic policy question for countries is the limits of patent law – which positive externalities a patent holder should have the ability to potentially capture and which positive externalities a patent holder should not be able to capture – and whether one can more effectively design the trade-off between incentives to innovate and losses created by the patent system.

Generally, in patent laws such as the United States' and Canada's, the patent holder is allowed to raise prices up to the monopoly level.¹⁰⁸ The externalities directed to the patent holder (versus the situation with no patent) include the capture of consumer surplus (the value to consumers above the price paid), and are accompanied by a deadweight loss – the loss of consumer surplus representing those consumers who cannot purchase the product. As argued by Ayres and Klemperer, ideally the patent reward should capture less than the full monopoly price, as the last bit of monopoly or patent-holder profits

¹⁰⁷ For a discussion of the excessive capture of positive externalities in intellectual property law, and comparisons to real property and the theories of Harold Demsetz, see M. Lemley, "Property, Intellectual Property and Free Riding" (2005) 83 Tex. L. Rev. 1031. See also M.A. Lemley, "Romantic Authorship and the Rhetoric of Property" (1997) 75 Tex. L. Rev. 873 at 888-90.

¹⁰⁸ See discussion in I. Ayres & J. Klemperer, "Limiting Patentees' Market Power Without Reducing Innovation Incentives: The Perverse Benefits of Uncertainty and Non-Injunctive Remedies" (1999) 97 Mich. L. Rev. 985.

corresponds with a large deadweight loss.¹⁰⁹ However, this is an idealistic analysis: while the notion of monopoly pricing is often used in the economic analysis of patents, it is rare for a patent to actually grant monopoly power. Usually, the pricing power of a patent owner is constrained by the existence of non-infringing substitutes. The Ayres & Klemperer and other analyses of the optimal design of patent laws have been inconclusive, with results usually limited by strict underlying assumptions.¹¹⁰

One of the primary virtues of the patent system is that once the bounds of patent law and particular patents are set by the government, the amount of reward directed to a patent holder is determined in the decentralized decision-making of the marketplace. The patent reward is thus automatically tied to the social, or at least commercial, value of the patented invention. This avoids the problems associated with judgments of the “worth” of an invention/innovation by a centralized body.¹¹¹

Informally, a patent system increases innovation in three ways: by providing incentives to invent; by providing incentive to disclose technological information, which is then disseminated to the public as published patent applications and issued patents; and by providing incentives to develop products incorporating inventions and distribution systems, including (a) creating sufficient rights to allow

¹⁰⁹ *Ibid.*

¹¹⁰ See footnote 130; Burk & Lemley *supra* note 89 at 1578 (“like the blind men examining the proverbial elephant, theorists have approached patent law with the needs and characteristics of particular industries in mind, and have developed a general theory of patent law based on an understanding of innovation that is industry-specific and, therefore, necessarily incomplete.”) and 1615; S. Scotchmer, *Innovation and Incentives* (Cambridge: MIT Press, 2004), chapter 4 (“On the Optimal Design of Intellectual Property”).

¹¹¹ For more on this see Scotchmer, *supra* note 110 at 38, 58

the rights holder to efficiently organize and finance development of his invention, and/or (b) creating property rights for post-invention bargaining/financing.¹¹² As discussed below in chapter 2, the effects of patents vary from industry to industry, and indeed from company to company within an industry.

The patent system creates losses to society by increasing prices on products protected by patents (thus incurring a deadweight loss), and deters innovation by deterring competitors from manufacturing and distributing or developing distribution systems for products that might infringe patents; and potentially deters competitors from researching avenues covered by or close to approaches patented by their competitors.¹¹³ It also creates cost to administer or access the system to both public and private actors.¹¹⁴ The patent system can also create incentives for undesirable pre-innovation behaviour, as in the case of patent racing.¹¹⁵ When considering patent law in a complete autarchy (or closed system), moves taken to increase incentives to innovate, develop and disclose come at the cost of increased deterrence of competitors or additional cost to the buying public, and vice-versa. Patent issues in the academic literature that adopt a closed system approach (generally analyzing the United States) are usually

¹¹² In respect of the last point, see E. Kitch, "The Nature and Function of the Patent System" (1977) 20 J. L. & Econ. 265 and R.P. Merges and R.R. Nelson, "On The Complex Economics of Patent Scope" (1990) 90 Colum. L. Rev. 839.

¹¹³ This latter point depends on the actual content of national patent laws, which vary considerably on this issue.

¹¹⁴ On the public side, the costs include the costs to run a patent office (although these can be off-loaded to the applicants), and the costs to operate a court system. On the public side, there are professional costs to apply for and obtain patents, and costs to exploit and enforce patents. Also the costs to run a patent office are often shifted to the private side through fees to access patent office services.

¹¹⁵ See Scotchmer, *supra* note 110 at 112-114

viewed as a trade-off between these positive and negative economic effects of patents, and debates repeatedly circle around the proper point for this trade-off.

More formally, this idea is captured in the Nordhaus trade-off, taking its name from the work of William Nordhaus in the late 1960s.¹¹⁶ The Nordhaus trade-off is formally derived in Appendix B. It argues that the consumer surplus for a product is divided under a patent into profit to the patentee, consumer surplus accruing to the public, and a deadweight loss – the loss of consumer surplus representing those consumers who cannot purchase the product because of the patent-protected price increase. Increasing the strength or breadth of patent protection increases the potential return to a patent holder, thus providing an incentive to invest in what are anticipated to be more costly innovations. However, increasing the strength or breadth of patent protection also increases the deadweight loss.

Balancing these effects results in the Nordhaus trade-off: it is only optimal to increase the strength or breadth of the patent if the marginal gains to social value of the additional inventions induced by the longer patent length are greater than the increased deadweight losses that are incurred for inventions that would have been made at the lesser length of patent life.

This trade-off is quite difficult to assess in practice on both sides of the trade-off: it is difficult to observe or estimate either gains from additional innovation or

¹¹⁶ See Nordhaus, *supra* note 88 and W.D. Nordhaus, “The Optimal Life of Patents”, Cowles Foundation discussion paper #241, 1967. (available at <http://cowles.econ.yale.edu/P/cd/d02a/d0241.pdf>) (accessed July 25, 2007)

increases in deadweight loss for most proposed changes in patent law. This difficulty also extends to the actual empirical justification of patent law itself.¹¹⁷

This trade-off between the welfare enhancing and welfare reducing effects of patent law is complicated by significant issues of identification, claiming and marking the patent grant. Unlike most other types of property, there is a difficult question of whether an invention, which typically requires novelty and non-obviousness, has actually been made for which a patent can be claimed. A person who has created a technological advance “new to themselves” cannot know – indeed, can never be absolutely sure – that their creation is a patentable invention, as this would require a perfect knowledge of the state of all public information (and some private information) at the relevant date.¹¹⁸ Similarly, the public – whether competitors, business partners or customers - is also uncertain as to the existence of a patentable invention.

¹¹⁷ See E. Mansfield “Patents and Innovation: An Empirical Study” (1986) 32 *Management Science* 173; R. Levin, A. Klevorick, R. Nelson and S. Winter, “Appropriating the Returns from Industrial Research and Development” (1987) *Brookings Papers on Economic Activity* 3 783; and W. Cohen “Empirical Studies of Innovative Activity” in P. Stoneman, ed., *The Handbook of the Economics of Technological Change* (Oxford: Basil Blackwell, 1996) at 182-264. These empirical analyses, while limited in number, tend to have consistent results. Based on opinion surveys, patents are regarded as a necessary incentive for innovation in only a few (pharmaceutical and to a lesser extent chemical and semiconductor) industries. The perceived usefulness of patents tends to be associated with the cost of imitation within an industry and how much patents increase costs of imitation. Regardless of these results, however, patents are widely pursued, even in industries where executives do not regard patents as a necessary incentive for innovation. The more limited evidence on how differences in appropriability conditions, including patent laws, affect innovation and performance is unclear. At the least, theories suggest that the relationship is complicated. These studies suggest that patents should be seen as social structures that improve the appropriability of returns from innovation; not necessarily as the primary barrier to access.

¹¹⁸ For example, a patent application might already have been filed for the invention but is still being held confidential by the patent office.

Even if it is assumed that a patentable invention has been made, there is further difficulty in knowing how far its scope of protection lies – what activities do or do not fall within the bounds of the patent. Again, this is a difficulty faced by both the patentee and the public. These two uncertainties underlie what externalities can and cannot be captured by the patent holder.¹¹⁹

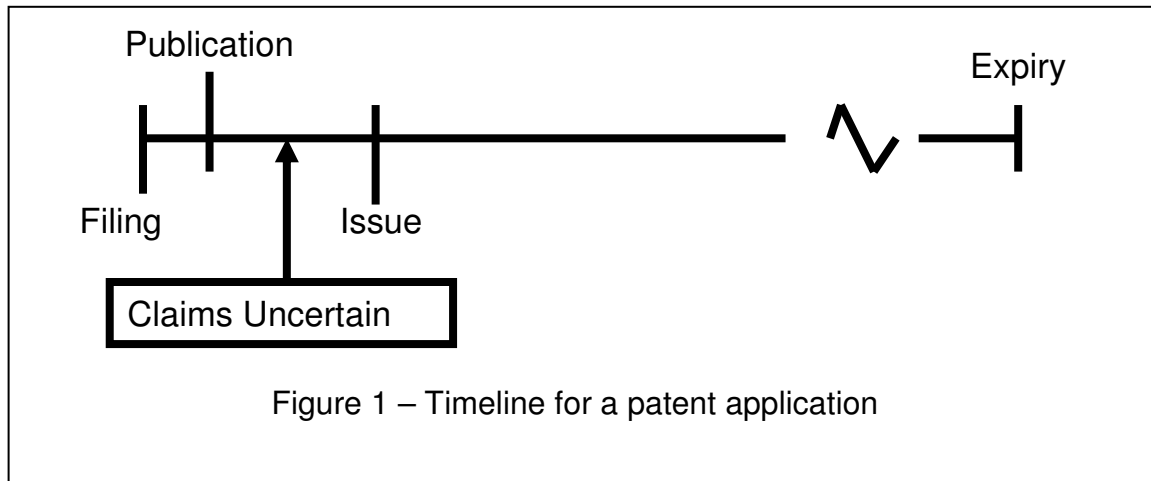
Given the serious potential effects of this uncertainty to domestic economies, governments respond to this uncertainty by establishing patent offices that examine patent applications, setting the bounds for what is and is not covered by the patent, and notifying both the patent applicant and the public of those bounds.

The process by which a patent applicant obtains an enforceable patent is called patent prosecution. A timeline for a typical patent prosecution, limiting ourselves to a purely domestic patent system and ignoring international effects (and ignoring the Patent Cooperation Treaty),¹²⁰ is shown in Figure 2. The process leading to the issuance of a patent begins with the filing of a patent application in a national intellectual property office on the filing date. At some point after filing, on the publication date, the patent application is published, i.e. made available to the public for examination. The latest possible publication date

¹¹⁹ This may be contrasted with copyright, where an author typically knows immediately that he has a work and what constitutes that work, or real property, where an owner typically knows that an item exists (i.e. a pen, a car, a piece of land) and its bounds.

¹²⁰ Under the Patent Cooperation Treaty, *infra* note 309, an international application may be filed which can serve as a simultaneous filing in many national intellectual property offices. This international application has to be perfected or “brought into the national phase” within prescribed time limits in each national office, or else is considered abandoned by that national office. For international applications under the PCT, the “filing date” is the date of the filing of the international application. The effect of the “filing date” may differ with each country’s patent laws. For example, in Canada the term of patent protection lasts for 20 years from the international filing date. See *Patent Act*, R.S.C. 1985 c. P-4 s. 44 and *Patent Rules*, SOR/96-423, s. 64.

is 18 months after the filing date, and often falls at 6 months from the filing date.¹²¹



After the filing date and independently of the publication date, the examination of the patent by the patent Examiner begins. First, the Examiner

¹²¹ The publication date falls 18 months after the priority date. If the patent application claims the benefit of an earlier patent application (typically filed in a foreign country), the filing date of the earlier application is the priority date. If the application does not claim the benefit of an earlier filed application, the priority date is the filing date of the present application.

The international standard is that a patent application can only claim the benefit of an earlier patent application if the earlier application was filed within 12 months before the filing of the present application. In other words, the priority date generally cannot be earlier than 12 months before the filing of the present application, and so the publication date falls between 6 months and 18 months after the filing of the present application.

Exceptions to this usually arise in cases of internal priority (claiming priority from previous applications within a domestic patent system, rather than from a foreign patent application) and can result in the patent application being published earlier than six months after the filing date, and in some cases as soon as possible after the filing date.

Also, in many patent systems the patent applicant may request that their patent application be published earlier than the 18 month deadline.

performs a search of patent office and external databases to locate pieces of information, known as prior art, that may be compared to the claims of the patent application to see if the claims meet the statutory criteria of novelty and non-obviousness.¹²² The prior art found in the search is compared to the claims in the application by the Examiner, who enters into correspondence with the applicant regarding the Examiner's views on the allowability of the claims. This correspondence comprises the bulk of patent prosecution.

It is here that key contrasts to copyrights come into play. Unlike an author, who can be fairly certain at the time of creation that he has a copyright in his work, an inventor has no certainty when he makes an invention, or files a patent application, that he is entitled to any protection for his invention. It is not enough for the invention to be novel to the inventor: instead, it must be new (also called novelty) and non-obvious to the entire world¹²³ at the appropriate date.¹²⁴ Until a search is made of the prior art, the patent applicant cannot be certain that his invention, or specific aspects of it, are new and non-obvious.

¹²² Generally speaking, a claim is novel if it is new (no prior documents describe all the features of the claim) and a claim is not obvious if a person skilled in the art, looking at the prior art, would not consider the claim obvious. Individual legal systems will implement these general notions in different and often highly nuanced ways. On rare occasions, the prior art may also be relevant to utility: whether the claim claims a useful invention.

¹²³ Some patent systems, particularly the United States, still have provisions judging novelty in some cases against knowledge in the United States rather than in the world. See 35 U.S.C. § 102(a), (b) and (e), under which an invention that was known but not patented or described in a printed publication in a foreign country may not be prior art. However, I am not aware of any patent system that judges novelty against the knowledge of the inventor.

¹²⁴ The "appropriate date" will vary with both the country and the context. For example, in Canada non-obviousness is assessed as of the claim date in light of information disclosed more than one year before the filing date by the applicant or a person who obtained knowledge directly or indirectly from the applicant, and information otherwise disclosed before the claim date. The claim date is the earlier of the filing or priority date. See *Patent Act* R.S.C. 1985 c. P-4 s. 28.1 and 28.3.

Claims are the key part of the patent.¹²⁵ While people often talk of the “patent” as being infringed, invalid, broad, etc, etc., this is only a shorthand way of referring to whether the individual claims of a patent are infringed, invalid, and so on. Each individual claim is checked by the Examiner against a number of criteria, including novelty, non-obviousness, utility, subject-matter, and clarity/definiteness. When the examiner thinks a claim does not meet these criteria, he sends a letter outlining his objection to the patent applicant.

Claims are of central importance because they limit or define the scope of protection afforded by the patent. Competitors should in theory be able to examine the claims, and understand both what is and what is not caught under the patent’s scope of exclusion. This important concept is referred to as the Notice Function of the claims.¹²⁶

During prosecution, the objections of the Examiner are met either by amending the claims to deal with the objections, or by presenting arguments to rebut the Examiner’s position. At the end of this correspondence, the claims have been refined into a form acceptable to the Examiner, or are ultimately

¹²⁵ As Chief Justice Giles Rich wrote, “The name of the game is the claim.” (G. Rich, “The Extent of the Protection and Interpretation of Claims – American Perspectives” (1990) 21 Int’l Rev. Indus. Prop. & Copyright L. 497 at 499, 501, quoted in *Hilton Davis*, *infra* note 126 at 1539).

¹²⁶ See, for example, *Hilton Davis Chemical Co. v. Warner-Jenkinson Co., Inc.*, 62 F.3d 1512, 35 U.S.P.Q.2d 1641 (Fed. Cir. 1995), opinion supplemented, 64 F.3d 675, 35 U.S.P.Q.2d 1700 (Fed. Cir. 1995) and rev’d on other grounds, 520 U.S. 17, 117 S. Ct. 1040, 41 U.S.P.Q.2d 1865 (1997) and adhered to, 114 F.3d 1161, 43 U.S.P.Q.2d 1152 (Fed. Cir. 1997); *Festo Corp. supra* note 216 (prosecution history estoppel); *Johnson & Johnston Associates Inc. v. R.E. Service Co., Inc.*, 285 F.3d 1046, 62 U.S.P.Q.2d 1225 (Fed. Cir. 2002) (en banc); *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1582, 39 U.S.P.Q.2d 1573 (Fed. Cir. 1996); *PSC Computer Products, Inc. v. Foxconn Intern., Inc.*, 355 F.3d 1353, 69 U.S.P.Q.2d 1460 (Fed. Cir. 2004); in Canada see *Free World Trust supra* note 214; *Whirlpool supra* note 214.

rejected. If a set of claims are found to be acceptable by the Examiner, these claims are allowed to issue into a patent on the issue date.

This is only a highly simplified explanation of the very technical and detailed field of patent prosecution. The process as given above is roughly representative of the national patent prosecution process in countries world-wide.

The patent prosecution system centers around a tradeoff among the three bellwethers of the performance of a patent office:

- The costs (public and private) of the patent examination process
- The (legal) quality of the issued patents
- The speed with which the patent applications are issued or rejected

Generally, the greater the speed and the higher the quality of the examination, the higher the costs necessary to maintain the patent office.¹²⁷ These costs, which in the abstract may be funded by revenues generated from private (fees charged to the applicants) and public (financing of the patent office from the public purse) sources, act as a constraint on improving the other two aspects of patent office performance.¹²⁸

In contrast to other forms of intellectual property such as copyright or legal regimes such as competition or labour law, patent law issues include significant

¹²⁷ It has been argued, particularly in the United States, that patent offices should be able to increase speed and quality performance without higher expenditures through the deployment of technology and re-engineering of the patent office's work as a paperless system. See The 21st Century Strategic Plan, As Updated February 3, 2003, at http://www.uspto.gov/web/offices/com/strat21/stratplan_03feb2003.pdf (accessed December 7, 2004). While this may very well be possible, such claims are un-proven at this point in time, and I will ignore them for the rest of this paper. This also does not change the existence of an underlying trade-off between speed, quality and cost.

¹²⁸ In the United States, the money allocated to the USPTO by Congress is less than the amount collected in patent fees, so the Patent Office essentially generates revenue used elsewhere. See Jaffe and Lerner, *supra* note 62 at 130-133.

prosecution issues as well as enforcement issues. Furthermore, it is difficult to say which area – prosecution or enforcement - has more effect. It is during prosecution that the initial scope of the patent is set and that competitors are most uncertain about the scope of any resulting rights. The prosecution also sets the stage for any future litigation or exploitation of the patent. Much if not most of the economic power given to patentees and patent applicants is set by the patent application process, and never rises to the level of litigation, particularly in smaller jurisdictions.¹²⁹

It is difficult to analyze empirically the overall welfare effects of patent laws, because the measurement would require counterfactuals (i.e. how much innovation would have occurred in the absence of patent law?), and because the benefits of increased innovation are necessarily measured over the long term. Despite this, it seems that as a practical matter, patent law in roughly its present form will continue to exist as a major policy in the industrial states and, consequent to the TRIPs Agreement, around the globe.

This thesis will not attempt to make judgments about the basic instrumental justification for domestic patent law: whether the positive effects of patent law outweigh the negative effects. This is an intractable problem, even within a purely domestic context for a large industrialized country such as the United States.¹³⁰ Instead, this thesis simply takes it as given that patent law exists, and

¹²⁹ Although this will take place in the shadow of the courts' jurisprudence.

¹³⁰ See R.M. Brunell, "Appropriability in Antitrust: How Much is Enough?" (2001) 69 Antitrust L.J. 1 at 4 ("Indeed, if the vast economics literature on intellectual property conveys one message, it is that the relationship between intellectual property protection and economic welfare is unclear. Determining the appropriate reward to innovative activity in general, or on a case-by-case basis, is a perilous exercise for which

that at the very least the large industrialized countries such as the United States have made a legislative judgment that patent law is justifiable. However, the theory of how patent systems encourage and discourage innovation may be used to demonstrate the costs and benefits of harmonization and is thus critical to an understanding of harmonization itself.

Finally, it should be noted that some issues that this thesis discusses as part of patent law and patent law harmonization may be considered as falling within other areas of law in various domestic legal systems. An example is the ability of the state to regulate generally acceptable, legal conduct by holders of valid patent(s) on a case-by-case basis, as opposed to a framework basis that would apply to all patentees in similar circumstances. This may be formally considered part of antitrust or competition law, a body of law separate from patent law, or may be handled internally within the patent laws.

economics has few answers.”); L. Kaplow, “The Patent-Antitrust Intersection: A Reappraisal” (1984) 97 Harv. L. Rev. 1815 at 1833 (“[O]ur knowledge is inadequate to inspire confidence even in the desirability of having a patent system at all”); Kaplow at 1815 shows that it is impossible to resolve conflicts between patent policy and antitrust law on global efficiency grounds; G.L. Priest, “What Economists Can Tell Lawyers About Intellectual Property: Comment on Cheung” (1986) 8 Res. L. & Econ. 19 at 21 (“[I]n the current state of knowledge, economists know almost nothing about the effect on social welfare of the patent system or of other systems of intellectual property.”); I. Ayres & J. Klemperer, *supra* note 108 at 987; R. Dreyfuss, “Pathological Patenting: the PTO as Cause or Cure” (2006) 104 Mich. L. Rev. 1559 at 1561 (“[T]here are no easy answers and that the debates over the patent system are enduring and cyclical”); Jaffe and Lerner, *supra* note 62 at 78-95; Burk and Lemley, *supra* note 89 at 1580-1581 (“There is no unanimity, however, about whether the patent system actually succeeds. Among legal and economic theorists, the patent system has staunch defenders, vocal critics, and those who cannot decide whether the system is good or bad. Both defenders and critics of the system seem to have adopted their positions about the patent system’s merits or demerits as articles of faith rather than as conclusions drawn from hard evidence.”); Staff of Subcomm. on Patents, Trademarks, and Copyrights of the Senate Comm. on the Judiciary, 85th Cong., *An Economic Review of the Patent System: Study No. 15*, at 76-80 (Comm. Print 1958) (prepared by Fritz Machlup) (concluding that if we did not have a patent system, it would be irresponsible to create one, but that since we have one, it would be irresponsible to eliminate it).

This thesis regards it as a detail whether a national legal system actually locates such regulations as part of patent law or another body of law. Regardless of their characterization in domestic laws, such measures are subject to international agreement.¹³¹ A more difficult question is whether for some issues where patent and other areas of law overlap there are additional factors at play in the regulation of patent rights that are not considered in this thesis.¹³² For example, how may patent rights be dealt with in the approval of corporate mergers? A considerable body of literature deals with international antitrust cooperation, and should be considered for such issues.¹³³

1.1 Introduction: The Costs of a Loss of Diversity

¹³¹ The TRIPs Agreement, *supra* note 92, in Articles 40 (Control of Anti-competitive Practices in Contractual Licenses), 31 (Other Use without Authorization of the Right Holder), 21 (Trademarks – Licensing and Assignment), contains several measures that deal with or impact on the use of competition or similar laws to regulate the use of intellectual property.

¹³² At the least, there will be disagreement on the basis for antitrust or competition law intervention: see E.M. Fox, “Trade, Competition and Intellectual Property - TRIPs and its Antitrust Counterparts” (1996) 29 Vand. J. Trans’l L. 481 at 499:

The fact is that what the United States calls “antitrust” is not what the LDCs [Least Developed Countries] call “antitrust”. To some extent, the two bodies of doctrine are opposites. United States antitrust today is largely based on efficiency policy ... which aims to increase aggregate wealth not redistribute wealth. ... For better or worse, efficiency policy advocates have succeeded in nearly abolishing antitrust as applied to conduct and transactions other than cartels and mergers that produce monopoly or cartel behaviour.

LDCs perspective on antitrust - which tends to be in accord with certain U.S. policies of the 1960’s - is against power, exploitation, and exclusion of the weak by the powerful. It is not pro-efficiency: it is anti-power and anti-bullying. Most LDCs have no interest in following a muse of increased aggregate wealth in the world when their own people lag at the low end of wealth and opportunity. They are deeply concerned with distribution and deeply convinced that a redistribution of wealth and a focus on opportunity for the less well-off are necessary conditions for engagement of their nations in the world economic enterprise

¹³³ See, for example, Guzman, *supra* note 183; Gerber *supra* note **Error! Bookmark not defined.**; Trachtman *supra* note 350; Tarullo *supra* note 655; Ehlermann *supra* note 799; Trebilcock *supra* note 843; B.P. Stephan, “Global Governance, Antitrust and the Limits of International Cooperation” (2005) 38 Cornell Int’l L.J. 173

Chapters 1 and 2 discuss the value of diversity in patent laws between states, arguing that there is a high value to diversity. This section of Chapter 1 discusses such costs under an assumption of autarchy, or taking states in isolation. Chapter 2 continues this analysis by relaxing the assumption of autarchy to allow some interstate flows of information and incentives.,

The satisfaction of preferences is the primary goal of international ordering under a welfarist approach. Assuming that greater difference in preferences exists between states as opposed to within states, a global regime where each state determines its own ordering results, in the abstract, in a higher satisfaction of local preferences than a harmonized or unified global ordering.

Generally, it is assumed that preferences differ more between states than within states for most issues.¹³⁴ The underlying reasons for these assumptions would seem to hold in the case of patent law. It can be assumed that the level of economic development and innovativeness is roughly at a common level within a country, or at least less diverse than between states. Furthermore, over time geographical proximity tends to generate more uniformity of beliefs and preferences.¹³⁵ Government policies and national politics also generally create a convergence of preferences.

More specifically, patent law serves to further innovation, and to the extent that complementary innovation policies (such as tax policies, competition or

¹³⁴ E. Posner, *supra* note 1 at 503; Alesina and Spolaore, *supra* note 44 at 19-21 and 27.

¹³⁵ Alesina and Spolaore, *supra* note 44 at 19

antitrust law, tariffs on foreign goods, subsidies, labour policies, etc.) are determined at a state rather than an international or sub-national level, patent preferences will also converge at a state level. Obviously, the assumption of greater inter-state versus intra-state differences in preferences may hold more strongly in respect of industrialized countries or countries of small geography and homogeneous populations versus countries with severe issues of internal disparities, such as India. However, on a global basis this assumption would seem to be reasonable.¹³⁶

Before analyzing the satisfaction of preferences, it should be noted that efficiency considerations, in the sense of minimizing deadweight loss, do not provide a basis for or an argument against the harmonization of patent laws. Assuming that the aggregate incentive to invent is fixed, the geographic coverage of patent law does not matter from an efficiency point of view. The deadweight loss is invariant for all combinations of national patent laws that provide the same joint profit or joint incentive to invent. As a result, the following regimes are equally efficient in the sense of generating the same ratio of profit to deadweight loss:

- a) Inventors are protected only in their home country.
- b) Inventors are protected in all countries regardless of their home country.

¹³⁶ As argued below, even among developed or developing countries, there are often divergences in their preferred patent laws.

c) All inventors are protected in one country.¹³⁷

This is formally derived in Appendix A. One key underlying policy question is how big the total international incentive or profit needs to be, and a second question is how to achieve that level of incentive.

Consequently, there is no general case to be made from a global efficiency perspective to require unification or even cooperation between states on patent law. The global efficiency perspective is neutral on the question of harmonization. Some theory or empirical evidence in favour of unification or harmonization would seem to be necessary to overcome the general presumption that governments should be allowed to tailor their patent regimes to be domestically welfare maximizing. These theories are the subject of chapter 3.

As noted above, the satisfaction of preferences is the primary goal of international ordering under a welfarist approach. I argue that patent law has a high level of diversity in preferences, dividing the topic into static and dynamic concerns.

Under static concerns I argue that there is at any time a wide variety of different preferences in respect of patent laws between states. These different preferences reflect economic, political, legal and cultural, and capability differences. This implies that differences in patent laws between states are often (and perhaps usually) the result of real and substantial differences in underlying

¹³⁷ This might occur where only one country recognizes patents for a particular subject-matter: for example, when the United States was the first country to recognize business method patents.

preferences as opposed to random variation.¹³⁸ Static concerns are addressed in Chapter 1 and Chapter 2, under assumptions of autarchy and a relaxed autarchy.

The dynamic concerns address the different question of how diversity of laws might affect the future satisfaction of preferences. This may be further divided into two questions: whether diverse patent law might lead to improvements in satisfaction of preferences assuming the underlying realities remain static; and whether diverse patent law has advantages if we assume that the underlying economic context changes. Given that patent law necessarily deals with unpredictable and often disruptive changes in technology, responsiveness to changes in the underlying economic structure may be assumed to have greater importance than in other legal subject areas. Dynamic concerns are discussed in Chapter 2 with the assumption of a relaxed autarchy.

a. Static Concerns

i. Economic Preferences

What economic factors underlie differences in patent law preferences, and how do they vary between states?

To analyze these questions, it is helpful to first consider states under the unrealistic assumption of complete autarchy (as in chapter 1), and then relax that assumption to more closely approach a realistic model. By an autarchic state, I mean a state where innovation comes entirely from within the state, and is

¹³⁸ See Sykes, *supra* note 22 at 58 for a discussion of differences in regulatory policy resulting from chance.

controlled by conditions including patent law within the state. This is highly unrealistic and ahistoric, as companies in all states take advantage of information arising in other jurisdictions, but the autarchy model is useful as an analytical starting point.

Complete Autarchy

Considering a completely autarchic state, the preferred patent law from an economic standpoint will be tailored to respond to at least five factors: the size of the economy; relative strength in innovation versus imitation; the level of economic development; industrial mix; and complementary innovation policies. (This assumes that all autarchic states are identical in terms of wishing to pursue a level of innovation to increase domestic welfare: differences in that preference are dealt with under political and cultural preferences).

The size of the economy is directly related to the amount of incentive a given patent law provides. Assuming that innovations have a range of development costs, the potential returns from innovations associated with patents will limit the expenditures rational firms will commit to pursuing innovations. To match the incentive provided by a larger economy with a given level of externalities directed to patent holders, a smaller country would need a patent law that internalizes a higher level of externalities. Most simply, if otherwise identical patent laws in two disproportionately sized countries such as Canada and the United States are to provide the same incentive to innovate, the Canadian patent would have to have a much longer duration than a United States patent.

The strength of patent-related incentives necessary to induce a given innovation will also be affected by the economy's relative strength in innovation. A country whose economy is already predisposed towards innovation may require less of a patent incentive to induce a particular level of innovation than a country whose economy is less predisposed towards innovation. A country with strengths in imitation – not merely in terms of efficient copying of other's inventions, but also strengths in terms of rapidly making small improvements to lower production costs or better match consumers' preferences – might prefer a less stringent patent regime, or perhaps a regime that encourages experimentation before the expiry of the patent grant to allow small innovations to be at least prepared, if not used, under a license from the patent holder.¹³⁹

Similarly, the preferred patent regime under assumptions of autarchy will vary depending upon a country's industrial mix and level of economic development. It is well known that the optimal patent laws are expected to vary in a number of dimensions – from industry to industry, but also as an industry matures.¹⁴⁰ Recent work by Burk and Lemley argues that “A wealth of empirical evidence demonstrates deep structural differences in how industries innovate. Industries vary in the speed and cost of research and development (“R&D”), in the ease with which inventions can be imitated by others, in the need for cumulative or interoperative innovation rather than stand-alone development, and in the extent to which patents cover entire products or merely components of

¹³⁹ See Siebrasse & Culver, *supra* note 238; and Ferance, *supra* note 238

¹⁴⁰ Burk and Lemley (Policy Levers), *supra* note 89 at 1578.

products.”¹⁴¹ Different industries present different economic contexts for the operation of patent law.

For example, industries can vary in whether innovation is relatively costly (pharmaceuticals, microprocessors) or inexpensive (software, biotechnology, much of manufacturing).¹⁴² They can vary in whether invention is dominated by individual inventors (software, mechanics) or corporate teams (semiconductors, biotechnology);¹⁴³ the ratio of R&D to imitation costs¹⁴⁴; the availability of non-patent incentives to innovate; the availability of *ex ante* incentives such as research spending by government agencies and universities; the inherent level of spillovers or positive externalities from one firm to another within an industry; and the importance of continued innovation. Unsurprisingly, this means that different industries interact with the patent system in idiosyncratic ways:

“The relationship between patents and innovation is at least as complex as the profile of technological and economic factors that determine innovation. There is no simple or universal correlation between the availability of patents and the incentive to innovate. This is due in part to the fact that the patent system interacts with industries at several different points in the innovation process. Recent evidence has demonstrated that this complex relationship is also industry-specific at each stage of the patent process: deciding to seek protection, obtaining a patent, setting the scope of the patent that results, deciding to enforce a patent, and determining litigation outcomes.”¹⁴⁵

¹⁴¹ Burk and Lemley (Policy Levers), *supra* note 89 at 1576.

¹⁴² Burk and Lemley (Policy Levers), *supra* note 89 at 1581-1582

¹⁴³ Burk and Lemley (Policy Levers), *supra* note 89 at 1583

¹⁴⁴ Burk and Lemley (Policy Levers), *supra* note 89 at 1584

¹⁴⁵ Burk and Lemley (Policy Levers), *supra* note 89 at 1589. In respect of patent prosecution, see J. R. Allison and M. A. Lemley, “Who’s Patenting What? An Empirical Exploration of Patent Prosecution” (2000) 53 Vand. L. Rev. 2099 at 2124-2132 and J.R. Allison and M.A. Lemley, “The Growing Complexity of the United States Patent System” (2002), 82 B.U. L. Rev. 77 at 78-81;

Reflecting this multiplicity of the effects of patent laws, there are at least five dominant and often contradictory utilitarian theoretical models of the patent system as a whole: prospect theory; competitive innovation; cumulative innovation; anti-commons theory; and patent thickets.¹⁴⁶

Prospect theory: introduced by Kitch,¹⁴⁷ frames the patent system as a “prospect” system similar to mineral claims that encourages further commercialization of patented ideas, and thus avoids a “tragedy of the commons” or “common property problem”.¹⁴⁸ Patent law is therefore about the allocation of property interests, not the setting of *ex ante* incentives. This theory suggests that broad patents should be granted early in the invention or innovation process, and that the patents should be strongly enforceable with few

in respect of ownership of patents see at Allison and Lemley “Who’s Patenting What?” at 2128 and K.A. Moore, “Xenophobia in American Courts: An Empirical Study of Patent Litigation” (2003) 97 Nw. U. L. Rev. 1497;

in respect of the enforcement of patents, see J.R. Allison, M.A. Lemley, K.A. Moore & R.D. Trunkey, “Valuable Patents” (2004) 92 Geo. L.J. 435 and J.R. Allison & M.A. Lemley, “Empirical Evidence on the Validity of Litigated Patents” (1998) 26 AIPLA Q.J. 185 at 224-25 and J.O. Lanjouw and M.A. Schankerman, “Characteristics of Patent Litigation: A Window on Competition” (2000) 32 RAND J. Econ. 1;

in respect of licensing see A. Arora, A. Fosfuri and A. Gambardella, *Markets for Technology: The Economics of Information and Corporate Strategy* (Cambridge, MA: MIT Press, 2001)

¹⁴⁶ As identified by Burk and Lemley (Policy Levers), *supra* note 89 at 1599.

¹⁴⁷ Kitch, *supra* note 112. See also J.A. Schumpeter, *Capitalism, Socialism, and Democracy*, 3rd Ed. (New York: Harper, 1975) at 106 (“[P]erfect competition is not only impossible but inferior....”); S. Kieff, “Property Rights and Property Rules for Commercializing Inventions” (2001) 85 Minn. L. Rev. 697 ; cf. S. Scotchmer, “Protecting Early Innovators: Should Second-Generation Products Be Patentable?”, (1996) 27 RAND J. Econ. 322.

¹⁴⁸ Generally, the “Tragedy of the Commons” refers to a situation where multiple owners have rights to use a resource, resulting in the overuse of the resource. A canonical example is overgrazing on a “commons” – a field where a community has the right to graze their flocks. The term was introduced in G. Hardin, “The Tragedy of the Commons” (1968) 162 Science 1243.

exceptions. Patents should allow the inventor to control the market, and development of products in the market.

Competitive innovation: identified with the work of Arrow¹⁴⁹ whose work predates Kitch, contradicts the basic assumptions of prospect theory, arguing that the competitive spur of competition in commercialization is needed to effectively motivate companies to develop their patented ideas. Indeed, prospect theory is seen as harmful to innovation: under competitive innovation theory, patents should be narrow in scope (if they are desirable at all) and limited to the specific embodiments of the invention created by the patentee, and should not allow the control of a market.

Cumulative innovation: while both prospect theory and competitive innovation theory are based on models of one invention creating a product market, in many industries saleable products are the result of multiple cumulative improvements of a basic invention. Several writers, most notably Merges and Nelson's theory of "tailored incentives", have constructed theories on how patent law might best divide rights between initial inventors and improvers.¹⁵⁰ This

¹⁴⁹ Kenneth J. Arrow, Economic Welfare and the Allocation of Resources for Invention, in *The Rate and Direction of Inventive Activity* 609, 619-20 (Nat'l Bureau of Econ. Research ed., 1962; see also M.I. Kamien and N.L. Schwartz, *Market Structure and Innovation* (Cambridge: Cambridge University Press, 1982) (noting that monopolists may reduce R&D expenditures); F.M. Scherer and D. Ross, *Industrial Market Structure and Economic Performance*, 3rd Ed. (Boston : Houghton Mifflin, 1990) (criticizing Schumpeter's "less cautious" followers for advocating monopoly to promote innovation); M.A. Lemley and L. Lessig, "The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era" (2001) 48 UCLA L. Rev. 925 at 960-62 (arguing that the Internet was as innovative as it was because its architecture required competition rather than monopoly bottlenecks); H.A. Shelanski, "Competition and Deployment of New Technology in U.S. Telecommunications" [2000] U. Chi. Legal F. 85 at 87 (finding that competition was a greater spur to innovation than monopoly in ten empirical studies in the telecommunications industry);

¹⁵⁰ Merges and Nelson, *supra* note 112 at 876-79.

fundamentally contradicts prospect theory, which would place all rights in the hands of the initial inventor, and focuses on the creation of desirable incentives. Generally, cumulative invention theory would give patents to both initial inventors and improvers, but their relative strength would vary from context to context.

Anti-commons theory: a limitation on cumulative innovation theory has been pioneered by Heller and Eisenberg,¹⁵¹ that argues that if too many patent rights are granted for a product (for example, between the initial inventor and improvers), transaction costs and strategic behavior may prevent the accumulation of sufficient rights to produce a product. However, there are inconsistent strategies for dealing with an anti-commons. One solution is to grant fewer patents, but another is to consolidate the effective ownership of patents through vertical integration.¹⁵² These conflicting strategies, as well as empirical

See also See Jerry R. Green & Suzanne Scotchmer, On the Division of Profit in Sequential Innovation, 26 RAND J. Econ. 20 (1995); see also J.H. Barton, "Patents and Antitrust: A Rethinking in Light of Patent Breadth and Sequential Innovation" (1997) 65 Antitrust L.J. 449 at 453 (arguing that follow-on innovators deserve more protection); Howard F. Chang, Patent Scope, Antitrust Policy, and Cumulative Innovation, 26 RAND J. Econ. 34 (1995) (investigating the most desirable balance of protection between initial and follow-on innovators); Ted O'Donoghue, A Patentability Requirement for Sequential Innovation, 29 RAND J. Econ. 654 (1998) (arguing that patent law must give some protection against minor improvements but should permit major improvements).

¹⁵¹ M.A. Heller, "The Tragedy of the Anti-commons: Property in the Transition from Marx to Markets", (1998) 111 Harv. L. Rev. 621. See also M.A. Heller & R.S. Eisenberg, "Can Patents Deter Innovation? The Anti-commons in Biomedical Research", (1998) 280 Sci. 698, 698-99 (identifying anti-commons problems in biomedical research); see also A.K. Rai, "The Information Revolution Reaches Pharmaceuticals: Balancing Innovation Incentives, Cost, and Access in the Post-Genomics Era", (2001) 2001 U. Ill. L. Rev. 173, 192-94 (arguing that upstream patents in biotechnology could lead to bargaining breakdown and impede innovation).

¹⁵² Burk and Lemley (Policy Levers), *supra* note 89 at 1613

questions of the identification of an anti-commons, leave the policy implications of anti-commons theory ambiguous.¹⁵³

Patent thickets: similar to anti-commons theory, patent thickets are concerned with the effect of numerous patent rights necessary to produce products in some industries.¹⁵⁴ However, patent thicket theory is concerned with the overlap of granted patent rights. A patent thicket analysis would thus support the grant of narrow patents to minimize overlap (even if that had no impact on the number of patent licenses necessary to produce a product, in contrast to anti-commons theory). Another implication of patent thicket concerns is that the law should be deferential to attempts to clear thickets of patent rights, for example through patent pools.

Actual industries may exhibit characteristics reflecting one or more of these theories. For example, biotechnology reflects a mixture of prospect theory and anti-commons theory, with high cost and risky development, suggesting that fewer patents with broad scope are appropriate. In contrast, software is an example of cumulative innovation, with low cost and relatively low risk development, suggesting that many patents of narrow scope are appropriate. Pharmaceuticals, with high upstream and downstream research and development costs and a resulting high R&D cost to imitator cost ratio, strongly reflects prospect theory and suggests broad, strong patents to initial inventors. Patent thickets are associated with the semiconductor industry, suggesting

¹⁵³ *Ibid.*

¹⁵⁴ C. Shapiro, "Navigating the Patent Thicket: Cross Licensing, Patent Pools, and Standard Setting" (2001) 1 *Innovation Policy and the Economy* 119

careful control of patent scope and the encouragement of cooperative bargaining mechanisms to clear patent rights for products.

To add another layer of complexity, the pattern of innovation in a given industry may change over time, thus changing the relevant patent theory.¹⁵⁵ An example is the software industry. It is often suggested that initially (i.e. in the 1970s), the software industry was consistent with competitive innovation theory, with innovation inexpensive and strong non-patent reasons to invent and innovate. In such an industry, patents are not necessary to motivate invention. However, as the industry has matured and invention/innovation costs have risen, Burk and Lemley suggest that software has taken on characteristics of cumulative innovation theory.¹⁵⁶ They also suggest that software in the future may assume the characteristics of patent thickets.¹⁵⁷ Similarly, Long argues that biomedical research has changed over time towards a cumulative innovation structure.¹⁵⁸

“The process of discovery, invention, and information diffusion is undergoing a paradigmatic shift as biomedical research has become increasingly information-based, as basic research and product development increasingly depend on continuous and nonlinear interactions with each other, and as scientific practices and industry business models are evolving to blur the traditional boundaries between public and private goods.

The amount of biomedical information available to researchers is estimated to have increased logarithmically every five years, which means that today scientists have approximately one-thousand times the quantity of information available to them that they did in 1985.”

¹⁵⁵ C. Long, “Patents and Cumulative Innovation” (2000) 2 Wash. U. J.L. & Pol’y 229

¹⁵⁶ Burk and Lemley (Policy Levers), *supra* note 89 at 1618-1620, 1688-1689.

¹⁵⁷ Burk and Lemley (Policy Levers), *supra* note 89 at 1629 (fn 173) and M.A. Lemley & D. W. O'Brien, “Encouraging Software Reuse” (1997) 49 Stan. L. Rev. 255

¹⁵⁸ Long, *supra* note 155 at 233.

Finally, even if two countries (treated as complete autarchies) are identical in terms of innovativeness, size, industrial mix and economic development, the content of preferred patent laws will be affected by complementary innovation policies, such as tax, labour, and competition laws. The ultimate goal of patent law is to promote innovation: however, innovation can be promoted by and is influenced by many other policies, thus increasing or decreasing the need for strong patent incentives, or changing the details of the preferred patent law. For example, a country may choose to increase incentives for invention and innovation by introducing a tax incentive to invest money in research and development, or by simplifying or speeding regulatory and safety approvals for new products, rather than increasing the externalities provided to patent owners.

It should be emphasized that although there has been considerable research into and increased understanding of the welfare effects of patent law, this research still does not form a practical, convincing basis for the design of the details of patent law. The economic theory makes prescriptions only in broad strokes, and the welfare effects of specific patent laws in different countries, even simplified through treatment as autarchies, is subject to uncertainty. As a result, the design of domestic patent laws is still quite political as opposed to administrative or technocratic, there is considerable disagreement over the design of patent laws, and there is often dissatisfaction with existing patent systems. For example, the United States has a highly developed patent system with perhaps the greatest direct experience in developing patent doctrine through

litigation and the greatest concentration of economic and policy research on patents. Despite this, the theoretical literature still cannot provide easy or certain answers to many questions of patent policy in the United States,¹⁵⁹ and there is considerable criticism of the existing U.S. patent system¹⁶⁰ and recent legal upheaval.¹⁶¹

ii. Political, Cultural and Legal Preferences

Different preferences in the choice of patent law may also arise from political, cultural and legal differences between states. This category may be particularly important given the uncertainty surrounding the welfare impacts of many aspects of patent law.

Many patent doctrines inherently involve choices that are directly political in nature and impact. Most obviously, many choices of patent law impact upon policy areas that are traditionally seen as separate from patent law *per se*. For example, a patent law's attitude towards the patenting of pharmaceuticals or medical techniques, and compulsory licensing or liability exemptions for such

¹⁵⁹ See many of the references in footnote 130, *supra*.

¹⁶⁰ See, for example, Jaffe and Lerner, *supra* note 62, and J. Bessen and M. Maurer, *Patent Failure: How Judges, Bureaucrats and Lawyers put Innovators at Risk* (Princeton: Princeton University Press, 2008)

¹⁶¹ The last decade has seen a string of U.S. Supreme Court cases upsetting the U.S. patent law landscape:

KSR International Co. v. Teleflex Inc. et al., 127 S. Ct. 1727 (April 30, 2007); *Microsoft Corporation v. AT&T Corp.*, 127 S. Ct. 1746 (April 30, 2007); *Medimmune, Inc. v. Genentech, Inc., et al.*, 127 S. Ct. 764 (January 9, 2007); *Ebay Inc., et al., MercExchange, L.L.C.*, 126 S. Ct. 1837 (May 15, 2006); *Illinois Tool Works Inc., et al. v. Independent Ink, Inc.* 126 S. Ct. 1281 (March 1, 2006); *Merck KGaA v. Integra Lifesciences I, Ltd. et al.*, 125 S. Ct. 2372 (June 13 2005); *Festo Corporation, v. Shoketsu Kinsoku Kogyo Kabushiki Co. Ltd., et al.*, 122 S. Ct. 1831 (May 28, 2002); *J.E.M. AG Supply, Inc., DBA Farm Advantage, Inc. et al. v. Pioneer Hi-Bred International, Inc.*, 122 S. Ct. 593 (December 10, 2001)

patents, impacts on a country's health care system. The patent system's attitude towards patenting of life forms (higher or lower), patents on genes and the scope of such patents affects modern agriculture and medicine. Intellectual property and competition law have a long history of uneasy coexistence and interaction.¹⁶²

More subtly, many choices that fall within the bounds of patent law *per se* also inherently involves political and cultural choices, albeit such choices are sometimes so well-ingrained that they are no longer viewed as choices. For example, do patent laws support innovation by small companies and independent inventors, or reflect the concerns of large-company innovation? In the United States a powerful lobby representing small companies and independent inventors has significantly disrupted patent modernization and harmonization efforts in the United States.¹⁶³ Similarly, the creation of the Court of Appeals for the Federal Circuit as a common appeals court for all patent cases was a political creation, designed to stop forum-shopping and strengthen the value of a United States patent.¹⁶⁴ In addition, there can often be a clash between established industries, new industries or potential entrants, which once

¹⁶² There are many books on the interface between competition law and intellectual property: see H. Hovenkamp, *IP and Antitrust: An Analysis of Antitrust Principles Applied to Intellectual Property Law* (Gaithersburg, MD: Aspen Law & Business, 2001-); R.D. Anderson and N. Gallini, Eds., *Competition Policy and Intellectual Property Rights in the Knowledge-Based Economy* (Calgary: University of Calgary Press, 1998). See also W.K. Tom & J.A. Newburg, "Antitrust and Intellectual Property: From Separate Spheres to Unified Field", (1997) 66 *Antitrust L.J.* 167.

¹⁶³ See H. Bardehle, "A New Approach to the Worldwide Harmonization of Patent Law" (1999) 81 *J. Pat. & Trademark Off. Soc'y* 303 at 304: "Even though the large majority of corporate applicants in the USA has agreed to this transition, even welcomed it, it became evident in domestic administrative and legislative discussion that it would not be possible in the near future to induce the US Congress to agree to this, due to the opposition of "independent" inventors." See also Jaffe and Lerner, *supra* note 62 at 20-21

¹⁶⁴ R. Dreyfuss, "The Federal Circuit: A Case Study in Specialized Courts" (1989) 64 *N.Y.U. L. Rev.* 1 at 6-7; R. Dreyfuss, "The Federal Circuit: A Continuing Experiment in Specialization" (2004) 54 *Case W. Res. L. Rev.* 769 at 770-771.

again is resolved politically. For example, the Hatch-Waxman Act in the United States and the Notice of Compliance Regulations in Canada are the result of a political resolution of the clash of interests between brand name pharmaceutical drug companies and generic drug companies.¹⁶⁵

In both cases – choices within patent law proper, and choices that impact on policy areas outside of patent law – the choices implicate choices about the nature of the domestic economy and society. Often, the economic results of choices in patent law are difficult to predict, so the choices by default become political in nature.

Finally, patent law reflects domestic political and cultural preferences through the general legal system. Patent enforcement takes place in the context of a country's general dispute resolution system. These may differ between even apparently similar countries on such points as the admissibility of evidence, the standards to grant preliminary injunctions (recall that most intellectual property cases that go to court never go past this stage),¹⁶⁶ the specialization of judges hearing the cases,¹⁶⁷ the awarding of punitive damages, or the calculation of monetary awards. These issues all reflect political and cultural choices as manifested in the legal system. For example, in the United States the use of

¹⁶⁵ A.B. Engelberg, "Special Patent Provisions for Pharmaceuticals: Have they Outlived their Usefulness?" (1999) 39 IDEA 389, particularly at 391-392.

¹⁶⁶ See A. Katz, "A Network Effects Perspective on Software Piracy" (2005) 55 U. Toronto L.J. 155 at 207; J.O. Lanjouw & J. Lerner, "Tilting the Table? The Use of Preliminary Injunctions" (2001) 44 J.L. & Econ. 573 at 573.

¹⁶⁷ Several articles debate the appropriateness of specialist courts versus generalist courts in the patent field – worried about bias. For example: Dreyfuss, *supra* note **Error! Bookmark not defined.**; Alan P. Klein, "A Funny Thing Happened to the Non-obvious Subject Matter Condition for Patentability on Its Way to the Federal Circuit" (1997) 6 U. Balt. Intell. Prop. J. 19 at 21; Arti Rai, (2000) "Addressing the Patent Gold Rush: The Role of Deference to PTO Patent Denials", 2 Wash. U. L.J. & Pol'y 199 at 205 n. 14.

juries to decide factual matters in patent cases is routine.¹⁶⁸ In other common law countries, however, the use of juries in intellectual property cases is seen as a quaint anachronism if not a deleterious practice.¹⁶⁹ Anecdotally, the use of juries is believed by U.S. litigators to be favourable to the plaintiff as compared to trial before a judge alone.¹⁷⁰

Furthermore, by the very nature of its uncertain subject matter, patent law must place great discretion in the hands of judges. “The law is technical and complex; it requires reconciliation of conflicting policies and the statute fails to clarify the appropriate accommodations.”¹⁷¹ In this regard, patent law is similar to competition law, another legal field of economic regulation based upon only a thin legislative text, delegating broad authority to judges to make decisions.¹⁷²

¹⁶⁸ See Jaffe and Lerner, *supra* note 62 at 123, showing that in 2000 more than 70% of US patent cases were jury trials. The right to a jury trial in the United States is guaranteed in the U.S. Constitution, amendment VII.

¹⁶⁹ In Canada, for example, there is no provision for the use of juries used in the Federal Court system, where the majority of patent cases are heard. Even if a patent case is brought in a provincial court system, the provincial judges usually have the discretion to refuse a party’s request for a jury if the matter is considered “complex”, and in Ontario the courts have refused juries for patent matters. I am not aware of any modern Canadian patent jury trial.

¹⁷⁰ Dreyfuss, *supra* note 130 at 1568

¹⁷¹ Dreyfuss, *supra* note 130 at 1575.

¹⁷² See Burk and Lemley (Policy Levers), *supra* note 89 at 1638 (“Statutes differ in the specificity with which they dictate the rules for judicial decision. They exist on a continuum between detailed rules such as the tax code capable of rote application on one end, and rules like antitrust law delegating broad authority to judges to make correct decisions on the other. On this continuum, the Patent Act is closer to antitrust law than to the tax code. While the statute sets the basic parameters for patentability and infringement, it does not specify in detail how those basic principles are to be applied. Further, in many instances, such as application of the doctrine of equivalents or of unenforceability, judicially created doctrines play a major role in defining the scope of patent protection.

Such tailoring activity necessarily vests a fair degree of discretion in the judiciary in order to adapt the general statute to the particular circumstance.”)

Or see R.P. Wagner, “The Supreme Court and the Future of Patent Reform” (2008) 55-FEB Fed. Law. 35 at 39:

Only the basic concepts are listed in legislation, leaving details to be handled through case-law. Often, political and cultural choices are necessarily dealt with by judges handling patent cases, inherently reflecting the political and cultural differences between states. For example, consider the European patent system. Since 1973, all states signatory to the European Patent Convention have interpreted patent claims according to a common legislative text.¹⁷³ Despite this, identical patents are still interpreted differently in various European countries.¹⁷⁴

“Furthermore, patent law offers a unique environment for judicially driven reforms. Many of the law’s most important doctrines – most relevant for our purposes here, the nonobvious requirement – are solely or primarily creatures of judicial doctrine: that is, even though patent law is a creature of statute, much of the actual legal landscape has been constructed by decades of court decisions, in common-law-like fashion. Indeed, many of the most important issues in current patent law – such as claim construction – seem somewhat beyond the reach of legislative activity.”

See also D.J. Gerber, “Competition Law and the WTO: Rethinking the Relationship” (2007) 10(3) J. Int’l Econ. L. 707 at 723; more generally M.J. Trebilcock et al., *The Choice of Governing Instrument* (Ottawa: Canadian Government Publication Centre, 1982) at 88.

¹⁷³ The Protocol on Interpretation attached to Article 69 of the European Patent Convention reads:

"Article 69 should not be interpreted in the sense that the extent of the protection conferred by a European patent is to be understood as that defined by the strict, literal meaning of the wording used in the claims, the description and drawings being employed only for the purpose of resolving an ambiguity found in the claims. Neither should it be interpreted in the sense that the claims serve only as a guideline and that the actual protection conferred may extend to what, from a consideration of the description and drawings by a person skilled in the art, the patentee has contemplated. On the contrary, it is to be interpreted as defining a position between these extremes which combines a fair protection for the patentee with a reasonable degree of certainty for third parties."

Article 164(1) states that the Protocol is an integral part of the European Patent Convention.

¹⁷⁴ See S. Bavec, “Scope of Protection: Comparison of German and English Courts’ Case Law” (2004) 8 Marq. Intell. Prop. L. Rev. 255; P.E. Geller, “An International Patent Utopia?” (2003) 85 J. Pat. & Trademark Soc’y 582; B. Sherman, “Patent Claim Interpretation: The Impact of the Protocol on Interpretation” (1991) 54(4) The Modern L. Rev. 499.

An interesting implication of this is that it may be insufficient for countries to truly harmonize enforcement procedures by adopting identical legislative texts and legal tests. Real harmonization of enforcement may require an international court. See Barton, *supra* note 9 at 354 n. 60; Commission Proposal for a Council Regulation on the Community Patent 2000 O.J. C. 337 E (COM (2000) 412 final) at § 2.4.5 [o]nly a

For example, see *Improver Corp. v. Remington Consumer Prods. Ltd.* [1990] F.S.R. 181 (Eng. Patents Ct.) and *Epilady VIII* [1993] Gewerblicher Rechtsschutz und Urheberrecht (International) Part 242, where the UK and German courts split on whether an identically worded claim with the same specification was infringed by the same product (with the German court finding infringement and the UK court finding no infringement). In the same case, the Austrian Court of Appeal did not find an infringement, while Dutch and Italian courts found an infringement. In the *Müller-Hilty* case which concerned a relatively simple pipe clamp, the German, Swiss and French national patents corresponding to EP 0 319 521 were all found to be valid. At trial or first instance, the defendant's clamp was found to be infringing in Germany and Switzerland and non-infringing in France. All of these decisions were then overturned on appeal, with the appeal decisions in France and Switzerland later overturned.¹⁷⁵ More recently, in *Conor v. Angiotech* on January 16, 2007 the English CA ruled that a patent for a paclitaxel-eluting stent was invalid for obviousness, while the Hague District Court found the opposite one day later.¹⁷⁶

centralized Community court can guarantee without fail unity of law and consistent case law'; Vincenzo Di Cataldo, "From the European Patent to a Community Patent" (2002) 8 Colum. J. Eur. L. 19 at 27.

¹⁷⁵ M. Franzosi, "Three European Cases on Equivalence – Will Europe Adopt Catnic?" (2001) 2 IIC 113 at 115-118; B. Hanley and A. Strowel, "Last-ditch Attempt to Improve the EU Patent System" (2007) 2(9) J. of Int'l IP Law & Practice 577 at 578.

The wide variety of findings in the *Müller-Hilty* case does suggest that the case is simply a tough case, regardless of which particular legal system is being employed.

¹⁷⁶ Hanley and Strowel, *ibid.*; J. Nurton, "Stent Case Exposes Europe's Patent Lottery" March 2007 M.I.P. 14

iii. Capability Preferences

Finally, countries will have varied preferences from a capabilities point of view. A fully realized domestic patent system in the United States model includes a patent office to review and grant patents, a court or other system for enforcement, and an enforcement agency to apply competition or antitrust laws. All of these domestic institutions are expensive, and different strategies may be preferred for differently situated countries.

For example, even developed countries find running a patent office expensive. One country (such as the US) may prefer to have a fully functioning patent office; another may prefer to take advantage of the efforts of a neighbouring office (Canada¹⁷⁷), while perhaps another group of countries would prefer to consolidate their efforts to create a common but stand-alone office (such as Europe¹⁷⁸). Developing countries are further challenged to fund fully functional patent offices, and indeed it may be argued that funding a stand-alone patent office is a waste of resources.

This capability based diversity may also extend to purely legal issues. For example, some sort of antitrust or competition law control on the behaviour of patent owners is often viewed as important.¹⁷⁹ However, many countries lack the

¹⁷⁷ See text associated with footnotes 277 to 286

¹⁷⁸ See below in Chapter 4, section (g) "Europe"

¹⁷⁹ See footnote **Error! Bookmark not defined.**; and C. Fink, "Entering the Jungle of Intellectual Property Rights Exhaustion and Parallel Importation" in C. Fink and K.E. Maskus, eds., *Intellectual Property and Development: Lessons From Recent Economic Research* (Oxford: Oxford University Press, 2005) 171 at 180-181, 183.

capability to create sophisticated antitrust authorities.¹⁸⁰ Instead of addressing such issues via a competition law and enforcement agency (the United States and European model), a fiscally restrained country may find it desirable to instead classify such issues as patent misuse or abuse and trust to private enforcement. Similarly, antitrust treatment of patent issues in the United States has moved from a *per se* illegal actions approach to a rule of reason approach, where each case is evaluated on its own economic merits.¹⁸¹ This is necessarily expensive, and a developing country might find *per se* patent abuse rules an attractive alternative to rule of reason inquiries (which may be practically infeasible) or a *laissez-faire* approach.

¹⁸⁰ K. Maskus, "Lessons from Studying the International Economics of Intellectual Property Rights", (2000) 53 Vanderbilt Law Review 2219 at 2223

¹⁸¹ See Tom & Newburg, *supra* note **Error! Bookmark not defined.**

2. *The Value of Diversity: Relaxed Autarchy*

Of course, an assumption of autarchy is in many ways misleading – as described in chapter 4, countries have been heavily influenced in their preferred patent practices by flows of information and innovations across borders since the 1800s. If the assumption of autarchy is relaxed to permit the flow of information and incentives across borders (but not to permit strategic reaction such as retaliatory measures by states to other countries patent laws¹⁸²), how does this change the preferred patent laws? In this chapter 2, I relax the assumption of autarchy from chapter 1 by allowing information and incentives to innovate to flow across borders. However, I do not account for strategic behaviour: countries' changing their laws in reaction to other states. These are taken into account in chapter 3, where the assumption of autarchy is fully relaxed.

It is insightful to discuss the implications of relaxing the assumption of autarchy in the context of developing countries versus developed countries. In the case of developing countries, allowing information and technologies to flow across borders has ambiguous effects, depending upon one's views of the role of patent law in attracting technology transfer or inbound investment. In contrast, in developed countries the flow of information and incentives would seem to create a greater divergence in preferred patent policies.

¹⁸² Strategic in the sense of “Strategic behavior ... involves how one actor (person, nation, firm, government) behaves when its choices depend on those of others.” T. Sandler, *Economic Concepts for the Social Sciences* (Cambridge: Cambridge University Press, 2001) at 36. “Strategic behavior also involves a recognition of this interdependency; that is, one player or agent thinks that the other player will act in a certain way, and so the first player acts on this belief.” T. Sandler, *Global Challenges: An Approach to Environmental, Political and Economic Problems* (Cambridge: Cambridge University Press, 1997) at 25.

Developing Countries

In recent years, the most heavily discussed difference in preferences is between developed and developing countries, particularly the least developed countries. This has been the focus of a great deal of academic attention, analyzing the move of developing country intellectual property laws towards a developed-country standard under the TRIPs Agreement.¹⁸³

In general, developing countries – particularly the least developed countries - may be characterized by low levels of per capita income, infrastructure, human capital, technology, and a lack of adequate monetary capital, all measured relative to developed, industrialized countries. The goal of development from an economic standpoint is for developing countries to reach developed country standards in these areas. Unlike the case under complete autarchy, where ideas had to be internally developed, under the relaxed autarchy model developing countries have the opportunity to source innovation from developed countries. In fact, it seems to be an unstated assumption in the literature that innovation must for the most part be obtained by developing countries from developed countries.¹⁸⁴

¹⁸³ [UK] Commission on Intellectual Property Rights, *Integrating Intellectual Property Rights and Development Policy* (London: Commission on Intellectual Property Rights, 2002); J.H. Barton, "The Economics of TRIPS: International Trade in Information-Intensive Products", (2001) 33 *Geo. Wash. Int'l L. Rev.* 473; A.T. Guzman, "International Antitrust and the WTO: The Lesson from Intellectual Property" (2003) 43 *Va. J. Int'l L.* 933 at 946; Yu, *supra* note 12.

¹⁸⁴ C. Fink and K.E. Maskus, "Why We Study Intellectual Property Rights and What We Have Learned" in C. Fink and K.E. Maskus, eds., *Intellectual Property and Development: Lessons From Recent Economic Research* (Oxford: Oxford University Press, 2005) 1 at 6: "Inward technology transfer remains the primary source of new information for effecting technological change and structural transformation in most developing countries."

There are two strands of thought as to how patent law may be best implemented by developing countries to achieve development goals. The first strand argues that since information flows across borders (and this is increasingly true over time as communication technologies develop), the best way to ensure that information flow into a developing country is to have a weak patent system, or no patent system at all. Inventions and innovations from developed countries may then be used in the developing countries at no cost. Rationally, international investment should be attracted by the opportunity to sell products free of license fees to a patent holder, and competition in a product area suggests that prices will be lower than the price under a patent monopoly, better serving relatively poor developing country markets. Such an approach could also encourage companies to manufacture goods locally rather than in developed countries, and the opportunities therefrom should lead to the creation of local human capital.

Supporters of this approach often point to historical precedent, noting that many industrialized countries did not develop strong intellectual property laws until their industries had become well-established.¹⁸⁵ Indeed, in some cases the patent system was used to grant exclusivity to businesses who imported (often

¹⁸⁵ W. Kingston, "An Agenda for Radical Intellectual Property Reform", in K.E. Maskus and J.H. Reichman, eds., *International Public Goods and Transfer of Technology* (Cambridge: Cambridge University Press, 2005) 653 at 658:

"From the start of the industrial revolution, every country that became economically great began by copying: the Germans copied the British; the Americans copied the British and the Germans, and the Japanese copied everybody. The thrust of the TRIPS Agreement is to ensure that this process of growth by copying and learning by doing will never happen again."

via copying) foreign technology.¹⁸⁶ Given their present lack of ability to create world-first inventions and enter the patent arena, the adoption of strong patent laws by developing countries only leads to rents flowing to the developed countries.¹⁸⁷ Certainly, the least developed countries generally lack the industrial base to take advantage of the patent system, while foreign-held patents can deny or at least raise prices for agricultural equipment, medicines, or other products needed for development.¹⁸⁸

Many people extend this approach to developing countries in general, arguing that a higher level of access to technology (and more broadly, information) is needed compared to the industrialized countries to spur development.¹⁸⁹ Such analyses are not uniform in the desirable strength of patent law for developing countries; some imply that developing countries should never adopt a patent law unless forced to, while others argue that some level of protection for inventions is in the self-interest of a society as it develops, essentially arguing for a sliding scale approach to the strength of the optimal patent laws, varying with the level of development.

¹⁸⁶ See E.C. Walterscheid, "Charting a Novel Course: The Creation of the Patent Act of 1790" (1997) 25 AIPLA Q.J. 445 at 469 and the discussion throughout. See also *Edgeberry v. Stephens*, 91 Eng. Rep. 387 (K.B. 1691), finding that the first importer into England is the inventor under the *Statute of Monopolies*.

¹⁸⁷ See, for example, A. Deardorff, "Welfare Effects of Global Patent Protection" (1992) 59 *Economica* 35

¹⁸⁸ See Barton, *supra* note 9 at 345 and 346: "the [patent] system is not as valuable to the developing world as it is to the developed world, and, in some situations, can positively harm developing nations";

¹⁸⁹ For example, see A. Oddi, "The International Patent System and Third World Development: Reality or Myth?" [1987] *Duke L.J.* 831; Penrose, *infra* note 356 at 115-120

The second strand argues in contrast that there should be less heterogeneity of preferences between developed and developing countries in respect of patent law, and that it is desirable for developing countries to have relatively strong, enforceable patent laws to attract international capital and create transfers of technology.¹⁹⁰ They argue that while it is true that information flows across borders, the information publicly available about innovations (and specifically in patents) is often too incomplete to efficiently implement the innovation.¹⁹¹ This information is usually located in the “know-how” of the companies that have already implemented the innovation, usually in developed countries.¹⁹² It is thus desirable if not necessary to attract investment by inventive, patent holding companies to have meaningful technology transfer into developing countries. Furthermore, developing countries are often seen as undesirable locations for investment due to economically small markets and

¹⁹⁰ E.W. Kitch, “The Patent Policy of Developing Countries” (1994) UCLA Pac. B. L.J. 166. Empirical analysis in this area is difficult: see C. Fink and K.E. Maskus, eds., *Intellectual Property and Development: Lessons From Recent Economic Research* (Oxford: Oxford University Press, 2005), Fink and Maskus conclude in C. Fink and K.E. Maskus, “Why We Study Intellectual Property Rights and What We Have Learned” in C. Fink and K.E. Maskus, eds., *Intellectual Property and Development: Lessons From Recent Economic Research* (Oxford: Oxford University Press, 2005) 1 at 8:

“In sum, existing research suggests that countries that strengthen their IPR regimes are unlikely to experience a sudden boost in the inflows of FDI. At the same time, the empirical evidence does point to a positive role for IPR’s in stimulating formal technology transfer, through FDI in production and R&D facilities and through cross-border technology licensing.”

However, Kitch and Maskus go on to note at 13 that the empirical evidence largely draws on middle income countries, not lower-middle income and least developed countries. See also Maskus, *infra* note **Error! Bookmark not defined.** at 2230-2238.

¹⁹¹ Kitch, *supra* note 190 at 171: “Technology does not simply consist of a collection of instructions as to how to proceed, and patents do not, standing alone, contain the necessary information”, 171-176;

¹⁹² This is why pure patent licenses unaccompanied by a license of related know-how are considered rare in many industries.

weak institutions, poor human capital and infrastructure. To attract investment, it may be necessary to provide temporary incentives such as patents to give investors a better *ex ante* opportunity to realize an acceptable return on their investment. Also, the technological needs in developing countries may be different than the needs of developed countries, and a domestic patent system creates an incentive to invest in developing-country focused technology.¹⁹³ Given that intellectual property such as patents are non-movable assets (having no force outside of the granting jurisdiction), investments in intellectual property in developing countries may be less susceptible to the problem of capital flight. Finally, some studies argue that the negative impact of patent rights on issues such as health care or access to AIDS treatments is often exaggerated.¹⁹⁴

Such questions are also complicated by variations amongst developing countries themselves. As Correa has written:

“While some have argued that stronger IPRs will foster FDI, it seems clear that the impact of changes in IPRs on investment flows will be dependent upon a number of factors (such as market size, growth prospects, resource endowment, political conditions) which, in many cases, have an overriding impact on investment decisions.”¹⁹⁵

¹⁹³ Kitch, *supra* note 190 at 176

¹⁹⁴ See A. Attaran and L. Gillespie-White, “Do Patents for Antiretroviral Drugs Constrain Access to AIDS Treatment?” (2001) 286(15) *Journal of the American Medical Association* 1886; A. Attaran, “How Do Patents and Economic Policies Affect Access to Essential Medicines in Developing Countries?” (2004) 23(3) *Health Affairs* 155.

¹⁹⁵ C.M. Correa, “Intellectual Property Rights: a Perspective from Developing Countries” in F. Gotzen (ed.), *The Future of Intellectual Property in the Global Market of the Information Society: Who is Going to Shape the IPR System in the New Millennium?* (Brussels: Bruylant, 2003) 177 at 180.

Many developing countries do have at least pockets of highly skilled workers (for example, Kenya, Malaysia and Pakistan in the biotech, high technology and medical device fields). Developing countries will differ in terms of their natural resources and related industries – lumber, mining, oil. India, although a developing country taken as a whole, contains portions of population who are highly educated with access to sources of capital, and has thriving generic pharmaceutical and information technology industries. China is large enough that even small but wealthy segments of its population are large markets.

Returning to the central question, it seems to be unnecessary to take a view on the best development strategies for developing countries to note that the differences between developing countries themselves should be reflected in a wide heterogeneity in preferred patent laws. Furthermore, even if one adopts the view that developing countries are best served by adopting enforceable patent laws, this does not seem to suggest convergence with developed country standards *per se*.

Differences among developed countries

It is often assumed that developed states have symmetric preferences for patent laws, and that the differences in economic preferences between developed states is therefore small.¹⁹⁶ Recall the discussion of what would affect preferred patent law in a complete autarchy: the size of the economy; relative strength in innovation versus imitation; the level of economic development; industrial mix; and complementary innovation policies. Amongst the developed

¹⁹⁶ See, for example, Duffy, *supra* note 8 at 706.

states, the level of economic development might be expected to be similar.

However, even amongst the highly industrialized developed states, we would expect to see differences based upon the other four factors.

Moving away from a complete to a relaxed autarchy and assuming that incentives and knowledge can spill across borders provides additional reasons to expect a high level of diversity in preferred patent laws resulting primarily from different size of countries and their innovativeness.¹⁹⁷ (Differences in preferences resulting from industrial mix and complementary innovation policies will remain similar under a complete autarchy or a relaxed autarchy).

Unlike in the case of developing countries, developed countries have in place high levels of human capital, access to infrastructure, and wealthy markets. As a result, issues such as technology transfer or industrial development are less of a concern – policy makers can largely assume that world-first innovators will be motivated to enter their wealthy markets, or alternatively that imitators or even improvers will move to fill the void if the world-first innovator cannot or will not enter. This raises the possibility that developed states can free-ride on the provision of patent law by other developed states, either by not enacting patent laws, restricting their scope, or rendering them weak in content.

By itself, this is a crude and unpersuasive analysis. As will be discussed in chapter 3, reactions by countries with strong patent laws makes blatant free-

¹⁹⁷ For a dissenting view, see P. Newman, “On Global Patent Cooperation” (1997) 8 Fordham Intell. Prop. Media & Ent. L.J. 3.

riding among the developed countries unlikely. There are no examples of this among the developed nations today.¹⁹⁸

However, it is certainly possible for developed countries to tailor their patent laws to their particular situations without blatant free-riding. For example, the Japanese patent system has often been cited as a patent system tuned for the needs of an economy that has strengths in imitation rather than innovation. While patents in Japan are available for pioneer inventions, the scope of Japanese patents has traditionally been strictly limited to the central invention, and only narrow claims are permitted. This creates incentives for domestic Japanese companies to invent around the pioneer patent with small improvements and variations (which themselves may often be patented), which tied to a culture that embraces cross-licensing¹⁹⁹ allows Japanese companies to rapidly introduce improved versions of foreign innovations.²⁰⁰

¹⁹⁸ However, one might want to consider the former Canadian compulsory licensing scheme for pharmaceutical patents.

¹⁹⁹ See D. Rosen and C. Usui, "The Social Structure of Japanese Intellectual Property Law" (1994) 13 UCLA Pac. Basin L.J. 32, especially at 44-45. Rosen and Usui write that the emphasis on interdependence in Japanese society is reflected in the patent arena by a willingness of Japanese firms to cross-license patents, an emphasis in the development of technology on incremental steps rather than large leaps, and a patent law which confines patents tightly to their disclosure and allows the patenting of small improvements.

²⁰⁰ In fact, this has led to complaints that Japanese companies facing a US patent application filed in the Japanese patent office would "flood" the US application with a multitude of close but not identical applications – threatening to cut off the United States company from maneuvering around their own patent and placing the U.S. company in a difficult bargaining position. The U.S. company might then be forced to cross-license their underlying, basic patent.

For a general description, see J.A. Wolfson, *Patent Flooding in the Japanese Patent Office: Methods for Reducing Patent Flooding and Obtaining Effective Patent Protection*, 27 Geo. Wash. J. Int'l L. & Econ. 531 (1994); S.K. Sankaran, "Patent Flooding in the United States and Japan" (2000) 40 IDEA 393; R.J. Girouard, U.S. Trade Policy and the Japanese Patent System, BRIE Working Paper No. 89 (accessed December 5, 2007) (<http://brie.berkeley.edu/publications/WP%2089.pdf>) and Linck & McGarry, *ibid.* A short

Similarly, developed countries of small size will rationally design their patent laws to take advantage of the disproportionate incentive provided by foreign patent systems, as well as their particular economic situation. It is illustrative to consider the situation for Canada: a small country heavily economically integrated into a much larger neighbour: the United States.

The Canadian situation

It is difficult to think of an issue in Canadian patent law that is not heavily influenced by Canada's economic relationship with the United States, and to a lesser extent Canada's other trading partners. While Canada does not have a small economy on a global scale, with a gross domestic product in 2004 of approximately 1.29 trillion CA dollars, the Canadian economy is spread across the country on an East-West axis along the US border and is dwarfed by the United States economy, with a gross domestic product in 2004 of approximately 11.7 trillion U.S. dollars.²⁰¹ In many sectors of the economy one can argue that there are effectively combined US/Canada markets rather than distinct markets separated at the border.²⁰² The integration of the Canadian and United States

list of congressional complaints about the Japanese patent system may be found starting on page 549.

See also John C. Lindgren and Craig J. Yudell, *Protecting American Intellectual Property in Japan*, 10 Santa Clara Computer & High Tech. L.J. 1, 19 (1994).

²⁰¹ See R.G. Harris, "The Economic Impact of the Canada-U.S. FTA and NAFTA Agreements for Canada: A Review of the Evidence" in J.M. Curtis and A. Sydor, eds., *NAFTA @10* (Ottawa : Minister of Public Works and Government Services Canada 2006) at 10 and Statistical Abstract, United States Census Bureau.

²⁰² For example, see Courchene, T.J., *From Heartland to North American Region State: The Social, Fiscal and Federal Evolution of Ontario*, University of Toronto, Centre for International Studies, 1997. More generally, it has been suggested British Columbia is part of an economic region incorporating Oregon, Washington State and Alaska; that Ontario forms a region with the Great Lakes states, the Prairie provinces and Prairie

economies coupled with the ease with which many Canadian companies can enter the U.S. marketplace²⁰³ has resulted in approximately 78.8% of Canada's exports going to the U.S. market.²⁰⁴ Trade (exports and imports) accounted for approximately 2.0% of Canadian GDP.²⁰⁵

As a result, Canadian companies, particularly sophisticated innovative Canadian companies, are very much focused on the United States and other foreign marketplaces. For many of these companies, the main market for their products, including products incorporating their inventions, is the United States. Translated to the patent arena, obtaining patents in the United States is more important to innovative Canadian companies than obtaining patents in Canada.²⁰⁶ Taking a purely instrumental point of view, the differences in Canadian and United States patent law and policy arise from these facts "on the ground."

The integration of the US and Canadian economies combined with the disparity in size of the economies has an interesting implication. The incentives to Canadian entities to invent or develop and distribute innovative products are predominantly beyond the control of Canadian patent law. These incentives are

states form a region, and that the Maritime provinces form an economic region with the Northeastern states.

²⁰³ The ease with which Canadian companies can enter the US marketplace is not only legal ease under NAFTA, but also the ease with which many Canadians can understand and blend into the US culturally.

²⁰⁴ Harris, *supra* note 201 at 10.

²⁰⁵ Harris, *supra* note 201 at 10.

²⁰⁶ For a similar conclusion, see E.R. Gold, D. Castle and L.M. Cloutier, "Ag-Biotech in the Courts: Patents, Privileges and Presumptions" (8th International Consortium on Agricultural Biotechnology Research (ICABR), Ravello, Italy, July 8-11, 2004) at 26-27 (available at http://cipp.mcgill.ca/db/projects/iacbr_courts_en.pdf) (accessed April 21, 2005).

provided by United States patent law. What is more directly under the control of Canadian patent law are the costs of the patent system to the public and impediments to innovation by competitors of the patent holder located in Canada.²⁰⁷ The direct correlation between the positive and negative effects of patent law that exists in a complete autarchy or closed system is attenuated in the Canadian context.

As a first crude cut, a Canadian patent law analysis should therefore emphasize examining the ways the law might restrict access to technology, and pay less attention to the incentive effects of Canadian patents which will generally be outweighed – sometimes even dominated - by the incentive effects of foreign patent systems.²⁰⁸ This is not to deny that Canadian patents can have a marginal impact on incentives to invent in Canada, but rather to suggest that feasible choices on specific patent law issues primarily impact the economy by regulating access to technology in Canada.

The claim that the Canadian patent system has a greater impact on deterring Canadian competitors or impeding innovation or technological diffusion in Canada and a lesser impact on incentive effects – the incentive/impediment imbalance - needs greater clarification. The balance between impediment and incentive effects will vary from industry to industry and indeed from company to

²⁰⁷ For a similar conclusion, see Gold et al., *supra* note 206..

²⁰⁸ These impediment to innovation effects roughly correspond to the ability of patent holders to deter normal (and presumably efficient) economic development in the territory of the particular patent.

company, depending on where they and their competitors operate their manufacturing and research facilities, and the location of their main markets.²⁰⁹

For example, consider a Canadian company or facility that produces a product – say, washing machines – that is sold across the entire North American marketplace. In this case, the central point is that a product made in country number 1 (i.e. Canada) and shipped to country number 2 (i.e. the United States) is caught by the patent systems of countries 1 and 2, not just the country where the product is eventually sold. A company in this position will have some of their Canadian manufactured products shipped to the United States and thus subject to the US patent system – but all of their Canadian manufactured products will be subject to Canadian patent law whether sold in Canada or the United States. If the manufacture of the products violates a Canadian patent – and even if it violates no U.S patent – the patentee can recover associated damages or profits, including damages or profits in the United States marketplace.²¹⁰ So, on the

²⁰⁹ See R. Hirshhorn and J. Langford, “Intellectual Property Rights in Biotechnology: The Economic Argument”, prepared for The Canadian Biotechnology Advisory Committee Project Steering Committee on Intellectual Property and the Patenting of Higher Life Forms (March 2001) (available at [http://cbac-cccb.ic.gc.ca/epic/internet/incbac-cccb.nsf/vwapj/EcoArgument_Hirshhorn_Langford_e.pdf/\\$FILE/EcoArgument_Hirshhorn_Langford_e.pdf](http://cbac-cccb.ic.gc.ca/epic/internet/incbac-cccb.nsf/vwapj/EcoArgument_Hirshhorn_Langford_e.pdf/$FILE/EcoArgument_Hirshhorn_Langford_e.pdf)) (accessed October 4, 2005) at 18 for an example:

“As compared to other industry segments that look initially to the U.S., however, agricultural firms with patentable technologies place greater importance on a Canadian patent because Canada is a significant agricultural market.”

²¹⁰ *Beloit Canada Ltée v. Valmet OY* (1995) 61 C.P.R.(3d) 271 at 283 (F.C.A.). See also A.J. Stack, A.S. Davidson and S.R. Cole, “Accounting of Profits Calculations in Intellectual Property Cases in Canada” (2001) 17 Canadian Intellectual Property Review 405 at 408. Of course, there are difficult questions surrounding the quantum of award under either a damages or accounting of profits remedy that may be complicated by cross-border situations: see N.V. Siebrasse, A.J. Stack and the Cole & Partners IP Litigation Support Group, “Damages Calculations in Intellectual Property Cases in Canada” and “Accounting of Profits Calculations in Intellectual Property Cases in Canada”, both forthcoming in the Canadian Intellectual Property Review.

incentive side, the potential returns to patentable innovation by this Canadian company from Canadian or United States patents would be directly proportional to the size of the Canadian and United States marketplaces – heavily in favour of the United States patents. However, on the impediment side, all of the Canadian company's manufactured items – whether sold in the United States or Canada – are constrained by its competitors' Canadian patents, while only a fraction (admittedly, possibly a large fraction) are constrained by its competitors' American patents. In addition, all pre-manufacturing activities are governed by Canadian, not American, patent law. As a result, while the Canadian washing machine company will be concerned about both Canadian and American patents held by its competitors, it has more reason to be concerned about its competitors' Canadian patents (which govern all the company's products) than their American patents (which only govern some of the company's products).

Of course, this basic story will vary from company to company, and from industry to industry. Consider an industry where there might be a larger Canadian presence than is predicted by the size of the Canadian market – say, in telecommunications equipment around 1998, when a telecommunications cluster grew in Ottawa and Toronto.

This situation is where the split between incentives and impediment to innovation or deterrence of competitors stands out starkly. Generally, companies seek to obtain patents (1) in markets for the products incorporating their inventions, and (2) in jurisdictions where their competitors' operations are

located.²¹¹ In this case, we would expect the balance between impediment to innovation and incentive effects of Canadian patents to be even more heavily tilted towards impediment to innovation effects than in the first “washing machines” example. Companies in the “telecommunications” type of industries (whether foreign or Canadian) will be primarily motivated to obtain Canadian patents to impose some control on the actions of their competitors located in Canada, not to sell into the relatively small Canadian market.²¹²

There are categories where the general imbalance of Canadian patent effects towards impediment to innovation and the deterrence of competitors does not hold. For some products – for example, curling brooms - the demand for a product will be proportionately greater (and perhaps absolutely greater) in Canada than in the US, putting the size of the relevant marketplace out of proportion to that of the general economy. In such situations, the above arguments do not apply in the same strength – Canadian patents will have a strong incentive effect, and it will be difficult to say the incentive effects of Canadian patents will be weaker than the impediment to innovation effects. However, in this case the impediment to innovation effects are not reduced, but rather incentive effects of Canadian patents are greater than normal in this

²¹¹ In some cases, a company may also wish to obtain a patent in their home country for defensive purposes. However, patents in their home country usually fall into the categories of markets for their products or locations of their competitor’s operations in any case.

²¹² The nationality of the companies is not really important – what is important is the strategic use of the patents. For example, a Canadian company might use a Canadian patent to control the activities of an Ottawa facility of an American company. The argument does not depend upon the nationality of the companies obtaining Canadian patents.

industry and there is therefore a balance closer to what is seen in the United States context.

Finally, for some products the integration of an industry across the Canada/US border results in the Canadian patent having an importance equal to a US patent. For example, in the rail industry, it is important to purchasers of railway cars that the cars be usable in both the United States and Canada due to integrated shipping and scheduling. In this case, Canadian and United States patents are equally important to railway car manufacturers located in the United States as well as in Canada, and the incentive versus impediment/deterrence balance for Canadian patents is again similar to what is seen in the U.S.

Given North American economic integration and the constant continental competition to attract investments in innovative industry, this analysis implies that Canada needs to be particularly critical of practices that systematically create greater uncertainty or give patent holders greater economic deterrent power in Canada than in the United States.

As an example of the effect this can have on the analysis of patent issues, consider one of the most controversial and urgent issues in recent patent case-law and academic commentary: the treatment of after-developed technology (also often called later-developed technology). This issue has arisen before both the Canadian and United States Supreme Courts in the last few years.²¹³ The question, put simply, is: can a device that works in the same manner as a

²¹³ In Canada, see *Free World Trust*, *infra* note 214, in the United States, see *Warner-Jenkinson Co.*, *infra* note 217, and more indirectly *Festo Corporation*, *infra* note 216.

claimed device but uses a means that had not yet been created at the time of patenting fall within the scope of the claims?

By way of example, in the 2000 Supreme Court of Canada case of *Free World Trust v. Électro-Santé* the following claim was at issue:

1. An electro-magnetic low frequency therapeutic system comprising
...
said control means also having:
 - (i) **circuit means** for controlling the peak amplitude of the said magnetic field for achieving a specific modulation of said peak amplitude in a given time;
 - (ii) ...[Emphasis Added]²¹⁴

This claim is for an electro-magneto therapy device with a new method of controlling the amplitude and frequency of the electro-magnetic waves using “circuit means” (in bold above). The Supreme Court found that the impugned device was the same as the claimed device, except that a microcontroller was used instead of a circuit. The primary remaining issue was whether a microcontroller fell within the meaning of “circuit means” as used in the claim. If so, the impugned device infringed the claim.²¹⁵

This claim is from a patent that issued in 1981. Assume for our purposes that microcontrollers were not known to people skilled in the art in 1981. The inventor did not know of microcontrollers, and cannot be said to have conceived

²¹⁴ *Free World Trust v. Électro-Santé* [2000] 2 S.C.R. 1024 and *Whirlpool v. Camco* [2000] 2 S.C.R. 1067. This is an excerpt of claim 1 of Canadian Patent No. 1,113,156 issued November 24, 1981.

²¹⁵ In the actual *Électro-Santé* Supreme Court of Canada decision *supra* note 214 (at 1063), the impugned device fell outside the scope of the claim.

of microcontrollers being used to achieve his goals, so why should he be able to claim that microcontrollers fall within the scope of his invention? On the other hand, it could be said that the impugned device has simply changed one element for another that performs the same function in the same way with the same results, so the impugned device uses the patented inventive concept, and that infringement should not be avoided by merely changing the “bells and whistles” of a patented device.

After-Developed Technology in the United States

In the United States academic literature and in the decisions of the Court of Appeals for the Federal Circuit (CAFC) and United States Supreme Court (USSC) in the *Festo* case, the issue has been analyzed as a choice between creating incentives to make minor sequential or cumulative inventions, or creating incentives to make leap-frog inventions.²¹⁶ If claims can capture after-developed technology, then an incentive will be created to invest in researching “leap-frog” inventions that will avoid the broad scope of the claim. In contrast, if claims cannot capture after-developed technology, then an incentive is created to invest in researching slightly different ways of performing the same function as the innovation as claimed.

The capture of after-developed technology is reached, under American law, through the interaction of two doctrines: first, that claim scope is to be

²¹⁶ *Festo Corporation v. Shoketsu Kinzoku Kogyo Kabushiki Co.* 533 U.S. 915 (U.S.S.C., 2002); vacating CAFC decision 56 U.S.P.Q.2D 1865; 234 F.3d 558 (Fed. Cir., 2000) [*Festo* CAFC hereinafter cited to F.3d]. The doctrine has, of course, also been analyzed in other ways: for example, as an equitable doctrine rooted in notions of fraud on the patent and fairness by Justice Plager in the Federal Circuit *Festo* decision at 593.

determined at the time of infringement,²¹⁷ and second, the doctrine of equivalents, which allows equivalent technology to fall within the scope of a claim even if the technology does not fall within the literal wording of an element (or part) of a claim. Technology is equivalent to a claim element if it is insubstantially different from a claim element, and a common test is whether the technology performs the same function of a claim element in the same way with the same result.²¹⁸

The doctrine of equivalents has been a source of considerable controversy, primarily because of its uncertainty in application. The instrumental effect of the scope of the doctrine of equivalents was explicitly considered by the *en banc* decision of the Federal Circuit Court of Appeals in *Festo*. The Court divided on the question, with two concurring opinions and four dissenting-in-part opinions. The majority attempted to severely restrict the use of the doctrine of equivalents through the aggressive application of a third doctrine, that of prosecution history estoppel (where patentees are estopped from asserting that their claims cover subject matter surrendered or disclaimed by the patentee during prosecution, also known as file wrapper estoppel).²¹⁹ While it is not necessary for the purposes of this thesis to go into great detail, the majority

²¹⁷ *Warner-Jenkinson Co. v. Hilton-Davis Chem. Co.*, 520 U.S. 17, 37 (U.S.S.C., 1997) .

²¹⁸ See *Graver Tank Co. v. Linde Co.* 339 U.S. 605 (1950), discussed in *Warner-Jenkinson Co.*, *supra* note 217 at 39. The two tests are not alternatives, but are two formulations attempting to address the same issue of equivalence.

²¹⁹ During patent prosecution, a process of usually written negotiation takes place between the patent office and applicant over the precise wording of claims in the issued patent. If, during this negotiation, the patent applicant admits (often by implication) or asserts that a piece of technology does not fall within the scope of his claims, the patent owner will later be estopped from asserting that that technology actually should fall within the scope of the patent's claims. This is called prosecution history or file wrapper estoppel.

holding of the CAFC in *Festo* would have effectively precluded the application of the doctrine of equivalents in many cases.²²⁰

Two of the dissenting opinions, by Rader J. and Newman J., specifically opposed the majority decision to constrain the efficacy of the doctrine of equivalents as limiting the ability of patentees to catch after-developed technology. Newman J.'s dissent in particular discussed the burgeoning economic and legal literature on patent breadth and scope, including the following:

... However, within the growing body of scholarship, studies of the relationship between industrial innovation and optimal patent policy weigh against the majority's policy decision here. A paper entitled Optimal Patent Design and the Diffusion of Innovations, Carmen Matutes, Pierre Regibeau & Katherine Rockett, 27 RAND J. Econs. 60, 78 (1996), concludes that "the optimal scope policy implies that inventors of basic innovations obtain protection on applications that they have not yet fully worked out. This would probably require a more lenient review of claims than is the current practice." Edmund W. Kitch in The Nature and Function of the Patent System, 20 J. L. & Econ. 265 (1977) proposes that optimum patent policy should provide sufficiently broad scope to the inventor who opens a new field, to provide adequate economic incentives while avoiding duplication of effort and discouraging recourse to secrecy. D.G. McFetridge and M. Rafiquzzaman in The Scope and Duration of the

²²⁰ The Federal Circuit Court of Appeals decision in *Festo* held that prosecution history estoppel applies whenever a claim element was amended for reasons related to patentability, that all claim amendments were presumed to be made for reasons related to patentability, and that the estoppel would apply for all equivalents of the claim element, including those that were not in the contemplation of the patent office or applicant at the time of the claim amendment (as is the case with later-developed technology).

This decision would increase the certainty of patent claim interpretation, as in many cases the doctrine of equivalents could be discarded as blocked by the expanded doctrine of prosecution history estoppel. The judgment noted that: "This certainty will stimulate investment in improvements and design-arounds because the risk of infringement will be easier to determine." (*Festo*, note 216 CAFC decision at 577) This argument is disputed by Rader J. and Newman J., as discussed in the main body of this article.

Patent Right and the Nature of Research Rivalry, 8 *Research in Law & Economics: The Economics of Patents and Copyrights* 91, 104 (1986) discuss how the existence of non-infringing substitutes alters the benefit gained by an inventor, necessarily skewing incentives to invest.

...
The public and private interests served by the doctrine of equivalents derive from its deterrence of close imitation, thereby helping to assure to the patentee the benefit of the invention, while obliging would-be competitors to advance the technology instead of simply skirting the edge of the claims. Although its influence is not easy to quantify, it is generally accepted that the doctrine contributes to an industrial policy that seeks to support technologic innovation.²²¹

The decision of the Court of Appeals of the Federal Circuit majority in *Festo* was later overturned by the United States Supreme Court, which reaffirmed and restored the viability of the doctrine of equivalents, albeit in limited circumstances.²²²

In summary and without going into detail, after developed technology generally can be caught under U.S. patent law.²²³ Indeed, a 2004 decision by Rader J. of the CAFC describes after-arising technology as the “quintessential example of an enforceable equivalent”.²²⁴ A primary basis for the capture of after-developed technology is the instrumental desire to provide incentives for “leap-frog” inventions rather than small, incremental inventions.

After-Developed Technology in Canada

²²¹ *Supra* note 216 at CAFC decision 641-642.

²²² *Supra* note 216, USSC decision. Specifically, the doctrine of equivalents could be applied as long as it did not allow the patentee to recapture subject matter it had already given up during prosecution. The burden was put on the patentee to prove that the equivalent was not surrendered during prosecution when a term of a claim was amended.

²²³ Although this can be blocked in some cases by prosecution history estoppel

²²⁴ *Smithkline Beecham Corp. v. Excel Pharmaceuticals Inc.* 356 F.3d 1357, 1364 (Fed. Cir., 2004)

In the Canadian context, however, these arguments have little traction. As noted above, the incentives to invent for a company located in Canada are generally set by United States patent law, while Canadian patent law sets the level of impediment of innovation by competitors caused by patents within Canada. Thus, Canadian patent law should seek to minimize the impediments to innovation by competitors (recalling that innovation includes imitation). The straightforward policy conclusion: Canadian claims should not capture after-invented technology.²²⁵

This conclusion is reached independently of whether United States law allows claims to capture after-developed technology. If the United States chooses to capture after developed technology, Canadian patent law can achieve the best of both worlds: while the United States patent system creates great incentives for Canadian companies to invest in leap-frog technology, the Canadian patent system will give an additional smaller incentive to invest in sequential innovation.

Conversely, if the United States is unwilling to allow after-developed technology to be caught by United States patents, it would seem unwise for Canada to fetter its economy by allowing after-developed technology to be caught by Canadian patents, as it would add very little incentive but impose cost.²²⁶

²²⁵ A specific example of the broader point that a Canadian patent law analysis should emphasize examining the ways the law might restrict access to technology, and pay less attention to the incentive effects of Canadian patents as noted above in the text associated with footnote 208.

²²⁶ This may be further supported by recalling that the majority of Canadian patents are held by United States companies, and asking: why would (or should) Canada grant

In a legal (as opposed to policy) analysis, the Canadian Supreme Court's *Électro-Santé* decision does severely restrict the capture of after-invented technology in patent claims, holding that patent claims are to be construed as of the date of publication of the patent.²²⁷ Thus, to be caught by a Canadian patent claim, it would seem that the after-developed technology would have to be known to the person skilled in the art as of the date of publication of the patent, usually 18 months after the priority date of the patent application (or perhaps considered by a person skilled in the art to fall within the literal, functional scope of the claims).²²⁸

The debate in the United States case-law given above (footnote 221) is of limited relevance in Canada. While the work is quite sophisticated (and a list of prominent authors who have published seminal papers on this issue includes several Canadian academics), it is an analysis of American patent policy, not Canadian patent policy.

Summary

In summary, from an economic point of view, there is at any given time a high level of diversity of preference for patent laws between states.

These differences exist not only between developed and developing

greater patent protection to United States companies than the United States itself is willing to grant United States companies?

²²⁷ *Supra* note 214 at 1055.

²²⁸ It remains unclear how functional claiming – i.e. claiming an invention at a high abstract level of functionality rather than at a more specific level of implementation – will be treated in light of the *Électro-Santé* decision. Functional claiming is a widely accepted practice before the Canadian patent office, but is much less accepted in the United States Patent Office.

countries, but also amongst the developing countries and amongst the developed countries.

a. Dynamic Concerns

The previous discussion has dealt with static heterogeneity in preferences, arguing that patent law exhibits a high level of heterogeneity at any point in time (whether under assumptions of autarchy or a relaxed autarchy). However, attention must be paid to dynamic concerns: whether heterogeneity has value in better satisfying preferences over time. This section argues that diversity in patent law is critical in respect of the future satisfaction of preferences.

Dynamic concerns arise from two linked sources: limitations on our understanding of the welfare effects of patent law; and the changing nature of innovation in the economy over time. Even if technology could be assumed to stay constant, our limited understanding of the effects of patent law suggests that any given patent law could be improved. However, technology does not stay constant – within recent memory, semiconductors, software, biotechnology and the Internet have all arisen, giving growth to new industries and new frontiers for patent law. The appropriate patent policy may also change for a given industry as it develops. For example, an industry may move from a period of high cost and risky innovations where prospect theory may be suitably applied to a period

where the major innovations have been made and future innovations are small and cumulative in nature.²²⁹

Diversity in patent laws allows states the flexibility to respond to these changes.²³⁰ The dynamic advantages of diversity may be discussed under two headings: experimentation, and regulatory competition.

i. Experimentation

Diversity encourages the satisfaction of preferences over time primarily through experimentation, presumably leading to the discovery of superior practices. The introduction of legal innovations addresses both the problems of our lack of a full understanding of the effects of patent laws²³¹ and changes in the economy over time.

This justification for diversity is somewhat in tension with the discussion above regarding static concerns: while the section on static concerns emphasized the divergence in preferences among states, legal experimentation theoretically is of greatest value among similar jurisdictions, as the results of legal experimentation in one jurisdiction will be of greater relevance internationally.²³² Nevertheless, patent laws are still of similar form in the various countries of the world – i.e. consisting of a written description and claims,

²²⁹ Prospect theory and cumulative innovation theory *supra* at footnotes 147, 150 and associated text.

²³⁰ See Leebron, *supra* note 22 at 89: “Once the harmonized rule is agreed upon, it may be very difficult to change... International representatives and bureaucrats might be less responsive [than national officials] to changing views and circumstances.”

²³¹ See footnotes 110, 130, 160, 161 and related text.

²³² Duffy, *supra* note 8 at 708

examined before a patent office, requiring novelty, non-obviousness and utility, and requiring a difficult interpretation of the claims – and as a result legal experimentations are still very likely to be relevant in several foreign jurisdictions.

An example of this is deferred examination and the publication of patent applications. Before the 1960's the practice in patent offices worldwide was to examine patent applications as soon as possible after they were filed. However, as the number of patent applications filed began to increase, some countries considered how the cost of running a patent office could be lowered. The Netherlands adopted a policy in the mid-1960's of deferred examination, where a patent application filed in the patent office is not examined until it is requested (and a fee paid). This allowed the applicant and the Dutch patent office to take advantage of patent prosecution in foreign patent offices, creating savings for the running of the patent office, and also for the applicant. This experiment was successful, and deferred examination has been adopted by many countries, including Canada and Japan.

Interestingly, a secondary or cumulative innovation to deferred examination has had an even greater impact. Before deferred examination was introduced, patent applications were routinely kept secret until they issued into patents, and if no patent issued, the applications were never made public.²³³ However, under deferred examination the potential patent right could remain secret for many years, creating situations where a competitor invests substantial resources into a product, only to have his market denied by a late-issuing patent.

²³³ This was the source of the famous “patent bargain” whereby a technical disclosure is traded for a patent grant.

As a result, the Netherlands began to publish patent applications 18 months after their priority date. The publication of patent applications has proven even more successful an innovation than deferred examination, becoming a *de facto* world standard and adopted even by countries that shun deferred examination.²³⁴

ii. Regulatory Competition

Diversity also has value as it can support regulatory competition – competition amongst various legal systems or jurisdictions to efficiently serve society. In theory, people, businesses or investment will gravitate to superior regulatory jurisdictions, thus putting a check on governments, and spurring them to better assess and meet demand. For example, as argued by Charnovitz:

“Theoretically, if a country operates an inadequate patent system, its denizen citizens will emigrate. Governments will respond to this loss of talent by correcting their patent policy. Yet in a rigidly harmonized system, such experience-driven corrections may not occur.”²³⁵

This argument can only have limited purchase in the patent field. As noted above, the ultimate goal of patent law is to increase innovation – and innovation is influenced by many policies apart from patent law. As a result, the feedback loop that theoretically would drive regulatory competition in patent law is compromised. Furthermore, innovation is a long term phenomenon, creating response problems for governments seeking evidence of improvement (i.e. it may take twenty years to see the results of a given policy change).

²³⁴ Such as the United States.

²³⁵ S. Charnovitz, “Patent Harmonization under World Trade Rules” (1998) 1(1) J. of World. I.P. 127 at 132.

An example of this is the experimental use defence to patent infringement. In 1984, the United States' Federal Circuit drastically narrowed the exception, holding it "to be truly narrow" and not to extend to research activities with "definite, cognizable, and not insubstantial commercial purposes."²³⁶ Many commentators consider it effectively repealed.²³⁷ However, in Europe, Japan and Canada, the experimental use exception remains robust, and indeed has arguably been growing in scope over time.²³⁸ Despite this, I am not aware of reported movement of research activity out of the United States as a result, and it is difficult to see how jurisdictions are competing on this issue.

There are also problems in measurement bias: it may be easier to track the effects of patent laws on world-first innovators as opposed to imitators and improvers, so that regulatory competition acts to accelerate satisfaction of the interest of patent owners rather than society as a whole. If inventors, for example, are dissatisfied and leave a jurisdiction, that is not necessarily evidence of a poor patent system. Inventors (or companies who employ inventors) will be attracted to jurisdictions that give the inventors the greatest advantage, not the jurisdictions with superior patent systems.

²³⁶ *Roche Prods, Inc. v. Bolar Pharm. Co.*, 733 F.2d 858, 863 (Fed. Cir. 1984)

²³⁷ For example, see Duffy, *supra* note 8 at 718.

²³⁸ N.V. Siebrasse and K, Culver, "The Experimental Use Defence to Patent Infringement: A Comparative Assessment" (2006) 56 U. Toronto L.J. 333 at 333-334; S.J. Ferance, "The Experimental Use Defence to Patent Infringement" (2003) 20 C.I.P.R. 1 at 1, 21-22, 37. As noted in both papers, it is difficult to precisely assess the scope of the experimental use defence in Canada due to a lack of case law: however, it is generally considered to at least be wider than in the United States. J.A. Johnson, "The Experimental Use Exception in Japan: A Model for U.S. Patent Law?" (2007) 12 Pac. Rim L. & Pol'y J. 499 at 499, 510-511.

Regulatory or jurisdictional competition may be on firmer ground if we consider it working on innovation policies as a whole rather than patent law in isolation. Innovation policies as a package provide a coherent basis for feedback to occur, and a broader focus may ameliorate possible problems of focusing on the interests of patentees. However, this says little about the value of diversity in respect of patent law. As noted by Duffy, even if patent systems were to be unified worldwide, regulatory competition could still beneficially check government behaviour in other complementary innovation policies.²³⁹ Diversity of patent laws is not necessary for regulatory competition in innovation policy.

There may be some room for patent regimes to compete in attracting examination work through patent offices competing to have the most reliable or prompt search or examination of a patent application. However, such competition would require patent applicants to have freedom to choose their examination authority, which at present is limited.²⁴⁰ Similarly, states might be able to compete to attract patent litigation. Of course, patents are generally only enforceable in a nation's domestic court system, so such competition is predicated on both parties being willing to settle their multi-state disputes on the

²³⁹ Duffy, *supra* note 8 at 707. This relies on an assumption that there are many avenues for regulatory competition other than patent law.

²⁴⁰ For example, American applicants must file their applications first in the USPTO and receive a foreign filing license before filing in other countries or lose their American patent rights (35 U.S.C. 184). Residents of the United Kingdom must obtain permission from the UK patent office before filing foreign patent applications if the application concerns military technology or would be prejudicial to national security or the safety of the public (U.K. *Patents Act 1977* s.23). Under the Patent Cooperation Treaty, an applicant may only receive an international search or examination from patent offices permitted by applicant's government (Patent Cooperation Treaty, *infra* note 309, Article 16).

basis of a result in a particular state.²⁴¹ However, this is an unlikely basis to support or reject regulatory competition in patent law and policy. It is unclear whether such competition exists at an influential level, and it is unclear (and probably highly context specific) whether such competition would be beneficial to a particular state or globally.

This is not to state that such competition does not exist. From a high-level point of view focused on pure innovation issues, as used in this section's analysis, it is unclear why a state would want to compete for examination work (as long as it feels it is getting patents at a sufficiently high quality and speed of disposal) or for litigation work.²⁴² However, it is likely that the domestic patent bars would wish to attract work and the resulting fees into a jurisdiction.²⁴³ The ability of local bars to influence decision making will obviously depend on many

²⁴¹ See, for example, *Xerox of Canada v. IBM Canada Ltd.* (1977) 33 C.P.R. (2d) 24 at para. 17 (F.C.T.D.): "There is similar litigation pending in the United States and the United Kingdom. This [the Canadian litigation] is probably a test run." Or see D. Leung, "Litigate Patents in Canada, Settle Worldwide" *IPLaw360*, Portfolio Media, January 28, 2008: "As a result, it might be advantageous to litigate patent disputes with international implications in Canada, either to resolve the dispute on a worldwide basis, or as a dry run in advance of American litigation." or A. Shaughnessy and A. Bernstein, "Choosing Between Canada and US: Patent Law and Litigation" *Innovation and Invention Focus* 2004: "Moreover, when it is important to signal a victory early as part of a multijurisdictional strategy, a successful Canadian trial judgment may be worth pursuing as an early, or indeed first, step against an international infringer."

²⁴² There is an argument that attracting legal work for the patent bar and patent office will allow a state to maintain a sufficient local cadre of sophisticated patent professionals who in turn will nurture and support local innovative industry. See B. Doern and M. Sharaput, *Canadian Intellectual Property: The Politics of Innovating Institutions and Interests* (Toronto: University of Toronto Press, 2000) especially chapter 9 (pp 160-178)

²⁴³ See, in the case of state corporate law and the Delaware corporate law bar, J. Macey and G. Miller, "Toward an Interest-Group Theory of Delaware Corporate Law" (1987) 65 *Tex. L. Rev.* 469; in respect of Canada, see Leung, *supra* note 241; Doern, *supra* note 242 at 128.

domestic considerations, including competition from other interested groups or the responsiveness of decision-makers to patent-law concerns.²⁴⁴ For example, in Delaware incorporation fees have averaged over 16% of total taxes collected from 1960 to 1995;²⁴⁵ unsurprisingly, the Delaware legislature is very responsive to concerns of the Delaware corporate law bar. It is unlikely that patent law will be in a position in any country to command a similar level of attention from domestic lawmakers. However, the patent bar might have a great influence on administrative, organizational and legal decisions originating from national patent offices. In many cases, patent office officials may wish to expand the amount of work they attract for reasons of economies of scale, to justify their continuing existence as opposed to international organizations,²⁴⁶ or simply to enhance their own prestige, and so are responsive to the interests of the patent bar as a proxy for the interests of patent owners.²⁴⁷ This may raise concerns about the capture of patent offices by patent applicants.²⁴⁸

b. Summary

Chapters 1 and 2 have argued that preferences for patent law show a high level of diversity between states. From a static point of view, the preferred patent

²⁴⁴ Macey and Miller, *supra* note 243 at 472, 498-500.

²⁴⁵ R. Romano, "Competition for State Corporate Law" in P. Newman, ed., *The New Palgrave Dictionary of Economics and the Law* (London, UK: Macmillan Reference Limited, 1998) 364 at 364.

²⁴⁶ Doern and Sharaput, *supra* note 242 at 83-84

²⁴⁷ However, in some cases patent office officials might be responsive to demands to increase the perceived quality of their work rather than expanding the size of the patent office. See USPTO *Strategic Plan 2007-2012 Summary*: "Strategic and Management Goals: Goal 1: Optimize Patent Quality and Timeliness" (http://www.uspto.gov/web/offices/com/strat2007/stratplan2007-2012_brochure.pdf) (accessed January 20, 2008)

²⁴⁸ See Lemley, *infra* note 321 and associated text.

law will vary for economic, political, cultural and legal, and capability reasons. Furthermore, preferences will not only vary between states at unequal levels of economic development, but also between states at similar levels of development. The analysis suggests that differences in patent laws between developed states rest upon normatively plausible differences between the states, as opposed to arising from chance differences. From a dynamic point of view, it is also desirable to maintain diversity in the international patent system to allow legal innovation and experimentation. However, regulatory or interjurisdictional competition does not provide strong reasons for diversity in the international patent context.

3. Bases for Harmonization

Chapter 3 discusses why domestically welfare maximizing states might wish to harmonize aspects of patent law. It provides theories needed to overcome the presumption that states should choose their patent laws to be domestically welfare maximizing, as discussed in chapter 2. This thesis takes the view that well-founded (and globally welfare enhancing) patent harmonization seeks a balance between the reasons for harmonization in this Chapter 3 and the reasons to value diversity given in Chapter 2.

Three well-founded reasons for harmonization are identified: (1) the recognition of foreign patentees; (2) decreasing the duplication of efforts related to patent prosecution; and (3) eliminating uncertainty between highly integrated economies. These three reasons create the benefits of international regimes to supply public goods discussed in the introduction: lower per capita costs of providing public goods; the larger size of the economy; regional insurance; and redistributive schemes.²⁴⁹

a. The recognition of foreign patentees

The first part of chapter 2 concluded that there is no purely economic case for harmonization (or unification) of patent laws from an efficiency point of view. However, that simple analysis was non-strategic, assuming that countries did not react to the patent policies of other nations. As such, it did not take into account distributional concerns, particularly profit flows between countries (which are

²⁴⁹ See footnotes 44 and **Error! Bookmark not defined.** and associated text.

neutral from a global efficiency point of view), and political considerations arising from these profit flows and from diversity of preferences among citizens of different countries. Taking these factors into account provides a basis for why the international community of nations would cooperate in patent law, and eventually would prefer harmonizing to a set of minimum standards.

For historical reasons, two sequential arguments are made: 1) that cooperation leading to national treatment is desirable, and 2) that in a world with national treatment, minimum standards are desirable.

i. National Treatment is Desirable

Recall the discussion in chapter 2: one efficient state of affairs is an ordering with no international patent cooperation, where each country grants patents only to its own inventors. This situation is the most deferential to states' autonomy and the diversity of patent regimes. I will start from this assumption of a relaxed autarchy with information flow to build an analysis. Relaxed autarchy is assumed to mean that each country protects only its own innovators, and has access to information and innovations created in other countries.

Although a system of national relaxed autarchies is efficient in the sense of minimizing global deadweight loss,²⁵⁰ such a system would be unstable. Assuming that there is commerce and communication between states, only if the collection of states is of roughly equivalent size and innovative capacity might each country feel that it is receiving spillovers from other countries somewhat

²⁵⁰ See footnote 137 and associated text; and Appendix A.

proportionately, justifying other countries' free riding.²⁵¹ However, in the real world countries are diverse, as are the value of inventions. This leads to an imbalance of externalities and an imbalance of incentives to innovate.

These imbalances of externalities and incentives to innovate relate directly back to the differences introduced in chapter 2 to explain differences in preferred patent policy between relaxed autarchic states, producing imbalances for what might be called deterministic reasons. The two imbalances also arise from a second source: the skewed nature of patents and innovation. The resulting disparity in positive externalities or spillovers and domestic incentives to invent between states combined with high levels of skewed-invention risk provides a structural motivation for cooperation.

Chapter 2 considered the effects on domestic optimal patent law of: the size of the economy; relative strength in innovation versus imitation; the level of economic development; industrial mix; and complementary innovation policies. Unbalanced externalities between states may result from differences in these metrics. For example, in a bilateral relationship between Canada and the United States, even if we assume identical domestic patent laws and innovation policies, industrial mix and economic development and strength in innovation, the United States might feel that spillovers from Canadian inventions are not adequate compensation for Canadian use of United States inventions simply because of the difference in size of the national economies. Identical patent systems and industrial mix would imply that a Canadian innovator would only have 1/10 the

²⁵¹ Scotchmer, *supra* note 110 at 328.

incentive to innovate as an American inventor.²⁵² All other things being equal, Americans will have a higher rate of innovation resulting in more innovations due to the greater population of the United States. The United States will be systematically providing much greater positive externalities from patent laws to Canada than Canada will be providing to the United States.

A significant and systematic unbalance in externalities is unlikely to be satisfactory to the countries providing the externalities. It is unlikely to be acceptable to patent holders in the innovative country, who see others benefiting from “their” invention without compensation, but perhaps more importantly from a welfare point of view the costs of supporting higher levels of innovation are borne through higher costs paid by consumers in the more innovative country.

Of equal importance, the reverse implication of this point is that it is in small-market countries’ self-interest to arrange for their domestic innovators to have access to patents in large-market countries in order to provide a sufficient domestic incentive to invent. The unpalatable alternative for small countries that wish to create a significant incentive for invention would be to grant patents of very broad scope and/or length. As discussed in chapter 1, this raises the specter of considerable deadweight losses in the domestic economy, and lower levels of overall innovation in affected technologies.²⁵³ If the latter holds, it suggests that there is an upper limit to the overall rate of world-first innovation, and innovation in general, that a small state can create on its own without

²⁵² Canada having approximately 1/10 the population of the United States.

²⁵³ Please see text associated with footnote 107

cooperation from nations with larger economies, and that this upper limit will be less than the upper limit of similarly situated but larger nations.

The second factor that would drive imbalances of externalities between states in a relaxed autarchic system is the skewed value of patents, which introduces an aspect of risk into the more deterministic description given above. As noted by Scherer, analyzing evidence from Germany and the United States, patents and technological innovations are highly skewed in value.²⁵⁴ In other words, patents are in many ways like a lottery ticket, where the vast majority of patents are essentially worthless or worth little, but a small number are valuable, and an even smaller number are extremely valuable.²⁵⁵ The value of technological advances goes disproportionately to a few winners.

A second implication of the skewedness of patents is that the return on investment in innovation will not follow the law of large numbers: the value of patents may not converge on an average given a large enough number of tries, frustrating attempts to obtain stable average profit returns through portfolio or aggregation strategies. On an international level, this creates what I will call a skewedness risk of invention: the risk that disproportionately valuable invention will be made in one country, thus burdening their citizens (in a relaxed autarchic system) with a very costly patent while citizens of other countries enjoy disproportionate and windfall positive externalities. Even between two countries that are identical in terms of the five factors listed above that affect the level of

²⁵⁴ F.M. Scherer, "The Innovation Lottery" in R. Dreyfuss, D.L. Zimmerman and H. First, eds., *Expanding the Boundaries of Intellectual Property: Innovation Policy for the Knowledge Society* (Oxford: Oxford University Press, 2001).

²⁵⁵ See Jaffe and Lerner, *supra* note 62 at 173 ("most patents are, and always will be, worthless and unimportant.")

innovation (the size of the economy; relative strength in imitation versus innovation; the level of economic development; industrial mix; and complementary innovation policies), the skewedness of patents suggests that at any given time there may be a gross imbalance of positive externalities, and no guarantee that the sum of positive externalities will even out over a sufficiently long time period.

The skewedness of patents does raise the possibility that less innovative countries could still end up bearing the brunt of costs to support global innovation in a relaxed autarchy if they happen to host the most valuable inventions. However, this cannot be relied upon to counteract the systematic conclusion under the deterministic analysis given above that countries with characteristics that are innovation enhancing will have more innovation: while the results are unpredictable, the structurally more innovative countries will still be making a greater number of tries at innovation.

An unanswered question that arises from the observation that patent values are skewed is whether this skewedness is also desirable. Schumpeter wrote:

Spectacular prizes much greater than would have been necessary to call forth the particular effort are thrown to a small minority of winners, thus propelling much more efficaciously than a more equal and 'just' distribution would, the activity of that large majority of businessmen who receive in return a very modest compensation or nothing or less than nothing, and yet do their utmost because they have the big prizes before their eyes and overrate their chances of doing equally well.²⁵⁶

²⁵⁶ Schumpeter, *supra* note 147 at 73-74

Scherer suggests that skew patent rewards are necessary to motivate skewedness-loving or risk-accepting entrepreneurs as opposed to well-established corporations (who may be expected to be risk averse), noting that both historically and recently, the boldest technological innovations have tended to arise from small sources outside the realm of large corporations.²⁵⁷ If this is true, it provides another reason for small or less innovative countries to attempt to obtain access for their domestic inventors to the patent systems of larger countries: to provide a sufficiently high “lottery ticket” effect to motivate domestic entrepreneurs.

In summary, under a system of autarchy there will be an imbalance of externalities in the static or short-term, where consumers in one country will be paying for an invention while consumers in other countries gain a spillover benefit. I argue that this creates friction between countries that can motivate cooperation to avoid the possibility of retaliation. Simultaneously, smaller or less innovative countries are motivated to obtain patent protection for their domestic inventors in third countries to provide greater incentives to invent domestically while seeking to minimize the domestic impediments to innovation that would be created by stronger domestic patent systems. These motivations are complicated, and I would argue enhanced, by the skewedness of patent values, creating a risk for every country that their consumers will be paying (potentially very heavily) for the patent that is the “winning lottery ticket” while consumers in other countries gain a windfall spillover benefit. Since patent values are so

²⁵⁷ Scherer, *supra* note 254 at 20.

skewed, it seems likely that the spillovers will always be unbalanced at any given point in time, an inherently politically unstable situation.²⁵⁸

Given these motivations to cooperate, what form should cooperation take? In theory, there are a number of possible forms of cooperation. For example, nations receiving a positive flow of externalities could simply pay a subsidy back to the country(s) experiencing a negative flow of externalities. However, this would ignore one of the strengths of the patent system: that the payments to individual patent holders are determined by the marketplace, not a central decision maker.²⁵⁹ In the absence of this factor, how is the amount and destination of such a subsidy to be determined?

Alternatively, smaller or less innovative countries could agree to increase their incentives for innovation. Returning to our example, the United States might be more likely to be satisfied if Canada provides a patent law to induce domestic innovation that preserves roughly equivalent incentives to invent on either side of the border. However, this can only be true if Canadian and American patent laws are truly disproportionate (i.e. – should Canada's patent term be ten times as long as the United States patent term to compensate for differences in the size of

²⁵⁸ This effect would be exacerbated if smaller countries enacted stronger patent laws to compensate for smaller domestic markets providing smaller incentives to invent.

As far as positive explanations are concerned, it should be noted that the drive for National Treatment and Minimum standards has been driven by repeat patentees, who obviously benefit from the greater geographic scope and content of their patent rights. However, while this is obviously an important explanation for why the patent agenda is driven forward when many other agenda for international cooperation have stalled, it is not particularly useful for explaining why countries should agree to recognize foreign inventors.

²⁵⁹ Once the government, judiciary and patent office have established patent law and practice, the return to patent holders is determined in the resulting marketplace.

the marketplace?). This is unlikely to be politically stable from a Canadian point of view. Instead, the Canadian impulse would likely be to have equivalent if not lower patent standards than in the U.S., essentially free-riding on the costs borne by U.S. consumers to support innovation.²⁶⁰

The most plausible solution would be for all countries to provide patents to foreign inventors. This would create flows of profits from the users of patents to the owners regardless of geographic location, alleviating the problems of imbalances in flows of positive externalities and alleviating problems of imbalances in incentives to invent. It also allows the amount and destination of these patent-generated profit flows to be determined by the marketplace, reflecting the patent's social value.

While it is possible to envision a system of multiple bilateral treaties establishing specific rights for foreign patent holders – and, historically, such a system was first attempted – the most straightforward and stable solution to these problems would be a system of national treatment, an ordering where each country provides access to patents to foreigners on terms at least as favourable as those provided to its own citizens.²⁶¹ This ordering would be the multilateral solution most deferential to state sovereignty and the value of diversity outlined in chapter 2.

²⁶⁰ As a side note, it may be impossible to completely segregate markets at borders in this fashion. Inevitably, there will be importation of imitative products across borders, undermining the notion of domestic-only patent systems.

²⁶¹ In addition, as noted below, it would be desirable to construct an international system to facilitate the filing and obtaining of international patents. This was also a feature of the *Paris Convention*, *supra* note 68.

ii. Given National Treatment, Minimum Standards are Necessary

Even after states have agreed to cooperate via national treatment, this ordering would in turn be unstable (albeit less unstable than the relaxed autarchic world or a world of bilateral treaties). Serious coordination problems may be predicted to occur.²⁶² A failure to coordinate could theoretically result in a “race to the bottom,” or more realistically a failure of the underlying national treatment cooperation. The solution to this problem is for states to agree (informally or formally) to minimum standards for their patent regimes.

Once national treatment is in place among states, there will be international profit flows generated by patent assets. Having secured access to foreign countries’ patent systems for their nationals, it is then in each country’s self-interest to minimize the scope and length of their patent laws to minimize their profit outflows. As a result, no country’s domestically optimal patent policy will correspond to an optimal global policy. It is thus desirable (in order to avoid a prisoner’s dilemma) for states to negotiate minimum patent standards. Because it is in each country’s domestic interest to weaken patent laws, harmonization on this basis may be predicted *ex ante* to generally strengthen patent protection.²⁶³

This is shown formally in Appendix C. The patent-related incentive to innovate within a country is a sum of the incentive provided by the “rest of the

²⁶² Generally speaking, a coordination problem is a subset of general cooperation problems. It is a problem where there are benefits to be realized from two states not merely agreeing to cooperate, but choosing the same form or content of cooperation. Think of a traditional prisoner’s dilemma, except that the benefits for both prisoners simultaneously defecting or not defecting dominate the combinations of defection/no defection.

²⁶³ This argument may be found in Scotchmer *supra* note 110 at 329.

world” and the domestic patent laws. It is possible that the patent incentive offered by third party patent laws is sufficient to induce a desired level of innovation in the domestic economy, in which case the optimal domestic patent law is no patent law at all. More generally, instead of an “optimum” solution, there is instead an equilibrium bilateral solution treating the rest of the world as one entity – multiple optimal solutions depending on the state of the rest of the world.

Recall from chapter 1 the Nordhaus trade-off: the optimal additional patent length is when the value of increased innovation equals the additional deadweight loss on innovations that would occur regardless of the additional patent term. The Nordhaus trade-off captures the optimal or globally welfare-maximizing patent strength whether we are considering countries as a complete autarchy or as an open economy, albeit the result of the Nordhaus trade-off is likely to change as autarchy is removed. Once we add international considerations, we add an outflow of profits to foreign patent-holders to the strategic analysis made by each country. So, the increase in innovation from a longer patent term (or any other change that increases the externalities captured by the patent holder) must be balanced against both the increase in deadweight loss, and also against the increase in outflow of profit. Countries will thus systematically choose lengths of patent protection that are less than the Nordhaus optimum. In other words, the introduction of national treatment among

countries creates incentives for countries to reduce their patent strength below that which is globally welfare maximizing.²⁶⁴

In summary, domestic policymakers have an incentive to decrease profits flows to foreign countries and discount the positive effects of innovation on foreigners. (i.e. the benefits of incremental innovation from the domestic country's stronger patent policy on other states' citizens). This provides an incentive for countries under a pure national treatment regime to reduce their patent strength below globally welfare maximizing levels.

This is a robust conclusion. Even if countries start from the equilibrium point that maximizes social welfare, both countries will have an incentive to weaken their patent laws. A similar conclusion also holds even if the domestic market and the sum of other states' markets are assumed to be identical.

The solution to this problem is for states to agree to minimum standards for their patent regimes.

While the more recent development is for minimum standards to be formalized in written treaties, minimum standards can also be implemented informally. As will be noted in the historical overview in Chapter 4, national treatment via the *Paris Convention* first arose among a relatively small group of countries with similar, European cultural outlooks. Under such conditions, a key issue was informal minimum standards. When signatory countries (the Netherlands and Switzerland) violated these informal minimum standards, conflict arose. As will be discussed, a primary motivator for patent law to be

²⁶⁴ Scotchmer, *supra* note 110 at 331

moved into the world trade system was to facilitate a move from informal to more formal minimum standards.

Theoretically, countries could negotiate for minimum standards tailored for each cooperating country. More realistically, and especially in the presence of uncertain information, countries tend to reach agreement on the basis of reciprocity, all countries undertaking the same commitments.

Some limited predictions may be made about the course of negotiations for minimum standards. If we assume two countries of equal market size, the more innovative state will prefer minimum patent standards that give greater market power to patentees. On the other hand, if we assume that countries are equally innovative, smaller countries will advocate for higher minimum patent standards. The smaller the domestic market, the less an increase in patent breadth or length increases deadweight loss, and the less it increases outflow of profit. Assuming the “rest of the world” has a greater market size than the small state, an increase in patent breadth or length will increase the smaller state’s net flow of profit. Similarly, the greater the domestic innovativeness, the more an increased breadth or length of minimum patent protection will increase profit flow into the state assuming the state’s industry can access markets of the same or greater size.

In summary, small innovative countries will prefer and negotiate for stronger minimum patent rights. Large non-innovative countries will prefer weaker minimum patent rights. However, nothing can be generally said about large innovative or small non-innovative countries from simple models.

Observations of large innovative or small non-innovative countries taking a strong position on international patent law standards suggests additional factors at work, such as the greater influence of innovative capacity over the size of the market,²⁶⁵ or interest group influence.²⁶⁶

Minimum standards are also important from a purely political perspective. A lack of minimum standards undermines the political support for cooperation in general. As noted above, it is politically difficult for trading countries to have highly divergent pricing structures for products and services caused by intellectual property laws (including their absence). While the formal adoption of patent laws on a National Treatment basis provides a solution to this problem, it is an ineffective solution if the patent laws of some partners are very weak.

On the other hand, broad minimum standards as opposed to minimum standards negotiated for each individual country are likely to generate political support for cooperation on national treatment grounds. This underlies the use of reciprocity as the primary model for minimum standards.

In other words, the innovation system (of which the patent system is a sub-part) is an international system. – and the more politically stable (and, arguably, economically beneficial) system is the international recognition of foreign patentees with some set of minimum patent standards. Critically, a system of global recognition of foreign patentees requires an understanding of what a “patent” is – i.e. what are the minimum conditions for reciprocity?

²⁶⁵ Scotchmer, *supra* note 110 at 336

²⁶⁶ Scotchmer, *supra* note 110 at 324; Ryan, *supra* note 4 at 10-11 and chapter 4 (pp 67-89)

Reduction of Duplication

The reduction of duplication in patent prosecution is the most commonly recognized and promoted purpose for harmonization.²⁶⁷ The motivation behind this basis for harmonization is straightforward: patent prosecution (the process of applying for and obtaining patents from national patent offices) is very expensive both to applicants and, potentially, to states (depending upon how an individual patent office is funded); and the various patent offices are all undertaking roughly similar work. Reducing these costs directly benefits the cooperating nations by lowering the per capita costs of providing the patent system – one of the basic benefits of harmonization.²⁶⁸ As is argued by Gerald Mossinghoff, the former Commissioner of Patents and Trademarks for the United States:

There is a debilitating redundancy built into the current national/regional patent search, examination and enforcement systems. With respect to any important invention, highly skilled patent examiners around the world – all of whom are scientists or engineers and many of whom in addition, particularly in the United States, have legal training – analyze the same patent application, search the same prior art, and perform the same examination before granting virtually identical patents in their respective jurisdictions.²⁶⁹

Estimates of the cost of patent prosecution vary, but are known to be high. In 1998 it was estimated that to obtain “comprehensive worldwide protection for an important chemical compound” would cost approximately \$750,000 to \$1,000,000 (US), and “that figure is growing at a rate of 10% each year.”²⁷⁰ For

²⁶⁷ See Bardehle, *supra* note **Error! Bookmark not defined.** at 303; Barton, *supra* note 9 at 342; Campbell, *supra* note 3 at 605;

²⁶⁸ See text associated with footnote 44.

²⁶⁹ Mossinghoff and Kuo, *supra* note 3 at 529.

²⁷⁰ Mossinghoff and Kuo, *supra* note 3 at 529; also cited in Barton, *supra* note 9 at 344.

small companies, or companies that prosecute hundreds of applications every year, these are significant figures.

Estimates of savings available from avoiding duplication naturally vary depending upon the extent of harmonization incorporated in the estimate. Barton provided a back of the envelope estimate in 2004:

Considering that some 300,000 applications are filed each year in the United States, and conservatively half of those are filed in more than one jurisdiction, the duplication represents an enormous waste, on the order of \$150 million for excess filing fees for filing in just two jurisdictions. If more than two jurisdictions are involved and translation and extra legal fees taken into account, the numbers seem likely to rise by at least an order of magnitude and perhaps much more.²⁷¹

Advocates of high levels of cooperation and harmonization in this area typically argue that, in addition to imposing unnecessary costs for patent applicants and owners (and potentially states), this duplication also results in economic uncertainty, as companies have to attempt to understand the economic and legal impact of differences in patent prosecution from state to state. Harmonization of patent granting procedures can reduce these costs, leading to welfare gains for both applicants and states. These changes would also maximize the value of aggregate patent grants, increasing incentives to invent worldwide. The ultimate preferred result, on this view, would be the unification of patent granting activities, with one search, one examination and one set of approved claims.

²⁷¹ Barton, *supra* note 9 at 345

From a welfare point of view, it is generally an incomplete argument to simply assert that a measure will increase incentives to invent, as the impact of the measure on the patent system's impediments to innovation must also be accounted for. In this case, if it is true that the same global patent position can be achieved with less cost, increased incentives to innovate may be achieved without increasing the negative aspects of patent laws. Put differently, if we recall from chapter 1 that the three bellwethers of the performance of a patent examination system (including the international system) are: the costs (public and private) of the patent examination process; the (legal) quality of the issued patents; and the speed with which the patent applications are issued or rejected; then a proposal that reduces the costs of the patent system without negatively affecting the speed or quality of issued patents in all jurisdictions would be absolutely beneficial.

However this is a complicated area to assess, and the possible benefits depend heavily on how cooperation is achieved. This will be further addressed below.

The removal of differences between states reducing uncertainty, of course, simply reflects back to the main approach of this thesis: while reducing uncertainty for business is not an inconsiderable benefit, it has to be weighed along with all the other implications of harmonization, including the loss of satisfaction of local economic and legal/cultural preferences. Also, the perception that differences in prosecution practices between states, even the

presumably similar large industrialized states, is “small” is somewhat subjective: one report on cooperation in the patent prosecution field written in 1999 notes:

“The exchange of work results of the examining patent offices, which has been discussed for years, has, despite extensive efforts – particularly the so-called “Trilateral Cooperation” (EPO, Japanese, and US Patent Offices) – not led to any tangible results. The reason for this essentially lies in the lack of conformity of fundamental norms in the patent laws, particularly in the industrialized countries.”²⁷²

iii. The Relation between Prosecution and Enforcement

Patent prosecution is similar across jurisdictions, because all nations generally grapple with the same problems – how to identify a (patentable) invention, and then write its bounds in a manner that may be understood by the patent holder, public (which includes competitors, customers, and business partners) and public officials (including the patent office and, eventually, courts). Furthermore, as will be discussed later, improved communications and frequent meetings between representatives of different states tends to lead to a convergence of opinion on desirable forms of patent law and practice.

However, despite these factors, there are still key and sometimes critical differences between regimes. For example, in the United States, patent applicants are held to statements and positions taken during patent prosecution via a doctrine known as file history or file wrapper estoppel.²⁷³ In Canada, in

²⁷² Bardehle, *supra* note **Error! Bookmark not defined.** at 303

²⁷³ See, for example, *Festo supra* note 216.

contrast, the file wrapper cannot be entered into evidence for this purpose.²⁷⁴ As a result, patent applicants are often wary of making too strong an argument for the novelty or non-obviousness of their claims before the United States patent office, as such arguments could restrict the breadth of their claims during later licensing or litigation. Since this factor does not exist in Canada, a patent applicant could make much stronger arguments for acceptability in the Canadian patent office, perhaps obtaining claims with broader wording, or alternatively an identically worded claim in Canada and the United States could have a broader interpretation in Canada than the U.S.

This presents a conceptual and practical challenge or hurdle for international cooperation or harmonization of patent prosecution. Prosecution is inherently linked to enforcement, since patent claims are prosecuted with enforcement in mind. Claims may be seen as the link between administrative patent prosecution and substantive patent exploitation and enforcement.

In one aspect, minimum standards in enforcement (a subset of cooperation in the recognition of foreign patentees) are an important precursor to cooperation on reducing duplication in patent prosecution. Unless aspects of prosecution in various countries become roughly similar – specifically, in the requirements for written claims, adoption of some sort of novelty, non-obviousness and utility standards, the adoption of an examination rather than a registration system – the possible grounds for cooperation are necessarily

²⁷⁴ *Free World Trust*, *supra* note 214 at para. 66 and 67.

limited. Historically, as seen in Chapter 4, cooperation in national treatment and minimum standards predates cooperation on patent prosecution.

If prosecution and enforcement are tightly linked (for example, in the United States), then harmonizing patent prosecution inevitably requires harmonizing many patent enforcement issues as well. Given the existence of a wide diversity of preferences between states regarding enforcement issues (as was discussed in chapter 2), harmonization of patent prosecution begins to look much like the harmonization of patent enforcement, as discussed in section 3(a), with all its attendant difficulties.

However, it is not necessary for prosecution and enforcement to be tightly linked. Both companies and states are in practice generally satisfied with imperfect or approximate examination. This looseness between prosecution and enforcement allows much cooperation between states on patent prosecution without the necessity of harmonizing on substantive, enforcement patent laws. It should be possible to capture much of the gains available from harmonizing patent prosecution while maintaining policy diversity in other patent law topics.

From the point of view of the state, it seems undoubtedly true, as asserted by Mark Lemley in his article “Rational Ignorance at the Patent Office”, that at some point improvements in patent office performance will not be worth the cost to society to run the office.²⁷⁵ The notion that patent offices strive for perfect examination is illusory; their performance is necessarily limited by their

²⁷⁵ *Supra* note 319. Note, however that Lemley specifically excludes spending on pendency from his paper, referring only to spending on patent quality: see pp 1520 and 1524.

resources. However, it is possible for patent offices to improve their performance within their resource constraints, in part by cooperation with other patent offices.

From the point of view of applicants, it is expensive to tailor the patent granted in each jurisdiction to maximize protection. Given that most applicants are unsure as to the ultimate value of any given patent during prosecution, they choose to direct their prosecution spending to the most important jurisdictions and patents for that particular company. For some companies, the spending will be highly targeted to specific jurisdictions; for other companies, spending will be more diffuse among many countries.²⁷⁶

iv. Example: Informal Cooperation between the Canadian and United States Patent Offices

Generally, assuming a sufficiently high pendency or amount of time a patent application takes to be examined, the patent office and patent applicants can take advantage of prosecution in other patent offices. Once the patent application has been successfully prosecuted in a first patent office, the patent applicant can take the claims obtained in the first patent office and use them in the second patent office in an attempt to avoid the legal costs of repeating arguments and amendments in the second patent office. The second patent office may feel comfortable relying to a large extent on the analysis and work done in the first patent office, approving the first patent office's work after a relatively expeditious and inexpensive overview. The extent to which a patent office is willing to accept the work of foreign patent offices depends upon both the

²⁷⁶ Of course, this presupposes that the company is taking a rational, strategic approach to its spending on patent prosecution, which does not always hold.

reputation of the first patent office's work and on domestic attitudes towards relying on the work of foreign patent offices in the second patent office.

The reliance of the Canadian patent office on USPTO prosecution is an example of this informal cooperation. Through policy decisions, specifically the resources devoted to the patent office and the adoption of a deferred examination policy, the Canadian system allows patent applications filed in the Canadian patent office to have an average pendency of 79-80 months from the date of filing to the date of issue or rejection of the patent.²⁷⁷ In comparison, in the United States Patent Office, the average pendency for a patent application from the date of filing to issue is 27 months.²⁷⁸ Assuming that identical originating Canadian and United States patent applications are filed on the same day, on average the Canadian application will issue 46.3 months – 3.9 years – after the corresponding US patent.²⁷⁹

The Canadian patent office takes advantage of its long pendency to utilize the work performed by other patent offices – primarily the USPTO, but also the

²⁷⁷ Campbell interview, *supra* note 281. This length reflects policy choices, not only in terms of the resources provided to the Canadian patent office, but also by choosing to have a deferred examination system with a five year period of deferral.

²⁷⁸ See footnote 145 (“The Growing Complexity” and “Valuable Patents” and United States Patent and Trademark Office, *Performance and Accountability Report for Fiscal Year 2004*, at p. 2 (available at <http://www.uspto.gov/web/offices/com/annual/2004/2004annualreport.pdf>) (accessed May 6, 2005). The pendencies for the last few years, reported at page 23, are: 24.7 months (2001), 24.0 months (2002), and 26.7 months (2003).

²⁷⁹ 79.5 months less 33.24 months = 46.26 months. Note that this example and use of averages is likely to be misleading, as it does not take into account the fact that most Canadian applications are filed a year earlier in the United States, and the effects of deferred examination. The actual average pendency gap between the United States and Canada for the same applications is likely to be higher; and for applicants that take full advantage of the deferral possibilities, the average gap is likely to be above five and a half years.

European Patent Office.²⁸⁰ Most Canadian patent applications claim priority from a foreign patent application. By deferring examination of the Canadian patent application, the applicant can prosecute and issue the corresponding foreign patent before the USPTO (or other foreign office). The applicant can then amend the claims of the Canadian application to match the allowed claims in the foreign application, while directing the attention of the CIPO Examiner to the issued foreign patent. Typically, this is done when requesting examination of the Canadian patent, or after receiving the first substantive review of the allowability of the patent application from CIPO.

CIPO's policy is not to duplicate unnecessarily the work of a foreign patent office.²⁸¹ An experienced CIPO Examiner,²⁸² faced with a patent with claims amended to match a set of foreign allowed claims, will typically perform a limited supplemental search to see if he can find prior art not considered by the foreign Examiner (primarily, the Examiner will search the database of Canadian patent applications, as the Canadian filing date of a patent application filed by a different applicant describing the same or a similar invention may trigger various consequences under the Canadian *Patent Act*). Assuming that no new prior art is found, the Examiner will rely on his general familiarity with the prior art, the

²⁸⁰ See J. Van Zant, "Proposals for Reducing Patent Costs in Canada" (1999) 15 C.I.P.R. 167 at 170. While the USPTO generally has a good reputation, the EPO specifically is recognized for its examination of chemical and pharmaceutical applications.

²⁸¹ The following description is from an interview with David Campbell (October 16, 2002).

²⁸² As part of the training process, new Examiners are not allowed to rely on foreign prosecution, and must perform a full search and examination of the claims. As the Examiner gains experience, he is allowed to rely on foreign prosecution, as described in this section.

foreign Examiner²⁸³ and perhaps a quick review of the cited art to consider whether, in his judgment, the foreign-allowed claims appear reasonable.²⁸⁴ If they are reasonable, the Examiner will typically allow the claims.²⁸⁵ In contrast, an Examiner faced with a stand-alone application will perform a full search for prior art and consider the claims in detail, a task which typically is considerably more time-consuming.

It should be emphasized that this approach creates savings for the patent office, but also for the applicants. In part, this is reflected in lower fees – as with many other patent offices, the Canadian patent office is self-sustaining from fees paid by patent applicants. However, patent applicants also use this system to reduce their private costs for legal or patent agent counsel. It is commonplace for both Canadian and American patent applicants to file first in the United States and obtain an evaluation of patentability from the USPTO, which has the general reputation of being the world’s foremost patent office both for the quality of issued patents and the speed with which applications are processed.²⁸⁶ Having

²⁸³ This procedure is common enough that CIPO Examiners become familiar with the work and reputations of their counterparts in the corresponding art areas in the USPTO.

²⁸⁴ The claims will also be examined to ensure that they conform with Canadian-style claiming rules.

²⁸⁵ In all cases, the Examiner will check to see if formal requirements are met in the application, i.e. no incorporation of other documents by reference, and no disallowed claim formats such as omnibus claiming. Generally, these formal requirements are effectively non-substantive.

²⁸⁶ See R.V. Jackson, “Filing Patent Applications Abroad – Cost-effective Editing of Canadian or U.S. First-filed Applications” (1991) 7 C.I.P.R. 346; D.S. Wainwright, “Patent Filing Strategy – Consider Filing More Often, Faster, and in Canada First” (1997) 14 C.I.P.R. 61 at 61, 69; J.S. Baggott, “International Issues in Intellectual Property: A Canadian Perspective” (2000) 17(1) C.I.P.R. 199 at 201; R. Hirshhorn and J. Langford, *supra* note 209 at p. 5, 11, 18, and 22.

obtained a set of patentable claims from the USPTO, the applicant, if it is in its interest, can simply put these claims in its back pocket, take the maximum period of deferral in Canada to defer costs and wait to see if any advantages arise to warrant an attempt to obtain different or broader claims in Canada.²⁸⁷

An interesting point is that this sort of cooperation – which is widespread – is arranged in an informal manner. This suggests the high value that is placed on reducing duplication in patent prosecution. It also suggests that states can to some extent better arrange their affairs if they can avoid the high transaction costs of formal agreement – an application of the Coase theorem in the international context.²⁸⁸

More recently, CIPO and the USPTO have announced a program called the “Patent Prosecution Highway Pilot Program”, under which an applicant whose patent application that has been found allowable in one office may request their application in the second office to be advanced out of the normal

Note that the “general reputation” mentioned here is comparative and dependent upon the standards used in other countries: i.e. the USPTO has the reputation of being quick, doing a good search to find prior art, and determining the resulting allowable claims, relative to other patent offices. It is also an observation that many foreign patent offices are willing to give considerable weight to the opinions of the USPTO examiners. It is not a judgment on whether the USPTO is doing an acceptable job from a policy point of view, or in all subject areas.

²⁸⁷ To some extent, the patent applicant can also rely on provisional rights (Patent Act s.54(2)), under which a patent owner can recover “reasonable compensation” for actions occurring after the publication of the application and before issue of the patent which would have constituted infringement if the patent had issued on the publication date. However, there is very little case law on this provision, and it is commonly thought to have two significant limitations: (1) “reasonable compensation” is suspected to be less than a full measure of damages, and (2) it is assumed that compensation can only be awarded for activities that would have infringed both the patent claims as they issue and the claims in the published patent application. Given the uncertainty surrounding this provision, it is questionable whether it has a significant practical affect on the behaviour of patent applicants.

²⁸⁸ The Coase theorem generally holds that in the absence of transaction costs, parties would rearrange their affairs to increase their welfare regardless of the liability rules in place. See R. Coase, “The Problem of Social Cost” (1960) 3 J.L. & Econ. 1

queue and given an early examination.²⁸⁹ The claims must be the same or similar to the allowed claims. The applications in the second office are still examined according to the national laws, and there is no specific guarantee of any special consideration apart from the accelerated examination; however, this implicitly invites the examiner in the second office to rely on the search and examination performed in the first office. The pilot project will run until January 28, 2009.

This is only a minor tweak to the pre-existing system at CIPO. However, it is a major change of attitude at the USPTO, which traditionally has given no weight to foreign searches or examinations. The Canadian/United States Prosecution Highway is one of a number of similar temporary pilot projects entered into by the USPTO with the Japanese Patent Office, UK Patent Office, the Korean Intellectual Property Office and IP Australia. From the USPTO's point of view, the experiment will determine "if the program improves quality and efficiency and reduces the workload at the USPTO."²⁹⁰ There are also temporary Patent Prosecution Highway pilot projects underway between the Japanese Patent Office and the patent offices in Korea, Germany and the UK.

²⁸⁹ See "Patent Prosecution Highway Pilot Program between the Canadian Intellectual Property Office and the United States Patent and Trademark Office" (<http://www.cipo.ic.gc.ca/epic/site/cipointernet-internetopic.nsf/en/wr01221e.html>)

and

([http://www.cipo.ic.gc.ca/epic/site/cipointernet-internetopic.nsf/vwapi/PPH_Notice-e.pdf/\\$FILE/PPH_Notice-e.pdf](http://www.cipo.ic.gc.ca/epic/site/cipointernet-internetopic.nsf/vwapi/PPH_Notice-e.pdf/$FILE/PPH_Notice-e.pdf))

(both accessed April 21, 2008)

²⁹⁰ See "USPTO Expands Patent Prosecution Highway Network to Canadian, Korean Patent Offices" (<http://www.uspto.gov/web/offices/com/speeches/08-04.htm>) (accessed April 21, 2008)

v. What is at stake? The costs of Pendency

It would be misleading, however, to assume that allowing high pendencies worldwide with accompanying opportunities for free-riding is a solution with no costs. Canada has essentially lowered the cost of running its patent office by maintaining quality but sacrificing the speed with which Canadian patent applications are processed. While the assessment of the effects of high pendency would vary from country to country (and in Canada there are mitigating considerations), generally high patent application pendency creates costs for society.

A quick or informal assessment of patent prosecution might assume that it is always in the patent applicant's interest to have the patent issue as soon as possible in order to maximize the effective term of the patent.²⁹¹ However, there are many reasons for patent applicants to prefer a delay in the prosecution and issuance of patents:

- To defer and lower prosecution costs
- To evaluate the commercial value of the patent
- To “target” competitors’ products

²⁹¹ Recall the default rule (TRIPs Agreement, *supra* note 92, Article 33) that a patent by expires 20 years from its filing date. Delays in the issuance of the patent thus reduce the time (from the issue date to the expiration date) for which a patent may be fully enforced. While patent statutes in various countries might allow the patentee to obtain some compensation for infringement in the period between publication and issue of the patent, this compensation is often limited and the ability to collect may be reliant upon the claims in the published patent application being similar if not identical in scope to the issued claims.

TRIPs is the Agreement on Trade-Related Aspects of Intellectual Property Rights, April 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, LEGAL INSTRUMENTS - RESULTS OF THE URUGUAY ROUND vol. 31; 33 I.L.M. 1144, 1197 (1994).

- To draft stronger claims
- *In Terrorem* effects

The first two effects are socially beneficial and normatively desirable, while the last three reasons give the applicant greater leverage against potential competitors and are either normatively ambiguous, or unambiguously not in the public interest.

First, high pendency defers the costs of patent prosecution, including both the legal professional costs for the prosecution of the application and the fee charged by the patent office for issuing the patent. In addition, assuming that high pendency implies a later initiation of prosecution, applicants will be better able to evaluate the practical feasibility and commercial value of the applied-for technology and decide whether it is worthwhile to incur the costs of prosecuting and issuing the patent. Normatively, allowing patent applicants to defer costs and the decision to proceed with prosecution is in the public interest, in light of the scale of patent prosecution costs and the uncertainty surrounding the worth (to society or the patentee) of any particular patent application.²⁹²

However, high pendency may also improve patent applicants' strategic position versus their (potential) competitors. As long as the patent application is pending, the patentee may lie in wait and see what competitive products are brought into the marketplace before finalizing his claims.²⁹³ The patent applicant

²⁹² Mossinghoff and Kuo, *supra* note 3 at 529 report that in the pharmaceutical industry it costs between \$750,000 and \$1,000,000 (US) to obtain "comprehensive worldwide protection for an important chemical compound, and that figure is growing at a rate of 10% each year."

²⁹³ As put in one article:

can then draft claims specifically targeted to catch his competitors, generally through two approaches: broader claims, or picture claims. If a competitor's product does not fall within the wording of the claims in his filed patent application, the applicant can pursue a broader claim which will catch the competitor's product.

More subtly, if the competitor's product only arguably falls within the claims of the patent application but more definitely falls within the scope of the invention described in the application, the applicant can add a claim which is narrower than the full scope of the invention but which clearly catches the competitor's product.²⁹⁴ These claims are often called "picture claims" because they draw a picture of the competitor's product.²⁹⁵ Picture claims are much easier to draft than general, broad claims: while drafting a claim broad enough to catch all potential embodiments of an invention is a daunting challenge,²⁹⁶ drafting a claim to catch a specific, known embodiment is a relatively straightforward task. As a further benefit, these "picture claims" are usually stronger in terms of validity before a court than the broader claims in the same

"In today's world of rapidly expanding technology, using a deferred examination procedure would benefit an applicant greatly since he could wait up to seven years to see if any competitors are using his invention before spending any more money prosecuting a patent on it."

John C. Lindgren and Craig J. Yudell, *Protecting American Intellectual Property in Japan* (1994) 10 Santa Clara Computer & High Tech. L.J. 1 at 19.

²⁹⁴ In this case, the patent agent will be concerned with whether the competitor's product would be regarded as infringing the claims of the patent before a court. Whether the patent examiner would regard the competitor's product as infringing a claim is only a minor point.

²⁹⁵ Ideally, the patent agent actually has a sample of the competitor's product sitting on his desk for reference while he drafts the claim.

²⁹⁶ As per Brown J. of the U.S. Supreme Court, "The specification and claims of a patent, particularly if the invention be at all complicated, constitute one of the most difficult legal instruments to draw with accuracy." *Topliff v. Topliff* (1892) 145 U.S. 156 at 171; cited with approval in *Sperry v. State of Florida* (1963) 373 U.S. 379 at 383.

patent, and are more likely to be allowed by an examiner.²⁹⁷ Strategically, it is advantageous to write a claim that clearly catches the competitor's product and argue its validity before the Examiner, an *ex parte* proceeding in respect of the competitor, rather than argue the proper scope of an even slightly ambiguous general claim before a court, where the competitor will be able to lead evidence and make arguments.

In both cases, claims may even be added to a patent application to cover ideas that were first thought of by the competitor rather than the applicant, as long as the Examiner believes that the claims fall within the scope of the invention as disclosed in the original application.²⁹⁸

In addition, even in the absence of active competitors, the extra time gained through slow disposal of patents allows applicants to better understand their inventions, allowing them to draft better claims that capture a greater portion of their maximum potential valid claims. Under a fast examination office such as the USPTO, the applicant's patent agents are often placed in the position of drafting and prosecuting claims to cover commercial embodiments of an

²⁹⁷ As a narrow claim, picture claims are less likely to be held invalid for obviousness or anticipation.

²⁹⁸ For example, in *Gentry Gallery v. Berkline Corp.* (1998) 134 F.3d 1473, 45 USPQ2d 1498 (Fed. Cir.), the patent application as filed described reclining chairs separated by a "console," with controls for the chairs located on the console. After a competitor introduced a similar product with the controls not mounted between the chairs, the plaintiff added claims to his application which did not limit the location of the controls to the console. The inventor "admitted at trial that he did not consider placing the controls outside the console until he became aware that some of [the plaintiff's] competitors were so locating the recliner controls" at p. 1479.

In the *Gentry Gallery* case, the claims where controls were not limited to the console were ruled to be invalid as not disclosed in the initial application. However, this result depended heavily on the specific facts of the case. If there was more ambiguity in the initial application or about when the inventor had thought of placing the controls elsewhere, a different result may have been reached.

invention that has not yet been commercialized, and perhaps is not even far along the road to commercialization or well understood.²⁹⁹ The longer the issue of the patent is delayed, the more opportunity the applicant has to gain experience with the invention and its potential commercial embodiments, giving its patent agents a better perspective to draft broader and/or more enforceable claims.³⁰⁰

Finally, delays in issuing patents can increase *in terrorem* effects. A company, faced with a competitor's patent application³⁰¹ that has not yet been finalized and where the claims are still subject to broadening (or narrowing) amendments, can be in a difficult position: it is often difficult to anticipate what the applicant will regard as his invention, and usually difficult to assess the bounds of the claims of a patent that will issue from the application.³⁰² In other words, a patent application automatically provides a greater albeit more uncertain

²⁹⁹ It is fairly easy to avoid this problem by filing continuation applications: however, this results in additional fees which the client may be unwilling to incur.

³⁰⁰ Whether under the US approach of literal infringement and infringement under the doctrine of equivalents, or the Commonwealth approach of the purposive construction of claims, it is considered easier to catch alleged infringers if the impugned device falls within the literal text of the claims, as opposed to being similar to the text of the claims.

³⁰¹ Recall that patent applications are generally published 6 to 18 months after the filing date of the application in a national office, after which competitors of the patent applicant may become aware of the existence of the application and the claims in the application as filed. Competitors may also become aware of pending applications even if they are not published – for example, if the patent applicant sends them a copy as a warning, or if a corresponding application is published in a foreign jurisdiction. Some companies will routinely monitor publications of patent applications in relevant technologies or by important competitors as a matter of corporate intelligence.

³⁰² This is the very reason that claims were introduced into the patent system in the first place. Historically, patents simply consisted of a description of the invention. Competitors looking at an issued patent, or even a defendant in a patent trial, did not know what aspect of the described invention the patentee would focus on as the key invention that the defendant had appropriated. Please see footnote 126.

potential threat to competitors than a patent with finalized claims.³⁰³ Unissued patent applications create uncertainty in national economies, increasing the risks involved for competitors of the patent applicant doing business in the jurisdiction and impeding investment.³⁰⁴ Companies are typically wary of investing considerable sums in developing manufacturing facilities, advertising, and

³⁰³ While it is sometimes possible to re-issue a patent with broader claims, such broadening re-issues are generally disfavoured, and are only available for a short time after the patent's original issuance.

³⁰⁴ As noted by Ayres and Klemperer, *supra* note 108, additional uncertainty in patent enforcement can sometimes be in the public interest. However, as Ayres and Klemperer themselves state at 987:

“Although this Article begins with a reductive mathematical model to show how uncertainty and delay can induce limited amounts of infringement, the purpose is not to propose a system in which the validity of patents is uncertain and only resolved *ex post*.”

The Ayres and Klemperer analysis does not take into account the effect of costs upon follow-on or third-party innovation. In the specific case of patent examination, the cost to third parties of the increased uncertainty “in the form of researching prior art, obtaining patent opinion letters, and revising research plans to avoid masses of uncertain but potentially valid patents --are simply too high. Best to apply their insights in other areas [Ayres & Klemperer] explore...”: R. Merges, “As Many As Six Impossible Patents Before Breakfast: Property Rights For Business Concepts and Patent System Reform” (1999) 14 Berkeley Tech. L.J. 577 at 593 (see footnote 44). See also A. Rai, “Engaging Facts and Policy: A Multi-Institutional Approach to Patent System Reform” (2003) 103 Colum. L. Rev. 1035 at 1080 (“Emphasizing the virtues of early confidence in patent rights may appear to do little more than confirm what is already conventional wisdom.”) and 1084-1085 (“The model put forward by Ayres and Klemperer is, however, quite unrealistic.”)

Within their framework, Ayres & Klemperer posit a difference between “Type I” uncertainty, which increases the chance that valid patents will not be enforced, and “Type II” uncertainty, which increases the chance that invalid patents will be enforced (see pp 987-988). They limit their results in favour of increased uncertainty to Type I uncertainty, and disfavour increased Type II uncertainty. In the case of a country which relies on foreign patent offices for a first examination, such as Canada, increased pendency would have the effect of increasing Type II uncertainty (the chance that invalid patents will be enforced) more than Type I uncertainty, since the applicant can usually rely on being able to easily obtain the protection already granted in a foreign country, and is looking for an opportunity to strategically introduce broader claims in the country where the prosecution is still open.

Furthermore, in the specific case of Canada, one needs to consider uncertainty in a North American context, See footnotes 325 to 345 and accompanying discussion.

creating distribution systems if they may be cut off by a later-issuing patent, even if they can have a few years of production and sales before the patent issues.

In terrorem effects are unambiguously not in the public interest. However, whether targeting competitors' products or drafting stronger claims is coincident with the public interest is open to some debate. In countries such as the United States where the domestic patent system dominates foreign patent systems in the provision of incentives to innovate, the desirability of these two effects is similar to the classic question of the optimal level of benefits to be provided by the patent system. One can argue that allowing the patentee to capture as much of the social benefit of his invention as possible, and allowing him every opportunity to do so, provides the correct level of incentive for innovation and is thus in the public interest.

However, even in the United States there is strong and recent judicial reasoning emphasizing the notice function of the claims.³⁰⁵ While one can still argue that patentees should be able to appropriate as much of the benefit of their invention as possible, the modern judicial view constrains what is "possible" by requiring the patentee to reduce economic uncertainty by making clear to his competitors what is and is not covered in his patent at a relatively early stage in the life of the patent.³⁰⁶

³⁰⁵ For example, see *Festo Corporation*, *supra* note 216.

³⁰⁶ The applicant is given an opportunity to prosecute his claims and issue his patent, but should not then be allowed at trial to broaden the scope of his patent beyond the scope of the claims. As put evocatively by Binnie J. of the Supreme Court of Canada in *Free World Trust*, *supra* note 214 at para. 51, courts will not assist a patentee who has suffered "a self-inflicted wound." The public is entitled to rely on the words used provided the words used are interpreted fairly and knowledgeably.

Please also see the discussion in footnote 304.

In contrast to countries like the United States, in countries (such as Canada) where (a) the incentives to invent provided by the domestic patent system are dominated by the incentives to innovate provided by foreign patent systems, and/or (b) patents are overwhelmingly owned by foreign patentees, it would seem that targeting competitors' products and drafting stronger claims is much less likely to be coincident with the public interest.³⁰⁷

In summary, achieving informal cooperation by lengthening pendency comes at a cost to states and the general public. There are probably limits to the reduction in prosecution costs that can be achieved in a welfare enhancing manner.

vi. Recent Changes in Formal Cooperation (under the Patent Cooperation Treaty)

This divergence of the interests of states versus patent applicants forces the issue of capture of regulators to the surface. While most applicants would likely prefer to have patentability quickly assessed in one jurisdiction to gain information on allowability and its likely scope, companies would otherwise like a high level of control over patent prosecution, controlling the timing of patent prosecution and issue. As noted above, this is not necessarily in the interests of states as promoters of their citizens' domestic welfare, whose interest is in quick

³⁰⁷ Recalling that in such countries, the dissemination-inhibiting and incentive-providing functions of the domestic patent law are largely decoupled.

prosecution and the issue or rejection of patents, within the constraints of costs and quality.³⁰⁸

However, recent trends in formal international cooperation in patent prosecution have mirrored informal cooperation by tending to sacrifice the speed of patent examination while transferring control of the patent examination process to the applicant. An example is the recent changes to the Patent Cooperation Treaty system as urged by the European Patent Office (EPO).

Under the Patent Cooperation Treaty (PCT),³⁰⁹ an international application may be filed which can serve as a simultaneous filing in many national intellectual property offices. This international application has to be perfected or “brought into the national phase” within prescribed time limits in each national office, or else is considered abandoned by that national office. This allows patent applicants to delay much of the spending on national patent prosecution, and if necessary withdraw from the patenting process before incurring many costs.

In 1999, the PCT system involved a trade-off for patentees – they could delay their entry into national patent systems by 20 months, but in return the International Searching Authority (ISA) produced a search report that could be seen by competitors, and used by national patent offices in their examination.

³⁰⁸ See discussion above, text associated with footnotes 288 to 307 regarding the costs of pendency. Placing control of the pace of patent prosecution in patentee hands increases the undesirable impact of high pendency, since companies will rationally choose to slow or speed prosecution to further their own interests, which do not generally correspond with the public interest.

³⁰⁹ *Patent Cooperation Treaty*, June 19, 1970, 28 U.S.T. 7645, 1160 U.N.T.S. 231. See also J. Erstling and I. Boutillon, “The Patent Cooperation Treaty: At the Center of the International Patent System” (2006) 32 Wm. Mitchell L. Rev. 1583; “Patent Cooperation Treaty” at (<http://www.wipo.int/pct/en/treaty/about.htm>) (accessed March 20, 2008); *PCT Applicants’ Guide* (<http://www.wipo.int/pct/guide/en/index.html>) (accessed March 20, 2008).

The deadline to enter national patent systems could be extended to thirty months from the priority date, but in return a first round of examination – the International Preliminary Examination – would occur, which could be adopted by national patent authorities as their first office action on the merits.³¹⁰ Recall that the patent offices in most countries are not as well equipped as the Canadian Intellectual Property Office, and even less the USPTO or EPO. By relying on the International Preliminary Examination Report prepared by a large patent office such as the EPO or USPTO, these offices – typically in less developed or developing countries – have access to a quality of search and a round of examination they might not be able to generate internally. This ability to rely on the larger patent offices is presumably a component of making patent law acceptable to many poorer countries worldwide.

Three patent offices worldwide provide the backbone of the international patent system – the USPTO, EPO and Japanese Patent Office – and the EPO is crucial to the functioning of the PCT system as the International Searching Authority (ISA) and International Preliminary Examination Authority (IPEA) for many countries.³¹¹

However, in 2000 the European Patent Office, overwhelmed with PCT and its own domestic workload,³¹² began to short-circuit this process by issuing

³¹⁰ The first office action on the merits is generally the first response to the patent application dealing with the substance, rather than the formalities, of the application.

³¹¹ Under the PCT, if a country's national patent office is not an ISA or IPEA, it must contract with an ISA or IPEA to perform international searches and examinations for that country's nationals.

³¹² Since there are strict deadlines to provide the ISR and IPEA under the PCT, the EPO had to meet these deadlines by postponing its domestic work as the European patent office. As a result, it was commonly thought that the quickest way to have a

International Preliminary Examination Reports that were computer generated repeats of the International Search, and only providing a substantive examination if requested by the applicant. Following this, the Patent Cooperation Treaty states modified the PCT scheme, giving applicants thirty months from the priority date to enter the national phase with only the requirement of an International Search, making the International Examination optional.³¹³

While it is true that many companies did not particularly want an international preliminary examination report (cited as one of the justifications for the modification of the PCT system), this is expressly putting the applicant as “client” ahead of the public interest.³¹⁴ Early searches and examination are not a favour done for companies that want them: rather, they should be seen as necessities in the public interest that are sometimes unfortunately delayed due to

European patent approved was to go through the PCT process rather than file directly with the EPO, since the European examiners were forced to give a PCT application priority over European applications.

³¹³ The national phase is an informal phrase for patent prosecution in the national patent offices subsequent to the “international phase” before the ISA and IPEA.

For an explanation of the priority date, see footnote 121.

³¹⁴ There is a split among patent agents as to the proper strategy to be pursued under the PCT. Under the old system, many applicants requested an IPER to gain the extra 10 months of deferral (to 30 months), but ignored the actual IPER itself, ignoring the first written opinion and the opportunity to respond to the Examiner’s objections. Generally, this was justified on the grounds that the IPER wouldn’t be seen as persuasive in the countries where they wished to obtain patent protection, or simply on the grounds that they didn’t wish to incur the costs. It should also be noted that the PCT process is relatively “new” to US patent lawyers, which may also explain some of the reluctance to deal with the IPER.

In contrast, many other applicants take full advantage of the opportunity to respond to the examiner in the preparation of the IPER, reasoning that if a positive IPER could be gained, it would be persuasive in the patent offices of the countries they were interested in (which, if the IPEA was the EPO, naturally included the EPO). Costs could be saved by only making one amendment and argument before the IPER Examiner, rather than repeating the same amendment and argument before multiple offices.

practical resource constraints.³¹⁵ Also, the suggestion that the International Preliminary Examination Reports were “ignored” by national patent offices appears to be somewhat of an Euro- and US- centric view. For US applicants wishing to obtain a patent in Europe, it is true that a USPTO generated International Search Report and International Preliminary Examination Report would not be relied upon by the EPO. Similarly, for European applicants an International Search Report and International Preliminary Examination Report generated by the EPO would not be relied upon by the USPTO. However, as noted above many other patent offices did rely on the International Preliminary Examination Reports,³¹⁶ and if the International Preliminary Examination Authority in question was the European Patent Office, the EPO itself certainly relied on its own opinion.³¹⁷

As has been noted several times in the domestic context, most particularly in the United States, there has been a recent shift by patent offices to regard patent applicants as clients to whom patent offices are providing a service. There has been a move by governments facing regimes of fiscal restraint to make patent offices self-sustaining by placing the entire burden of funding the offices on fees charged to patent applicants, whether through procedural reforms

³¹⁵ Indeed, rather than making the production of an IPER optional, it is arguable that the applicant should be forced to make a good-faith response to the Examiner in the preparation of the IPER. In a domestic patent office, an applicant who simply ignored the Examiner’s letters would quickly find his application to be abandoned. Ideally, the IPER could be regarded as a substitute for the first round of examination in domestic patent offices.

³¹⁶ The author can report receiving office actions after national phase entry that either expressly or implicitly adopted the IPER from Turkey, Russia and Australia.

³¹⁷ Recall that the European Union is a very large and popular market for the obtaining of patent protection – probably second only to the United States.

or through an actual recasting of the patent office as an independent corporation. For example, the Canadian Intellectual Property Office (CIPO) became a Special Operating Agency in 1993, self-financed through the fees charged for its services.³¹⁸ This has changed the culture of patent offices, as applicants have begun to be considered “clients” and the patent offices as providing a service to them.³¹⁹ As recently stated by US Patent Commissioner Rogan:

We try to treat this like a business in the sense that we follow what [the former Patent Commissioner] started, making the culture of the office refer to our applicants as customers. That is an important mental framework in which to get employees to operate.³²⁰

There has been a general unease among commentators about this change. For example, Mark Lemley has written:

The PTO during the 1990s “reengineered” itself, declaring its mission to be “helping our customers get patents.” E.g. U.S.P.T.O. Fiscal Year 1999 Corporate Plan, available at <http://www.uspto.gov/web/offices/ac/comp/budg/plan>. This is an indefensible position for a quasi-judicial administrative agency that is trusted with representing the public interest in deciding whether to issue patents.³²¹

³¹⁸ See B. Doern, *Global Change and Intellectual Property Agencies*, (New York: Pinter, 1999) at 30-32. CIPO doesn’t only handle patents, but also trade-marks, industrial designs and copyrights.

³¹⁹ For example, see CIPO 2000-2001 Annual Report *infra* note 332 at p. 5:

The Canadian Intellectual Property Office (CIPO) is committed to delivering high quality products and services that meet clients’ needs. Understanding clients’ current and future needs is an essential step towards continuous service improvement.

³²⁰ Speech by James Rogan at the ABA/IPL Summer Conference in Philadelphia, PA, June 27, 2002, page 4 of 8 (available at www.uspto.gov/web/offices/com/speeches/speech2002jun27.htm) (accessed August 16 2002).

³²¹ M. A. Lemley, *Rational Ignorance at the Patent Office*, 95 Nw. U.L. Rev. 1495 (2001), fn 3.

The convergence of these trends – increased demands for patents, increasing costs of running patent offices, and the privatization of the world’s patent offices - combined with increasing costs to companies for the prosecution of each patent application,³²² has resulted in pressure being applied by applicants to rationalize and reduce the costs of the worldwide patent system. Increasingly, there is pressure on patent offices to harmonize laws and procedures, and to reduce the duplication of work in various patent offices. However, one has to ask whether the changes made are always in the public interest, or instead in the private interest of the patent applicants who are the “clients” of the patent offices. Similarly, there is some question of whether international cooperation in patent prosecution – the negotiation of which is dominated by officials from various national patent offices – is driven by the public interest of the involved states, or influenced by the private interests of patent applicants.

³²² Recall that individual patent applications are now more likely to be prosecuted in more countries.

b. Integration-driven Harmonization

Generally, patent harmonization and international cooperation – the two topics of this thesis – are linked. The previous parts 3a and 3b discuss why patent harmonization might occur through international cooperation although such moves may result in less direct satisfaction of local preferences.

However, a country may move to make its patent laws more similar to those of another country independent of international cooperation. In this thesis, the idea that a state legislates to satisfy its own citizens' patent law preferences is generally assumed; and of course these domestically welfare enhancing preferences might well change to become more similar to another country's over time for a number of reasons – including the international transmission of ideas changing states' perceived self interest, or changes in a state's underlying industry mix, human capital or strength in innovation.

This chapter discusses a specific factor that might drive harmonization: the integration of national economies across borders, which has accelerated in the last few decades.³²³ This has changed the ground-rules for patent law for some countries, particularly small industrialized countries.

As discussed above, patent laws inevitably both encourage and inhibit innovation. The overall welfare effects of a national patent law depend on its implementation, but also on the economic situation of a country. The international integration of economies changes the underlying economic situation

³²³ Leebron, *supra* note 22 at 78-81, discusses a number of other general reasons that might drive unilateral harmonization.

of a country, and thus potentially changes the details of a welfare enhancing patent law.

As national economies integrate with their neighbours under globalization (which is not relied on above, and is a different way of relaxing the assumption of autarchy), the differences in patent laws between countries starts to create differences not only in terms of profit flows and politics (as discussed above), but also in terms of investment.³²⁴ Differences in patent laws may inefficiently (or at least unnecessarily) influence investment in innovative activities between countries. Such differences in patent laws will have their greatest effect if there is the disparity in size between the integrated countries: the smaller country will be particularly vulnerable to disadvantageous differences, while the larger country will be insulated against detrimental differences. Harmonization or even unification of patent laws is one way to reduce differences and minimize this effect.

To examine this, I will return again to the example of Canada and the United States, which as already discussed is an outstanding example of a smaller country integrated economically with a larger neighbour. While patent laws are only one of many innovation policies that affect investment, there is the potential for Canadian patent laws to tilt North American investment decisions towards or away from the Canadian economy relative to the United States economy.

³²⁴ Investment matters in terms of reciprocity as well, but to a much more limited extent. It depends on the industry, shipping and efficient plant sizes, but in a competition for investment in industry to supply the North American market it is likely that the main players will be Canada, the U.S. and Mexico, and not Japan or the European Union.

i. Example – Canada and the United States

The Canadian economy is a modern industrialized economy, marked by a high level of integration with a partner of disparate economic size, the United States. While Canada and the United States have long formed a close trading relationship, economic integration between the countries has accelerated since the signing of the Free Trade Agreement in 1989³²⁵ with increased volumes of trade and investment flowing in both directions across the border. Cross-border trade has topped 1.9 billion CAD per day in recent years.³²⁶ While Canada does not have a small economy, with a gross domestic product in 2002 of approximately 730 billion USD, the Canadian economy is overshadowed by the United States economy, with a gross domestic product in 2002 of approximately 10.4 trillion U.S. dollars.³²⁷ The increased integration of the Canadian and United States economies coupled with the ease with which many Canadians can sell in the U.S. marketplace has resulted in approximately 232.4 billion USD of the Canadian GDP, or approximately 32% of Canadian GDP, consisting of products

³²⁵ This Agreement was later replaced by the North American Free Trade Agreement (NAFTA) in 1994. North American Free Trade Agreement between the Government of Canada, the Government of Mexico and the Government of the United States, 17 December 1992, Can. T.S. 1994 No. 2, 32 I.L.M. 289 & 605

³²⁶ See *NAFTA @10*, *supra* note 201

³²⁷ *Ibid.*

exported to the United States.³²⁸ In many sectors of the economy one can argue that there are effectively combined United States and Canadian markets rather than markets separated by the border.³²⁹

In essence, in North America we have two patent regimes operating within one integrated economic space, with Canada having a much smaller economy than the United States. The important implication for this thesis, from a domestic welfare point of view, is that the combination of economic integration and disparate size dictates that Canadian patent policy should strive to ensure that Canadian patent law and procedures do not create levels of economic uncertainty, or provide legal and economic power to patentees, that are greater in Canada than the United States.³³⁰ The speed with which patents are granted and the scope of claims granted needs to be considered in this light.

To illustrate this, hypothesize two manufacturing facilities making identical products, one located in the United States and the other in Canada, that proportionately serve the North American marketplace - 90% of the sales are in the United States, 10% in Canada, for both facilities.³³¹ A third party has a Canadian patent application and an issued United States patent. The identical

³²⁸ *Ibid.* The ease with which Canadian companies can enter the US marketplace is not only legal ease under NAFTA, but also the ease with which many Canadians can understand and blend into the US culturally.

³²⁹ For example, see Courchene, T.J., *From Heartland to North American Region State: The Social, Fiscal and Federal Evolution of Ontario*, University of Toronto, Centre for International Studies, 1997. More generally, it has been suggested British Columbia is part of an economic region incorporating Oregon, Washington State and Alaska; that Ontario forms a region with the Great Lakes states, the Prairie provinces and Prairie states form a region, and that the Maritime provinces form an economic region with the Northeastern states.

³³⁰ This assumes realistic proposed changes to Canadian patent practice that are not so radical as to prompt a response from state or private international actors. See *ibid.*

³³¹ Reflecting a roughly 10:1 population ratio between the United States and Canada.

products of the two manufacturing facilities avoid the U.S. issued patent, but could conceivably be caught by broader claims issuing in the Canadian patent (or alternatively are caught by broader claims in an issued Canadian patent). The United States facility's exposure to the possible negative effects from broader claims of the Canadian patent application is 10% of sales – not inconsequential, but the bulk of this facility's production is unaffected by a Canadian patent. In contrast, the Canadian manufacturing facility faces a potential liability on 100% of its manufactured products – all of its products that are manufactured in Canada are governed by the Canadian patent system whether or not they are eventually sold in Canada or the United States. This disadvantages the Canadian facility in any competition for investment, whether inter- or intra-company.

Given the ease of cross-border movement, shipping and marketing and disparate market size, greater legal/strategic power granted by the Canadian patent system compared to the United States patent system for equivalent patents creates a distinct incentive to locate Canada/United States economic activity physically within the United States. Greater legal/strategic power can arise from claims of greater scope in issued Canadian patents versus corresponding United States patents, but also arises whenever a United States patent is issued while the corresponding Canadian patent remains unissued. For even a Canadian owned company in this sort of situation, the rational response may be to minimize the impact of Canadian patents and patent applications by locating operations in the United States.

Reflecting this reality, any evaluation of the performance of the Canadian patent granting system (including pendency) must compare its performance primarily to the performance of the United States patent granting system.

This suggested focus on the impediment to innovation effects of Canadian patent law is buttressed by noting that Canadian patents are overwhelmingly held by foreign patentees. For example, in the year 2000, United States applicants received 6,098 of 11,740 issued Canadian patents, 52% of the total; and 96% of Canadian patents were granted to non-Canadian applicants (in contrast in 2000, only 45% of US patents were granted to non-US applicants).³³² In great part, the Canadian patent system concerns foreign interests exercising patent rights in Canada, making the study how Canadian patents deter innovation³³³ crucial to the Canadian public interest.

As noted in the previous section, Canadian patent applications take much longer to issue or be rejected than corresponding United States patents, resulting in a pendency gap between the Canadian and United States patent systems.

In the United States Patent Office, the average pendency for a patent application from the date of filing to issue is 27 months, and the average pendency from the earliest priority date to issue is 33.24 months.³³⁴ Meanwhile,

³³² Canadian Intellectual Property Office, *Strengthening Canada's Innovative Capacity*, Annual Report 2000-2001 (available at strategis.gc.ca/sc_mrksv/cipo/corp/allreport-e.html) (accessed November 23, 2004)

at pp 34, 36 and 44-46; and "Patent Counts by Country/State and Year - Utility Patents – January 1, 1963-December 31, 2003", United States Patent and Trademark Office, Office of Electronic Information Products/PTMD.

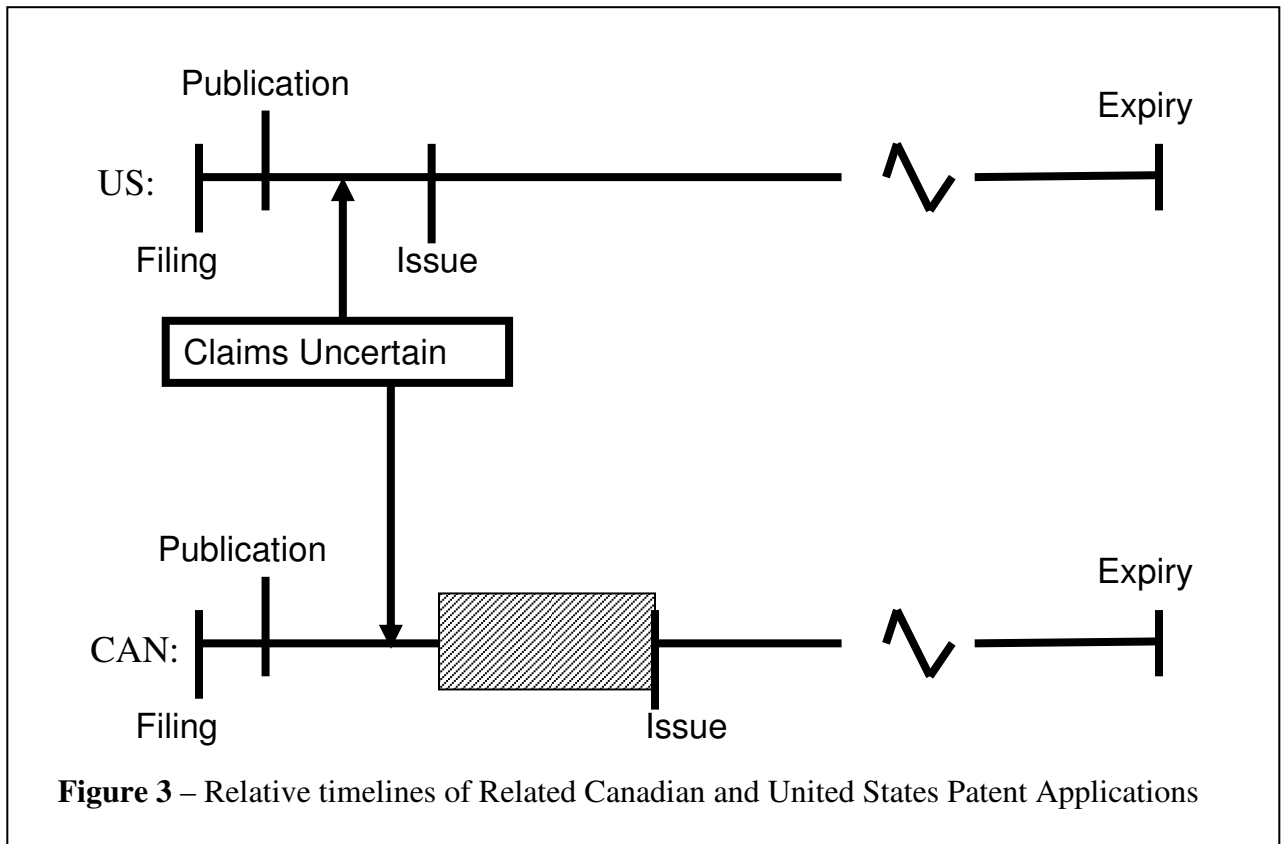
³³³ Recalling that all patent systems both deter and promote innovation.

³³⁴ See footnote 278; Allison and Lemley, *Growing Complexity* *supra* note 145 at 87 and 98; and Allison, Lemley, Moore and Trunkey, *Valuable Patents* *supra* note 145 at 459.

patent applications filed in the Canadian patent office have an average pendency of 79-80 months from the date of filing to the date of issue or rejection of the patent.

The effects of this difference in pendencies is illustrated in Figure 3. Assuming that identical originating Canadian and United States patent applications are filed on the same day, on average the Canadian application will issue 46.3 months – 3.9 years – after the corresponding US patent.³³⁵ This additional length of time is represented by the gray box in Figure 3.

³³⁵ 79.5 months less 33.24 months = 46.26 months.



However, this use of averages is likely to be misleading in light of the large number of applicants who take the maximum time before requesting examination. For filers who file first in the United States, then file 12 months later in Canada while maintaining the priority date as allowed under the *Paris Convention* (a very common practice), and then wait the maximum 60 months before requesting examination in Canada, the gap between the issue of the patent in the United States and Canada may be even greater.³³⁶ Assuming that

³³⁶ *Paris Convention, supra* note 68. Alternatively, the applicant may file a Canadian application via the PCT, but in any case the final deadline to request examination will still fall on the same date.

the US application issues 33.24 months from the U.S. filing date and the Canadian patent issues 44 months from the request for examination date, the Canadian patent will issue 82.76 months or 6.9 years after the United States patent.³³⁷ Even if we assume that patent applications for which a request for examination is filed at the end of the five year deferred examination period issue faster on average than other applications (due to reliance by CIPO on foreign prosecution) and deduct a year of pendency, the Canadian patent will still issue 70.76 months or 5.9 years after the United States patent – still a considerable period of time.

These estimates of the pendency gap are not precise: the underlying Canadian and United States statistics vary by whether the pendency is measured from the date of filing or priority date, and vary by whether they include abandoned applications as well as applications that mature into an issued patent. However, even being cautious, it seems indisputable that the pendency gap between the Canadian and United States patent offices is at least three and a half years on average, and at least five and a half years on average for applicants who choose to delay prosecution.

In either case, the presence of unissued Canadian patents increases uncertainty in the Canadian marketplace.

ii. Absolute and Relative Uncertainty

As noted in the previous section, the uncertainty arising from high pendency has a number of negative effects on a national economy in any case.

³³⁷ 12 months + 60 months + 44 months – 33.24 months = 82.76 months.

However, the specific effect of higher uncertainty relative to the United States patent situation may be seen by distinguishing between measures of absolute and relative uncertainty.

A competitor looking at identical U.S. and Canadian patent applications in the period before either the Canadian or United States patent issues faces the maximum absolute uncertainty about the scope of the patent in both Canada and the United States. After the United States patent issues, the uncertainty regarding the scope of patent protection in the United States falls to the normal default level inherent in any issued US patent.³³⁸ This explains why the USPTO and U.S. industrial concerns have recently placed a greater emphasis on improving patent quality than the pendency of the applications. U.S. corporations have to live with uncertainty created by low quality patents for the life of the issued patent – from roughly 27 months after filing or 33 months from the priority date to 20 years from the date of filing. Since the USPTO average pendency time is short by international standards and the USPTO historically has chosen not to rely on the efforts of other offices, a U.S. focused analysis is likely to conclude that patent quality is presently more important than pendency concerns.³³⁹

³³⁸ If a continuation application is filed so that the applicant still has an equivalent live application, the level of uncertainty regarding that patent family still falls to some extent, as a competitor can look at the issued patent and depending on the circumstances can perhaps assume that future patents will issue with similar claims. Once the last continuation application issues, the uncertainty for the whole family then falls to the normal default level for an issued and non-continued US patent. Note that even including continuations, the average pendency for issued US patents is approximately 33 months measured from the priority date: see Allison & Lemley, *supra* note 145.

³³⁹ Once again, this ignores the United States practice of continuation applications, which can allow an applicant to keep a corresponding patent application alive after the

In Canada, after the United States patent issues and before the corresponding Canadian patent issues, the absolute level of uncertainty regarding the Canadian application will also fall – a Canadian competitor can look at the issued United States patent, and assume that the Canadian patent will issue with the same claims.³⁴⁰ However, there will always be a risk that the Canadian patent may issue with different claims that are of greater scope, or at least worded differently to catch different embodiments.³⁴¹ Until the Canadian patent application issues, there will be a reservoir of relative uncertainty regarding the patent situation in Canada compared to the United States.

For example, a company may file a patent application in both Canada and the United States, having a US patent issue after 33 months.³⁴² A competitor designs a product that the competitor thinks avoids the claims of the issued US patent. Even if the patentee is unable to obtain further or broader claims in the United States in an attempt to catch the competitive product,³⁴³ it can contact its

issue of a US patent, raising levels of uncertainty. See M.A. Lemley and K.A. Moore, “Ending Abuse of Patent Continuations” (2004) 84 B.U. L.Rev. 63

³⁴⁰ See R.H. Saunders, “Does Canadian Patent Practice Impair Technological Development?” (1999) 15 C.I.P.R. 265 at 268.

³⁴¹ Recall that a differently worded Canadian claim can give a greater strategic/legal advantage to the patentee even if it is not broader than (or even if it is narrower than) a U.S. claim. See footnote 297 and accompanying text.

³⁴² The average pendency for US patent applications from the priority date, including the effects of continuation practice. See Allison & Lemley, *supra* note 145

³⁴³ As noted above, it is common for Canadian applications to exist long after the last of their US counterparts have issued, given the discrepancies in pendencies (however measured) between the U.S. and Canada.

There will also be situations where, even though there are live equivalent US and Canadian applications, a broader claim can be introduced in Canada but not in the United States. For example, if the US company is still prevented from effectively claiming the Canadian device in their US patent application due to file wrapper estoppel. This paper will not explore situations under which broader claiming may be possible in Canada than the United States. However, it is relevant to observe that

Canadian lawyers, who (if the Canadian application has not yet issued) have a live application and can try to write a claim specifically designed to catch the competitive product in Canada.

This relative uncertainty caused by the delay in the issuance of Canadian patents after their United States counterparts is an important policy consideration.³⁴⁴

As a general or theoretic matter, it is difficult to state whether a high level of absolute uncertainty or a lower level of relative uncertainty has a greater negative impact on Canadian domestic welfare, as absolute and relative uncertainty act on the Canadian economy through very different mechanisms. Two linked decisions by an investor are at play: (a) a decision on whether to invest in innovative activity in North America at all, and (b) a decision on where to make the investment. In the period before either a Canadian or United States patent issues, absolute uncertainty acts as a deterrent to innovative activity by competitors equally in both Canada and the United States. Uncertainty at this

whenever such situations exist, long periods of pendency in Canada give patent applicants a greater time period in which to exploit such situations.

File wrapper estoppel is a US doctrine under which a US patentee is unable to argue at trial that a patent should cover something that the patentee admitted during patent prosecution is not covered by its patent. The patentee may have affirmatively stated that the thing is not covered by his patent, or it may have surrendered the subject-matter implicitly in its claim amendments in response to challenges by the patent office. There is no doctrine of file wrapper estoppel in Canada.

³⁴⁴ Note that the analysis of Ayres & Klemperer, *supra* note 108, does not contradict this. While in some cases increased uncertainty of patent enforcement may be welfare-enhancing, in the case of patent prosecution increased uncertainty is not welfare-enhancing (see footnote 304). This will apply in the case of relative uncertainty as well: while Canada will have relatively more Type I and Type II uncertainty (using Ayres and Klemperer's terminology) than the United States, Type II (increased chance that invalid patents will be enforced) uncertainty will exhibit a greater relative increase than Type I (increased chance that valid patents will not be enforced) uncertainty.

point may well deter a competitor from engaging in innovative activity at all in the Canada/United States economic space, but in this sense the patent situation will not favour investment in either country (although an investor might well be affected by the anticipation of future relative uncertainty).³⁴⁵

In the period after the United States patent issues and before the corresponding Canadian patent issues, the level of absolute uncertainty surrounding the patent situation in both countries will fall. This will encourage investment in innovative activity in both countries – and analyzing Canada as an autarky, the situation in respect of innovation in Canada appears to be necessarily improved. However, an investor must also decide where in North America to make his investment, and it is here that greater pendency in the Canadian patent system compared to the United States drives investment towards the United States and away from Canada.

Although relative uncertainty (as used above) arises during the period between the issue of the United States and Canadian patents, the economic effects of relative uncertainty are not limited to that time frame. Even in the period before a United States patent issues and the level of absolute uncertainty in Canada and the United States are the same, an investor will anticipate that there will be a future period of relative uncertainty in Canada, providing an incentive to locate North American innovative activity in the United States. Furthermore, in many industries companies are repeat players in the patent game, and will be concerned with the cumulative relative uncertainty of a string of

³⁴⁵ Recall that innovative activity as used in this thesis has a broad meaning, and is not just limited to research and development.

patent applications extending indefinitely into the future, rather than with one or two specific applications.

Since absolute and relative uncertainty act on the decision on whether to invest in Canada in different ways, it is difficult to say whether absolute or relative uncertainty should be a greater concern for Canadian policy makers.

Recall the discussion above about the bellwethers of patent office performance – quality of issued patents, speed of issue and costs. Unlike in the United States, the functioning of the patent system in Canada cannot be evaluated merely by looking at the functioning of the Canadian Patent Office. The absolute levels of uncertainty – or, correspondingly the speed with which a somewhat finalized set of claims for a Canadian patent application become available to the public, and the quality of that set of claims – is usually set by the USPTO. In this sense, the USPTO already operates as a North American Patent Office, and short of a drastic revision in the operation of the Canadian patent office, the absolute uncertainty of patent applications in Canada is largely controlled by United States, not Canadian, policy-makers.

iii. Implications

As discussed above, patent laws or regulations in Canada that grant patentees additional economic or strategic power versus American patent law, or create additional relative uncertainty versus the United States, act to the detriment of the Canadian economy. This detriment arises from Canada's

economic integration into the United States, and decision-making by investors on whether to invest in Canada or the United States in patent-sensitive industries.

In this situation, a country such as Canada could carefully scrutinize its patent laws, eliminating features that give undue advantages to the United States, and revisiting the issue as circumstances change. Presumably, this would be the optimal approach.

However, this optimal approach may well be impractical. Creating a domestically welfare maximizing patent law is expensive, not only consuming money and requiring sufficient capabilities, but also needing political attention and political capital. Undoubtedly, this might vary from country to country, but it seems likely that in many cases the political will to continuously amend domestic patent laws in a thoughtful manner will not be present.

In such cases, it may make sense from a policy point of view for a country to voluntarily harmonize its patent laws with those of its economically dominant neighbour(s). This will minimize any problems associated with a diversity of patent laws between the states, but will also imply that the harmonizing state is voluntarily foregoing the better satisfaction of local preferences. However, it may well be preferable for a state to capture actual benefits from harmonization as opposed to hoping for a theoretical satisfaction of local preferences that is never realized. Nevertheless, this step would also require political attention and the spending of political capital, and this sort of deep voluntary harmonization may be unrealistic.

More realistically, the response of the smaller integrated state may be to align and integrate patent practices with those of the larger state to the extent it is possible without invoking the political process. In application, then, this integration-based motivation for harmonization begins to blend with the reduction of duplication in patent prosecution and recognition of foreign patentees grounds for harmonization, and it may be difficult to characterize exactly why a harmonization measure occurs. Nevertheless, the integration driven basis for harmonization is theoretically distinct.

Recap – Part I: Well-Founded Harmonization

In Part I, this thesis has set out the framework that governs well-founded harmonization, arguing that there are strong reasons to preserve diversity in national patent laws, but also strong reasons for harmonization. It has argued that there are two separable bases for international harmonization requiring cooperation: the recognition of foreign patentees, and the reduction of duplication in patent prosecution. The severability of these bases is a key issue, as the existence of either two or one motivations for harmonization controls the forms of possible harmonization and impacts on the later analysis of international institutions.

Part I has also introduced many of the complexities surrounding international harmonization, including the existence of both informal and formal cooperation, the question of undue regulatory influence by private parties, and the possible difference between theoretical and achievable results.

Finally, it has tried to ground the framework in the economic theories of the effects of patent law and innovation policy more generally. Well-founded harmonization should reflect the subject-matter of the harmonization.

a. Relation to the Benefits of Harmonization

As discussed in the introduction, from a welfare point of view there are four possible benefits to constructing legal regimes of a larger size, including:

- (1) lower per capita costs of providing public goods;

- (2) the larger size of the economy;
- (3) regional insurance; and
- (4) redistributive schemes.³⁴⁶

The first benefit, the lower per capita costs of providing capital goods, is clearly applicable to the reduction of duplication in patent prosecution. Since the various national patent offices are performing roughly similar work for identical applications, the opportunity exists to lower the per capita costs of providing patent examination services for both states and applicants. This basis for cooperation is separable from the recognition of foreign patentees basis for cooperation because in practice both states and applicants are generally satisfied with an imperfect examination.

The remaining three benefits of harmonization – the larger size of the economy, regional insurance, and redistributive schemes, are all implicated in the “recognition of foreign patentees” basis for cooperation.

The larger size of the economy is the most obvious benefit, and largely underlies the theory in section 3(a). By cooperating via national treatment and minimum standards, states of all sizes and levels of innovation can increase the incentives provided to their domestic entrepreneurs and/or can obtain greater profit flows for their world-first innovators. While these underlying motivations may differ in importance between states, access to larger aggregate markets is an obvious benefit to this sort of cooperation.

³⁴⁶ Alesina and Spolaore, *supra* note 44 at 3-4. A fifth benefit, greater military power, is not applicable in the case of patents.

Regional insurance is a more obscure but theoretical and practical benefit. Patents are skewed in distribution, with a relatively few patents placing the owner in a position to extract large monopoly profits, and with an unpredictable distribution that does not observe the law of large numbers.³⁴⁷ In a system of national relaxed autarchies with flow of information over borders – the situation where each country grants patents only to its domestic entities – each country with a patent system, no matter how small or how strong in imitation, runs the “risk” that it will be the jurisdiction saddled with a disproportionately valuable patent, incurring great deadweight costs on its own consumers while providing large windfall positive externalities. Cooperation via national treatment spreads the risk, theoretically providing for all countries to experience losses and send profits to the country with the “winning lottery ticket” invention. Indeed, this aspect of cooperation is so successful that countries’ interests change from a risk of skew invention to a position of hoping that the disproportionately valuable patents are invented and owned by their domestic companies.

Finally, international cooperation allows for redistribution schemes to be used. Although not discussed at great length in Part I, systems of international cooperation allow states which strongly benefit from harmonization to provide transfers to states that are reluctant to cooperate.³⁴⁸ By doing so, states providing the transfers can spread the cooperative regime to more countries.

³⁴⁷ Also, note that the relationship of cost to develop an invention or innovation to the value of the innovation or invention is unpredictable and often disproportionate.

³⁴⁸ Alesina and Spolaore, *supra* note 44 at 4, 53-67.

Transfers also can often reinforce the cooperative scheme by motivating states whose reasons to cooperate are marginal to comply.

Within patent law itself, the opportunities for redistribution schemes are limited, since the international profit flows related to patents form the underlying base for cooperation and are not readily available for additional transfers.

Looking ahead to Part II of the thesis, an important role of international institutions is the facilitation of linking patent law commitments to transfers of various sorts. Within the World Property Organization and other United Nations agencies, the provision of technical assistance to developing countries and arrangements to promote technology transfer are arguably redistributive schemes of this sort. However, these schemes are limited in impact, and the most widely accepted account of why governance of patent law shifted in part to the World Trade Organization is that it permitted the developed countries to offer additional transfers to developing countries in return for their joining an enhanced international patent system.³⁴⁹

³⁴⁹ As noted later in the thesis, this has led to difficult questions about the use of coercion to obtain the developing countries' cooperation, along with questions as to the developing countries' competence to understand the ramifications of the TRIPs Agreement and whether the developed countries have fulfilled the commitments they made during the Uruguay Round.

b. A Political Question, and International Institutions

Except at the extremes (negligible gains from harmonization, or negligible costs for a loss of diversity), the approach of balancing the costs and benefits of harmonization does not specify specific details of harmonization. Instead, this thesis has examined the content of gains from harmonization and the costs of a loss of diversity in light of theories about patent law and innovation theory. While some normative conclusions may be drawn about specific issues, the actual content of harmonization is a matter of bargaining between states within the international institutional structure. As Trachtman states:

“This article argues that it is impossible to generalize about the benefits of competition in regulation, and that a number of factors must be considered. These factors cannot be simply totted up by a researcher who then provides definitive policy advice. ... Therefore, the design of regulatory competition, like other decisions about regulation, is best left for political determination, informed by scholarly analysis of these factors.”³⁵⁰

The political determination of the content of international patent cooperation is influenced by the applicable international institutional structures, which are considered in Part II.

c. Content of Minimum Standards

Since patent law harmonization is fundamentally a political matter, and given the almost infinite permutations of schemes for cooperation available, this

³⁵⁰ J. P Trachtman, “Regulatory Competition and Regulatory Jurisdiction” (2000) 3 J. Int’l Econ. L. 331 at 331.

thesis will not attempt to recommend any particular minimum standards or form of cooperation. However, some observations may be made about the content of minimum standards.

Some minimum standards would seem to be necessary to permit international cooperation either to reduce duplication or to allow the recognition of foreign patentees. These are necessary to stabilize the meaning of “patents” – to stabilize the meaning of the subject of international cooperation - although the agreement may be formal or informal. Standards in this category would include requirements for novelty and obviousness, some sort of remedy for infringement (injunctions and/or damages), a concept that the invention protected is defined in written claims that are subject to interpretation, and a general description of the invention, would seem to be necessary.

In another category are minimum standards that are perhaps necessary from a practical point of view for patentees to achieve benefits from international cooperation. To foreshadow the next chapter, an example is the right of priority, which allows a patent applicant who has filed an application in a first country in the Paris Union to file an equivalent application in other Paris Union countries within a year of the first filing, and have the later applications treated as filed on the same date as the first application.³⁵¹ Given the limitations on international communication in the late 1800's, such a provision was perhaps necessary for any international patent agreement at that time centred on the recognition of foreign patentees to be meaningful.

³⁵¹ See footnotes 410 to 412 and associated text.

Agreement on additional minimum standards may well facilitate cooperation. Examples of these would be agreement on the grounds for compulsory licensing, or minimum standards for utility, or common criteria for deciding whether information is “prior art” and thus may be used to assess novelty and obviousness.

Thinking about the content of minimum standards also helps to clarify how international cooperation in patent law differs from international cooperation in other areas, such as labour, environmental, or copyright law. Most directly, patents are implemented as a form of property. This raises core issues of identifying when the property has been possessed, defining the boundaries of the rights claimed, making these boundaries clear and predictable and available to the public, and ensuring that there is some assurance of the validity of the property.³⁵² Moreover, these boundary issues are also central to the welfare effects of the policies at issue.³⁵³

Less obviously, there are significant differences in respect of minimum standards even compared to other forms of “property”, arising from uncertainty in capturing central property-related patent law concepts in a text. Although every area of law probably has legal and concepts that defy textual capture, it is unusual in a property system for the central issues of property identification to be so ill-defined. A useful comparison may be made to copyright, a similar form of intellectual property. Copyright has at least as many ill-defined concepts as patent law: the idea-expression dichotomy, fair dealing or use, parody, or the

³⁵² Bessen and Meurer; *supra* note 57 at 6-11

³⁵³ Bessen & Meurer, *supra* note 57 at 11-12, 29-45

originality requirement.³⁵⁴ However, these concepts only come into play in a small minority of actual use of copyrights in society. In most cases, there is no serious question that the creator has created a work eligible for copyright; no serious question regarding the bounds of what has been created; and no serious question of whether or not the use in question is infringing.³⁵⁵ In contrast, whether the alleged inventor has actually made a patentable invention, and if so the bounds of the invention eligible for protection and whether the activity in question falls within those bounds, arise in almost every case a patent is exploited. As a result, it is easier for states to cooperate internationally on copyright law than on patent law. This is reflected in the differing agendas for copyright-reliant versus patent-reliant industry: copyright-reliant companies, having already secured worldwide acceptance of copyright laws with the automatic granting of rights upon creation, are primarily concerned with issues of the enforcement of existing copyright laws. In contrast, patent-related companies are still faced with issues about the existence and practical meaning of patents in many countries.

The inability to capture central patent law standards in a written text suggests that it may be impossible to set meaningful minimum standards or harmonize patent laws without the implementation of a common appeals court internationally. How can countries know to precisely what they have agreed, or

³⁵⁴ See J.E. Cohen, L.P. Loren, R.G. Okediji and M.A. O'Rourke, *Copyright in a Global Information Economy* (New York: Aspen Law & Business, 2002) at 90-107; 491-571; 512-513; 75-90.

³⁵⁵ Implicit in Bessen and Meurer: "The world of movie production and copyright clearance provides a glimpse of what the patent system should aspire to in terms of notice and clearance. ... experienced Hollywood producers manage copyright clearance without much trouble." (pp 48-49)

whether they or someone else is complying? This has many implications, but a primary implication is that in the absence of political will to implement some sort of common appeals system, there are likely to be limits on the depth of international harmonization or minimum standards that can be achieved in the patent field.

PART II: THE ROLE OF INSTITUTIONS

Two of the three bases for harmonization discussed above (the recognition of foreign patentees and the reduction of duplication in prosecution) require active international cooperation; however, they differ considerably in the type of cooperation required for a desirable outcome. Different international institutions would be needed to facilitate cooperation. In the final two chapters 5 and 6, the differing conditions for cooperation are discussed for each of the bases for harmonization, and it is argued that each type of cooperation is best served by a different international institution. Chapter four begins by placing this analysis in context by discussing the historical dimensions of international patent law and the development of related international institutions.

4. *History*

Chapter four stands between Parts I and II of this thesis, which is reflected in this chapter's two purposes. First, Part I (chapters 1, 2 and 3) has made a number of claims about international patent cooperation, building a theoretical model to understand the drives underlying harmonization. Chapter four seeks to show that the theoretical model from Part I may be reconciled with the historical record. Although a number of examples have been given in chapters 2 and 3 to illustrate specific points, the history of conflict and cooperation in the international patent field has not yet been discussed. It is important to evaluate whether the theoretical model is concordant with observed events.

The second purpose of chapter four is to introduce Part II of this thesis, which discusses the main international institutions that affect international patent law. While the subject-matter and interests at hand help determine the institutional structure applied in a given area, the institutional structure used to address international issues also affects the quality of international cooperation in a field. This chapter also introduces observations from the historical record that will underpin the discussion of international law in chapter five.

These points will be seen in the later review of the history of the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO). This chapter, however, begins before the *Paris Convention* of 1883.

a. Pre-Paris Convention

Patent law has a long history in European civilization, including European offshoots in other continents. This thesis will not cover this history, but instead will begin in the mid-1800's, when patent laws of various sorts were in place in most major European countries (including Britain, Germany, Russia and France), the British Empire and the United States.³⁵⁶ In many countries, patent laws had been introduced as a simple reflection of European laws by colonial

³⁵⁶ For a more detailed history, see S.P. Ladas, *Patents, Trademarks and Related Rights: National and International Protection* (Cambridge: Harvard University Press, 1975) at 58; E.T. Penrose, *The Economics of the International Patent System* (Baltimore: Johns Hopkins Press, 1951) at 2-18. Most famously, Venice enacted a patent law to encourage inventors in the 1470s.

administrations (and later were automatically continued after independence).³⁵⁷

These patent laws varied widely, depending upon domestic interests, the domestic legal context (especially in respect of administrative law), and legal tradition (common law, civil law, Germanic). For example, patent laws varied in subject matter, with some countries excluding patentability for natural products (Spain), luxuries or chemical products (Germany), medicine (all countries except the United States, England, Chile and Brazil), medical products but not methods of manufacture (Sweden), food (Germany, Austria) (Sweden allowed patents only for process-related food patents) and beverages (Austria).³⁵⁸ Patent laws varied in terms of the applicable foreign prior art, using all world-wide prior art, or only printed or published foreign art, or excluding foreign prior art altogether.³⁵⁹ They varied in the length of the patent grant, and whether the system was a registration or examination system.³⁶⁰ They varied in terms of whether a patentee had an obligation to work a patented invention in the country (all

³⁵⁷ R.L. Okediji, "The International Relations of Intellectual Property: Narratives of Developing Country Participation in the Global Intellectual Property System" (2003) 7 *Sing. J. Int'l & Comp. L.* 315 at 321-322

³⁵⁸ Ladas, *supra* note 356 at 21-22. In countries following civil law traditions, the list of patent eligible subject matter tended to be enumerated in detail, while in common law countries subject matter tended to be open ended. In civil law countries, it thus took a positive act to add new categories of subject matter. Exclusions tended to reflect local industries and politics.

³⁵⁹ Ladas, *supra* note 356 at 22. Excluding foreign prior art allowed "patents of importation" in the English patent system, under which the communication of a new foreign invention was sufficient for the grant of a patent. See H.G. Fox, *Monopolies and Patents: A Study of the History and Future of the Patent Monopoly* (Toronto: The University of Toronto Press, 1947) at 45, 55, 230 and Penrose, *supra* note 356 at 73.

³⁶⁰ Ladas, *supra* note 356 at 23. In a registration system, a patent application is simply examined for form and then issued as a patent. Questions of validity and the scope of exclusion were dealt with a later date, typically in the courts. In a prosecution system, more commonly seen today, a patent application is examined for validity (including a negotiation of the claims or scope of exclusivity) before it is issued.

countries except Britain and the United States), and whether importation of a patented object was permitted. In all cases, there was great diversity in the formalities needed to obtain a patent, a resident agent needed to be appointed by non-resident applicants, and a failure to closely follow formalities resulted in the loss of the patent.³⁶¹

There was an absence of any serious international patent cooperation, and it was difficult for an inventor to obtain useful patent rights for an invention in many countries. Countries varied in terms of how they treated foreign applicants. Many patent laws invalidated applications filed after an equivalent application was filed in a foreign country.³⁶² Under the absolute novelty standard in place in most countries, any revelation of the subject-matter of an invention – even if required by law - immediately barred the filing for a patent on that invention.³⁶³ Many patent laws required the working of the invention within the country as a condition of the continued validity of the patent.³⁶⁴ Some countries also had different terms for patents granted to non-residents and residents.³⁶⁵ Finally, some countries tied the term of a patent granted to a non-resident to the existence of the corresponding patent in the owner's home state.³⁶⁶

This was also a time when many countries were engaged in domestic debates about the desirability and specifics of their patent laws. Without going

³⁶¹ Ladas, *supra* note 356 at 22

³⁶² Ladas, *supra* note 356 at 22

³⁶³ Ladas, *supra* note 356 at 23

³⁶⁴ Ladas, *supra* note 356 at 25-26

³⁶⁵ Ladas, *supra* note 356 at 24

³⁶⁶ Ladas, *supra* note 356 at 24

into great detail, the arguments can be gleaned from earlier in the thesis: a debate about the unproven economic efficacy of patent laws, the relevance of the “rights” of the inventor, and a suspicion that patent laws act only in the interest of foreign or privileged domestic interests.³⁶⁷

The primacy of domestic interests and the idea that patent law was a strategic tool for domestic industrial policy combined to create national patent regimes that made it difficult for the nationals of any country to obtain meaningful international patent protection. This is somewhat similar to the model of a relaxed autarchy discussed above. On a similar note, in England patents were available to persons who introduced inventions into England regardless of whether they were an inventor, which, combined with working requirements, encouraged technology transfer into England and the growth of new industries.³⁶⁸

However, commercial interests in a number of countries had an interest in obtaining protection for their industrial property (generally, trademarks and patents) in foreign markets.³⁶⁹ This was part of a more general trend towards reducing uncertainty in international business through international cooperation. The desire for foreign patent protection motivated their national governments to

³⁶⁷ See, for example, R.A. Macfie, *The Patent Question Under Free Trade: A Solution of Difficulties by Abolishing or Shortening the Inventors' Monopoly, and Instituting National Recompenses: A Paper submitted to the Congress of the Association for the Promotion of Social Science at Edinburgh, October, 1863*, 2nd Ed, (London: W.J. Johnson, 1964); May, *The WIPO infra* note 367 at 15-16.

³⁶⁸ See Fox, *supra* note 359 at 45, 55.

³⁶⁹ Albeit often expressed by invoking the rights of man or inventors (Penrose, *supra* note 356 at 44). Industrial property is more fully defined as “patents, utility models, industrial designs, trademarks, service marks, trade names, indications of source or appellations of origin, and the repression of unfair competition” in Article 1 of the *Paris Convention*, *supra* note 68.

negotiate treaties to facilitate this process.³⁷⁰ Attempts were made to alleviate these problems by negotiating bilateral treaties covering industrial property. In form, these treaties ensured that the domestic industrial property systems only facilitated the granting of rights to applicants from those countries that extended equivalent privileges in return. Thus, the initial international intellectual property norm was one of reciprocity. Reciprocity is a form of harmonization. However, for points of law not specifically covered by the treaties, these treaties generally required national treatment, which is respectful of diversity.

Ladas lists sixty-nine bilateral treaties in force in 1883 dealing with industrial property and signed between 1859 and 1883. These took many different forms: treaties of commerce, consular conventions, declarations, arrangements and conventions. These dealt with trademarks, sometimes with industrial designs and less often trade names, and became more sophisticated over time, moving from mere declarations on reciprocity to more detailed standards dealing with registration, formalities, and even validity and forfeiture. As the level of detail in these bilateral treaties increased, the reliance on reciprocity as opposed to national treatment increased.

Similarly and simultaneously, an intricate network of bilateral copyright treaties arose.³⁷¹ This effort was led by France, where the idea of universal rights for intellectual property was strongly held³⁷² and which had a considerable

³⁷⁰ Ladas, *supra* note 356 at 12

³⁷¹ S. Ricketson, *The Berne Convention for the Protection of Literary and Artistic Works, 1886-1986* (London: The Centre for Commercial Law Studies, 1987)

³⁷² France was the only country pre-1886 to unilaterally protect works published abroad. See Ricketson, *supra* note 371 at 22.

interest in protecting the writings of its authors, and the United Kingdom.³⁷³ The first bilateral international copyright agreement was between Austria and Sardinia in 1840.³⁷⁴ By 1886, France was a party to 13 agreements, Belgium 9, Italy and Spain at 8, United Kingdom and Germany at 5.³⁷⁵ Typically, these treaties were based on national treatment with some minimum standards or concepts.³⁷⁶ It was common to have differences between countries as to the formalities necessary to obtain copyright protection, and also to such issues as the types of works protected, the duration of protection, the rights recognized and restrictions on those rights.³⁷⁷

This system of bilateral treaties had many drawbacks. Bilateral treaties by their nature are unstable, and are relatively easy to cancel, and in some cases were repeatedly cancelled.³⁷⁸ They can lead to situations where a state signs a bilateral treaty providing terms superior to a previous treaty with a third country,

³⁷³ Ricketson, *supra* note 371 at 27.

³⁷⁴ There were also dozens of bilateral copyright treaties between German states in the 1820s. Ricketson, *supra* note 371 at 25-26.

³⁷⁵ G.B. Dinwoodie, W.O. Hennessey and S. Perlmutter, *International Intellectual Property Law and Practice* (Newark: LexisNexis Matthew Bender, 2001) at 521.

³⁷⁶ Ricketson, *supra* note 371 at 29.

³⁷⁷ Ricketson, *supra* note 371 at 8-17 and 35.

³⁷⁸ Ricketson, *supra* note 371 at 35-36:

“[The task of ascertaining an author’s entitlement to protection in a country other than his own] was complicated by ... the uncertain duration of many conventions. ... [M]ost conventions were linked to some broader treaty of trade or commerce which had been negotiated at the same time. In many other cases, this was indirectly so, these conventions containing a clause providing that they should remain in force for a fixed period of time, for example, six years, and thereafter indefinitely, subject to a denunciation by either side by a year’s notice. As such denunciations would often occur at the time of renegotiation of a new treaty of commerce, this might mean the sudden loss of their rights for authors, and was therefore a continual source of uncertainty.”

upsetting the existing treaty partner.³⁷⁹ States tried to anticipate such problems through most favoured nation clauses, but these have been criticized as creating great uncertainty for private parties:

“... each day new conventions are signed; authors and artists should always be aware of any progress made; by the operation of this clause, their treatment may, in effect, be modified without their government being party to the arrangement.”³⁸⁰

Bilateral treaties also create uncertainty and discrepancies within the domestic economy, as the validity, scope and enforceability of the industrial property in question will come to depend on the nationality of the property owner, when he obtained the property and the terms of the bilateral treaty under which the owner is operating. Indeed, in some cases some foreigners (but not all) received superior protection to domestics.³⁸¹ Finally, intellectual property owners had to negotiate a maze of treaties to determine their legal position in various countries. Catalogues of bilateral treaties were published to allow intellectual property owners and users to determine their status of protection internationally.³⁸² As written by Dinwoodie et al.:

“Bilateral intellectual property agreements were generally based on the principle of reciprocity. In essence, each country would agree to protect intellectual property from the other country under its own legal system, but only to the same extent that the other country extended protection to the first country’s intellectual property. But by the late nineteenth century, it became clear that reciprocity had

³⁷⁹ More formally, the expectations of the existing treaty partner are upset. Most Favored Nation clauses were sometimes used, but comparing different aspects of two patent regimes to determine which was more favourable could be problematic.

³⁸⁰ A. Darras *Du Droit des auteurs et des artistes dans les rapports internationaux* (1887) at 556, translated at Ricketson, *supra* note 371 at 36.

³⁸¹ Ladas, *supra* note 356 at 49

³⁸² D.J. Gervais, “The Internationalization of Intellectual Property: New Challenges from the Very Old and the Very New” (2002) 12 *Fordham Intell. Prop. Media & Ent. L.J.* 929 at 935.

certain negative aspects: it was burdensome to apply, since it required determining the contents of the other country's laws; it discriminated against foreign right holders relative to national right holders; and the scope of protection for the same type of intellectual property could be quite different within the same country, depending on which country was its source."³⁸³

Or as put by Burger:

"A system of material reciprocity requires the courts of state A to interpret the laws of state B in order to determine whether country B gives adequate and reciprocal protection to an author from country A. Thus the courts in country B would, potentially, have to interpret the copyright laws from many different countries in administering international copyright relations -- a very complicated task indeed."³⁸⁴

As a result, the advantages to be gained through bilateral treaties were insufficient to overcome domestic opposition to harmonization and foreign ownership in the specific case of patents. Of the sixty-nine bilateral industrial property treaties signed by 1883, only two dealt with patents – and of these, one was between Austria-Hungary and Lichtenstein which was only a quasi-independent country, while the other, between Germany and Austria-Hungary, was signed after the drafting (but before final agreement) of the Paris Convention. The rest dealt with trade-marks, trade names and designs.

In summary, patent law was subject to pressure for early international agreement primarily due to national industrial interests, which sought to obtain protection for their intellectual property in other countries. This is consistent with

³⁸³ G.B. Dinwoodie, W.O. Hennessey and S. Perlmutter, *supra* note 375 at 79.

³⁸⁴ P. Burger, "The Berne Convention: Its history and Its Key Role in the Future" (1988) 3 J. L. & Tech. 1 at 9 (fn 45). See also Ricketson, *supra* note 371 at 24.

the idea that although patent law has a public purpose, it is implemented through private interests. However, the influence of national industrial interests in international cooperation was not enough to result in bilateral treaties for the recognition of foreign inventors.

b. The Paris Convention

The issue of international patent protection came to a head in the international exposition of 1873 in Austria. International expositions were of great importance in the 1800's, and a lack of adequate protection of foreign inventions in Austria caused a threatened boycott of the exposition, led by American and German interests.³⁸⁵ Specifically, even assuming the foreign entities did acquire Austrian patents covering their displayed products, under Austrian patent law they were required to begin manufacture of the product in Austria within one year of the patent grant or lose the patent.³⁸⁶ Even if manufacture was begun, American companies reported that the Austrian legal system required foreign companies to appear before a court to prove that manufacture of the patented product was begun, although the reports stop short of accusing the Austrian legal system of outright bad faith.³⁸⁷ In a diplomatic

³⁸⁵ C. May, *The World Intellectual Property Organization: Resurgence and the Development Agenda* (New York: Routledge, 2007) at 16

³⁸⁶ Ladas, *supra* note 356 at 59-60. See also New York Times, October 18, 1872, "The Vienna Exhibition: Appeal to American Exhibitors – Prospectus of the Exposition"

³⁸⁷ See article in *Scientific American* dated 23 December 1871, reproduced in USA, Congressional Papers, *Papers Relating to the Foreign Relations of the United States, 1872*, 42nd Cong., 3rd Sess., H of R, Ex Docs VI, part 1 at 48-49.

response, the Austrian government reported that it had always extended the one-year deadline to manufacture in Austria when requested, but insisted that the requirement for working in Austria was necessary to support domestic industry, pointing to similar provisions in the law of Germany and France.³⁸⁸ In response to these complaints, the Austrian government passed a special law to protect inventions displayed at the fair, providing one year of protection but insisting that protection beyond a year must come through the existing Austrian patent laws.³⁸⁹

More importantly, Austria (responding to pressure from German and Austrian patent attorneys and engineers³⁹⁰) also organized a congress of experts to meet in conjunction with the exposition to consider multinational cooperation in patent law.

Patent law was not the only topic subject to pressure for multilateral international cooperation at that time. The mid to late 1800's were an era of "internationalism", as improved communications and transportation technologies brought national communities and markets closer together.³⁹¹ Domestic interests – i.e. industrial interests - began to develop that wished to operate in multiple jurisdictions and wished to guarantee the legal context for international

³⁸⁸ Papers Relating to the Foreign Relations of the United States, 1872, 42nd Cong., 3rd Sess., H of R, Ex Docs VI, part 1 at 50-51.

³⁸⁹ Papers Relating to the Foreign Relations of the United States, 1872, 42nd Cong., 3rd Sess., H of R, Ex Docs VI, part 1 at 60-61.

³⁹⁰ May, *The WIPO*, *supra* note 385 at 16; Braithwaite and Drahos, GBR, *supra* note 18 at 59

³⁹¹ There was also the idea of progress through improvements in science and technology, particularly movement of people and goods and communication. In such an era, perhaps it is unsurprising that there is increased emphasis on the protection of new science and technology through patents. (might it be too strained to extend this to the present?)

transactions. Simultaneously, greater international travel and communication made it easier for ideas including inventions to spread, allowed higher levels of imitation. In response, some actors began to look to the international level rather than the domestic level for the furthering of their interests.³⁹² As a side note there are thus many parallels to the general situation leading up to the signing of the TRIPs Agreement more than 100 years later.³⁹³

There were many formal agreements for international cooperation from this time period. Reflecting the ideas from Part I of this thesis, the most successful attempts at cooperation tended to be in areas with high levels of benefits from harmonization and few benefits from diversity – often described as infrastructure or administrative fields. These include the Telegraphic Union (established in 1865),³⁹⁴ a Union for Wireless Telegraphy (established in 1906), the Universal Postal Union (established in 1874)³⁹⁵, the International Union of

³⁹² Furthermore, the idea was developing that by engraining in industrialized countries the habit of international cooperation and closer commercial ties, an international order could be established that would avoid conflict between states, whether at the relatively minor level of trade sanctions or the major level of war.

³⁹³ Compare to Bhagwati, *supra* note 17 at 21-22 “[I]ncreasingly, the integration of the world economy has made several more industries footloose than ever before, all facing fierce competition with a much reduced cushion for their competitive edge vis-à-vis their rivals abroad. ... In this situation, you can fairly expect those who are investing in and managing these industries to be extremely sensitive to any possibility of an “unfair” advantage gained by their foreign rivals: the slightest advantage enjoyed by them becomes suspect because it can be fatal. This situation implies that demands will be made... for harmonization of any elements of domestic policies that might be considered to give one’s rivals an edge in competition.”

³⁹⁴ There was a previous European-wide Union established in 1852 and smaller unions created in 1949 and 1950. P. Reinsch, *Public International Unions – Their Work and Organization – A Study in International Administrative Law* (Ginn and Company, Boston, 1911) at 17-18

³⁹⁵ There were earlier smaller agreements beginning from 1802. Reinsch, *supra* note 394 at 22

Railway Freight Transportation (established in 1892)³⁹⁶ , an Automobile Conference to establish standards for the granting of international road certificates (established in 1909), and at least three unions dealing with Navigation (the earliest being established in 1864 between Britain and France), and the Metric Union (established 1875).

These agreements and their negotiations may be generally described as “Public Unions”, being unions among states, and provided ideas and an institutional model that heavily influenced international patent law and the Paris Convention (perhaps unsurprisingly, as the 1878 patent law congress in Paris was held in the same building as various other groups establishing International Unions to prohibit trading in slaves, to protect literary property, and to establish the Red Cross). The choice of a Public Union is important from an institutional viewpoint. In general, joining a Public Union implied a commitment to common legislation on a particular subject (hence the name Union), whether at present or in the future. One of the roles of a union was to “establish positive norms for universal action.”³⁹⁷ In furtherance of this, a permanent organ was usually established, with powers at a minimum to call future diplomatic conferences, and usually to prepare drafts for negotiation. This permanent organ was designed to be independent from control of any particular state. This freed the permanent central organization to be able to formulate proposals and ideas independently of any particular state interest. Further to this, the Union and the permanent organ

³⁹⁶ A private union of railways had been established in Europe as early as 1847. See Reinsch, *supra* note 394 at 28.

³⁹⁷ Reinsch, *supra* note 394 at 130.

usually served the purpose (formally or informally) of facilitating information exchange and communication of views between interested communities in the various states, helping to generate agreement on international norms and convergence of national laws. Reinsch notes in 1911 that 45 public unions composed of states were in existence, thirty of which had administrative bureaus or commissions.³⁹⁸

Reflecting this institutional thinking, the aim of the 1873 Austrian congress on international patent law was explicitly to achieve harmonization through uniform patent legislation in all countries. The congress passed four resolutions affirming the natural right of the inventor and seven principles on which all patent laws should be based.³⁹⁹ It also created a permanent executive, with the mandate of seeking to have the principles carried into practice in various countries and, more importantly, to call from time to time meetings and conferences. As the Permanent Commission ended up being dominated by those in favour of harmonization, it created a very long and detailed proposal for legislative unification.⁴⁰⁰ The French government, which had taken responsibility for the organization of future meetings, rejected this proposal as unworkable.

³⁹⁸ Reinsch, *supra* note 394 at 4. The term “unions” was also used for similar private organizations.

³⁹⁹ This strong position may in part have reflected the participants having an interest in influencing debates about patent law in various countries, including their home countries.

⁴⁰⁰ The 1878 Paris congress had 484 delegates, 390 of whom were French. There was also representation from Germany, Hungary, Italy, Luxembourg, Norway, Russia, Spain, Sweden, Switzerland and the USA. Many of these were representatives from trade and professional organization. See WIPO publication no. WIPO/IP/UNI/DUB/04/1 M. Blakeney, “The International Protection of Industrial Property: From the Paris Convention to the Agreement on the Trade-Related Aspects of Intellectual Property (the TRIPS Agreement)” from the WIPO National Seminar on Intellectual Property for Faculty Members of Ajman University (Ajman, May 5-6, 2004) at 4.

The Commission then came back with a more modest proposal, centered on national treatment. This proposal was presented to the first of three Paris congresses, meeting in 1878,

A second congress was held in 1880, organized by the French government in Paris. This congress considered all industrial property rights, not just patents, and had a wider representation from countries than the Austrian meeting. It included 35 official delegations,⁴⁰¹ which were largely drawn from diplomatic backgrounds, not industrial property backgrounds as had previously been the case.⁴⁰² While the congress' starting point was the institutional structure of Public Unions such as the International Postal Union, which laid down principles for uniform legislation to be enacted by all countries, this was rejected vehemently by many delegates, primarily for reasons of domestic interest.⁴⁰³ Indeed, the suggestion that the congress lay down high level principles for domestic legislation resulted in representatives of Great Britain, Russia, the United States and Uruguay stating that they had no authorization to enter into such discussions, while representatives of the Netherlands and Switzerland refused to participate.⁴⁰⁴

⁴⁰¹ From Argentina, Austria, Belgium, Brazil, France, Guatemala, Hungary, Italy, Luxembourg, Netherlands, Norway, Portugal, Russia, Salvador, Sweden, Switzerland, Turkey, UK, Uruguay, USA, and Venezuela. Germany refused to participate, fearing that the resulting treaty would require amendments to the German patent law just enacted in 1877. See Blakeney, *supra* note 400 at 5.

⁴⁰² Blakeney, *supra* note 400 at 5. Two exceptions were the UK and Italy, who sent the heads of their respective industrial property offices.

⁴⁰³ Penrose, *supra* note 356 at 50, 53

⁴⁰⁴ Ladas, *supra* note 356 at 64

Even those not opposed in principle to high level doctrines expressed doubts about the feasibility of such an approach. As put by one expert, citing differences in domestic legal contexts:

“We must not hope, in the present state of things, to have in all countries industrial property laws which will be common on all points, it is a utopia... what makes impossible the preparation of laws absolutely uniform, in all countries, on these matters, is that they are closely related to the civil law, civil procedure, commercial law, penal law and penal procedure. It should have been necessary that all of these branches of legislation should become uniform in order that we may unify the laws related to industrial property, and this is not possible.”⁴⁰⁵

As a result, the 1880 Congress rejected harmonization or unification of patent laws in favour of the idea of national treatment. It also created a Permanent International Commission to draft what became the *Paris Convention*, signed in 1883, which established the Union for the Protection of Industrial Property (“the Union”).⁴⁰⁶ The Paris Convention represents a synthesis or balancing between the norms of reciprocity and national treatment or the norms of harmonization versus diversity, which through today is an ongoing process in the patent field. This generally accords with both a high value of diversity and a high value to harmonization in the patent field.

Recognizing the lack of agreement on appropriate patent standards and the strength of domestic interest groups, the *Paris Convention* generally adopts

⁴⁰⁵ *Compte Rendu du Congrès* (Paris, 1879), p. 139, as reported in Ladas, *supra* note 356 at 61

⁴⁰⁶ The original signatories were Belgium, Brazil, France, Guatemala, Italy, Netherlands, Portugal, Salvador, Serbia, pain and Switzerland. A. Bogsch, *The Paris convention for the protection of industrial property from 1883-1983* (Geneva: the International Bureau of Intellectual Property, 1983) at 23.

the norm of national treatment, leaving the specifics of patent legislation to the various states. Article II of the Convention as written in 1883 states:

“The subjects or citizens of each of the contracting States shall enjoy, in all other States of the Union, so far as concerns patents for inventions, trade or commercial marks, and the commercial name, the advantages that the respective laws thereof at present accord, or shall afterwards accord to subjects or citizens. In consequence they shall have the same protection as the latter, and the same legal recourse against all infringements of their rights, under reserve of complying with the formalities and conditions imposed upon subjects or citizens by the domestic legislation of each State.”⁴⁰⁷

One suggested alternative, that the norm of national treatment be subject to reciprocal treatment between any two of the contracting states, was rejected as leading the Union to degenerate into a group of bilateral arrangements.⁴⁰⁸

However, there were two significant exceptions to the idea of national treatment, where the *Paris Convention* imposes minimum standards or harmonizes domestic law. The primary exception is the Right of Priority, which requires all states to grant patent applications an effective date of filing of the first filed equivalent patent within the Union members if it is filed within a year of the first filing.⁴⁰⁹ In other words, an inventor can file a first application in his home country, and have foreign countries treat equivalent foreign applications as filed

⁴⁰⁷ See “Convention for International Protection of Industrial Property” *The American Journal of International Law* 4(2) Supplement Official Documents (1910) at 146. Note that Article III expressly states that entities from states not part of the Union who are domiciled or have industrial or commercial establishments in one of the States of the Union are considered subjects or citizens of that contracting State. (at 146)

⁴⁰⁸ E. Schiff, *Industrialization without National Patents: The Netherlands, 1869-1912, Switzerland 1850-1907* (Princeton: Princeton University Press, 1971) at 23

⁴⁰⁹ Article IV (Convention, *supra* note 407 at 146) Note that when signed in 1883, the right of priority for inventions was six months (seven months for countries “beyond the seas”).

on the same date as the first application, as long as the foreign application is made within a year.

The Convention also prohibited signatory countries from invalidating patents if the patent-holder imported a product covered by the patent from another country of the Union in Article V.⁴¹⁰ Before the Convention, many patent systems encouraged local industry either by requiring the patent to be “worked” or manufactured/ implemented⁴¹¹ within its borders, or by invalidating the patent if the patent-holder imported a product covered by the patent, or both measures. From the point of view of nascent multinational industry, such requirements prevented the exploitation of a patent by efficient scale facilities: for example, a single factory to supply continental Europe. From a welfarist point of view, dividing markets at the borders through working requirements is thus welfare-reducing. However, the permissibility of various “working” requirements continued to be a point of controversy for many years. As a compromise with those who favoured strong local working laws, Article V also says that “The patentee, however, shall be subject to the obligation of working his patent conformably to the laws of the country into which he has introduced the patented articles.”

Given the climate of hostility towards foreign patentees prevalent at the time, these were major harmonizing measures. Indeed, some of the delegates at

⁴¹⁰ Article V. Convention, *supra* note 407 at 146-147.

⁴¹¹ Depending on whether it was a product or process patent.

the congress were harshly criticized on these two points.⁴¹² However, these minimum standards, particularly the right of priority, were necessary to make an international patent agreement meaningful, as it addressed the concerns of inventors about the realistic availability of patents in multiple countries.

In 1886, the issue of importation of patented products and the working requirement flared again at the First Conference of Revision, with France taking the position that importation should be a grounds for invalidating a patent, (consistent with France's traditional practice and public sentiment in France) while other countries led by Belgium wanted to reduce the working requirements to a stipulation that the patent must be worked somewhere in the Union. These clashing views were resolved with no change on the importation rule, and an interpretation of the Convention that let each country determine its own requirements for "working" the patent.⁴¹³

This back and forth between the ideas of reciprocity/harmonization versus national treatment/diversity continued through a further Congress in 1890, focused in part on industrialized countries which had legislation protecting trademarks and trade names and so wanted to join the Union, but had no protection for patent law. Under a national treatment standard, these countries were only obligated to extend protection to foreign nationals to the extent such protection was available to their own citizens. As a result, countries with strong patent laws would end up granting patents to nationals of patent-weak states while

⁴¹² See Ladas, *supra* note 356 at 66, noting a post-Convention call for the French delegates to the 1880 Congress to be charged with high treason.

⁴¹³ Blakeney, *supra* note 400.

simultaneously inventors in states with strong patent laws could gain no protection at all in the patent-weak states.

The Third Conference of Revision in 1897 resulted in the insertion of Article IVbis, which mandated that patents granted for the same inventions in multiple countries should be independent. Previously, some countries had tied the continued validity of domestic patents to the continued existence of equivalent patents in other countries, typically the home country of foreign patent owners. As a result, patent rights could be lost in a country for reasons extraneous to the validity of the patent under its domestic patent laws. Article 4bis forbade the tying of validity of patents to the validity of foreign patents.

1897 is also notable as the year of the founding of the International Association for the Protection of Industrial Property (AIPPI), an organization of manufacturers, businessmen, engineers and lawyers. AIPPI was established to conduct research and lobby for the protection of industrial property, including the introduction of uniform patent laws in all countries.⁴¹⁴ To this day, the AIPPI chooses one topic a year and commissions reports from various countries, seeking a basis for unification or at least further harmonization on that topic.⁴¹⁵ AIPPI and other similar organizations continue to have an important influence on international intellectual property, and continue the dominant role of private

⁴¹⁴ Blakeney, *supra* note 400 at 7

⁴¹⁵ From the AIPPI website: “[The AIPPI] operates by conducting studies of existing national laws and proposes measures to achieve harmonisation of these laws on an international basis.” (www.aippi.org) (accessed December 5, 2007)

interests in the congresses of 1873 and 1878. Private initiative was seen as crucial to the reaching of agreement on the Paris Convention.⁴¹⁶

In parallel to this, international copyright law was multilateralized via the Berne Convention, signed in 1883. Again, the movement for international copyright cooperation was spearheaded by private interests, with the first international copyright conference in 1858 in Brussels.⁴¹⁷ This led to the founding of the International Literary Association in 1878, now the Association Littéraire et Artistique Internationale or ALAI, which operates similarly in the copyright field to the AIPPI. Again, in parallel to the industrial property negotiations, there was a clash of visions between those who sought universal or unified copyright protection and those who fought to preserve diversity. The Berne Convention, in comparison to the Paris Convention, includes more clauses listing minimum standards or common rules, including minimizing the formalities necessary to obtain international protection.⁴¹⁸

In summary, the interests of industrial patent holders in obtaining protection for their inventions internationally led to the creation of the Paris Convention. Initially, the primary idea was one of unification of patent laws, similar to that underlying International Public Unions for purely administrative services, such as the post office or telegraph system. However, this proved to be infeasible due to differences in the larger legal environment between countries

⁴¹⁶ Reinsch, *supra* note 394 at 141

⁴¹⁷ Ricketson, *supra* note 371 at 41-46.

⁴¹⁸ "...article 12 provided that it was sufficient evidence of their entitlement for authors of works to indicate their names on the title-pages of their works, at the bottom of the dedication or preface, or at the end of the work." Ricketson, *supra* note 371 at 67.

and domestic welfare differences between states. As a result, although the primary institutional structure chosen was that of an international union, the actual Paris Convention largely holds to the idea of diversity, with some minimum standards necessary to effectuate the primary interests of industry. The long term goal of the Union, however, was still to promote harmonization and the strengthening of patent rights worldwide.⁴¹⁹ This is still said to be the goal of the Bureau's present day descendent, the World Intellectual Property Organization (WIPO).

c. Reaction to Defection

A test of the resiliency of the international patent law institutions during this time arose in the Netherlands and Switzerland. Of all the industrialized countries, only these two had no patent laws for a period of time after 1883, despite being members of the *Paris Convention*. Although both countries eventually did enact enforceable patent laws, it was only after considerable struggle between the Netherland and Switzerland and the other Paris Convention states which challenged the negotiated balance between harmonization and diversity enshrined in the *Paris Convention*.

⁴¹⁹ Reinsch, *supra* note 394 at 158 "But it must be noted that mutuality will after all rarely be the sole purpose of an international union.", speaking of economic unions including the Paris Convention.

It is an open question whether WIPO's goal of "strengthening" patent rights worldwide implies advocating for ever-stronger patent rights.

Specifically, the Netherlands repealed their existing patent law in 1869, in part because of the inefficient provisions of the law,⁴²⁰ and did not reinstate a patent system until 1912. Switzerland had no patent system until 1888, just after the signing of the *Paris Convention*. However, the Swiss patent law of 1888 was only a weak law, and it was not until 1907 that a comprehensive patent law was introduced.⁴²¹

Both countries did well in terms of the founding of new industries during the relevant time periods. It is therefore accurate to say that the Netherlands and Switzerland industrialized without patents during the relevant time periods.⁴²² However, it would be incorrect to say that Switzerland and the Netherlands did not benefit from patents during that time.⁴²³ The other industrialized nations still had patent systems, and companies in the Netherlands and Switzerland were able to take advantage of information about foreign inventions (whether from foreign patent publications or other sources) free from the disincentives to competition present in foreign countries. To use the terminology used in chapters 2 and 3, there was information flow across borders, even in the absence of a patent system. Simultaneously, as members of the *Paris Convention*, Dutch and Swiss companies obtained patents to their inventions in

⁴²⁰ The Dutch law had no requirement for examination, meaning that both competitors of patent holders, and indeed the patent holders themselves, had great uncertainty about the scope of the Dutch patent. Also, under this law the Dutch patent was forfeit if the owner obtained an equivalent patent in a foreign country. See Schiff, *supra* note 408 at 19-20.

⁴²¹ Schiff, *supra* note 408 at 14-15.

⁴²² Note that this does not address the question of whether the Netherlands and Switzerland would have had a better, or at least different, experience industrializing with a domestic patent law.

⁴²³ Schiff, *supra* note 408 at 23-24, for example.

foreign countries. Indeed, Swiss nationals were heavy users of foreign patent systems – during this period the Swiss obtained more patents per capita in Britain and Italy than any other nation, and were second in the United States and Austria.⁴²⁴ Switzerland and the Netherlands were free riding on the rest of the industrialized world's patent systems: they took advantage of the informational benefits of the worldwide patent system to build leading margarine and incandescent lamps (the Netherlands), chemical and electrotechnical (Switzerland) industries,⁴²⁵ and their nationals were not denied patent rights in foreign countries in retaliation.

As noted above, both nations did eventually enact strong patent laws. What were the main ideas and interests that led to these enactments?

In both countries, the signing of the *Paris Convention* also immediately led to domestic pressure to introduce a patent law. However, this ran headlong into significant domestic opposition. Schiff reports that the supporters and opponents of a domestic patent law did not fall into specific groups, but were spread amongst both industrialists and economic commentators.⁴²⁶ While in part the pro-patent argument was economic, it was often couched in a natural rights approach which rejects imitation as unethical.

⁴²⁴ Penrose, *supra* note 356 at 121.

⁴²⁵ Schiff, *supra* note 408 at 52, 104-105. Schiff also identifies textiles, machinery and foodstuffs as Swiss industries that were established and grew to a leading status in the absence of patents, although he does not go so far as to say that these industries were assisted by the absence of patents: Schiff, *supra* note 408 at 98-101. Presumably, though, the Netherlands and Switzerland still imported many patented goods from other countries, paying the patent-protected price. Economies of scale may have prevented the production of many products in such small domestic markets.

⁴²⁶ Schiff, *supra* note 408 at 71.

In both countries, the patent law issue was primarily seen as a question of domestic national interest – i.e. was it in our national interest to have a patent law, and if so of what type? Given the unclear economic case for patents as incentives for innovation, the pro-patent interests were unable to prevail. In particular in Switzerland, where there were low tariffs for the importation of goods, there was a fear of being overrun by foreign-made goods.⁴²⁷ (Generally, many industrialized nations had high tariffs, reinforcing the idea of national rather than trans-border economies.)

In the Netherlands, no new patent legislation was enacted upon entry into the *Paris Convention* to replace the patent law repealed in 1869. In the case of Switzerland, the signing of the *Paris Convention* appears to have been decisive in causing a patent law to be enacted in 1888.⁴²⁸ However, the Swiss constitution is structured so that enacting a federal patent law, or amending the patent law once passed, required a constitutional amendment via a direct popular vote. This hurdle was exploited by domestic opponents of a strong patent law (primarily the chemical industry) causing the 1888 version to be quite weak. A key requirement was that any patented invention had to be supported by a working model kept by the Swiss patent office. This immediately limited the Swiss patent system to inventions that could be incorporated in a small mechanical model; notably, this eliminated chemical patents altogether, protecting the Swiss chemical industry from the powerful and inventive German

⁴²⁷ Penrose, *supra* note 356 at 123.

⁴²⁸ Schiff, *supra* note 408 at 23.

industry, along with all process patents.⁴²⁹ The Swiss patent law also had strict working requirements.

Academic references discussing the situation write that the signing of the Paris Convention and its widespread adoption by other countries changed the ideas people had of patent law.⁴³⁰ This is often described in moral terms (i.e. imitation came to be seen as immoral), but the change seems to be adequately explained by changes in ideas linked to changes in perceived interests.

Importantly, there seems to be no evidence that people's ideas about the underlying economics of patent law changed during this period. As one commentator wrote: "It is doubtful whether the rather inconclusive debate on the economic effects of a new patent system would have made the Staten-Generaal decide in its favor"⁴³¹ and "What eventually weakened the resistance of the opponents was a slowly growing uneasiness about certain international law aspects of the question."⁴³²

The *Paris Convention* marked a change in the perception of patent law as an international issue rather than a purely domestic issue. There was also a growing awareness (driven in part by the patent debate) of the importance of foreign commerce and the high value to some domestic companies of being able to patent in multiple foreign countries. Finally, there was the idea that global

⁴²⁹ At the time, the chemical industry was a source of great innovation and profits, and Germany had the foremost chemical industry in the world. By disallowing chemical patents, the Swiss chemical industry was able to copy inventions made by the German chemical industry without the hinderance of German-owned patents. Today, Switzerland still has a leading multinational pharmaceutical industry.

⁴³⁰ See Schiff, *supra* note 408 at 77-81, 88-90 and 124-126

⁴³¹ Schiff, *supra* note 408 at 77, speaking of the Netherlands.

⁴³² Schiff, *supra* note 408 at 77-78

commerce had to have a set of governing norms, and that having a domestic patent law was part of the “rules of the game.”

For example, Schiff writes:

Quite apart from the question of formal international obligation, the feeling spread in the Netherlands that the moral position of the country vis-à-vis the other Union members was in fact open to some doubts. Certain arguments which had seemed unobjectionable so long as they were seen outside the context of international “rules of the game” appeared more doubtful after the Paris Convention had placed this context forcefully into the foreground. Take, for instance, the advantage of lower supply prices because of the absence of royalties to the inventor. In the 1879 article by Professor D’Aulnis de Bourrouill mentioned above, the author’s elation about this advantage was still quite unperturbed by any moralistic qualms. Later on, however, it was increasingly felt that the advantage involved an element of unfair competition. This consideration was perhaps not cogent; the Dutch *could* have taken the position: “You patent-granting nations have only yourselves to blame if royalties to inventors are placing you at a disadvantage in competition with our industry. It was your legislation, not ours, that saddled your entrepreneurs with those royalties.” But it would have been academic to reason this way. By 1900, the system of granting a temporary extra income to the owner of an invention (by monopoly prices or royalties) was so firmly entrenched in all industrial countries outside the Netherlands that, for good or evil, it had become internationally “standard”. The insistence of one singly country to remain free of a burden which all others were bearing, was considered to be somehow contrary to the rules of the game.⁴³³

These ideas were tied to identifiable changes in the Swiss and Dutch interests, and to reactions in other countries. The signing of the *Convention* brought to the attention of the Swiss and Dutch people the potential damage to their states’ reputation that being an industrialized state without a patent system could bring, ultimately resulting in threats of economic or legal retaliation.

⁴³³ Schiff, *supra* note 408 at 80.

The Congresses of revision in 1886 and 1890 as well as the founding meetings in 1878 and 1880 contained much uncomplimentary discussion of the Swiss and Dutch situations. Indeed, in 1886 there was a *voeu emis par la conference* (“wish expressed of the conference”) that all Union members should grant meaningful protection for all forms of industrial property as soon as possible.⁴³⁴ Furthermore, there were serious proposals in the 1886 and 1890 meetings to either (a) amend the *Paris Convention* to contain much more substantive minimum standards for domestic patent laws, forcing the Dutch and Swiss to either enact such a law or withdraw from the Convention, or (b) repeal the National Treatment provision, allowing states to retaliate against the Dutch and Swiss, or (c) simply expel the Netherlands and Switzerland from the Union. The Paris Convention as written protected the Netherlands and Switzerland from retaliation in the industrial property field by other industrialized countries through its National Treatment provisions. The possible repeal of the National Treatment provision was particularly notable, as this would invite a return to the old norm of reciprocity, raising the danger of the Union degenerating into a series of bilateral arrangements and setting back international cooperation in the patent sphere. This provides some evidence, although not conclusive, of a potential “race to the bottom”, or at least of the potentially deleterious effects of a lack of international cooperation.

Finally, there was the growing possibility of bilateral sanctions outside the international intellectual property regime. Germany, specifically, threatened

⁴³⁴ Schiff, *supra* note 408 at 78

economic sanctions against Switzerland over its patent laws, which were seen as a direct attack on the German chemical industry.⁴³⁵ Swiss chemical products had cut into the German market dominance, and in some cases Swiss industry had become the main competitor to German industry.⁴³⁶ German industrialists laid this at the feet of Swiss imitation of German inventions, calling the Swiss patent system which specifically excluded chemical patents while allowing patents on many other products “parasitic” and the “practices of robber barons.”⁴³⁷

The ability of the Union to bring about these changes to Swiss and Dutch patent law without significant changes to the Union itself may be seen as a vindication of the particular balance between harmonization and diversity enshrined in the *Paris Convention*. The institutional structure of the Union affected the political climate in which the Dutch and Swiss domestic interests interacted, eventually resulting in new patent laws and the furthering of the international patent order.⁴³⁸

⁴³⁵ Schiff, *supra* note 408 at 93-95. Specifically, Germany threatened to impose duties on import of Swiss dyestuffs (which otherwise entered duty-free) on December 31, 1907 unless changes were made to the Swiss patent act to allow chemical patents. See G. Dutfield, “Is the World Ready for Substantive Patent Law Harmonization” in P. Drahos, ed., *Death of Patents* (Oxford: Lawtext Publishing Limited, 2005) 228 at 244: “This prohibition on chemical process patents continued until 1907, when Switzerland finally bowed to German pressure. Such pressure was effective owing to the dependence of natural resource-poor Switzerland’s chemical industry on the German market (which was its biggest), and on German chemical firms for supplies of coal tar distillates and other chemicals needed to produce the dyes.”

⁴³⁶ By 1899, Switzerland was producing 18 million Swiss Francs, compared to the next two biggest producers, Britain and France at 8-10 million. Germany still maintained the lion’s share of the market at 100 million Swiss Francs. See Schiff, *supra* note 408 at 100

⁴³⁷ Schiff, *supra* note 408 at 94

⁴³⁸ Schiff writes: “Should the policy makers of [a country which is a member of the Union] some day be converted to the opinion of some prominent economists that the arguments against a patent system have more weight than the arguments in its favor,

One of the threatened sanctions of the Netherlands and Switzerland was exclusion from the Paris Convention.⁴³⁹ As put by Reinsch, speaking of public unions in general:

“When all is said, it is plain that the real sanction of international administrative law lies in the eventual exclusion from the union of a state which persistently neglects or refuses to fulfill its obligations. In some of the unions this sanction is amply sufficient to secure the careful observance of treaty obligations. An international union may be so necessary to the economic life of the member nations that exclusion from it would produce an industrial and commercial deadlock, an eventuality to be avoided at all cost.”⁴⁴⁰

d. Development of The World Intellectual Property Organization

The *Paris Convention* has been amended several times over the years, with continuing battles along the themes already traced: harmonization/reciprocity versus diversity/national treatment. However, the important features of the *Paris Convention* – national treatment, the right of priority, removing the ban on importing patented products, and the independence of national patents – continue to be the central features of the Paris Convention today. It is not necessary to list the subsequent amendments in great detail, except to note that Ladas writes:

Amendments of the Convention embodying harmonization on new points of law or procedure have been successfully carried out when two factors were present: (a) a real practical interest of removing serious or unreasonable obstacles to international trade; (b) a

chances are that they would nevertheless find it politically impossible to abolish the system within their borders.” Schiff, *supra* note 408 at 126.

⁴³⁹ Schiff, *supra* note 408 at 79

⁴⁴⁰ Reinsch, *supra* note 394 at 134.

sufficiently close similarity of law in the various countries so that this could be stabilized for the future and ensure certainty.⁴⁴¹

However, the institutional features of the associated organization have changed dramatically over the years.

As noted above, the *Paris Convention* created a permanent Bureau to administer the treaty. In the 1890's, the Bureaus established by the *Paris Convention* and the *Berne Convention* (which dealt with copyright and related laws) were merged. The United International Bureaux for the Protection of Intellectual Property or BIRPI was set up in Berne, and administered by the Swiss government.⁴⁴² Originally, its function was primarily the collection and dissemination of information and statistics about the industrial property laws of various states.⁴⁴³ In furtherance of this, the Bureau published a periodical (*La Propriete Industrielle*). It also had responsibility for preparing preliminary studies and draft proposals for conferences.

The notion that BIRPI could act as a registry office for industrial property including patents was rejected in the initial Union of 1883. Recall that the Union is a collection of member state representatives, which in 1883 were primarily diplomats. However, the idea of BIRPI as a registry office continued to be promoted by many actors, particularly from the private sector. In 1891, nine signatory countries created a restricted union (within the Union for the Protection

⁴⁴¹ Ladas, *supra* note 356 at 15

⁴⁴² BIRPI stands for "Bureaux Internationaux Reunis pour la protection de la Propriete Intellectuelle"

⁴⁴³ Reinsch, *supra* note 394 at 166.

of Industrial Property) under which the bureau at Berne acts as a registry of trademarks, that are *ipso facto* valid in all the countries that are signatory to the restricted Union.⁴⁴⁴ Note, however, that under this scheme the details of national trademark legislation were left in domestic hands, respecting diversity, and foreshadowing the idea that registration and enforcement could be separated in the patent field. The Bureau collected fees for these activities, and after deducting the expense of administration, these fees were divided among the members of the restricted Union.⁴⁴⁵

BIRPI, although supervised by the Swiss government, had become an organization very independent of state control. Note that there is no evidence that the Swiss government ever attempted to influence the functioning of the Bureau. The work of the Bureaux and Union continued to be driven by private interests, who submitted drafts preparatory to conferences of revision, lobbied patent office and other government officials, and generally interacted with officials in BIRPI.⁴⁴⁶ Over time private interest groups became more organized and effective. The United States (now International) Trademark Association (INTA) was founded in 1878, the International Association for the Protection of Industrial Property (AIPPI) and the American Intellectual Property Law Association (AIPLA) were both founded in 1897, and the Fédération Internationale des Conseils en Propriété Industrielle (FICPI) was founded in

⁴⁴⁴ Belgium, Guatemala, Italy, the Netherlands, Norway, Portugal, Spain, Sweden and Switzerland. See Blakeney, *supra* note 400 at 22.

⁴⁴⁵ Reinsch, *supra* note 394 at 37, 161, 163.

⁴⁴⁶ S.P. Ladas, "Proposed Reorganization of the Paris Union" (1966) 56 Trademark Rep. 817 at 818.

1906, all of which group together patent and trademark professionals from across international boundaries.

In a telling example of private influence, particularly of the AIPPI, Ladas wrote in 1966:

“We have also been fortunate in having an international group of experts in the field of intellectual property, the AIPPI, which by painstaking and long efforts through the years made it possible to arrive at resolutions for the periodic revisions of the text of the Convention. It is these resolutions of the AIPPI and also of the International Chamber of Commerce (and sometimes other professional organizations) which inspired and indeed determined the proposals for amendments of the Convention which the Bureau put before the diplomatic conferences of revision through the years. Indeed, it can be proven by the history of the revisions of the Convention that all successive amendments of the Convention were based on texts proposed by the AIPPI, because these texts were most often adopted by unanimous vote and represented the views of legal experts of the member countries of the Union. It is because of this also that, in the vast majority of cases, the stipulations of the Convention were actually given effect by legislation or court decisions in the various countries.”⁴⁴⁷

It should be emphasized that the interests of patent owners and the interests of NGO’s of patent and trademark professionals largely coincide. For example, Braithwaite and Drahos report that “During an interview with a member of [AIPPI], we were told that AIPPI tends to identify with the right holder, taking the attitude that ‘what is good for my client is good for me’.”⁴⁴⁸ Ladas notes that in the 1958 Conference of Revision, several professional non-governmental organizations (NGOs) participated, including AIPPI, FICPI (both of which are professional organizations of intellectual property professionals) and the

⁴⁴⁷ Ladas, Proposed Reorganization *supra* note 446 at 818.

⁴⁴⁸ Braithwaite and Drahos, GBR *supra* note 18 at 72.

International Chamber of Commerce. Dating back to the meetings of 1873 and 1878, transnational networks of professionals have a long history of influence in the intellectual property field.

Actual proceedings at conferences of revision under BIRPI auspices were dominated by technical experts, primarily from the various national patent offices as the State representatives. For example, Ladas reports that at the Conference of Revision at Lisbon in 1958, roughly two thirds of the countries were represented by patent office officials, who were usually inflexible regarding amendments to the *Paris Convention*.⁴⁴⁹ Generally, they were unwilling to make concessions or reach agreement without previous instructions from their home government and Ladas suggested that higher level negotiations were needed to encourage further cooperation.⁴⁵⁰

Meanwhile, changes were taking place in the membership of the Union. The number of member countries continued to grow, from 22 countries in 1911 to 34 in 1925 to 42 in 1934 to 47 in 1958 to 80 in 1967 (and to 134 in 1995).⁴⁵¹ It began to become apparent that the effect of the rule of unanimity in the *Paris Convention* was a serious barrier to further agreement. For example, in 1958 nine major proposals were defeated by the vote of one nation, with a different nation defeating each proposal. A greater variety of countries was now represented, with a greater divergence of domestic interests. In particular, many developing countries had joined (62 joined in the period between 1962 and

⁴⁴⁹ Ladas, *supra* note 356 at 85

⁴⁵⁰ Ladas, *supra* note 356 at 86- 88

⁴⁵¹ Ryan, *supra* note 4 at 96

1995)⁴⁵² whose views differed considerably from those of the industrialized nations.⁴⁵³ Developing countries viewed patent law through the lens of a need for development, and technology transfer, often tied to a fear of exploitation by developed country industry. As such, they resisted moves to broaden obligations under the *Paris Convention*, including the strengthening of pharmaceutical patents and the narrowing of compulsory licensing provisions. Indeed, they would in many cases advocate the weakening of the minimum standards contained in the Paris Convention to allow greater flexibility in designing regimes for technology transfer.⁴⁵⁴

Concern over the influence of private interests and the increasing involvement of developing countries, along with outside events such as the interest of UN organizations in intellectual property and the general focus on development in the 1960's and 1970's, led to BIRPI being transformed into the World Intellectual Property Organization. Plans to change the governance of BIRPI can be traced to the 1940's,⁴⁵⁵ and were given impetus by the appointment of Jacques Secrétan as Director of the Bureaux in 1952. As written by Ladas:

“The movement for change of this long-established position of the Bureau as an independent organ was in effect initiated with the appointment of a new Director of the Bureaux in 1952. The new Director, a person of special competence and knowledge in international law and an able administrator, came to the Bureaux after being connected for a number of years with the International

⁴⁵² Ryan, *supra* note 4 at 96

⁴⁵³ Ladas, *supra* note 356 at 87

⁴⁵⁴ By the 1967 Stockholm Conference, 57% of the member states of the Paris and Berne Unions were developing countries. Some of these states sought to lower the required level of intellectual property protection at the conference. See Halbert, *supra* note 15 at 261 and 265

⁴⁵⁵ A. Bogsch, *The First Twenty-Five Years of the World Intellectual Property Organization from 1967-1992* (WIPO Publication No. 881 (E), 1992) at 23-24.

Labor Office in Geneva. He had no previous contact with the field of intellectual property. It was his view that BIRPI should become an executive secretariat under the supervision and guidance of the member states of the Berne and Paris Unions, just as the International Bureaus established by other organizations, such as the Universal Postal Union, the International Tele-Communications Union, the International Labor Office, the World Health Organization, the Food and Agricultural Organization, and the like.⁴⁵⁶

This director, reportedly of his own initiative, began convening meetings of state representatives prior to conferences of revision in 1957⁴⁵⁷ to discuss possible amendments; reportedly the first time such meetings had been held.⁴⁵⁸

More dramatically, the Bureau reacted to growing political concerns that UNESCO (United Nations Educational, Scientific and Cultural Organization) or UNCTAD (United Nations Conference on Trade and Development) might move into the vacuum over governance of intellectual property rights at the United Nations.⁴⁵⁹ Concerns began to be raised that the United Nations would establish its own organization to deal with intellectual property, raising the specter of competing institutions. This raised the possibility that direction of the international intellectual property system might move out of the hands of the BIRPI and the members of the Paris and Berne Unions.⁴⁶⁰ A solution to this would be for BIRPI to become a United Nations organization.

⁴⁵⁶ Ladas, Proposed Reorganization, *supra* note 446 at 819

⁴⁵⁷ Meeting in Nice to revise the Madrid Arrangement

⁴⁵⁸ Ladas, Proposed Reorganization, *supra* note 446 at 820

⁴⁵⁹ Ladas, Proposed Reorganization, *supra* note 446 at 820

⁴⁶⁰ See Jacques Secretan, Fourth William Henry Ballantyne Lecutre, The Work of the Berne Bureaux in the International Field at the present Time, Lecutre delivered to the

The convergence of these somewhat contradictory concerns – a concern over the high influence of private interests, demands by developing countries for a greater emphasis on development concerns, and the potential for BIRPI to be sidelined by competing United Nations organizations - led to plans to transform BIRPI into a United Nations organization. This would involve changing the administrative governance of BIRPI to match that seen in other international organizations, often associated with the UN.⁴⁶¹ Status as a UN agency would satisfy those who wished to dilute private interests and introduce more of a development focus. Meanwhile, those who admired the influence of private interests were willing to accept administrative changes to BIRPI including association with the UN as less threatening than the possible assumption of responsibility for intellectual property at the UN by a rival organization, under the assumption that private interests would still wield considerably greater influence under a reformed BIRPI than in UNESCO or UNCTAD.⁴⁶² As stated by Arpad Bogsch (appointed the Deputy Director of BIRPI in 1963 and the Director General of WIPO in 1973), the ability to have patent and copyright protection “extended over the world, or at least to the great majority of countries, made it

British Group of the Association at the Old Hall (March 12, 1957) (copy on file at WIPO library) (as reported in Halbert, *supra* note 15 at 256)

⁴⁶¹ Ladas, Proposed Reorganization, *supra* note 446 at 819

⁴⁶² See H. Goldsmith, “WIPO: A Noble Idea Whose Time has Come” (1968) 12 IDEA 691 discussing fears that non-governmental organizations such as the AIPPI would be sidelined at pp 699-700, and opining that private sector rights will be recognized and respected at 694.

Interestingly, at the Lisbon conference of revision, at the suggestion of the United States, the Paris Convention was amended to specifically allow the International Bureau to consult with non-governmental organizations (like AIPPI) when preparing for conferences of revision. See article 15(7)(b) of the Paris Convention, *supra* note 68. See E.M. Braderman, “World Intellectual Property Organization and the Administrative Reorganization of BIRPI” (1968) 12 IDEA 873 at 678.

worth the risk.”⁴⁶³ Nevertheless, some commentators feared that the resulting politicization of BIRPI would render it a less effective organization:

“It is precisely this superstructure over the two Unions (rather than the originally intended overhaul of the internal administration of the two Unions) and its political overtones that met with intense objection by a minority of States. They feared that this would jeopardize the independence and autonomy of the Unions and would introduce international politics in an international legal system that had been signally successful for nearly eighty years.”⁴⁶⁴

As part of this process, an Inter-Union Coordination Committee was set up after the Lisbon 1958 meeting to revise the Paris Convention.⁴⁶⁵ The Coordination Committee established a Working Group to recommend revisions to the administrative structures of the Berne and Paris Unions. By 1965, the project encompassed the idea of a world-wide organization not limited to members of the two Unions, and a goal of joining the United Nations as the primary UN organization dedicated to intellectual property.⁴⁶⁶

In 1960, BIRPI moved to new headquarters in Geneva, and had about fifty staff members.⁴⁶⁷ This was done explicitly to facilitate entry into the United

⁴⁶³ Bogsch, *supra* note 455 at 28.

⁴⁶⁴ Ladas, Proposed Reorganization, *supra* note 446 at 821. See also May, *The WIPO*, *supra* note 385 at 24: “The proposed widening of membership prompted some concerns among the already existing member states, as their representatives (rightly, as it turned out) were worried that these new developing country members might question and undermine the key *promotional* aspects of the WIPO’s activities.”

⁴⁶⁵ For a description of the Lisbon meeting, see S.P. Ladas, “The Lisbon Conference for Revision of the International Convention for the Protection of Industrial Property” (1958) 48 *Trademark Rep.* 1291

⁴⁶⁶ Ladas, Proposed Reorganization, *supra* note 446 at 821

⁴⁶⁷ P. Salmon, “Globalization’s Impact on International Trade and Intellectual Property Law: Cooperation between the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO) (2003) 17 *St. John’s J.L. Comm.* 429 at 430.

Nations system.⁴⁶⁸ Through the late 1960's, BIRPI continued to undergo growth in size and expertise. In 1967, the supervisory body for BIRPI was changed from the Swiss government to an assembly of the signatory nations of the Paris and Berne Conventions.⁴⁶⁹ As a result, in 1970, the Unions for the Protection of Industrial Property and the Berne Union became the World Intellectual Property Organization or WIPO, which in 1974 became an agency of the United Nations.⁴⁷⁰

The World Intellectual Property Organization directly continues the institutional apparatus discussed above. WIPO coordinates the Paris, Berne and several other Conventions, and continues BIRPI. The new structure comprises a permanent Secretariat reporting to the WIPO Assembly, an organization of government representatives.

Importantly, the scope and membership of the organization changed as well: WIPO purported to be responsible for intellectual property protection worldwide, and all members of the United Nations are now eligible to join WIPO without adherence to either the Paris or Berne Conventions. United Nations agencies are also eligible to join WIPO.

Regardless of the changes discussed above, much of WIPO as an institution continues the thinking and approaches under the old Unions. Theoretically, as a United Nations Agency, the mandate of WIPO should

⁴⁶⁸ Halbert, *supra* note 15 at 258.

⁴⁶⁹ *Convention Establishing the World Intellectual Property Organization*, 14 July 1967, 21 U.S.T. 1749 [hereinafter the "WIPO Convention"]

⁴⁷⁰ See the WIPO Convention, *supra* note 469

incorporate concerns for the development of less-developed member states.⁴⁷¹ However, the organizational goal of WIPO is still commonly perceived as “to promote intellectual property worldwide.”⁴⁷² More formally, the goals of WIPO are: to help member states create multilateral norms, to help developing countries write and administer national laws, and to administer the intellectual property treaties.⁴⁷³ Also, the key discussions at WIPO are still held among a smaller group than the full membership. For example, direct negotiations over amendments to the *Paris Convention* are still negotiated only among the members of the *Paris Convention*. The same is true of the *Berne Convention*. The members of WIPO who are not members of the Conventions are primarily involved in high level discussions and informational sessions about intellectual property.

⁴⁷¹ May, *The WIPO*, *supra* note 385 at 4: “This attempt to shift the WIPO’s priorities is underpinned by the argument that as the WIPO is a specialized agency of the UN it should share the UN’s focus on global developmental issues rather than a more technical focus on the governance and protection of IPRs.” Or at 25: [A]s a specialized agency of the UN, the WIPO was, and is, required to work in accordance with the WIPO’s overall developmental mission.”

Also “As in the case of all organizations of the United Nations system, one of the main objective of WIPO is to assist developing countries in their development.” World Intellectual Property Organization, *Report of the World Intellectual Property Organization to the Economic and Social Council of the United Nations at its Fifty-Ninth Session* (Analytical Summary for the year 1974) (Geneva: WIPO, 1975) at 13.

⁴⁷² Ryan, *supra* note 4 at 104. See also Halbert, *supra* note 15 at 253:

“The mission of the World Intellectual Property Organization, generally speaking, is to spread the concept and benefits of a strong intellectual property system to the entire world. Since intellectual property is primarily a western and industrial concept, an important goal in support of WIPO’s mission has been to educate and create the conditions for acceptance of intellectual property throughout the global south. WIPO considers intellectual property laws to be the foundation of innovation and progress and thus a public good that all nations should share.”

⁴⁷³ Ryan, *supra* note 4 at 128

WIPO also continued to be driven by an active and independent secretariat, to the point where some negotiators complain that the institution is secretariat rather than member driven. Ryan reports that one US trade negotiator remarked:

“In WIPO the secretariat does the writing and then goes to countries. The secretariat creates the document – pleadings and intervention are needed by countries to change it. In the GATT process the secretariat writes down what trade negotiators decide for countries. [GATT] is much more country driven.”⁴⁷⁴

In the late 1960's through the early 1990's, great progress was made on the international administrative arrangements for patent law prosecution. Particularly after the recovery from World War II, companies had increasingly been seeking patent protection in more and more countries. This had begun to burden the national intellectual property offices, who were having trouble maintaining their standards for quality and speed, and simultaneously it had become very expensive for patent applicants. BIRPI, with input from the USPTO and EPO, created the Patent Cooperation Treaty (PCT) system in 1970.⁴⁷⁵

The Patent Cooperation Treaty is in many ways the most important patent law treaty in the world, both in terms of day-to-day patent prosecution, but also in the substantive impact of patents on domestic economies worldwide. It is the most successful example of recent international patent cooperation. Indeed, in contrast to the stagnation that developed in cooperation on substantive patent law, the PCT system has been amended many times, transforming the PCT system from one with limited participation from patent applicants and patent

⁴⁷⁴ Ryan, *supra* note 4 at 113.

⁴⁷⁵ The PCT system has been outlined in the text associated with footnote 309

offices in the early 1970's to the bedrock of most companies' international patent strategies in the 2000's.⁴⁷⁶

Indeed, the PCT has become so successful that it now provides the majority of funding to WIPO, making WIPO perhaps unique among United Nations agencies in its independence from funding of member states and funding from the UN. Over 91 percent of the WIPO budget comes from fees paid by intellectual property applicants to WIPO's intellectual property application systems, with over 85% coming from the PCT.⁴⁷⁷ No nation's direct contributions to WIPO is greater than 0.5 % of WIPO's budget,⁴⁷⁸ rendering WIPO somewhat immune from direct pressure from any one member country.

This funding allowed WIPO to greatly expand its educational and outreach efforts in the late 1980's and early 1990s. WIPO personnel travel the world and talk to stakeholders perhaps more than any other UN agency, creating perhaps the quintessential transnational network.⁴⁷⁹ In developing countries, WIPO tends to focus on providing technical assistance, while in developed countries WIPO tends to engage in activities advertising its patent, trademark and industrial design services.

⁴⁷⁶ The PCT was successfully amended in 1979 and 1984 in response to feedback from applicants, resulting in a dramatic growth in PCT filings from 260 in 1979 to 100,000 in 2001 and 130,000 in 2005: see Erstling and Boutillon, *supra* note 309 at 1584.

⁴⁷⁷ Salmon, *supra* note 467 at 430. See also S.K. Sell, "The Quest for Global Governance in Intellectual Property and Public Health: Structural, Discursive and Institutional Dimensions" (2004) 77 *Temp. L. Rev.* 363 at 385, who puts the number at "nearly ninety percent of [WIPO's] operating budget."

⁴⁷⁸ Salmon, *supra* note 467 at 431.

⁴⁷⁹ Ryan, *supra* note 4 at 137

The success of the PCT (and its trademark and industrial design counterparts) has also resulted in an expansion of the size of WIPO, which now has more than 1000 officials.

WIPO continues to be able to facilitate agreements in the area of patent prosecution. The Patent Law Treaty (PLT) was concluded in 2000, presently has 14 parties and deals exclusively with streamlining formal procedures for national and regional patent applications and patents.⁴⁸⁰

These successes may be contrasted with the increased frustration that many states felt – and indeed, still feel today – over the glacial pace of increased cooperation on substantive patent law at WIPO. Over time, there have been fewer substantive amendments to the *Paris Convention*, and the *Convention* has not been amended since 1967. In a sense, the topics meaningfully negotiated at WIPO ceased to include substantive (as opposed to administrative or prosecution-related) patent harmonization. For example, in the late 1970's representatives of the USPTO, along with pharmaceutical company representatives, approached WIPO with a plan to substantially revise the *Paris Convention*. The director general of WIPO refused to support this request, on the ground that the developing country members of WIPO were unalterably opposed to amending the Paris Convention. He expressed a fear that developing countries would leave WIPO *en masse* if harmonization efforts went

⁴⁸⁰ Patent Law Treaty (<http://www.wipo.int/treaties/en/ip/plt/>) (accessed May 10, 2007). The fourteen members are Bahrain, Croatia, Denmark, Estonia, Finland, Kyrgyzstan, Moldova, Nigeria, Romania, Slovakia, Slovenia, Ukraine, United Kingdom, and Uzbekistan. (<http://www.wipo.int/treaties/en/documents/pdf/plt.pdf>) (accessed May 10, 2007)

ahead, essentially dooming WIPO's existence as a United Nations agency.⁴⁸¹ Negotiations to revise the Paris Convention began in 1980, lasting for more than ten years, but ended in a stalemate between the supporters of stronger minimum standards for patents and states calling for a weakening of the standards already in place.⁴⁸² In 2000, WIPO began discussions on a Substantive Patent Law Treaty; however as of this date the negotiations appear to have broken down over the scope of the treaty.⁴⁸³ As one commentator writing in 2003 notes:

The World Intellectual Property Organization (WIPO) has been negotiating for the past eighteen years a substantive patent law treaty (SPLT) and at the present slow pace, it appears as if these negotiations may take many more years before they are concluded, if ever. By contrast, back in the 60's, the Patent Cooperation Treaty (PCT) was put together from conception to treaty in six years.⁴⁸⁴

The lack of progress in this area is now commonly thought to result from the mandate of WIPO being limited to intellectual property (combined with the opposed self-interest of the involved states). Within the context of intellectual property, there was little that the industrialized countries could offer the developing countries to entice them to cooperate.

There was increasing frustration for the United States and Europe as they tried to move developed countries such as Japan as well as transitional

⁴⁸¹ Ryan, *supra* note 4 at 104

⁴⁸² Salmon, *supra* note 467 at 433.

⁴⁸³ See <http://www.wipo.int/patent/law/en/harmonization.htm> (accessed May 10, 2007).

⁴⁸⁴ M.N. Meller, "Piercing the Language Veil – Transparency in Patent Applications" (2003) 85 J. Pat. & Trademark Off. Soc'y 22 at 22. Presumably, Meller is including negotiations to amend the *Paris Convention* in his total of 18 years (as of 2003) spent negotiating the SPLT.

economies such as India and Brazil towards stronger patent laws – echoing the reciprocity idea from earlier in this chapter. This frustration on the part of industrial interests who still wished to see a greater harmonization of patent laws led to a move to a different institutional structure, the WTO, as discussed in the next section.

In summary, the institutional features of WIPO might be described as follows:

- i. widespread membership
- ii. increasing and important role as an administrator of the PCT system, greatly increasing the size and in-house expertise of WIPO
- iii. negotiations by technical experts, largely from the national patent offices, rather than by diplomats and politicians
- iv. weak enforcement and dispute resolution mechanisms
- v. negotiations encompassing only intellectual property
- vi. an institutional bias towards the “promotion” of intellectual property rights worldwide
- vii. dependence upon the fees of intellectual property applicants to fund WIPO activities⁴⁸⁵ and independence from state funding

⁴⁸⁵ Specifically, fees paid to access the Patent Cooperation Treaty (PCT) system.

WIPO is now primarily concerned with four main activities: the three “Global Protections Services” for patents (the PCT), trademarks (the Madrid system) and industrial designs (the Hague system); the legal-technical assistance program and other global outreach programs; ongoing development of international intellectual property law, through discussions aimed at new treaties as well as “soft law”; and the domain name dispute resolution service.⁴⁸⁶

More formally, there are presently 184 states that are members of WIPO.⁴⁸⁷ A state is eligible to join if it is a member of the Paris or Berne Unions; or is a member of the United Nations.⁴⁸⁸

The preamble of the WIPO Convention states:

“Desiring, in order to encourage creative activity, to promote the protection of intellectual property throughout the world,

Desiring to modernize and render more efficient the administration of the Unions established in the fields of the protection of industrial property and the protection of literary and artistic works, while fully respecting the independence of each of the Unions,”⁴⁸⁹

Article three states the objectives of WIPO:

“(i) to promote the protection of intellectual property throughout the world through cooperation among States and, where appropriate, in collaboration with any other international organization,

(ii) to ensure administrative cooperation among the Unions.”⁴⁹⁰

Article 4 “Functions” reads:

⁴⁸⁶ See Salmon, *supra* note 467 at 432.

⁴⁸⁷ WIPO website, (<http://www.wipo.int/members/en/>) (accessed April 9, 2007)

⁴⁸⁸ WIPO Convention, *supra* note 469, Article 5.

⁴⁸⁹ WIPO Convention, *supra* note 469, Preamble.

⁴⁹⁰ WIPO Convention, *supra* note 469, Article 3.

“In order to attain the objectives described in Article 3, the Organization, through its appropriate organs, and subject to the competence of each of the Unions:

(i) shall promote the development of measures designed to facilitate the efficient protection of intellectual property throughout the world and to harmonize national legislation in this field;

(ii) shall perform the administrative tasks of the Paris Union, the Special Unions established in relation with that Union, and the Berne Union;

(iii) may agree to assume, or participate in, the administration of any other international agreement designed to promote the protection of intellectual property;

(iv) shall encourage the conclusion of international agreements designed to promote the protection of intellectual property;

(v) shall offer its cooperation to States requesting legal–technical assistance in the field of intellectual property;

(vi) shall assemble and disseminate information concerning the protection of intellectual property, carry out and promote studies in this field, and publish the results of such studies;

(vii) shall maintain services facilitating the international protection of intellectual property and, where appropriate, provide for registration in this field and the publication of the data concerning the registrations;

(viii) shall take all other appropriate action.”

It is interesting to note that the WIPO Convention itself states that WIPO shall promote the protection of intellectual property throughout the world, and that one of WIPO’s functions is “to harmonize national legislation in this field.” This is a direct continuation of the institutional ideas that were present in the *Paris Convention*.

WIPO admits many Non-Governmental Organizations (NGOs) to its meetings as observers, and also “seeks to involve NGOs, IGOs, industry groups and all other stakeholders as widely as possible in consultation processes and debates about current issues.”⁴⁹¹ At present, 232 Non-Governmental Organizations are accredited as observers, along with 66 Intergovernmental Organizations (“IGOs”).⁴⁹²

WIPO fosters dispute resolution between private parties (not between states) through the WIPO Arbitration and Mediation Centre, founded in 1994. The Centre has received 64 requests for mediation, 70 requests for arbitration, and more than 10,000 requests for proceedings under the Uniform Domain Name Dispute Resolution Policy.⁴⁹³

e. The World Trade Organization

It has been said by some analysts of negotiation that the key to reaching agreement is having the right topics on the table for discussion. Only in that case is there sufficient room for trade-offs and agreement.⁴⁹⁴

Patent-dependent industries, particularly the pharmaceutical industries, and governments whose perceived self-interest were in the worldwide patent protection, were stymied in their desire to introduce unified patent law, or indeed even minimum patent standards, through the WIPO system. Led by corporate

⁴⁹¹ <http://www.wipo.int/members/en/admission/observers.html> (accessed May 10, 2007)

⁴⁹² <http://www.wipo.int/members/en/organizations.jsp> (accessed May 10, 2007)

⁴⁹³ <http://www.wipo.int/amc/en/center/caseload.html> (accessed May 10, 2007)

⁴⁹⁴ Ryan, *supra* note 4 at 12-13; 92-93

officials at companies such as Pfizer and IBM, in the 1970's pro-patent interests realized that cooperation could not be induced solely within the intellectual property sphere. They needed to put more topics on the table for discussion, and link concessions in the intellectual property sphere to concessions in other economic areas. To do this, they pursued four major strategies. First, they worked with companies concerned with copyright protection, who were concerned with enforcement of existing copyright obligations rather than extension of substantive obligations, convincing them to pursue a united strategy.⁴⁹⁵ Second, they advocated for the United States Trade Representative (USTR) to begin bilateral negotiations with specific countries to induce improved patent and copyright regimes, backed with the possibility of sanctions under the "Special 301" process.⁴⁹⁶ Third, and for our purposes most importantly, they

⁴⁹⁵ United States copyright interests initially were not interested in the GATT negotiation approach. They thought that they had superior leverage through the bilateral (Special 301) process, and feared that they might lose bilateral options or even multilateral rights via the GATT process. Eventually, copyright interests agreed to pursue a multilateral approach through the GATT, largely because the USTR was determined to discuss copyright at GATT regardless of copyright interests' cooperation. See Ryan, *supra* note 4 at 107

⁴⁹⁶ The "Special 301" process (see 19 U.S.C. § 2411 (1994)) was signed into law in 1988. This law empowers the United States Trade Representative ("USTR") to impose sanctions or to bring international disciplinary proceedings against countries that fail to implement and enforce "adequate and effective" intellectual property laws. In practice, the USTR relies on industry to bring complaints about intellectual property in foreign countries. In making their assessments, the USTR necessarily interprets international intellectual property and trade agreements, often reaching interpretations that are disputed by foreign countries. The USTR annually publishes lists of countries on their "Watch List" and "Priority Watch List". Countries and issues on the Priority Watch List are subject to a fast track investigation and negotiations, followed by trade sanctions (either increased duties or import restrictions). The Special 301 process is commonly linked to the US TRIPS negotiating strategy.

See R.J. Pechman, "Seeking Multilateral Protection for Intellectual Property: The United States "TRIPS" Over Special 301" (1998) 7 Minn. J. Global Trade 179 at 195-201; J.H. Bello and A.F. Holmer, "'Special 301': Its Requirements, Implementation and Significance" (1990) 13 Fordham Int'l L.J. 259; H.R. Conf. Rep. No. 576, 100th Cong. 2d sess. 580 (1988).

pushed for intellectual property issues to be added to the Uruguay Round of negotiations at the General Agreement on Tariffs and Trade (the GATT). Fourth, they lobbied foreign multinational companies in patent-sensitive industries to lobby their own governments (primarily Europe and Japan) to adopt this strategy as well.

By introducing intellectual property into world trade negotiations coupled to pressure exerted through bilateral negotiations (and potential sanctions), pro-patent interests hoped that an agreement could be reached where minimum patent standards could be traded for concessions to developing countries in, for example, textiles or agriculture. In the event, this insight was prophetic, and the TRIPs or Trade-Related Intellectual Property Agreement became an integral part of the Uruguay Round deal. The TRIPs Agreement includes strong minimum substantive standards for patents, as well as minimum standards for intellectual property enforcement within a country.

The objectives of the TRIPs Agreement are stated in Article 7:

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

TRIPS provides for a minimum level of protection for a wide range of intellectual properties.⁴⁹⁷ The TRIPS Agreement requires adherence to the Berne and Paris

⁴⁹⁷ Including copyright and related rights, trade marks, service marks, geographical indications, industrial designs, patents, plant breeders' rights, integrated circuits, and undisclosed information (including trade secrets):

Conventions,⁴⁹⁸ and to provide protection to integrated circuits in accordance with the Treaty on Intellectual Property in Respect of Integrated Circuits (IPIC Treaty).⁴⁹⁹ National treatment⁵⁰⁰ and most-favoured-nation obligations⁵⁰¹ are reiterated.⁵⁰²

TRIPs signatories must make patent protection available for inventions in all areas of technology without discrimination.⁵⁰³ This is of particular interest to the pharmaceutical, agricultural chemical and biomedical industries, as many countries with no significant innovative domestic industry previously excluded pharmaceuticals and/or agricultural chemicals from eligibility for patent protection, or granted the protection subject to compulsory licensing schemes.⁵⁰⁴ Exceptions are allowed for plants, animals other than micro-organisms and processes related to them, and medical methods. If there is no protection for plants, contracting parties must enact a *sui generis* form of protection.⁵⁰⁵

⁴⁹⁸ TRIPs Agreement, *supra* note 92 Articles 2.1 and 9.1.

⁴⁹⁹ TRIPs Agreement, *supra* note 92 Article 35

⁵⁰⁰ TRIPs Agreement, *supra* note 92 Article 3

⁵⁰¹ TRIPs Agreement, *supra* note 92 Article 4

⁵⁰² There are exceptions linked to the Paris and Berne Conventions.

⁵⁰³ TRIPs Agreement, *supra* note 92 Article 27.1

⁵⁰⁴ Mostly developing countries, but also developed countries in certain sectors. For example, until recently Canada had a compulsory licensing scheme for pharmaceuticals. Ryan reports that a WIPO study in 1988 found that of the 98 members of the *Paris Convention*, 49 excluded pharmaceutical products from patent protection, 45 excluded animal varieties, 44 excluded methods of treatment, 44 excluded plant varieties, 42 excluded biological processes for producing animal or plant varieties, 35 excluded food products, 32 excluded computer programs and 22 excluded chemical products. Ryan, *supra* note 4 at 124, citing "Existence, scope and form of generally internationally accepted and applied standards/norms for the protection of intellectual property", World Intellectual Property Organization, WO/INF/29 September 1988, also issued as GATT document no. MTN.GNG/NG11/W/24/Rev. 1.

⁵⁰⁵ TRIPs Agreement, *supra* note 92 Article 27.3(b)

A country's patent protection scheme may not discriminate by place of invention, a provision aimed at ending discriminatory treatment of foreign applicants under "first-to-invent" regimes.⁵⁰⁶ The minimum rights that must accrue under a patent are specified in Article 28. Included in Article 28(l)(a) is the right to prevent third parties from "making, using, offering for sale, selling, or importing" the patented product, while similarly Article 28(l)(b) prevents third parties from using, offering for sale, selling, or importing products obtained directly from patented processes.

Compulsory licensing and government use of the invention without the rightholder's consent are permitted, but only within the constraints of Article 31. These include, in general, that the compulsory licence should only be granted after an unsuccessful attempt to acquire a licence on reasonable terms, that compensation for the licence should be adequate, and that all decisions to order a compulsory license should be subject to judicial or some other independent review. These conditions are relaxed if the compulsory licences are established in the context of an antitrust action.⁵⁰⁷ Finally, there is a minimum patent term of twenty years from the filing date,⁵⁰⁸ and a patent applicant must be required to meet high standards of disclosure.⁵⁰⁹

⁵⁰⁶ TRIPs Agreement, *supra* note 92, Article 3. This seems to be specifically aimed at the United States, the last remaining country with a first-to-invent system. See H.C. Wegner, "TRIPs Boomerang – Obligations for Domestic Reform" (1996) *Vand. J. Transnat'l L.*, 29(3), 535.

⁵⁰⁷ TRIPs Agreement, *supra* note 92, Articles 39 and 40.

⁵⁰⁸ TRIPs Agreement, *supra* note 92, Article 33

⁵⁰⁹ TRIPs Agreement, *supra* note 92, Article 29.1

Signatories are obliged to adhere to a wide range of procedural harmonization to ensure that applicants have clear avenues for acquiring and enforcing intellectual property rights. These include an avoidance of costly or unreasonable time-limits or delays,⁵¹⁰ decisions are “preferably” to be in writing and contain reasons,⁵¹¹ and there must be a right to judicial review of any decision to revoke or forfeit a patent.⁵¹² Remedies are also strengthened under TRIPs, with the judiciary empowered to award injunctions⁵¹³ and monetary damages including legal costs,⁵¹⁴ order the destruction of goods that infringe intellectual property rights,⁵¹⁵ and make interim *ex parte* decisions on injunctions.⁵¹⁶

The substantive and procedural burdens are onerous enough that some commentators have gone so far as to declare the TRIPS Agreement a *de facto* harmonization treaty.⁵¹⁷ In particular, the provisions on procedural standardization are an unprecedented intrusion into the domestic legal systems of the signatory countries, creating particular problems for countries whose legal

⁵¹⁰ TRIPs Agreement, *supra* note 92, Article 41.2

⁵¹¹ TRIPs Agreement, *supra* note 92, Article 41.3

⁵¹² TRIPs Agreement, *supra* note 92, Article 32

⁵¹³ TRIPs Agreement, *supra* note 92, Article 44.1

⁵¹⁴ TRIPs Agreement, *supra* note 92, Article 45

⁵¹⁵ TRIPs Agreement, *supra* note 92, Article 46

⁵¹⁶ TRIPs Agreement, *supra* note 92, Article 50

⁵¹⁷ M.J. Trebilcock and R. Howse, “Trade Liberalization and Regulatory Diversity: Reconciling Competitive Markets with Competitive Politics” (1998) 6 *European J. of L. and Econ.* 5 at 18-21. It is interesting to note that although the United States was a prime mover behind the TRIPs Agreement, the final result largely harmonizes to European patent law, causing concern in the United States over changes to domestic legislation. See Wegner, *supra* note 506; and B. Hattenbach, “GATT TRIPS and the Small American Inventor: An Evaluation of the Effort to Preserve Domestic Technological Innovation” (1995) 10 *I.P.J.* 60.

system either generally does not meet the standards now required by TRIPs for its intellectual property institutions, or whose traditions do not provide for or are opposed to TRIPs requirements.⁵¹⁸

Domestic intellectual property laws and regulations are required to be reported to the newly created Council for TRIPs,⁵¹⁹ and a role for this Council in the mediation of intellectual property disputes may be foreseen under Article 68. Beyond this, disputes under TRIPs fall within the general WTO dispute resolution procedures. It should be noted that WTO panels are composed of participants who “would preferably be governmental”, and cases are assigned within the WTO Secretariat to a particular division for technical support.⁵²⁰ The normative perspectives of experts in intellectual property and trade law are often in conflict, with the territorial, monopolistic nature of intellectual property contrasted with the trade theorist’s bias for increased trade. TRIPs disputes may involve any combination of intellectual property and trade law questions, and one might be skeptical that WTO panels drawn from international diplomats, and possibly handled by a non-intellectual property division of the Secretariat, are equipped to make detailed technical inquiries or display an enlightened comprehension of normative intellectual property theory. The intellectual property division itself is only five people strong, revealing limitations in its own right.⁵²¹

⁵¹⁸ For example, written reasons may not be required, or the norm, in civilian systems.

⁵¹⁹ TRIPs Agreement, *supra* note 92, Article 63.2

⁵²⁰ M.J. Trebilcock and R. Howse, *The Regulation of International Trade*, (New York: Routledge, 1995) at 395.

⁵²¹ Salmon, *supra* note 467 at 434.

The TRIPS Agreement does have significantly longer transitional periods for compliance by developing nations.⁵²² While developed countries must comply with TRIPs by January 1 1996, developing countries generally did not have to comply until the year 2000, and the least-developed countries did not have to be in compliance until 2006.⁵²³ This has recently been extended to 2013, and 2016 for pharmaceuticals.⁵²⁴ Countries whose economy is in transition, a phrase which generally applies to the former countries of the Soviet bloc, may also delay compliance until 2000. However, in the pre-compliance period, all signatories must comply with the most-favoured-nation and national treatment obligations, must allow the filing (although not necessarily the issue) of pharmaceutical and agricultural chemical patents, and are not permitted to enact legislation that derogates from their eventual obligations under TRIPs.

It is interesting to note the countries that were most affected by the TRIPs Agreement. Prior to the TRIPs Agreement, most developing and least developed countries had patent laws in place. However, these laws were typically holdovers from the colonial era, assumed by countries upon independence from a European country and thereafter ignored, often becoming obsolete.⁵²⁵ Some developing countries' laws did not recognize patents for pharmaceuticals (for example, India, Brazil, and Thailand before 1992), while others imposed strong compulsory licensing regimes (for example, Argentina, Korea, and Thailand after

⁵²² TRIPs Agreement, *supra* note 92, Articles 65 and 66

⁵²³ TRIPs Agreement, *supra* note 92, Articles 65 and 66.

⁵²⁴ See WTO Documents WT/MIN(01)/DEC/1 and WT/MIN(01)/17 and see http://www.wto.org/english/tratop_e/trips_e/implem_para6_e.htm.

⁵²⁵ Okediji, *supra* note 357 at 335-336.

1992).⁵²⁶ In any case, regardless of the form of the rights, there remained the difficult question of the effectiveness of the enforcement of the patent grant.⁵²⁷

Primarily, the TRIPs Agreement affected rapidly developing countries such as India and Brazil – moving them along the way towards more effective patent regimes. Most industrialized countries were not dramatically affected by the TRIPs Agreement, as they already generally conformed to its provisions. (For example, Canada largely anticipated the coming harmonization, and adjusted its laws accordingly in 1989). It is reported that the substance of the TRIPs negotiations centered on reconciling differences between European, Japanese and American patent practices.⁵²⁸ Interestingly, one view is that the United States was required to make several amendments as the TRIPs Agreement largely settled on European standards.⁵²⁹

Japan was also affected by this process, not by the TRIPs Agreement itself, but by signing two side agreements with the United States that allowed the TRIPs Agreement to go forward.⁵³⁰ These agreements obligated Japan to replace pre-grant oppositions with post-grant oppositions, allow applicants to seek accelerated examination, grant compulsory licenses only to remedy a

⁵²⁶ Okediji, *supra* note 357 at 336.

⁵²⁷ Okediji, *supra* note 357 at 336.

⁵²⁸ May, *The WIPO*, *supra* note 385 at 32. Braithwaite and Drahos, GBR *supra* note 18 at 63.

⁵²⁹ See Wegner, *Trips Boomerang*, *supra* note 506.

⁵³⁰ See Mutual Understanding on Patents, Jan. 20, 1994, U.S.-Japan, 33 I.L.M. 313 (1994); see also Exchange of Letters Containing Patent Systems Agreement, Aug. 16, 1994, U.S.-Japan, 34 I.L.M. 121 (1995) [hereinafter Patent Systems Agreement]. The agreements were reached through negotiations involving the patent offices of the United States and Japan. See Patent Systems Agreement, 34 I.L.M. at 121. The agreements were separately confirmed on January 20, 1994, and August 16, 1994, in correspondence between the U.S. Secretary of Commerce and the Ambassador of Japan to the United States.

practice determined after judicial or administrative process to be anti-competitive or to permit public non-commercial use, and to permit Japanese patent applications to be filed in English (with a translation to be filed within two months).⁵³¹ The United States was obligated to publish patent applications and make them available to the public 18 months after the priority date, revise their reexamination procedures, and the United States agreed to grant compulsory licenses only to remedy a practice determined after judicial or administrative process to be anti-competitive or to permit public non-commercial use.⁵³² It is interesting to note how Japan has changed its patent laws in recent years – moving towards a more “Western” style of patent system, and beginning to pay more serious attention to “prosecution issues” as a result.⁵³³

This raises an interesting question – whether, as an empirical and theoretical question, it is easier for the developed countries to reconcile their internal differences over minimum standards than to reconcile differences between the developed and developing countries. The literature understandably tends to focus on the differences between developed and developing countries, often characterizing the developed countries as largely homogeneous in their preferences, which are quite different from developing countries, who in turn are often characterized as heterogeneous in their preferences. Nevertheless, it

⁵³¹ See Sankaran, *supra* note 200 at 404-406 and *supra* note 530 at 124.

⁵³² *Supra* note 530 at 124.

⁵³³ See, for example, J.A. Tessensohn, “Publish and not Perish: Japan’s Universities Designated to Enjoy Patent Novelty Grace Period Amidst Promethean Changes in Biotechnology and University Patenting” (2007) 8 Asian-Pac. L. & Pol’y J. 292 at 333-343; T. Kondo, “Roles of the Intellectual Property Rights System in Economic Development in the [sic] Light of [sic] Japanese Economy”, (2000) 25 AIPPI 28

appears that differences between developed countries themselves presented a challenge in the wider context of the TRIPs negotiations. Two points may be made. First, there may be two linked but quite different negotiations ongoing. Notably, it appears that the developed countries may simply be disputing a more detailed set of minimum standards than those at issue between the developed and developing countries in the TRIPs Agreement. The agreement between Japan and the United States discussed above goes well beyond the minimum standards set out in TRIPs. Second, the negotiations between developed countries may be viewed as a necessary subset of the wider, global negotiations that include both developed and developing countries. From that perspective, drawing differences between the negotiations amongst developed and between developed and developing countries may be misleading.

The move to the world trading system also made international patent cooperation subject to the institutional qualities of the GATT and later the WTO.

The modern trading system has its roots after World War II, when three institutions – the International Monetary Fund, the World Bank, and the International Trade Organization (ITO) were proposed as part of the Bretton Woods agreement. Unlike the first two institutions, the ITO did not come into existence primarily over U.S. concerns about intrusions into national sovereignty. Instead, the provisional General Agreement on Tariffs and Trade (the GATT) became the permanent mechanism for cooperation in the trade field. Historically, the GATT has concerned itself with negotiating the lowering of tariff barriers. Only recently, as tariffs have reached historic lows, has the world trade system

begun to address non-tariff barriers to trade. One of the arguments for including intellectual property in the Uruguay Round was that intellectual property was a quintessential non-tariff factor that affected international trade.

Several institutional features of the world trade system may be seen to have affected the shape of the TRIPs Agreement. Obviously, negotiations at the world trade system moved the negotiations away from intellectual property experts. More importantly, the deadlocks seen at WIPO were broken, as the less rigid world trade negotiations gave greater negotiating scope to more economically powerful nations who, among other factors, had more to offer countries to induce agreement on patent laws.⁵³⁴

Perhaps most directly, the TRIPs Agreement was influenced by the trade law ideas that there should be one deal applicable to all signatories, and that there should be a more effective dispute resolution mechanism incorporated in the world trading system.

In the Tokyo Round of world trade negotiations, countries were allowed to pick and choose from a number of optional protocols to determine the level to which they would be bound. This was disquieting to many countries, particularly the United States, who were beginning to urge that a high level of reciprocity be added to the trade system. As a result, the Uruguay Round agreements are generally mandatory for all signatories: a country cannot decide to sign up for the

⁵³⁴ Description of actual negotiating tactics at Drahos and Braithwaite, *supra* note 18, especially chapter 9; Braithwaite and Drahos, GBR, *supra* note 18 at 183-184; Ryan, *supra* note 4 at 103-116.

World Trade Organization, but not the TRIPs Agreement.⁵³⁵ This attitude also seeped into the negotiations for TRIPs itself, minimizing the willingness of negotiators to allow developing countries to adhere to a lower standard of patent protection than the developed countries. Instead, flexibility in the TRIPs Agreement was added through phase-in periods, which would give the least developed countries a cushion of time before they became fully obligated under the TRIPs Agreement.⁵³⁶

The World Trade Organization also incorporates a dispute resolution system. While this system's primary goal is to encourage the disputing parties to settle their differences, ultimately it sanctifies retaliation for non-compliance. Although the actual effectiveness of this system is open to some debate,⁵³⁷ on the surface for the first time it organizes systematic retaliation for defection from agreed-to international patent norms.

In the aftermath of the TRIPs Agreement, attention has been focused on the lack of flexibility inherent in the Agreement as discussed above. In particular, this lack of flexibility limited the ability of developing countries to address domestic health crises by seeking international sourcing for inexpensive

⁵³⁵ There are two agreements from the Tokyo Round that remain optional: the Agreement on Trade in Civil Aircraft and the Agreement on Government Procurement. See http://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm10_e.htm (accessed December 5, 2007)

⁵³⁶ See TRIPs Agreement, *supra* note 92, Articles 65-67.

⁵³⁷ See, for example, Goldsmith and Posner, *infra* note 686 at 159:

“This raises the following question: If GATT could not prevent states from unilaterally retaliating against states that engage in trade violations, why should we expect the DSU to prevent states from retaliating at a level beyond whatever is authorized by a WTO panel? If states follow the law just because it is the law, then the DSU would not be necessary. If they do not, then it is hard to see why the DSU would change their behavior.”

pharmaceuticals, as the TRIPs Agreement envisions emergency responses only from within a state.

In response, via the Doha Declaration TRIPs has been modified to allow greater diversity between countries in respect of the importation of pharmaceuticals – and by delaying the date by which least developed countries must comply with TRIPs.⁵³⁸ In addition, transitional countries such as Brazil and India are beginning to insist on their freedom to implement TRIPs-consistent limitations on the patent grant even if they are not consistent with developed country patent standards.⁵³⁹

⁵³⁸ See WTO Documents WT/MIN(01)/DEC/1 and WT/MIN(01)/17 and see http://www.wto.org/english/tratop_e/trips_e/implem_para6_e.htm.

⁵³⁹ For example, see E.B. Rodrigues Jr. and B. Murphy, “Brazil’s Prior Consent Law: A Dialogue between Brazil and the United States over where the TRIPS Agreement Currently sets the balance between the Protection of Pharmaceutical Patents and Access to Medicines” (2006) 16 Alb. L.J. Sci. & Tech. 423 at 424:

“This paper endeavors to provide an introduction to a new Brazilian law that presents a novel means for the treatment of pharmaceutical patents in the national legislation of Member States of the World Trade Organization (WTO). The new legal mechanism, known as Anuência Prévia (or Prior Consent), divides the examination of patent applications for pharmaceutical products and processes between two federal agencies in Brazil; the first being the National Institute of Intellectual Property (INPI) and the second being Brazil’s National Sanitary Supervision Agency (ANVISA). The law permits ANVISA, the federal agency devoted to the protection of public health, to consider the public interest when deciding whether to allow the grant of patents approved for patentability by INPI, the agency analogous to the United States Patent and Trademark Office (USPTO), and which is traditionally charged with examining patent applications in Brazil. Predictably, the law has instigated debate within Brazil and throughout the world as to the procedure’s legality and policy. This paper discusses Prior Consent’s proper place within Brazil and under the international regime of intellectual property law, which is defined principally by the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) of the WTO.”

In these factors, as well as in academic and diplomatic commentary, one can see a move away from the idea of “one deal” or in-depth harmonization between countries. This may be seen as a re-emergence or re-assertion of the economically based diversity of patent norms among nations that existed prior to the TRIPs Agreement.

In summary, then, the institutional features of the WTO and the WTO dispute resolution process include:

- (a) involvement of many countries with divergent interests
- (b) cross-sectoral bargaining
- (c) negotiations by diplomats and politicians, not technical experts
- (d) strong (in international terms) enforcement and dispute resolution mechanisms
- (e) an institutional bias towards market access and trade norms

The experts at WIPO, it should be emphasized, were important during the negotiations for the TRIPs Agreement: while the trade system allowed for greater flexibility in negotiation, the actual details of the TRIPs Agreement were heavily influenced by the thinking that had already taken place within the WIPO system.

While WIPO the organization was perhaps sidelined, many individuals from WIPO were not.⁵⁴⁰

⁵⁴⁰ In a related point, Braithwaite and Drahos state that business regulatory contests are fought at the level of principles rather than details because “the informational demands of rule systems would make any contest at this level intolerably complex. Trade negotiators cannot, for example, walk into rooms in Geneva armed with their respective Telecommunications Acts under their arms and say to their counterparts ‘this is what we want.’ Often they will have very little idea about the details of their domestic systems. (One US trade negotiator told us that US trade people were ‘ignorant’ of intellectual property law. The US overcame this by sending several intellectual property specialists as part of its negotiating team on TRIPS.)”. Braithwaite

Perhaps the most striking institutional feature of the WTO/TRIPs Agreement is the large number of signatory countries, including many developing countries. This, in turn, affects the workings of WIPO, as more countries adopt the WIPO treaties and thus join WIPO.⁵⁴¹ A side-effect of the move to the WTO may be the increased politization of the WIPO, as more countries join, but also as more countries come to see intellectual property as an important and contentious issue. Indeed, in respect of the relatively non-political questions of patent prosecution procedure under the PCT, progress has recently bogged down as developing countries enter the process.⁵⁴² It may be suggested that this is the inverse of the strategy of the industrialized nations during the TRIPs negotiations: some developing countries are linking the non-political issues at WIPO to the issues on the table at the WTO, blocking progress in WIPO for concessions in the WTO forum.

and Drahos, GBR, *supra* note 18 at 527. Without the knowledge and detailed pre-existing discussions in the WIPO and other contexts, the TRIPs Agreement could not have achieved its high level of detail.

⁵⁴¹ The TRIPs Agreement requires all WTO states to adhere to the Paris and Berne Conventions. There is little reason for a state that adheres to the Paris and Berne Conventions to remain outside of WIPO.

⁵⁴² This probably arises from three factors: (1) questions of technical knowledge by developing country delegations, (2) different national interests of developing countries versus developed countries, both in terms of what WIPO should be focusing on and on substantive needs from the patent prosecution process, and (3) developing countries' suspicion of developed country motives.

f. Post-TRIPs Developments

WIPO/WTO Cooperation

With the TRIPs Agreement, WIPO and the WTO signed a cooperation agreement effective January 1, 1996.⁵⁴³ This contained three substantive accords. First, the WIPO database of intellectual property laws and regulations of WIPO member states is made available to WTO states, notification to WIPO shall serve to satisfy the notification requirements under TRIPs Articles 63.2 and 68, and laws and regulations notified directly to the WTO will be transmitted to WIPO.⁵⁴⁴ Second, the relationship between the TRIPs Agreement and Article 6ter of the Paris Convention, which deals with the protection of national emblems, is defined.⁵⁴⁵

Third and most importantly, WIPO undertook to provide all developing country members of WIPO and the WTO with legal-technical assistance relating to the TRIPs Agreement, and agreed that the International Bureau of WIPO would cooperate with the WTO Secretariat on legal-technical assistance matters.⁵⁴⁶

Legal-technical assistance to developing and least developed countries is described by WIPO as “encouraging the use of IP for economic development.”⁵⁴⁷

⁵⁴³ Agreement between the World Intellectual Property Organization and the World Trade Organization,

⁵⁴⁴ *Ibid.*, Article 2

⁵⁴⁵ *Ibid.*, Article 3

⁵⁴⁶ *Ibid.*, Article 4

⁵⁴⁷ http://www.wipo.int/about-wipo/en/core_tasks.html (accessed May 10, 2007)

The budget for this program in 2006/2007 was over 12 million Swiss francs.⁵⁴⁸

The main areas of assistance include: supporting Member States in technology transfer programs, especially by building capacity in critical areas such as technology licensing and patent drafting; working with Member States on IP strategies to foster innovation, and to promote the creation, ownership, and exploitation of IP assets; providing support, expertise and economic analysis to enable policy makers to formulate appropriate policies in response to existing and emerging IP issues; and providing technical cooperation to help national IP offices modernize their office automation and human resources infrastructure, and to assist in drafting IP legislation.⁵⁴⁹ Also included under this umbrella is the Technical Assistance and Capacity Building Sector, which is responsible for programs of technical assistance to developing countries (as well as other aspects of WIPO's wider activities to promote IP as an aid to social and cultural development, economic growth and wealth creation). The budget for this program in 2006/2007 was over 56 million Swiss francs.⁵⁵⁰ It assists developing countries in building up the legal and administrative infrastructure required to protect IP rights. Key areas include assistance with training, modernizing IP institutions and systems, awareness-raising, and expert advice on IP legislation. Such advice is supposed to be tailored to the national objectives and development interests of each country.

⁵⁴⁸ http://www.wipo.int/edocs/mdocs/govbody/en/wo_pbc_8/wo_pbc_8_3_pub.pdf (accessed May 10, 2007)

⁵⁴⁹ <http://www.wipo.int/ip-development/en/> (accessed May 11, 2007)

⁵⁵⁰ http://www.wipo.int/edocs/mdocs/govbody/en/wo_pbc_8/wo_pbc_8_3_pub.pdf (accessed May 10, 2007)

The TRIPs Council

As noted above, the TRIPs Council administers the TRIPs Agreement under Article 68. It has issued a number of decisions, including in two important areas.

First, the TRIPs Council has extended the time period by which the least developed countries (LDCs) must comply with the TRIPs Agreement. The latest decision, dated November 30, 1995, extends the deadline for LDCs to comply with TRIPs to July 1, 2013.⁵⁵¹ The deadline for LDCs to comply with the TRIPs Agreement in respect of pharmaceutical products had already been extended to January 1, 2016.⁵⁵² The TRIPs Council has also granted specific extensions of time for developing countries.

Second, the TRIPs Council has put forward amendments to the TRIPs Agreement, that are in the process of being formally adopted, to improve access to medicines in the least developed countries. As originally written, under TRIPs a country could only grant a compulsory license to a domestic producer to satisfy demand within its own borders. This meant that countries without a domestic capacity to produce medicines effectively could not gain access to patented medicines under a compulsory license. In 2003 (following a direction from the

⁵⁵¹ http://www.wto.org/english/tratop_e/trips_e/intel6_e.htm Decision of the Council for TRIPs of 29 November 2005, Extension of the Transition Period under Article 66.1 for Least-Developed Country Members, WT/IP/C/40 (Nov. 30, 2005).

⁵⁵² http://www.wto.org/english/tratop_e/trips_e/intel6_e.htm WTO General Council, WT/L/478, 12 July 2002 Least-Developed Country Members--Obligations Under Article 70.9 of the TRIPs Agreement with Respect to Pharmaceutical Products, Decision of 8 July 2002.

2001 Doha Declaration), the TRIPs Council issued a waiver allowing countries to issue compulsory licenses for the export of pharmaceuticals to countries without significant domestic pharmaceutical production capability.⁵⁵³ This was followed by an official amendment to the TRIPs Agreement, which has been adopted by the TRIPs Council and will come into effect for signatory countries once two thirds of the WTO members have accepted the amendment. As of December 6, 2007, thirteen (out of 150) countries, including the United States, had accepted the amendment.⁵⁵⁴ Interestingly, the original TRIPs Council waiver is now stated to apply to each WTO member until it accepts the amendment and the amendment takes effect.⁵⁵⁵

It is thus apparent that the TRIPs Council can function as a negotiating body to amend the TRIPs Agreement, whether in response to unforeseen results or foreseeable conflicts. This thesis will return to this point in chapter 6, expanding on the usefulness and limitation of the TRIPs Council as a vehicle for future cooperation.

Development Concerns

As noted above, development concerns have been an important issue institutionally in the patent field since at least the 1960's. However, the mid to late 2000's have seen a resurgence of interest in concerns for developing

⁵⁵³ See http://www.wto.org/english/tratop_e/trips_e/implem_para6_e.htm. Least developed countries are automatically deemed to have insufficient or no manufacturing capabilities in the pharmaceutical sector.

⁵⁵⁴ http://www.wto.org/english/tratop_e/trips_e/amendment_e.htm (accessed May 10, 2007)

⁵⁵⁵ *Ibid.*

countries across international patent law, cutting across both WIPO and the WTO.

In 2001, after pressure applied by developing countries, the Doha Ministerial Declaration instituted a negotiation process to focus attention on the needs of developing countries. The Declaration was far-ranging.⁵⁵⁶ In the area of patents, the main concern was the interaction between patents and public health, resulting in the Declaration on the TRIPs Agreement and Public Health,⁵⁵⁷ whose effects have been discussed above in respect of the TRIPs Council.

Similarly, at WIPO in 2004, pressure from developing countries and civil society NGO's resulted in the WIPO general assembly voting to "examine the proposals" in a document submitted by the Brazil and Argentine governments proposing a "Development Agenda for WIPO."⁵⁵⁸ Since WIPO is a United Nations agency, WIPO arguably should be paying more heed to development concerns.⁵⁵⁹

Interestingly, many of the issues included in the proposal for a Development Agenda at WIPO were contained in the draft resolution on intellectual property put before the UN by Brazil in 1961.⁵⁶⁰ Since 2004, there has been much discussion and study of the proposed Development Agenda

⁵⁵⁶ See WTO document WT/MIN(01)/DEC/1

⁵⁵⁷ See WTO Document WT/MIN(01)/DEC/2

⁵⁵⁸ See WIPO Document WO/GA/31/11

⁵⁵⁹ May, *The WIPO*, *supra* note 385 at 4: "This attempt to shift the WIPO's priorities is underpinned by the argument that as the WIPO is a specialized agency of the UN it should share the UN's focus on global developmental issues rather than a more technical focus on the governance and protection of IPRs."

⁵⁶⁰ A.K. Menescal, "Changing WIPO's Ways? The 2004 Development Agenda in Historical Perspective" (2005) 8(6) J. World. I.P. 761

(including a major seminar on intellectual property and development in 2005), but it is unclear whether the Development Agenda will result in substantive lasting change at WIPO.⁵⁶¹

g. Europe

In parallel to the developments described in the rest of this chapter, the nations of Europe have reached the highest level of international cooperation in patent law. The developments in Europe are consistent with the framework described in the first part of the thesis, and illuminate several features of this framework. Europe provides a microcosm of some themes of the preceding analysis.

The European Patent Convention (EPC) came into force in 1973.⁵⁶² Now with 32 signatory countries, the EPC allows applicants to prosecute a European patent application in the European Patent Office (EPO).⁵⁶³ The granting of a European patent allows the owner to automatically obtain equivalent national patents in all the signatory states (subject to translations and fees). Successful prosecution in the EPO thus creates a bundle of nascent national patent rights. These national patents are generally subject to the patent laws of the country,

⁵⁶¹ See May, *The WIPO*, *supra* note 385 at 76-82.

⁵⁶² *Convention on the Grant of European Patents* (European Patent Convention), 5 October 1973, 13 I.L.M. 271, (<http://www.european-patent-office.org/legal/epc/e/ma1.html>) (accessed March 20, 2008)

⁵⁶³ 32 states as of September 4, 2007 (<http://www.epo.org/patents/Grant-procedure/Filing-an-application/European-applications/national-validation.html>) (accessed September 4, 2007).

and are litigated in national courts.⁵⁶⁴ There is, however, a post-grant opposition period in which third parties can challenge the validity of the European patent grant before an Opposition Division within the European Patent Office, which if successful revokes all the associated national patent rights.⁵⁶⁵ The decision of the Opposition Division may be appealed to the Boards of Appeal of the EPO.⁵⁶⁶

The basis of the system is the preservation of national patent laws.⁵⁶⁷ The national patent systems still exist, and an applicant can bypass the European system entirely and simply obtain national patents via the national patent offices. In some cases, filing in a national patent office is a necessary first step to any patenting activity: for example, if one is a UK resident it is necessary to obtain permission from the U.K. patent office before filing any foreign (including European) applications if a patent application concerns military technology or would be prejudicial to national security or the safety of the public.⁵⁶⁸

The European Patent Convention is intended to allow for full prosecution in the EPO, with no disadvantages compared to prosecution in the national patent offices. It thus requires signatory states to harmonize – adopt minimum

⁵⁶⁴ European Patent Convention, *supra* note 562, Article 2.2

⁵⁶⁵ The Opposition Division must include at least three examiners technically qualified in the subject matter of the opposed patent, and if desirable legally qualified examiners as well. See the EPO's *Guidelines for examination, Part D: Opposition Proceedings, Chapter II section 2*. (available at <http://www.european-patent-office.org/legal/guiex/e/d.htm>) (accessed December 6, 2007) and European Patent Convention, Part V, Opposition Procedure (Art. 99 to 105). Dec

⁵⁶⁶ The Board of Appeal for an opposition shall number at least three and include both technically and legally qualified members. See European Patent Convention, *supra* note 562, Articles 21(4) and 106(1).

⁵⁶⁷ L.J. Robbins, *infra* note 570 at 219

⁵⁶⁸ UK Patents Act 1977, s. 23

standards for - the requirements for patentability (Articles 52-57) and disclosure (Article 83). It also creates a common patent term (20 years) and at least in theory (discussed further below) common rights in all countries conferred by the European patent (64(2), 69).

Most clearly, the cooperative benefits from the European Patent Convention fall under the reduction of duplication: centralizing patent prosecution (potentially) allows both public and private savings.

Why does Europe exhibit a higher level of patent cooperation than the rest of the developed world? Consistent with the analysis in Chapters 3, the ability of states to cooperate is affected by political concerns. The high level of patent law cooperation in Europe is tied to the more general willingness to subordinate domestic authority to central institutions via the European Union.

European harmonization in patent laws took place in the larger context of the post-World War II push for European unity. The underlying idea behind the European project was that deepened economic cooperation, and eventual economic and political integration, would prevent future intra-European conflicts.⁵⁶⁹ The Treaty of Rome, signed in 1957, emphasizes the desirability of the harmonization of the national laws of all member states in all fields.⁵⁷⁰ This process has continued to today, with the 1990's seeing the creation of a single European market, and the introduction of a common currency, the Euro.⁵⁷¹ The

⁵⁶⁹ Alesina and Spolaore, *supra* note 44 at 203.

⁵⁷⁰ L.J. Robbins, "The Proposed New European Patent" (1961) 5 Pat., Trade., & Copr. J. of Research and Educ. 217 at 218. The Treaty of Rome is more formally *The Treaty Establishing the European Economic Community* 25 March 1957, 298 U.N.T.S. 79.

⁵⁷¹ Note that the Euro has only been adopted by 15 of the European Union member states.

European Union has also expanded from six countries to 27 today. However, this has not been a smooth continuous development: there are ongoing controversies over the extent to which nations should transfer power to central European institutions, debates over the admission of new members, and attempts to create a European “constitution.”

Harmonization occurred despite large differences in the preexisting patent prosecution systems: in France, Belgium, Luxembourg and Italy, patents were simply registered without examination,⁵⁷² while in Germany and the Netherlands, patents were subject to a rigorous pre-grant examination, followed by a period of third-party opposition.⁵⁷³ Each country also had its own bodies of case law and precedent.

Reportedly, and consistent with the account in this thesis, European patent harmonization was largely propelled by “big technological industry in Europe... urged on primarily by German interests”.⁵⁷⁴ These interests “consider[ed] that some form of political and legal federation of European countries is not too far over the horizon, and when this comes it wants a strong autonomous patent system already in existence...”⁵⁷⁵

Although the Common Market already existed, those interested in patent harmonization went outside the Common Market system to establish a separate treaty. Although there was political will for economic cooperation and integration to some extent, it was unlikely that political will could be summoned to abolish

⁵⁷² and only subject to rigorous examination before the courts

⁵⁷³ Robbins, *supra* note 570 at 219

⁵⁷⁴ Robbins, *supra* note 570 at 220

⁵⁷⁵ Robbins, *supra* note 570 at 220

national patents. Going outside the European Community structure would help to prevent the Convention from being blocked by E.U. politics. Importantly, establishing the European patent system outside the European Community structure would allow countries to join the Patent Convention without joining the European Community.

Nevertheless, the process originated from within the Common Market structure. In 1959 the Commission of the Common Market (the executive body charged with ensuring the functioning and development of the Common Market) established a committee to make proposals for a European patent system.⁵⁷⁶ The proposal, presented in 1960, was for the creation of a “European patent” that would be granted by a European authority (now the European Patent Office or EPO) and would have higher (or at least equal) standards for grant than any of the national patent systems. Interestingly, in light of the practical impossibility of abolishing the national patent systems, the proposed system was described as creating a new patent right, rather than harmonizing national patent systems. Infringement would be handled in the national courts (and presumably initially subject to non-harmonized national patent laws), but appeals would lie to a European court. The validity of patents would be decided by a European level decision-maker.⁵⁷⁷

However, this level of harmonization proved to be politically difficult. As a result, the proposals were split into two separate treaties: the European Patent Convention (EPC), which set up the system in place today, and the Community

⁵⁷⁶ Robbins, *supra* note 570 at 220

⁵⁷⁷ All details from Robbins, *supra* note 570 at 221-224

Patent Convention (CPC), which provided for the community patent described in the previous paragraph. Both treaties were signed in 1973: however, only the European Patent Convention has been ratified, and despite ongoing interest in some quarters there seems to be little chance that the CPC will be ratified in the foreseeable future.

It is instructive to see how language, a highly political issue not typically associated with innovation policy, dominates the debate over European patent harmonization. It has contributed to the high cost of obtaining patents through the EPO, as the patent must be translated into the language of the countries in which the patent is to be validated.⁵⁷⁸ (Validated is the technical term for perfecting the European patent within the national patent system). For example, Philips, which filed 4,425 European patent applications in 2006, estimates that translation costs the firm 2-3 million euros for every 1000 patents granted.⁵⁷⁹ This cost is decried by many patent applicants, who have argued that it should only be necessary to translate the patent document to a local language if legal proceedings are started in that country.⁵⁸⁰ This is a clear case of the harmonization of patent laws creating local costs due to heterogeneous political (which might also be described as social) preferences which are balanced against reduction in costs as a major benefit of harmonization. It shows clearly the aggressive focus on private costs to obtain patents by those in favour of

⁵⁷⁸ European Patent Convention, *supra* note 562, Article 65

⁵⁷⁹ S. Bodoni, "European patents lost in translation no longer", National Post, May 1, 2008. It is unclear whether this means European patents granted or national patents granted. The same newspaper article states that translation costs are up to 40% of companies' patent application costs.

⁵⁸⁰ van Benthem, *infra* note 582 at 441, estimated in 1993 that the total cost of translations of European patents was about DM 1 billion per year.

international harmonization. One would think that translation into a local language would be seen as an inevitable part of obtaining what may be seen as a legal enactment or law.⁵⁸¹ Nevertheless, some describe the language requirements as unsupportable:

“It has gradually become too expensive for a large proportion of small and medium sized firms, which thus no longer have access to a centralized European grant procedure, and all for the sake of interests which, although they may be justifiable culturally, and perhaps even politically, are no longer justifiable in economic terms, because the practical needs of the industry are paramount. In moving the political and cultural problems of language into the European patent system, the contracting states have moved it into the economic sphere, where it does not belong. By doing so they have overshot the mark in the matter of retaining their national cultural heritages. The fact that the European patent system is at risk because of this directly affects the subject of European integration within the Community.”⁵⁸²

The issue of translation costs has recently been addressed with the coming into force of the London Agreement on May 1, 2008.⁵⁸³ Under this agreement, originally negotiated in 2000, if a state’s official language is one of English, German or French (the official languages of the European Patent Office), it shall waive the requirement for translation of the description of

⁵⁸¹ Recall that a patent is supposed to put the public on notice as to what they can and cannot do without violating the patent. To perform this function, it would seem necessary to have the patent written in the local language. It may be argued that anyone in business (and their legal, patent and technical) advisors would be able to read a patent written in a common language such as English. But recall that patents cover a wide range of technologies, many of which are relatively unsophisticated and do not require high levels of formal education for entry (for example, flooring and carpeting).

⁵⁸² J.B. van Benthem, “The European Patent System and European Integration” (1993) 24 I.I.C. 435 at 441

⁵⁸³ The text of the London Agreement may be found at [http://documents.epo.org/projects/babylon/eponet.nsf/0/7FD20618D28E9FBFC125743900678657/\\$File/London_Agreement.pdf](http://documents.epo.org/projects/babylon/eponet.nsf/0/7FD20618D28E9FBFC125743900678657/$File/London_Agreement.pdf) (accessed April 24, 2008)

Adherence to the London Agreement is strictly voluntary, and adherence is not necessary under the European Patent Convention.

European patents into their local language. The claims still must be translated into all three official languages. Countries whose language is not English, French or German, may only require the description of the patent to be translated into a designated official language. These latter countries may also require the claims of the patent to be translated into the local language in addition to the three official languages. All signatory states retain the right to require patentees to translate the patent into the local language in the case of a dispute.⁵⁸⁴

Thirteen countries have implemented the Agreement, a major victory for companies seeking to reduce patent-related costs.⁵⁸⁵

Whether issues such as the protection of local languages should be subservient to the idea of a common market is a classic case for the type of balancing described in this thesis. The success of the EPC should be interpreted as the European community finding its own balance between the benefits and costs of harmonization.⁵⁸⁶ As such, it is difficult to see it as holding precedential value for the world community as a whole, or the community of developed states.⁵⁸⁷ Few other areas of the world have similar political and geographic

⁵⁸⁴ The London Agreement does not seem to specify what is a “dispute”.

⁵⁸⁵ Croatia, Denmark, France, Germany, Iceland, Latvia, Liechtenstein, Luxembourg, Monaco, Netherlands, Slovenia, Switzerland and the United Kingdom.

⁵⁸⁶ An interesting question is whether smaller countries are better able to resist industry demands for concessions on language through membership in the European patent system than they would outside the system. As long as smaller countries are within the European system, they can rely on the opposition to language reform by large jurisdictions to effectively evade direct industry pressure.

⁵⁸⁷ See, similarly, M.J. Trebilcock and R. Howse, “Trade Liberalization and Regulatory Diversity: Reconciling Competitive Markets with Competitive Politics” (1998) 6 *European J. of L. and Econ.* 5 at 10 and M.J. Trebilcock, “Competition Policy and Trade policy – Mediating the Interface” (1996) 30(4) *Journal of World Trade* 71 at 94

circumstances to underpin, politically and socially, a drive for deep harmonization.

Language also affect the prospects of the Community Patent Convention (CPC), which provides for a true unitary patent covering the entire European Union but still has not come into force. The failure of this treaty can be attributed to differences between states, but industry is also now opposed to the CPC, as the resulting system would be a high cost system due to the highly political issue of language.⁵⁸⁸ Unlike under the EPC, where patent applicants choose which countries to obtain national patents and incur translation costs, under the CPC paying for translation into multiple local languages is mandatory.⁵⁸⁹

The EPC also serves to illustrate the relationship between patent prosecution and enforcement described in Chapter 3. Since the goal of the EPC was to allow a central examination to be a complete substitute for prosecution in national patent offices, it was necessary to harmonize not only prosecution practices, but also enforcement standards. Otherwise, one set of claims could not provide perfect protection in all states, only approximate protection. To this end, Article 69 of the EPC reads

“(1) The extent of the protection conferred by a European patent or a European patent application shall be determined by the terms of the claims. Nevertheless, the description and drawings shall be used to interpret the claims.”⁵⁹⁰

⁵⁸⁸ van Benthem, *supra* note 582 at 444

⁵⁸⁹ van Benthem, *supra* note 582 at 444, estimated in 1993 that this would place an additional cost of DM 32,000 per Community patent for translation into eight languages.

⁵⁹⁰ European Patent Convention, *supra* note 562, Article 69

and the Protocol on the Interpretation of Article 69 of the Convention reads:

"Article 69 should not be interpreted in the sense that the extent of the protection conferred by a European patent is to be understood as that defined by the strict, literal meaning of the wording used in the claims, the description and drawings being employed only for the purpose of resolving an ambiguity found in the claims. Neither should it be interpreted in the sense that the claims serve only as a guideline and that the actual protection conferred may extend to what, from a consideration of the description and drawings by a person skilled in the art, the patentee has contemplated. On the contrary, it is to be interpreted as defining a position between these extremes which combines a fair protection for the patentee with a reasonable degree of certainty for third parties."⁵⁹¹

Finally, this serves to illustrate the difficulty of capturing core patent law concepts textually in a minimum standards agreement, even when states agree to harmonize. The Protocol explicitly sets the terms for interpreting patent claims, explicitly answering questions such as whether the specification (description and drawings) may be consulted, whether the protection conferred by a patent is bound by the claim language, and whether the patentee is limited only to the literal meaning of the claim. These minimum standards go well beyond the standards in the TRIPs Agreement or other international agreements.

Nevertheless, the notion that this legislative enactment will cause national courts presented with identical evidence to interpret identical patents consistently seems implausible. Indeed, there have been several examples of identical patents being interpreted differently in different countries, usually reflecting already existing (i.e. pre-European Convention) differences in national patent law, most famously the *Improver v. Remington and Epilady*, *Müller-Hilty and*

⁵⁹¹ Protocol on the Interpretation of Article 69 of the Convention, adopted at the Munich Diplomatic Conference for the setting up of a European System for the Grant of Patents on 5 October 1973

Conor v. Angiotech cases.⁵⁹² In a more recent example, the European Central Bank sought to have various national patents corresponding to European publication EP 0455 750 B1 for a *'Method of making a nonreplicable document'* declared invalid. Over the space of a year, the UK and French courts have found their national patents to be invalid while the German and Dutch courts have found their national patents to be valid.⁵⁹³

As discussed in the Recap section, this raises the question of whether written minimum standards for claim construction or other core patent law concepts will ever be effective.⁵⁹⁴ This is a fundamental difference between international minimum standards for patents and other areas, such as copyright law. It has been argued that this reality requires there to be an international court to decide patent cases; otherwise, attempts to adopt minimum standards on claim construction and other patent law fundamentals will be doomed to frustration.⁵⁹⁵

⁵⁹² See footnotes **Error! Bookmark not defined.** and **Error! Bookmark not defined.** and associated text.

⁵⁹³ See "Netherlands Court Rules American-Based Document Security Systems' Anti-Counterfeiting Patent as Valid" (March 12, 2008) (http://www.documentsecurity.com/press_releases.php?id=119) (accessed April 21, 2008)

⁵⁹⁴ See text associated with footnotes 351 to 355.

⁵⁹⁵ See footnote 174

5. International Patent Cooperation as Collective Action

“The development of international administration is favored in general by the principle that action will not be taken unless all the parties are agreed as to its desirability. In the older types of treaties between nations the purpose was the conciliation and compromise of conflicting interests. The new economic conventions strive to discover, on the contrary, a basis for cooperation, an essential quality of interests among all nations, upon which permanent arrangements may be founded. The unanimity required for this kind of legislation cannot however be permanently defeated by mere capricious opposition on the part of one or several states. When it is once clearly discovered that a basis for cooperation exists, the reluctant states will generally be forced in the event to accede to the agreement, because they very soon find that exclusion from the advantages of the union means a serious loss to their own interests.”⁵⁹⁶

In this chapter, I will provide a background on collective action and international law, and then relate this background to the information detailed so far regarding the international patent situation. This includes an analysis of the prognoses for collective action in international patent law.

International cooperation in the patent arena involves collective action to provide public goods. By analyzing the types of public goods being provided, the problem of their collective provision may be related to an underlying form of game. Consideration of the type of game yields a prognosis for the likelihood of successful international collective action.

⁵⁹⁶ Reinsch, *supra* note 394 at 138-139.

However, recognition of the type of game does not prescribe a formula for encouraging international collective action. Many details will heavily influence the prognosis for successful collective action. Characterizing the underlying game is only a first step. Sandler provides examples of transnational public goods (control of ozone-depleting substances and control of greenhouse gases) that follow the same underlying game but have had very different levels of success at international cooperation.⁵⁹⁷ As he writes:

“Nevertheless, public good properties are not always sufficient for the proper assessment of global collective action: two public goods may possess virtually identical properties of publicness, yet may have quite different collective action prognoses... The key insight is to know when to generalize and when to discriminate among collective action issues. As such, political, strategic, temporal, institutional, and other considerations play a role.”⁵⁹⁸

The characterization of the underlying game depends upon three “publicness” aspects of the good in question.⁵⁹⁹ First, the benefit rivalry of the good – i.e. whether the good can be consumed by more entities at zero marginal cost. Second, the excludability of the good – i.e. whether the provider can keep non-contributors from consuming the good’s benefit. Completely nonrival and nonexcludable goods are called pure public goods. Somewhat rival or excludable goods are called impure public goods. Completely rival and excludable goods are called pure private goods.

⁵⁹⁷ Sandler, *GCA supra* note 45 at 212-225, 232

⁵⁹⁸ Sandler, *GCA supra* note 45 at 258

⁵⁹⁹ Sandler, *GCA supra* note 45 at 36-39

The third aspect of publicness of a good is the aggregation technology – i.e. how individual contributions add to the overall level of the good for consumption. Sandler lists seven different types of aggregation technology:⁶⁰⁰

- Historically, most analyses of international public goods have had an unwritten assumption that they have a summation technology, where the overall level of the public good equals the sum of the countries' contributions.
- A variation of this is a weighted sum technology, where the contribution of each country is weighted.
- In a weakest link technology, the smallest contribution sets the good's aggregate level.
- In a weaker link technology, the contributions are weighted so the smallest contribution has the largest weight, the second smallest has the next highest weight, etc. etc.
- Best shot technologies are those where the largest contribution sets the good's aggregate level.
- In a better shot technology, the contributions are weighted so the largest contribution has the greatest weighting, the next largest has the second greatest weighting, and so on.
- Finally, a threshold technology occurs when the benefit from the public good only arises once a threshold of contributions is reached.

⁶⁰⁰ Sandler, Regional Public Goods *infra* note 601 at 9-11; Sandler, GCA *supra* note 45 at 60-68.

Sandler combines the three aspects of publicness to create a list of 28 different categories of goods.⁶⁰¹

It should be noted that the creation of a public good – such as in international patent law – may be theoretically consistent with a diverse range of internal legal systems. Cooperation to provide a public good does not dictate harmonization.

When analyzing international patent cooperation, one needs to carefully consider what “goods” are in question. Notably, the goods are not innovation, invention or patent law *per se*. Rather, a more nuanced analysis of what cooperation is producing should be made.

a. Reduction of Duplication in Patent Prosecution

In the case of cooperation to reduce duplication in patent prosecution (section 3(b) above), the good in question is lowered costs of prosecution for states (and applicants). This good is non-rivalrous (since one country making use of an already existing patent examination does not prevent other countries from relying on the same examination) and non-excludable (since the prosecution history is a public document), and thus is a pure public good.

The aggregation technology for the reduction in costs is a better-shot technology: where the contributions to the overall level of the savings are weighted, with the heaviest weighting to the largest contribution, the second-heaviest weighting to the second largest contribution, and so on. The lowering of

⁶⁰¹ T. Sandler, “Regional Public Goods and International Organizations” (2006) 1 Review of International Organizations 5 at 11-12

costs is based on reliance on a previous, high quality examination. If only one high quality examination is relied upon, then in that case the reduction of duplication becomes a “best shot” aggregation technology, defined as “where the largest contribution solely determines the good’s overall level – lesser action is redundant.”⁶⁰² More generally, in some cases a previous though weaker examination may provide valuable information to a later, stronger examination. However, if the two examinations are contemporaneous, it is a matter of chance whether one examination can help the other; and if the weaker examination is subsequent to the best shot, it cannot help the best shot examination.

The analysis of whether a contribution is the “best shot” or not may also change from country to country. For example, consider a patent application that is first examined and issued in country X, and then examined and issued in countries Y and Z. For country X, its own examination is the best shot. If country Y is happy to base its examination on country X’s examination, then country X’s examination is also the best shot for country Y. If, however, there is prior art that is applicable in country Z that was not applicable in country X, then country X’s examination is only a weaker shot to country Z’s own best shot examination.

However, the difference between a best-shot and better-shot technology does not drastically change the prognoses for cooperation, albeit a better shot technology is more forgiving in terms of the coordination required of states.

As a pure public good with a best shot aggregation technology, international patent prosecution is thus like curing a region-specific disease or

⁶⁰² Sandler, “Regional Public Goods” *supra* note 601 at 11; Sandler, GCA *supra* note 45 at 65;

infiltrating a terrorist group in terms of the underlying game.⁶⁰³ As such, it requires some sort of collective action for provision. Generally, better-shot or best-shot games challenge states to provide a high level of coordination to avoid duplication of effort, especially if (as in the case of patent prosecution) there is more than one candidate available to take the best shot. The prognosis for states cooperating to solve a best shot game with a pure public good is often poor if the good is to be continuously provided, as in patent prosecution. However, in the specific case of patent prosecution there are jurisdictions such as the United States and Europe who regard the benefits of providing a high level of patent examination in their home office as outweighing the costs and thus being within their own self-interest: i.e. even if no one else cooperates, the United States is willing to organize a high level of patent examination in the USPTO.⁶⁰⁴ As this implies, a feature of public goods with better shot or best shot technologies is often the “exploitation of the big by the small”: a non-normative analysis suggesting that smaller countries with less ability to provide a good (i.e. patent prosecution) will free-ride on the efforts of bigger states with more resources.

For completeness, note that one theoretical possibility is to create exclusivity by limiting the availability of the results of patent prosecution to states

⁶⁰³ *Ibid.*

⁶⁰⁴ It is a separate question whether the United States succeeds in obtaining high quality examination in the USPTO. There has been criticism of the USPTO focusing on both the quality and speed of examination (see Jaffe & Lerner, *supra* note 62 at 34; Allison & Lemley *supra* note 145; Allison, Lemley, Moore & Trunkey *supra* note 145; Lemley & Moore *supra* note 145). In part, there are two separate issues: whether the law relating to examination is high quality, and whether the USPTO is correctly applying the law. Also, the question may be regarded comparatively: even if credible criticism may be made of the USPTO, that does not speak to whether the USPTO is of higher or lesser quality than other national patent offices.

who pay a fee – thus making the good excludable, and changing the underlying game to an impure good with no rivalry but full exclusivity. Patent prosecution generally results in three products that are made available to the public: the results of a search for relevant prior art; the record of negotiations between the patent examiner and patent applicant; and the resulting claims. It is difficult to conceive of a patent as a public document that does not reveal the claims. However, it is at least possible to keep the results of the search and the record of negotiations secret, or available only for a fee. Unfortunately, such a move would necessarily take the information regarding the prosecution out of the hands of the general public – competitors, potential business partners, and researchers – and would thus undermine one of the key features of the underlying patent regime.⁶⁰⁵ In many countries, including Canada and the United States, the record of negotiations between the applicant and patent office is used by third parties and courts to evaluate the validity and/or scope of the resulting patent. In Canada, this “file history” is only used to judge whether there has been fraud on the patent office,⁶⁰⁶ but in the United States the file history is an intrinsic part of the patent, and admissions and statements by the patent applicant in the file history may reduce the scope of the claims in ways not revealed in the patent document itself.⁶⁰⁷ In any case, the search and file history will be of interest to third parties who may wish to make their own independent reassessment of the decisions of the patent office.

⁶⁰⁵ Such a move from a pure public good to an impure public good also creates its own welfare problems. See Sandler, *GCA supra* note 45 at 51-52.

⁶⁰⁶ *Free World Trust, supra* note 214 at para. 66 and 67.

⁶⁰⁷ See, for example, *Festo supra* note 216.

The examination of further underlying factors, listed in Table 1 below, make the prognosis for international cooperation in reducing duplication favourable. As long as some countries regard the benefits of providing the good as outweighing the costs, every participating country can gain through cooperation. This is subject to cooperation on prosecution not blending with issues of the harmonization of substantive patent law: as discussed in chapter three, it is not necessary for states to unify their substantive patent laws to benefit from cooperation in patent prosecution, albeit for strategic reasons the issues are sometimes confused or linked. However, at least in principle every state can gain from cooperation in patent prosecution.

Reducing Duplication in Patent Prosecution	Reciprocal Recognition of Patents
<ul style="list-style-type: none"> • Low uncertainty and high quality information • Easy to detect defection • Compliance well defined • Disputes unlikely (about coordination if they occur) • Can see results within a short timeframe • Decision makers more informed about benefits than costs • Every country can gain through cooperation • Some high-capability countries perceive the benefits of providing the good as outweighing the costs • Requires a high level of technical knowledge, and difficult up front negotiations 	<ul style="list-style-type: none"> • High uncertainty and low quality information • Difficult to detect shirking • Compliance not well defined • Difficult to see results; hard to determine relevant timeframe • Decision makers poorly informed about benefits and costs (largely due to uncertainty) • Some countries will experience short-term losses from cooperation • Less technical knowledge needed, but ongoing reassessment of the basis for cooperation is likely

Table 1 – Underlying Features of Cooperation

As noted above, pure public goods games with better shot or best shot aggregation requires the coordination of activities; in patent law, this is heightened by the highly technical nature of patent prosecution, requiring a high level of expertise to properly understand the field and enter into meaningful negotiations. To a large extent, this coordination has occurred informally, as national patent offices simply adapt to their particular circumstances.⁶⁰⁸ Negotiations to formally reach or extend an agreement may be difficult.⁶⁰⁹ However, once agreement has been reached, there will be good information available in respect of compliance, what counts as cooperation is likely to be clearly defined, and defection will be relatively easy to detect. More fundamentally, it will be in the interests of all states to comply, and temptations to defect will be minimal. Disputes that may arise are likely to be coordination disputes, where both parties agree on the value of cooperation but disagree as to the specifics.

From the point of view of encouraging cooperation, it is also beneficial that decision makers can anticipate and observe positive results within a short timeframe (probably within a few years) and decision makers are likely to be more informed about benefits than costs. As noted in chapter three, this last point possibly has negative welfare implications: for example, while it is attractive

⁶⁰⁸ See footnote 288 and accompanying text.

⁶⁰⁹ Although, as noted above (see text associated with footnotes 474 to 480), reaching agreements on reducing duplication in patent prosecution has been less troublesome than reaching agreements on minimum standards for patent laws.

on the surface to save costs and maintain quality by sacrificing speed of issuance,⁶¹⁰ there may be negative welfare implications that are not easy to detect or quantify.

A good example of these factors in operation is the Patent Cooperation Treaty or PCT.⁶¹¹ The PCT system explicitly includes a relatively early best or better shot for patent search, and as originally designed a better or best shot at the first round of examination (this has now been made optional). National patent offices are free to rely on these international searches and examinations, and many explicitly adopt them as the first round of the national prosecution.

Looking at the factors listed in Table 1 for reducing duplication, there is low uncertainty about both the benefits and operation of the PCT system. There is a detailed set of regulations for the operation of the PCT and a comprehensive user's guide, both of which are widely available.⁶¹² Perhaps most importantly, all countries benefit from the system, albeit in different ways, and there is little reason for defection. All countries gain access to a high level prior art search and perhaps a first round of examination. Perhaps just as importantly, patent applicants from all countries also benefit from the private savings available under the system. While it is certainly true that the vast majority of PCT users are from the industrialized countries, applicants from developing countries often have a

⁶¹⁰ See text associated with footnotes 291 to 307.

⁶¹¹ Described earlier in the text associated with footnotes 308 to 322 and 475 to 478

⁶¹² See the PCT Applicant's Guide (available online at <http://www.wipo.int/pct/guide/en/index.html>) (last accessed September 15, 2008) and the PCT Guidelines for Authorities and Offices (<http://www.wipo.int/pct/en/texts/gdlines.htm>) (last accessed September 15, 2008) and the PCT Treaty, Regulations and Administrative Instructions (available online at <http://www.wipo.int/pct/en/texts/index.htm>) (last accessed September 15, 2008).

greater need for the cost savings associated with the PCT system. Of course, the functioning of the PCT relies on certain patent offices being willing to become certified as international search and examination authorities to process applications from foreign countries. However, the high-capability offices (primarily the EPO and USPTO, but increasingly smaller offices as well) are willing to assume this role.⁶¹³

The results, and particularly the benefits, of the PCT system can be seen within a short time-frame – approximately 3-5 years. In fact, the time-frame is short enough that the PCT has undergone several rounds of amendments, each of which has increased the use of the PCT and presumably brought greater benefits to both states and patent applicants.

An interesting issue is the difficulty of the up-front negotiations. An abstract analysis suggests that since a treaty such as the PCT requires a high level of technical knowledge, up-front negotiations may be difficult. From one perspective, this is not borne out by the historical record: the PCT treaty took only six years to negotiate and finalize.⁶¹⁴ On the other hand, the idea of a centralized patent examination system has been floated since the beginnings of the *Paris Convention*, and the PCT may be seen as a result of almost a century of consideration. One reason for the success of the PCT negotiations proper

⁶¹³ It is difficult to categorically state that international prosecution work is a burden on national patent offices. As noted above, around the year 2000 the EPO found itself overwhelmed with PCT and its own European work, and took steps to avoid some of its PCT duties. On the other hand, the Canadian Intellectual Property Office has recently taken steps to become an International Searching and Examination Authority, in part because such work allows it to achieve efficient work levels and have international influence. Providing services to PCT applicants does generate fees for the patent offices, and I have never heard that being an International Searching and Examination Authority, is a financial drain on a patent office.

⁶¹⁴ See Meller, *supra* note 484 at 22.

may be seen in the innovative structure of the PCT itself: apart from requiring signatory states to accept patent applications filed through the PCT, it places little formal obligations upon states. States are free to completely ignore the international search report, international preliminary examination report or anything else that happens at the international stage. The PCT simply relies on states' self-interest to generate use of the international prosecution results at the national level. Also, it should be noted that even after initial implementation, the PCT system has undergone several amendments primarily aimed at increasing its attractiveness to patent applicants and hence to grow into the very successful system used today.

In summary, then, the overall prognosis for global cooperation in this area is good. As noted in chapter four, and discussed in chapter seven, the international community has a long and impressive record of cooperation in patent prosecution, a process which continues today.

b. Is Patent Prosecution a Regional or Global Good?

A more difficult question is whether this good, reducing duplication in patent prosecution, is better perceived as a global public good (GPG) or a regional public good (RPG). In this context, "regional" does not necessarily imply a geographic region - instead, regional can mean political, cultural, development, or geoclimatic regions.⁶¹⁵ The underlying concept is the range of spillovers or positive externalities. For example, the prosecution of a patent in respect of

⁶¹⁵ Sandler, *supra* note 601 at 7

technology X will be more valuable to countries with industries or markets that use or consume technology X. A patent prosecution related to plants designed to grow in specific soil and climatic conditions will be most valuable to countries with such soil and climatic conditions, as well as countries whose companies work in that area.

“Regional” can also imply political and cultural concerns. As noted above, patent prosecution is linked, albeit weakly, to substantive patent concerns, since patents are prosecuted with an eye to enforcement. As such, international patent cooperation can create pressures for substantive harmonization as well as cooperation on prosecution. To the extent that countries wish to maintain substantive differences that create barriers to cooperation on prosecution, such concerns also create negative aspects to a unified prosecution system and form a basis for treating international patent prosecution cooperation as a regional public good.

For example, the UK Commission on Intellectual Property Rights discusses whether developing countries might wish to separate patent prosecution cooperation from the industrialized countries based upon concerns as to whether industrialized country practices are inappropriate for developing countries (and, indeed, raises concerns over whether recent developments in prosecution are even desirable in developed countries).⁶¹⁶ For example, developed country patent prosecution practices may be seen as too aggressive in embracing new subject-matters, lowering the tests for obviousness to allow

⁶¹⁶ [UK] Commission on Intellectual Property Rights, *supra* note 183 at 126-137 and 159-163.

more patents issuing to inventions exhibiting low creativity; and allowing too broad claims.⁶¹⁷ Whatever the desirability of these traits in a developed country context, they would seem to be less desirable in a developing country context.

One approach to this question is to begin with the principle of subsidiarity: the idea that there should be a match between the range of benefit spillovers from a public good and the providing institution's jurisdictional authority.⁶¹⁸ Such a match ensures that supply of the public good is tied to the entities who enjoy its benefits, leading to a better match between its provision and the benefactors and minimizing problems of over- and under- provision. However, this is still only a starting point, with many other factors to be weighed.

In general, RPGs may be more successful in their provision than GPGs due to the smaller number of participant nations.⁶¹⁹ Institutions providing localized or regional benefits may be supported by relying on shared norms, values and culture of the participants.⁶²⁰ Finally, as seen in the patent field, regional provision of public goods may allow those public goods to be better tailored to the preferences of the states in the region. This last point rests on an assumption that subsets of states with more homogeneous preferences than the

⁶¹⁷ Once again, this is not inconsistent with the US having a high quality patent prosecution process. See footnote 604

⁶¹⁸ See Alesina and Spolaore, *supra* note 44 at 205; Sandler, GCA, *supra* note 45 at 77, 85-87

⁶¹⁹ A general principle of collective action is that it is easier to achieve among fewer participants. See Olson, *supra* note 98; Sandler, Regional Public Goods *supra* note 601 at 13.

⁶²⁰ Sandler, Regional Public Goods *supra* note 601 at 13-15; more strongly, see North, *Institutions, Institutional Change and Economic Performance*, *supra* note 49 at 36-37 discussing informal constraints.

global collection of states may be identified, and perhaps more critically, organized into a sustainable “group”.

While RPGs have the undoubted advantage of better tailoring the provision of the good to regional preferences, RPGs also face several potential drawbacks that do not apply to GPGs. Importantly for our purposes, by choosing to implement RPGs states are choosing to forego large economies of scale. This is a particularly important (though hard to judge) factor when there is an overlap of spillover from public goods, which is seen in the patent prosecution field. For example, suppose that a patent application is examined and issued in the United States. This examination provides a spillover benefit to Europe. When the application is examined again in the European Patent Office, there is a possibility that the EPO will provide an examination more tailored to European needs (whether legal, economic or political); however, there is also a large possibility that the European examination will provide no additional benefits beyond the American examination.

Another complication in the case of better-shot or best-shot goods (such as patent prosecution) is the necessity for a participant in the regional group to have the capability to provide the best shot. Among a group of developing nations, for example, there simply may be no expertise and capability to perform a high level examination. Regional organizations for developing countries may be forced to combine efforts into a regional patent office rather than maintain separate offices, whereas developed countries might have more scope for state-

specific tailoring even within a regional patent examination system.⁶²¹ One implication of this is that while providing regional examination services may allow developing countries to maintain patent laws separate from pressures to adhere to developed-country standards, such a move may also reduce diversity within the regional group.

A regional approach is also expensive for developing countries, albeit less expensive than the option of creating stand-alone patent offices in each jurisdiction. In choosing to take the route of regional patent examination instead of free-riding on the efforts of the industrialized, developed nations, the developing nations are in a sense turning away free aid from the developed countries. In general, the provision of international public goods by industrialized, developed countries is a form of international aid – “free-rider aid” - to poorer, developing countries.⁶²² It is unclear in general whether developed countries that are willing to support the provision of GPGs designed largely for developed country needs will be willing to support financially the creation of RPGs designed largely for developing country needs.

In general, when the benefits of public goods cannot be conveniently assigned to jurisdictions based on the principle of subsidiarity, one approach is to foster a network of regional institutions that coordinate the provision of RPGs. As

⁶²¹ See [UK] Commission on Intellectual Property Rights, *supra* note 183 at 161. This does not imply that this approach is not followed in the developed world: the European Patent Office provides a single examination the results of which are automatically accepted in European national patent offices.

⁶²² This is one of the two main topics of R. Kanbur, T. Sandler and K. Morrison, *The Future of Development Assistance: Common Pools and International Public Goods* (Washington: Overseas Development Council, 1999). See p. 79 for the term “free rider aid”.

described above in respect of the United States and Europe, patent prosecution generally defies easy separation on the basis of the range of spillovers.

Such a pattern may already be seen developing in existing patent prosecution cooperation. Regional organizations such as the European Patent Organization (EPO), the African Regional Intellectual Property Organization (ARIPO) and the Organisation Africaine de la Propriete Intellectuellé (OAPI) have considerable patent examination powers delegated to them, and in the case of EPO and ARIPO, decisions to issue patents made by the regional patent office are automatically accepted in the national offices. In the case of ARIPO, an explicit purpose of the organization is to allow African countries better control of their domestic patent laws by shifting examination away from developed country patent offices.⁶²³ As noted earlier, smaller patent offices such as Canada's

⁶²³ From the ARIPO website's "Objectives of ARIPO":

"In determining its objectives, the founding fathers of the organization took into account the fact that, at that time, the majority of the countries concerned had "dependent industrial property legislations" which did not provide for original grant or registration in the countries concerned but could only extend to their territories the effects of industrial property rights obtained in a foreign country (in most cases the United Kingdom). Such effects were normally governed by law of the foreign country.

The objectives of the Organization, as enshrined in Article III of the Lusaka Agreement, show that, cooperation in industrial property is intended to achieve technological advancement for economic and industrial development of the member states. This cooperation is reflected in the objectives of the Organization which are:

(a) to promote the harmonization and development of the industrial property laws, and matters related thereto, appropriate to the needs of its members and of the region as a whole;"

(<http://www.aripo.org/articles.php?lng=en&pg=12>)(accessed February 1, 2008)

already have informal cooperation with neighbouring patent offices such as the USPTO. Arrangements providing RPGs are to some extent already developed.

c. The Recognition of Foreign Patentees

The public goods provided via the recognition of foreign patentees form of cooperation (as discussed in chapter 3(a)) are more difficult to assess than in the case of the reduction of duplication. This cooperation provides three benefits: a reduction of discord; greater domestic incentives to invent (thus creating more world-first innovations globally); and spreading the risk of skewed patent values. All of these are public goods.

Specifically, the reduction of discord between states (by reducing the scope of uncompensated positive externalities) is a non-rivalrous but excludable good. It is non-rivalrous since many states may benefit from the good with no marginal cost, and it is excludable since gaining this benefit requires explicit, treaty-based cooperation. If a state does not join the international system, it will be taking a position contrary to the globally accepted approach to adjusting positive externalities related to innovation, exposing it to retaliation and a loss of reputation. The aggregation technology of this good is summation: the amount of the good produced equals the sum of the contributions of all states.

Cooperation also provides an increase in domestic incentives in each country, and thus an increase in the global production of world-first innovations. The increase in global production of world-first innovations is a non-rivalrous,

non-excludable public good and follows a summation technology.⁶²⁴ Note that this public good was not listed as a basis for cooperation in chapter three, consistent with game theory. As a pure public good with a summation technology and where the costs outweigh the benefits for each state, the prognosis for cooperation solely on this basis is predicted to be unfavourable.

Finally, the reduction (indeed, elimination) of risk that your country will host a high value invention and patent⁶²⁵ is non-rivalrous and again follows a summation technology, since all states may benefit from the spreading of risk, and the risk is further reversed as more countries cooperate. This global good is practically but not absolutely excludable: entities in a non-cooperating state can still file applications in Paris Convention countries, but the situation will be similar to the situation before the Paris Convention: the applicant will have to file his or her application simultaneously in all countries, a risky enterprise with tremendous up-front cost. Alternatively, the entity in a non-cooperating country could set up a subsidiary in a Paris Convention country to apply for patents: however, the viability of such a scheme would be subject to tax and similar considerations.⁶²⁶

⁶²⁴ It is perhaps more precisely a weighted summation technology, since the effects of a country's domestic market providing incentives in a foreign country is doubtless affected by market size.

⁶²⁵ See Scherer, *supra* note 254 and associated text. If countries do not cooperate in patent law, but still provide a domestic patent law, they run the risk that a highly skewed valuable invention will be invented and patented domestically, at a high cost to the country's citizens, while other countries simply imitate the very valuable invention.

⁶²⁶ For example, transfer prices are the prices at which related companies trade goods and services, including patents and other intellectual properties, across international borders. When related companies transact, it is possible for them to manipulate the licences or prices they charge each other to shift profits to the company in the lower-tax jurisdiction. If a tax authority finds that the reported conditions of related-company transfers are not what would be agreed to between "arm's length" companies, it may reassess the transaction, substituting what it thinks to be the appropriate arm's length royalty. If the reporting company does not make reasonable efforts to determine, document and use arm's length transfer prices, a penalty may be applied in addition to

Activities such as providing for the foreign recognition of patents that produce more than one public good that vary in their excludability and rivalrousness are known as joint products. The prognosis for cooperation in such situations depends on the ratio of excludable benefits to total benefits. As listed above, two of the benefits accruing from cooperating in the Paris Convention and TRIPs international patent system are excludable. Thus, the tentative prognosis for cooperation in this area is good.⁶²⁷

Reflecting this positive outlook, there has been multilateral cooperation in this area since 1883. However, a detailed examination of the factors underlying cooperation suggests that ongoing or deeper cooperation will be difficult. Table 1 (of this chapter) lists these features, comparing them with the features underlying cooperation in the patent prosecution field.

Most strikingly, there is low quality of information and high uncertainty regarding the results of cooperation in this area. It is uncertain what strength of patents is desirable in any particular economy, and thus the impact of minimum standards is also fraught with uncertainty. A similar uncertainty also applies to the details of patent law: i.e. even if one agrees that a “strong” patent law should be implemented, that still leaves a host of details with uncertain economic impact to be assessed and determined.

Connected to this is a difficulty in seeing results, especially long term results. In some cases, it may be easy to see negative short-term costs of

tax and interest charges. In Canada, see s.247 of the *Income Tax Act*, R.S.C. 1985, c. 1 (5th Supp.). I believe that all OECD countries have similar rules.

⁶²⁷ Sandler, GCA *supra* note 45 at 53-55, 82; Sandler *supra* note 601 at 9.

introducing a patent law: for example, an increase in prices for patented medicines, which can impact on health care and potentially exclude some consumers from using the medicine. However, the presumed beneficial effects of a patent law – an increase in innovation – is inherently a long term benefit, and difficult to identify with any precision even with hindsight, as it is difficult to construct a counterfactual to isolate the effects of patent law.

As a result, for many countries the perceived costs of adopting patent law are likely to outweigh the perceived benefits, particularly in the short term.

Once we move past the questions of whether to adopt a patent law or the details of the patent law, the benefits of entering the *Paris Convention* and *TRIPs* regimes are more short term, albeit still hard to identify. While reducing discord is a short term and undoubtedly desirable outcome, it may be difficult to measure, and difficult to tie directly to the *TRIPs* and *Paris Convention* agreements. One result of the United States' willingness to threaten to employ bilateral sanctions (primarily through the Special 301 process) has been to make it plainly apparent to other countries that there may be costs to non-compliance with the United States' agenda on patent cooperation.

Similarly, the effects of increasing domestic incentives for word-first innovations are difficult to measure and are long term. Finally, the benefit of insuring against the "lottery ticket" patent being domestically produced is only easily measurable in the event that a domestic entity has such a patent and is reaping disproportionate international revenues. If this fortuitous event has not occurred, the impact of this benefit remains necessarily uncertain.

The ratio of benefits to costs for most countries remains obscure, and in many cases is perceived as negative at least in the short term.

As noted in chapter three, a central problem to cooperation in the recognition of foreign patentees, particularly over time and particularly as more states are introduced into the equation, is determining what counts as cooperation. In other words, what are the minimum standards or requirements to be considered as having an effective domestic patent law and thus regarded as cooperating? “Good enough” may have been sufficient when the *Paris Convention* consisted of relatively few important states with shared cultural and normative values; but with the incorporation of many diverse states, more formal rules as seen in the TRIPs Agreement became important, and perhaps necessary.

At a higher level of generality, this implies that it is difficult to agree to and determine *ex ante* the content of compliance with the regime. Even with the TRIPs Agreement in place, there remain many areas of difficulty and a lack of clarity.

Tied to this is a difficulty in detecting (and proving) shirking by states. Patent law is a complex field, and there are a multitude of ways states could undermine the spirit of the TRIPs Agreement and Paris Convention while adhering to the stated minimum substantive and procedural standards. These could include systematically granting narrow claims, but could also include non-statutory legal rules of claim interpretation that effectively narrow claims that look broad on their face. It could include aggressive use of patent misuse or antitrust

laws; or could include a requirement for government approval of the terms of any patent licensing contracts. Although more prevalent in the copyright field, it could involve prosecutors (i.e. the local police and judiciary) turning a blind or sympathetic eye to local patent infringement. Also, it is possible that even if a central government or many districts in a country are fully intending and making an effort to be in compliance, other local districts may resist. All of these sorts of non-compliance or shirking are difficult to detect or prove, even putting aside difficult questions of the content of minimum standards.

At a high level the requirement for technical knowledge in this area is likely less than in the case of patent prosecution, since so much of what is being “traded” in the patent field is subject to grave uncertainty in any case, and is effectively being traded against non-patent concessions (such as textiles or agriculture). However, this does not imply an absolutely low level of technical knowledge: the level of knowledge of domestic patent laws needed may still well be higher than in other areas of international law.

Finally, disputes regarding the recognition of foreign patentees are as likely to be about whether to cooperate in an area as about coordination. Article 27.1 of the TRIPs Agreement, for example, specifies that patent must be available in “all fields of technology”. Does this mean that countries have committed to issuing software patents? What of the highly related area of business method patents? Similarly, article 30 of the TRIPs Agreement allows countries to make limited exceptions to patent rights that “do not unreasonably conflict with a normal exploitation of the patent and do not unreasonably

prejudice the legitimate interests of the patent holder, taking account of the legitimate interests of third parties.” Does article 30 limit the sphere of cooperation? What precisely does article 30 allow? In all of these questions, the underlying conflict may be described as whether countries have committed to cooperate on a specific issue (i.e. may states allow stockpiling of patented products for quick entry once the patent expires?) rather than disputes over the content of issues where states have clearly agreed to cooperate. As a result of these and other imprecisions, it may be difficult for a country to tell *ex ante* whether it is complying with a minimum standards international agreement. A final conclusion is that there are likely to be more disputes concerning cooperation in respect of the recognition of foreign patentees than in respect of cooperation in the patent prosecution field.

d. Should the Recognition of Foreign Patentees Goods be Regional or Global Goods?

The goods associated with the Recognition of Foreign Patentees may be considered as global or regional public goods. There are theoretical advantages to the provision of these goods regionally, and there is some evidence that regional rather than global cooperation is already occurring over the issue of minimum standards. Regional cooperation may be the more likely avenue for cooperation in the immediate future. However, there is also a possibility that increased regional cooperation will create barriers to global cooperation.

The general differences between regional and global public goods are discussed in the section above on reducing duplication in patent prosecution. In particular, it should be recalled that regional does not necessarily imply a geographic region, but may involve grouping along some other basis, including based on political and cultural stances.

The goods provided by cooperation on minimum standards in the area of the recognition of foreign patentees tend to have their highest economic spillover effect amongst the developed, industrialized countries. Generally, developed countries have industries that are positioned to take advantage of the patent system, and also contain the markets into which patentees wish to sell. Under the general principle of subsidiarity (which matches the jurisdictional level to spillover effects) regional cooperation among the developed countries may be beneficial.⁶²⁸

An interesting topic is cultural and political similarity and spillovers between the industrialized countries. Recall that at least one of the public goods provided by cooperation on the recognition of foreign patentees – the reduction of discord – is explicitly political in nature. This raises two questions: are the industrialized countries “similar” in patent-relevant cultural and political areas, and are the benefits of a reduction in discord similarly higher amongst the developed countries?

⁶²⁸ It is interesting to note that patent harmonization talks have been convened by the USPTO outside the WIPO framework that involve the European Union and European Patent Office and member states, Australia, Canada, Japan, Norway and New Zealand. See USPTO OG Notice for 29 May 2007 (Docket no. PTO-C-2007-0018) (available online at <http://www.uspto.gov/go/og/2007/week22/patcomm.htm>) (last accessed September 22, 2008).

A key difference must be drawn between absolute and marginal issues and effects.

Patent law appears to be politically accepted and, pragmatically, engrained in the legal systems of all industrialized countries. Given a broad similarity between developed country patent laws, there seems to be little occasion for serious conflict over patent law (in contrast to recent clashes between India or Brazil and the United States). In this absolute sense, industrialized countries are “similar” in patent-relevant cultural and political areas, and the reduction in discord from cooperation appears to be small.

However, the alternate perspective is that there are still many points of disagreement on the details of patent law, and given the high value of patents in the developed countries, these points of disagreement can lead to disproportionately high levels of discord (compared to the same points of disagreement between developed and developing countries). To put the same point another way, small points of difference between patent practices may result in larger tension between two developed countries than between a developed country and a developing country. In one example, as discussed above, perceived unfairness in Japan’s patent practices led to considerable rancour with the United States before the settlement contemporaneous with the TRIPs Agreement.⁶²⁹ Another possible example is the case brought to the WTO dispute resolution system by the United States arguing that Canada must ensure that all patents in existence at the time of the signing of the TRIPs Accord must have a

⁶²⁹ See footnote 530 and associated text; see also footnotes 748 to 751.

minimum 20 year patent term (rather than only those filed after October 1, 1989).⁶³⁰ Still another was tension between the United States, Europe and Canada over Canada's former compulsory licensing of pharmaceuticals.⁶³¹

Similarly, but less strongly, developing countries may have commonalities in respect of spillovers – possibly because of similar geography, health issues, economic concerns of political and cultural similarities - that may result in useful regional cooperation on minimum standards in this area.

Unlike in the area of reduction of duplication in patent prosecution, there does not appear to be any evidence of a global network to manage RPGs in the recognition of foreign patentees. However, there is evidence of uncoordinated regional cooperation, both formal and informal. Formally, the clear example is Europe, where as discussed above there have been ongoing (albeit frustrated) attempts to create a European patent, and there is a treaty that sets minimum standards for issues such as claim construction.⁶³² Less formally, there is cooperation on the recognition of foreign patentees between Canada and the United States. Formally, Canada and the United States are both bound by the minimum requirements in the NAFTA agreement, although these tend to be subsumed by their overarching TRIPs commitments. Informally, there have been amendments to the Canadian patent system that move it towards the United

⁶³⁰ See *Canada – Patent Term* (2000) WT/DS170/R (Report of the Panel); (2000) WT/DS170/AB/R (Report of the Appellate Body)

⁶³¹ See S. Battram, “Canada-United States Trade Negotiations: Continental Accord or a Continent Apart?” (1988) 22 Int'l Law. 345 and G. Mossinghoff, “Research-Based Pharmaceutical Companies: The Need For Improved Patent Protection Worldwide” (1987) 2 J.L. & Tech 307 at 320-321.

⁶³² See footnotes 173 to 176 and associated text, and also Chapter 4, section (g) “Europe”

States system without any apparent ties to or impetus from international negotiations at WIPO or the WTO. A prime example is the Canadian Patented Medicines (Notice of Compliance) Regulations, which link marketing approval for pharmaceuticals to the clearance of relevant patents.⁶³³ These were introduced in 1993, and bear a close resemblance to the United States system under the Hatch-Waxman Act.⁶³⁴ A second, more subtle example is the adoption of the U.S. Graver Tank test for equivalents by the Canadian Supreme Court in the Whirlpool and Free World Trust cases.⁶³⁵

However, there may be serious difficulties with extending cooperation on minimum standards/ the recognition of foreign patentees beyond the present situation, even on a regional level. As discussed above, if textual capture of agreement on core concepts such as obviousness or claim construction is impossible between two jurisdictions without the implementation of a common court, it may be impossible to meaningfully pursue cooperation on these central points in small, cumulative steps: only a large leap involving a common court system is meaningful. The natural experiment in Europe with minimum standards without a common court system illustrates this problem.

As noted above, RPGs potentially allow for greater welfare enhancing cooperation than cooperation on a purely global level. However, regional cooperation can also become a barrier to global cooperation. As regions implement minimum standards and patent practices to facilitate regional

⁶³³ Patented Medicines (Notice of Compliance) Regulations SOR/93-133.

⁶³⁴ See 21 U.S.C. § 355(j)

⁶³⁵ *Supra* note 214

cooperation, they may select standards that are not only different in the sense of choosing compatible but different minimum standards (i.e. a minimum term of 20 years versus 21 years), but are fundamentally incompatible. Arguably, this already occurs when Europe and the United States take different paths in respect of the patentability of business method or software patents, or on the minimum standards for non-obviousness. More clearly, this would occur if a jurisdiction moved away from requiring a claims section, or decided that patent owners could only enforce their patents to obtain a royalty rather than a permanent injunction. In such cases, attitudes in jurisdictions with incompatible patent practices may become entrenched, creating significant additional barriers global cooperation.

The issue of a systemic clash between regional and global cooperation has been analyzed in respect of world trade, discussing the interplay between the WTO and regional trade agreements such as NAFTA, the EU and MERCOSUR. However, there is a fundamental difference between regional versus global cooperation in the trade and patent fields from a welfarist perspective. In trade, there is a known first-best solution - complete, undistorted global free trade - compared to which regional approaches necessarily fall short, although one might ask whether regional cooperation should be compared to a largely hypothetical first-best solution or to a more realistic view of the global trade system.⁶³⁶ In contrast, in patent law there is no basis – theoretical or otherwise – to assert that the globally welfare maximizing or first-best state of affairs is limited to global cooperation, global minimum standards or global

⁶³⁶ See Trebilcock and Howse, *supra* note 32, 3rd ed, pp 195-196.

harmonization. Similarly, it is difficult to state whether regional agreements necessarily improve global welfare. This thesis thus remains open to the idea of regional agreements and suggests that there be no institutional barriers created to regional cooperation, but stops short of recommending such arrangements.

e. The Role of International Institutions

Given that there are collective action problems creating barriers to the provision of transnational public goods, what are the roles of international institutions in fostering cooperation? How do international institutions facilitate cooperation?

Recall how an analysis of collective action problems starts with underlying games to suggest a prognosis for cooperation, but that an analysis must also encompass additional factors to explain the challenges to cooperation.

Following the same pattern, in an ideal situation institutional innovation can change the nature of the underlying game, thus improving the possibility of successful international cooperation. For example, joint products prognosis for international cooperation may be improved by engineering greater contributor-specific benefits.⁶³⁷ The nature of the public good may be changed to increase exclusivity. Inducement pools – pools of assets or benefits donated by the states who stand to benefit from cooperation - may be created to induce cooperation by otherwise reluctant states, or increased donations to an institution may grant increased benefits to a reluctant state. There are many suggestions that may be

⁶³⁷ Sandler, Regional Public Goods *supra* note 601 at 9; Sandler GCA *supra* note 45 at 90-97.

listed,⁶³⁸ but in general they involve creating a Nash equilibrium that is socially beneficial. A related point is that since treaties must be Pareto-superior to generate acceptance, one role of an international institution can be to facilitate arrangements that alter cooperation from Kaldor-Hicks superiority to a state of Pareto-superiority.⁶³⁹ This, for example, is one way of viewing the role of the WTO in the context of international patent law.⁶⁴⁰

More broadly, looking at institutions through the lens of game theory is only a starting point. “Game theory... only illustrates the severity of the problem; it does not solve it.”⁶⁴¹

A more detailed though ad-hoc approach has been developed from the work of Keohane, who worked from the Coase theorem from the market-failure literature to develop a list of conditions under which “international regimes are of potential value for facilitating agreements in world politics.”⁶⁴² He described international institutions as follows:

“International regimes – clusters of principles, norms, rules, and decision-making procedures – reduce transaction costs for states, alleviate problems of asymmetrical information, and limit the degree of uncertainty that members of the regime face in evaluating each other’s policies. Like other political institutions, international regimes can be explained in terms of self-interest. Furthermore,

⁶³⁸ See Sandler, *GCA supra* note 45 at 90-98.

⁶³⁹ An arrangement is Pareto-superior if no party loses under an arrangement. An arrangement is Kaldor-Hicks superior when the gains made by parties to an arrangement are larger than the losses to parties under an arrangement, so that in theory the parties that benefit can compensate the parties incurring a loss, thus making the arrangement Pareto-superior.

⁶⁴⁰ Of course, some countries (particularly developing countries) may dispute this characterization of the WTO bargain. See Yu, *supra* note 12 at 373-376.

⁶⁴¹ R.O. Keohane, *International Institutions and State Power* (Boulder: Westview Press, 1989) at 115.

⁶⁴² Keohane, *International Institutions and State Power, supra* note 641 at 110. See pages 110-124 for the development of the argument.

they exert an impact on state policies largely by changing the costs and benefits of various alternatives. They do not override self-interest but rather affect calculations of self-interest.”⁶⁴³

and

“Such regimes are important not because they constitute centralized quasi-governments, but because they can facilitate agreements, and decentralized enforcement of agreements, among governments. They enhance the likelihood of cooperation by reducing the costs of making transactions that are consistent with the principles of the regime. They create the conditions for orderly multilateral negotiations, legitimate and delegitimate different types of state action, and facilitate linkages among issues within regimes and between regimes. They increase the symmetry and improve the quality of the information that governments receive. By clustering issues together in the same forums over a long period of time, they help to bring governments into continuing interaction with one another, reducing incentives to cheat and enhancing the value of reputation. By establishing legitimate standards of behavior for states to follow and by providing ways to monitor compliance, they create the basis for decentralized enforcement founded on the principle of reciprocity.”⁶⁴⁴

This approach begins by visualizing international institutions as reducing transaction costs for agreements between states. From this viewpoint, institutions can reduce transaction costs by:

- providing information,
- reducing information asymmetries,
- monitoring compliance,
- increasing iterations,
- facilitating issue linkages,

⁶⁴³ Keohane, *After Hegemony* (Princeton: Princeton University Press, 1984, 2005) at p. xi

⁶⁴⁴ R.O. Keohane, *After Hegemony supra* note 47 at 244-245

- defining cheating, and
- assisting in dispute resolution between states.

Providing information refers to equipping states to understand the impact of policy decisions as well as providing information on possible forms of cooperation. By doing so, international institutions can reduce information asymmetries between states. Another form of information provision is monitoring the actions of signatory states and reporting on their compliance with the international agreement.

In addition, international institutions can also assist states in resolving disputes between states, including defining what counts as cooperation and what counts as cheating. An international institution cannot compel a state to cooperate or comply with a treaty; only actions by other states can induce compliance. What an international institution can do is facilitate the settlement of disagreements between states that wish to cooperate, but cannot agree on the content of what they have agreed to. This can include arbitration. International institutions can also clarify and point out when a country is non-compliant and can sanction retaliation, affecting the reputations of both the non-compliant state and the state taking retaliatory action. Generally, if the international institution is credible, a finding that a state is non-compliant will increase the reputational costs to the non-compliant state, and shield any negative reputational implications for the state threatening sanctions.

Finally, international institutions can increase iterations and facilitate issue linkage. Iteration helps to build trust in compliance between states and familiarity between various state officials as well as deepening cooperation over time. Increasing iterations between states helps to build confidence in negotiation and cooperation, paving the way for greater cooperation in the future. It also can provide more experience in what forms of cooperation are available, increasing the amount of information available to states over time. As this thesis has already discussed, issue linkage is critical in supporting cooperation in areas such as patent law where there are both strong reasons to cooperate and highly divergent effects on domestic welfare from cooperation.

As a general principle, institutions are more easily and effectively founded by limiting initial participation to a small number of essential states. Ideally, the member states are somewhat homogeneous, although this may conflict with the participation of essential states. Small numbers and similarity of interests both increase the chances of agreement and compliance.⁶⁴⁵

In addition, it is also often useful to have institutions begin as very loose and informal institutions, with relatively modest goals, and build from that foundation. Looseness may include unanimity voting rules (so states are not forced to choose between participation and an unwelcome rule), nonbinding decisions, small infrastructure and small budgets.⁶⁴⁶ This may be seen in the

⁶⁴⁵ Olson, *supra* note 98; Sandler, *GCA supra* note 45 at 95-96.

⁶⁴⁶ Sandler, *GCA supra* note 45 at 95-96. It may be objected that this may make the institution highly ineffective, and prevent further development. In some cases, this may be true, but in general it is often useful for an institution to start from a more humble beginning to attract agreement and compliance.

history of both WIPO and the world trading system from chapter 4. In particular, patent cooperation under the *Paris Convention* began with a small number of homogeneous (essentially European in culture) states, minimal harmonization, decision making by consensus, a small infrastructure, and no strong dispute resolution system.

Douglass North has argued that institutions that are successful over time are those that can cope with an unpredictably ever-changing or “non-ergodic” world.⁶⁴⁷ As such, he suggests that attention should be focused on whether institutions are open to change, and beyond that on whether the institutions actively encourage an “open-ended process of discovery.”⁶⁴⁸ He strongly argues that institutional change is overwhelmingly incremental and path dependent:

“The viability, profitability, and indeed survival of the organizations of a society typically depend on the existing institutional matrix. That institutional structure has brought them into existence and upon it their complex web of interdependent contracts and other relationships has been constructed. Two implications follow. Institutional change is typically incremental and is path dependent.

It is incremental because large-scale change will create too many opponents among existing organizations that will be harmed and therefore oppose such change. Revolutionary change will only occur in the case of gridlock among competing organizations which thwarts the ability of organizations to capture gains from trade. Path dependence will occur because the direction of the incremental institutional change will be broadly consistent with the existing institutional matrix (for the reasons described above) and

⁶⁴⁷ North, *Understanding the Process*, *supra* note 49 at 19-22. Ergodic is defined as: “involving or relating to the probability that any state will recur, especially having zero probability that any state will never recur” (Webster’s dictionary) or “an ergodic stochastic process simply means that averages calculated from past observations cannot be persistently different from the time average of future outcomes” (Davidson)

⁶⁴⁸ North, *Understanding the Process*, *supra* note 49 at 56 and more generally chapter 2.

will be governed by the kinds of knowledge and skills that the entrepreneurs and members of organizations have invested in.”⁶⁴⁹

Since change is incremental and path dependent, an understanding of the history and ideas underlying an institution is important to understand the possibilities for change.

Broadly speaking, the evolution of patent cooperation from the *Paris Convention* to WIPO may be seen as incremental and path dependent, in accord with North’s analysis. It is more interesting to consider whether the move of international patent law relations from WIPO to the WTO as a “revolutionary” rather than an evolutionary move. North predicts that a revolutionary move will only take place in the case of “gridlock” among the participating organizations (organizations in this case meaning states and other interested actors) preventing gains from trade. Generally, this accords with descriptions, particularly from the point of view of the United States and Europe, of why negotiations over minimum patent standards were introduced into the trade arena.

Finally, North emphasizes that an understanding of the history and culture of an institution and its supporting society of states is a key to understanding feasible (or in his words, “doable”) change:

“In order to improve the institutional structure we must first have a clear understanding of the sources of that institutional framework. We must know where we have been in order to know where we can be going. Understanding the cultural heritage of a society is a necessary condition for making “doable” change. We must have not only a clear understanding of the belief structure underlying the

⁶⁴⁹ North, *Understanding the Process*, *supra* note 49 at 62.

existing institutions but also at the margins at which the belief system may be amenable to changes that will make possible the implementation of more productive institutions. Only then will we have a knowledge of the sources of the existing institutions, their organizational underpinnings, and insights into possible structural reform.”⁶⁵⁰

f. Conclusions

An analysis of the two grounds for international patent cooperation – the recognition of foreign patentees and the reduction of duplication in patent prosecution – from a collective action point of view suggest that the prognosis for cooperation in both areas is positive. However, an analysis of the specific underlying features of the public goods being provided by each ground for cooperation reveal significant differences. For example, in the area of the reduction of prosecution costs, while agreement may be difficult to reach, once an agreement is in place the motivations for states to defect is quite low. In contrast, even if an agreement has been reached in the area of the recognition of foreign patentees, the agreement is likely to be less precise than in the area of the reduction of duplication in patent prosecution, and motivations to defect are significant. To look ahead to the next chapter, this suggests that different institutional arrangements for each ground of cooperation are desirable.

The normative analysis of international institutions, as described by Keohane, focuses on the role of international institutions to reduce transaction costs between states. This approach is often called regime theory, and in particular is identified with an analysis of dispute resolution in the pre-WTO

⁶⁵⁰ North, *Understanding the Process*, *supra* note 49 at 163.

GATT.⁶⁵¹ The next chapter will discuss how the introduction of patent law into the world trading system has changed the implications of regime theory for the WTO dispute resolution process and TRIPs Council. Finally, as suggested by North, change in institutions is incremental, and an appreciation of the history of an institution allows insight into the range of plausible institutional change.

⁶⁵¹ Trebilcock and Howse, *the Regulation of International Trade* (3rd ed) *supra* note 32 at 115

6. Institutional Suggestions: WIPO and WTO

a. Introduction: Institutional Analysis

There are two contrasting approaches to institutional analysis. One could ask the normative question: what should international institutions do to facilitate international cooperation. One could also ask a positive question: what features actually drive the behaviour of institutions. Both of these approaches should be kept in mind when considering international institutions.

As discussed in the last previous chapter, from a normative perspective based on an approach of minimizing international transaction costs (as introduced by Keohane), international institutions can contribute to international cooperation by: providing information, reducing information asymmetries, monitoring compliance, increasing iterations, facilitating issue linkages, defining cheating (and hence raising reputational costs), and assisting in dispute resolution between states. Keohane writes:

- “state actions depend to a considerable degree on prevailing [international] institutional arrangements, which affect
- the flow of information and opportunities to negotiate;
 - the ability of Governments to monitor others’ compliance and to implement their own commitments – hence their ability to make credible commitments in the first place; and
 - prevailing expectations about the solidity of international agreements.”⁶⁵²

⁶⁵² Keohane, *International Institutions and State Power*, *supra* note 641 at 2.

The second approach is to ask what factors actually underlie the behaviour of international institutions – or more precisely the behaviour of participants in international institutions. For example, an international institution’s officials may facilitate cooperation by suggesting new approaches to cooperation – i.e. suggesting specific clauses for agreements. However, this does not address the question of what suggestions an international institution’s officials might be likely to make.

To address this question, it is helpful to look at the analysis of the development of regulation by institutions. As stated by Trebilcock, this question is complex and nuanced:

“no single positive theory of the public policy-making process has broad explanatory power, remitting us unfortunately (for analytic purposes) to a less deterministic, more multi-stranded, and admittedly more messy complex of variables that, in terms of future analytic challenges, we have barely begun to work into a comprehensive theory of public decision-making.”⁶⁵³

Trebilcock suggests an approach to understanding regulation making that looks to three factors that give an impetus to regulation creation:

- (a) the interests of various concerned interest groups;
- (b) ideas; and
- (c) the structure of regulation making institutions.⁶⁵⁴

Of course, they are intertwined, and to some extent it may be difficult to separate these factors. For example, structure can determine what interests

⁶⁵³ M.J Trebilcock, “The Choice of Governing Instrument: A Retrospective”, *supra* note 48 at 54.

⁶⁵⁴ Trebilcock, *supra* note 48 at 69-72.

have influence, and thus can also affect the ideas proposed by officials of an organization.

In this chapter, ideas, interests and institutional structure are the primary framework used to analyze the behaviour of WIPO and the WTO. The approach of Keohane is the normative framework against which this understanding of the behavior of WIPO and the WTO is considered.

b. Two Institutions? One Institution?

As argued earlier in the thesis, there are two grounds for international cooperation in the patent field: the reciprocal recognition of patents, and cooperation in patent prosecution. As briefly summarized in Table 1 (in chapter 5), these grounds for international cooperation differ in their underlying features.

There are thus theoretical and practical grounds for two institutions in the international patent law field. These two institutions - WIPO and the WTO - address different cooperation problems.

As argued above, WIPO has become institutionally unsuited for facilitating international cooperation in the area of the reciprocal recognition of foreign patentees. This is primarily because the demand for substantive minimum standards has strengthened, involving more diverse nations than were previously involved in the process. Structurally, this reflects two difficulties with WIPO: the inability to bring non-patent (or non-intellectual property) concessions into negotiations, and the lack of an effective dispute resolution process.

The WTO, on the other hand, is not particularly well-suited to facilitate cooperation about patent prosecution. With only a handful of intellectual property specialists, it lacks the human capital capacity to move forward in the patent prosecution area or handle the requirements of prosecution. In addition, its negotiation and dispute resolution processes are aligned to resolve coordination problems and facilitate trade-offs rather than induce cooperation without trade-offs. The WTO “is not designed to help governments act more effectively to address a shared regulator [sic] problem.”⁶⁵⁵ In this sense, WIPO’s focus on promoting patent law “through cooperation among states” may be seen as a strength rather than a weakness.⁶⁵⁶

However, it may be more productive to regard WIPO and the WTO as one joint institution or institutional regime assisting in the area of international patent law cooperation rather than two separate organizations. This can also be described as “distributed governance”.⁶⁵⁷ Taking a view internal to patent law, the analysis may proceed on two questions: are international patent law needs met somewhere within this international regime, and may these needs be better facilitated?

In particular, there are areas of overlap and integration in the institutional design of WIPO and the WTO in the areas of ideas (in Trebilcock’s framework of

⁶⁵⁵ D.K. Tarullo, “Norms and Institutions in Global Competition Policy” (2000) 94 Am. J. Int’l L. 478 at 489. Tarullo makes a similar argument in the context of international competition law cooperation.

⁶⁵⁶ See Salmon, *supra* note 467 at 432.

⁶⁵⁷ See F.M. Abbott, “Distributed Governance at the WTO-WIPO: An Evolving Model for Open-Architecture Integrated Governance (2000) 3(1) J. Int. Economic Law 63 for a paper that essentially regards the WTO and WIPO as one regime for international patent law.

how organizations act) or information (in Koehane's analysis). These largely arise due to historical events, consistent with North's views on the importance of path-dependence in understanding institutions.⁶⁵⁸

It should be noted that there is nothing pre-ordained or necessary about the distribution of international governance in the patent field into two separate institutions. It is certainly possible to conceive of one institution having internal complexity sufficient to handle both grounds of patent cooperation – reducing duplication in prosecution and facilitating the reciprocal recognition of patents. For example, if the United International Bureaux for the Protection of Intellectual Property (BIRPI) had not become transformed into a United Nations entity, it is not unimaginable that it could have become incorporated into the WTO as its intellectual property division.⁶⁵⁹ Still, this thesis takes the position that there are advantages to be gained by having the two grounds for cooperation handled in the two separate institutions, as described in the rest of this chapter.

c. An Historic, Path-Dependent Perspective

States first cooperated in patent law to gain the reciprocal recognition of patentees. This required national treatment and some intrusion into domestic patent laws to facilitate the filing of foreign applications; however, the enforcement of minimum standards was largely left to informal processes. Over time, with greater numbers of international filings, states then began to cooperate

⁶⁵⁸ See North, *Understanding the Process*, *supra* note 49 at 51-52, 59

⁶⁵⁹ Albeit this would have left a vacuum for governance of intellectual property at the United Nations, which may have been filled by some other institution.

in a second stage in the international processing of patent applications (primarily via the Patent Cooperation Treaty). In the third stage, an increased demand for minimum standards combined with a demand for more states to adopt minimum standards and reciprocal patent protection led to the trade regime and the TRIPs Agreement.

This historical sequence, and the development of WIPO and the WTO, does not appear to be foreordained. The first step (as seen in the *Paris Convention* of 1883) may be the inevitable form of the first step of cooperation. As noted in Chapter 5, institutions and cooperation are more easily and effectively founded with a small number of somewhat homogeneous states, incorporating modest goals and loose or minimum burdens to induce compliance.⁶⁶⁰ The *Paris Convention* of 1883 may be the minimum form of agreement necessary to forward the idea of the reciprocal recognition of patents (and other industrial property). As noted above, it seems logical that some cooperation on minimum standards or a common understanding of the nature of patents must precede cooperation on reducing duplication in patent prosecution.

However, the founding of the Paris Union (or the adoption of the Public Union as the institutional form for patent law cooperation) seems dependent on the general international climate of the late 1800's. The first international institution taking the form of a Public Union may be historically contingent.

Past that point the sequence of events leading to WIPO and the WTO does not seem pre-ordained. It is conceivable that a demand for higher levels of

⁶⁶⁰ See footnotes 645 and 646.

minimum protection and compliance by developing states (such as India, Brazil and China) on the part of the United States and Europe could have occurred before the first-developed international institution adopted a role in the processing of patent applications. If this had happened, the first international institution (BIRPI/WIPO) might not have developed such a large human capital institutional capacity (recall that at the time of the TRIPs Agreement, WIPO had more than 1000 officials), and the second international institution (the WTO) might perhaps have needed to grow a large intellectual property directorate rather than delegate the task to WIPO. Alternatively, a smaller BIRPI might have had less institutional heft and perhaps would have merged into the WTO apparatus.

One can also speculate about the shape of international institutions if the first international institution (BIRPI/WIPO) had not transformed itself into an agency of the United Nations. In that case, BIRPI might have been free to join the WTO (which is not a United Nations agency) as a merged entity, creating only “one” international patent law institution.

Finally, it was not necessary that the demand for higher minimum or harmonized patent standards and the demand for developing countries to adopt serious patent laws be connected. As noted above, there were disagreements among the developed countries themselves regarding minimum patent standards, and that issue could easily have arisen primarily as a developed country issue.

Finally, it should be noted that the content and level of detail of the minimum standards in the TRIPs Agreement and the resulting WTO infrastructure could not have occurred without the pre-existence of WIPO. As noted by Ryan:

“When [TRIPs] was finally achieved as part of the Uruguay Round, it appeared that linkage-bargain diplomacy explained the outcome. And it seemed that international intellectual property lawmaking would from that time forward be linkage-bargain, trade-related diplomacy.

...

Closer examination of TRIPS diplomacy, however, reveals that linkage bargaining during the Uruguay Round only worked because there was a draft TRIPS agreement on the table as the final bargains were being struck. Expert specialists crucially helped cooperation in the international regime by deploying their technical knowledge, conducting what can be called function-specific diplomacy.”⁶⁶¹

As a result, the World Intellectual Property Organization and the World Trade Organization (or TRIPs regime) cannot be properly understood without reference to historical events, as described in chapter 4.

d. WIPO & Patent Prosecution

As the first-comer or older institution, WIPO evolved to meet the challenges of the reciprocal recognition of patents among similar states and reducing duplication in patent prosecution. With the signing of the TRIPs Agreement, many thought that the centre of gravity in international patent law

⁶⁶¹ Ryan, *supra* note 4 at 92-93

had moved to the World Trade Organization. However, an institutional analysis suggests that this is exaggerated. WIPO plays a key role in the information function of both WIPO and the WTO, provides a forum for the exchange of views from a wide variety of sources, is the lead institution in cooperation to reduce duplication in patent prosecution (which should be regarded as at least as important as minimum standards), still has a small role in substantive patent law, and provides a suitable institution for promoting experimentation in national patent laws.

As noted above, when the TRIPs Agreement was signed, WIPO employed over 1000 officials. Furthermore, WIPO had mechanisms in place to report patent laws and regulations; collect patent statistics; and report/publicize the information collected.⁶⁶² In addition, WIPO already had a mandate to provide legal-technical assistance to developing countries in the development of their patent laws and institutions.⁶⁶³

As a result, under the TRIPs Agreement the WTO has largely left the information function of international institutions (i.e. providing information, reducing information asymmetries, and monitoring compliance) to WIPO. Even today, the number of intellectual property officials in the WTO secretariat is reported to be about five.⁶⁶⁴ In this sense, the WTO is an incomplete institution with respect to facilitating cooperation on the recognition of foreign patentees – the information function is provided by a different institution, WIPO. In

⁶⁶² See *Paris Convention*, *supra* note 68, Article 15(2), (3), (4) and (5); WIPO Convention, *supra* note 469, Article 4(iii)

⁶⁶³ WIPO Convention, *supra* note 469, Article 4(v).

⁶⁶⁴ Salmon, *supra* note 467 at 432.

Trebilcock's framework, ideas in the international intellectual property field are more likely to be influenced by "WIPO" - whether as officials of WIPO, national officials, or IGOs or NGOs - even with respect to subjects such as minimum standards.

In furtherance of this information role, WIPO makes public a large number of free publications on intellectual property, runs courses through its IP academy, and holds regular meetings and conferences on intellectual property topics, all in addition to organizing negotiations between states. WIPO regards "Providing a Forum for Debate" as one of its five "Core Tasks".⁶⁶⁵

WIPO has also been reported as taking an interest in developing "soft law" – non-binding resolutions that presumably have an influential effect on international thinking on a topic. While these non-binding statements have reportedly had an influence in some areas of international law,⁶⁶⁶ it is uncertain how effective they would be in patent law, except perhaps in limited situations such as in respect of access to pharmaceuticals by the least developed countries.⁶⁶⁷ Their effectiveness, of course, would depend upon the

⁶⁶⁵ See WIPO website (http://www.wipo.int/about-wipo/en/core_tasks.html) (accessed May 24, 2007)

⁶⁶⁶ See J.J. Kirton and M.J. Trebilcock, "Introduction: Hard Choices and Soft Law in Sustainable Global Governance" in J.J. Kirton and M.J. Trebilcock, Eds., *Hard Choices, Soft Law: Voluntary Standards in Global Trade, Environment and Social Governance* (Burlington, VT: Ashgate Publishing Ltd., 2004) 1 at 9: "Intergovernmental organizations such as the ILO and OECD can employ soft law practices when they rely on the tripartite participation of government, business and labour to devise and manage regimes, and when they produce voluntary codes that their members – or more often constituents within them – are to varying degrees free to adopt or not." or at 10: "In its many forms, soft law has long existed in many fields of public and international life. Indeed, since the ... 1970s .. soft law arrangements have flourished all across the global stage." The same article notes, however, that "soft law" may have many meanings, possibly extending even to customary law.

⁶⁶⁷ See, for example, J.T. Gathii, "The Legal Status of the Doha Declaration on TRIPs and Public Health Under the Vienna Convention on the Law of Treaties" (2002) 15

persuasiveness of their content and the conditions under which the “soft law” was created. Such soft law statements or voluntary standards might, however, be considered in the WTO dispute resolution process.

In respect of interests, WIPO is open to representatives from a wide range of groups. WIPO has a long history of interacting with NGOs – at first, professional organizations and patent owners, but more recently members of “civil society”. Traditionally, WIPO has been heavily influenced by NGOs which were typically representatives of patent sensitive industries and patent law professionals. Preferably, WIPO should also be open to a wide range of NGOs representing development, health and other related interests -- in general, to balance the influence of industrial and professional NGOs.

Although only states ultimately negotiate agreements, this wide representation of interests can be perceived as an antidote for the “democracy deficit” – the view that international decision-making, particularly in the economic fields, is controlled by an elite whose views are dominated by producer interests. Recently, WIPO has been eager to incorporate views from wide sections of international society and has actively sought public input, as seen in the preparation by the International Bureau of the draft WIPO Internet Domain Name Process, which “combin[ed] elements of direct democracy with direction from a multilateral institutional bureaucracy.”⁶⁶⁸ As this suggests, a critical structural element is the relative independence of the WIPO central bureaucracy from tight

Harv. J.L. & Tech. 291 at 314, noting that the Doha Agreement (*supra* footnote 538) is a soft law agreement.

⁶⁶⁸ Abbott, *supra* note 657 at 65.

state control, due to historical (a history of independence), monetary (WIPO's budget is primarily supplied through fees for services), and capability (WIPO is a numerically large organization) reasons.

As the welfare effects of various patent laws and regulations are complicated and subject to high levels of uncertainty, the influence of a variety of views is probably desirable. It would perhaps increase the chance of having welfare-enhancing agreements – or at least avoiding agreements that have profound negative effects.

However, even under optimistic assumptions, it is unlikely that even this diverse range of interests will adequately serve consumer interests, particularly in developed countries.⁶⁶⁹ As argued above, there has perhaps been a shift towards granting patent applicants control over the processing of applications that may not be in the best interests of consumers. However, this is largely a problem that arises at the level of national patent offices and government, and its solution is difficult.

NGOs cannot replace representatives of states, whether diplomats or representatives from patent offices. A key role for WIPO thus has to be providing technical assistance to developing countries, with the goal of capacity building so they can participate meaningfully in the international patent regime. WIPO would seem to be preferable to the WTO for technical assistance for several reasons:

1) it is already providing such assistance; 2) it has pre-existing technical expertise in patent law, while the WTO has none; 3) WIPO has access to

⁶⁶⁹ To a large extent, consumer interests in developing countries may well be represented by advocates for development.

adequate, ongoing funding for technical assistance via patent fees; and 4) the relatively strong position of developing countries in WIPO makes it likely that ongoing assistance that is helpful to developing countries will be forthcoming.

In addition to technical assistance, WIPO assistance is also important to developing countries in terms of funding their participation in the international intellectual property institutions. Reichman writes:

“The transaction costs of building and staffing intellectual property systems, including patent offices and other administrative agencies, constitute a palpable drain on very scarce resources. Poor countries also have to send high-level delegations to numerous meetings at [WIPO], the WTO, and other bodies, not to mention regional and sub-regional meetings on related issues, whose costs further burden their treasuries. It is an open secret that many countries simply could not afford to attend these meetings if WIPO and other organizations did not foot all or part of the bills.”⁶⁷⁰

Once again, the financial independence of WIPO from country approved financing supports this role.

Structurally, WIPO works by consensus without issue linkage outside of the intellectual property field, and without an adjudicatory dispute resolution system. As a result, WIPO must strive to represent the views of all states, including developing states, when proposing revisions to existing agreements such as the *Paris Convention*. The requirement for consensus helps drive the inclusiveness of interests and ideas, as described above. It also plays a role in

⁶⁷⁰ Reichman, *supra* note 824 at 450. Note that this can have a darker side: Braithwaite and Drahos (GBR) *supra* note 18 at 496 write that “As a former WIPO official explained to us, one way in which many developing countries from Africa and the Pacific were persuaded to sign WIPO intellectual property treaties was that WIPO officials told individual bureaucrats from those countries that membership of those treaties would entitle them to WIPO-funded trips to Geneva (with allowances).”

encouraging new members to join WIPO agreements, as a commitment to a present treaty text does not commit a signatory state to any future amendments.

WIPO can therefore be seen as well-designed to address the collective action problem of reducing duplication in patent prosecution, as outlined in Table 1. Duplication in patent prosecution typically results in gains for all signatory parties, albeit the gains may not be equally (or equitably) distributed. Compliance is a small problem, since changes are generally in all states' interest, and compliance is easy to both detect, judge and monitor. Under these conditions, the primary challenge for the international institutions is to encourage discussion and negotiation, which WIPO does well.

WIPO also provides much of the infrastructure to support international patent prosecution through the operations of the International Bureau. However, this should be separated from the issue of assisting states to reach agreements, the general topic of this thesis. The fees collected through the operations of the International Bureau through the PCT do provide a pivotal underpinning for WIPO's work, providing roughly 85% of WIPO's revenues independently of state funding.⁶⁷¹

It should be recalled that the combination of an informal dispute resolution system and focus on intellectual property issues is often advantageous, regardless of the shortcomings it may have for collective action in the recognition of foreign patentees. In particular, the lack of an adjudicatory dispute resolution system encourages countries to join treaties without fear of later treaty interpretations creating obligations that they did not anticipate or consent to, and

⁶⁷¹ See footnote 477

keeps the reputation costs of non-compliance to a minimum. In such an environment, states may be more likely to cooperate at least tentatively on difficult issues. It will also encourage states to experiment in patent law innovations and agreements. Of course, it would be possible for WIPO as an institution to develop a more adjudicatory dispute resolution system, and perhaps to allow for the suspension of obligations under WIPO treaties if a state was found to be in non-compliance (i.e. mimic the WTO dispute resolution system), but doing so would lose the advantages of a looser compliance system.⁶⁷² Furthermore, to the extent that WIPO agreements are incorporated into the TRIPs Agreement, such a move would also be redundant.

WIPO also has the advantage of allowing great flexibility and diversity in patent laws within its structure. WIPO agreements (such as the *Paris Convention*) are updated through various revisions, and states can choose to which level of revision they wish to adhere. As a result, even within the *Paris Convention* there is room for diversity.⁶⁷³

However, to fully realize the potential for experimentation and diversity, WIPO's central bureaucracy would have to be open to sub-agreements or Unions, including the idea of limited or regional harmonization of patent practices. As noted in Chapter 5, there may be benefits to be gained by treating

⁶⁷² It should be noted that if two countries wish to have a dispute arbitrated, they can do so through the WIPO mediation and arbitration center. However, countries are free to arbitrate disputes whether through WIPO or not; such voluntary arbitrations are not the same as a non-voluntary dispute resolution system.

⁶⁷³ This point is somewhat diminished by the TRIPs Agreement, which requires states to adhere to the latest (1967) revision of the *Paris Convention* (TRIPs Agreement, *supra* note 92, Article 1.3). However, this is a feature of TRIPs and the WTO, not WIPO.

patent cooperation as a regional rather than a global public good. Agreements can then be concluded between similarity situated countries. This has the benefit of allowing agreements to be reached without political holdups by parties with differing interests, and also has the advantage of taking pressure off developing countries to necessarily conform to developed countries standards.⁶⁷⁴ Recently, the International Bureau has sought to bring together disparate groups rather than encourage the possible fragmentation of international intellectual property law.

This latter point may well be hotly contested, since it implies that groups of developed countries may well cooperate and reach their own agreements in a manner that does not reflect the interests of developing countries. Furthermore, over time these might become rules that other states “have” to follow due to resource constraints. For example, if the trilateral offices (the USPTO, EPO and JPO) adopt a certain set of standards, if developing country patent offices (such as ARIPO) want to cooperate with trilateral offices to reduce their costs, it will be on the trilateral offices’ terms. However, recent negotiations towards broad based treaties (whether in the areas of patent prosecution or substantive patent law) have repeatedly broken down, primarily because there is a desire for a broadly based treaty that can command wide support. Perhaps this is too ambitious, and unnecessary. In any case, if there is a demand for cooperation between, say, the patent offices of the developed countries, and this cannot be

⁶⁷⁴ Recently, negotiations in WIPO have been seriously compromised not only by states refusing to compromise due to their perceived self-interest, but we have seen developing countries beginning to tie their cooperation in WIPO to favourable developments in other contexts, such as the WTO.

achieved through WIPO, it will simply be achieved through a different forum. It would be beneficial for such negotiations to still take place within the WIPO context.

As a final note, the advent of the TRIPs Agreement does not prevent WIPO from hosting talks and negotiations aimed at minimum standards in substantive patent law. In fact, negotiations for a Substantive Patent Law Treaty (SPLT) are presently ongoing. Useful ideas from such negotiations may feed into the WTO process, and the WIPO is still a suitable institution for agreements that do not require adjudicative dispute resolution and issue linkage.

e. WTO & The Recognition of Foreign Patentees

This thesis argues that the WTO is the appropriate forum for collective action in respect of the second ground for cooperation – the recognition of foreign patentees, which has evolved to a point where substantive minimum standards for patent law among diverse states are now required. As discussed earlier, this primarily results from the wide range of issues discussed at the WTO, thus allowing linkage bargaining; and the dispute resolution mechanism, through which states can call upon the WTO to arbitrate disputes and identify defection. Two primary issues in respect of the WTO are the interpretation of the TRIPs Agreement, and future amendments to the TRIPs Agreement. It is important to consider the implications for these two questions of the institutional impact of the

two main WTO patent bodies: the dispute resolution process and the TRIPs Council. As noted by Tarullo:

“Institutions also matter in the dynamic sense that, over time, they will shape the principles and goals that were agreed upon in general terms at the time the institutional arrangement was launched.”⁶⁷⁵

As argued above, many of the ideas central to patent law itself, and the handling of many informational functions, fall to WIPO even within the realm of minimum patent standards. As such, WIPO supports the WTO in its institutional functions.

However, the move of international patent law to the WTO also raises difficult questions about the structures, ideas and interests that drive international trade, and how they interact with the patent law subject area. Generally speaking, trade law is driven by trade ministers, who are usually considered to be acting in the interest primarily of domestic exporters and importers.⁶⁷⁶ They are concerned with market access – negotiating for greater access to foreign markets for their exporters, in return for which they will make concessions to allow foreigners access to their domestic markets.⁶⁷⁷ To a certain extent, trade negotiations are thus quasi-mercantilist,⁶⁷⁸ albeit the underlying economic theory is that these quasi-mercantilist motivations will take the form of cooperation that

⁶⁷⁵ Tarullo, *supra* note 655 at 492.

⁶⁷⁶ Tarullo, *supra* note 655 at 483.

⁶⁷⁷ See an implication of this in K Bagwell, P.C. Mavroidis & R.W. Staiger, “It’s a Question of Market Access” (2002) 96 Am. J. Int’l L. 56 at 56, who write: “we argue that market access issues associated with the question of the optimal mandate of the World Trade Organization should be separated from nonmarket access issues.”

⁶⁷⁸ Tarullo, *supra* note 655 at 488.

is globally welfare enhancing.⁶⁷⁹ To forward these goals, trade agreements generally contain fairly specific and detailed rules for states to follow, and a dispute resolution system, adopted to rule on alleged violations, has stated timetables and (subject to an appeal process) is difficult to overturn through diplomatic pressure.⁶⁸⁰ The dispute resolution system is adversarial, with both sides presenting their case in a legalistic fashion.

It is difficult to see how these features of the WTO system mesh well with patent law as a subject. Normatively, patent law *per se* is not about market access, but about economic regulation to promote innovation as part of a broader innovation law policy bundle. An important perspective is a trade-off between rewards to world-first innovators and access to technology for follow-on innovators. Patent law is also an area where the public purpose of encouraging innovation is accomplished through private action. Depending upon the situation, patent law (a public institution) may be used in good faith by private actors to prevent market access by competitors, including foreign competitors. This also implies that in contrast to traditional trade law, intellectual property law issues at the WTO will be driven by ministers acting in the interest of domestic intellectual property holders.

Additional differences between traditional trade law and international intellectual property law are discussed in the following two sections: the rationale

⁶⁷⁹ K. Bagwell and R.W. Staiger, *The Economics of the World Trading System* (Cambridge, MA: The MIT Press, 2002) at 15-30; Trebilcock and Howse, *infra* footnote 681

⁶⁸⁰ In the pre-WTO GATT, a dispute resolution decision had to be unanimously approved by the signatory states. Under the WTO dispute resolution process, only a consensus can overturn a decision under the dispute resolution process.

of the WTO in respect of patents, and the treatment of the least developed countries.

i. The Rationale of the WTO in Respect of Patents

The traditional objective of the WTO and its predecessor, the GATT, has been to reduce tariffs, based on the underlying economic argument that this is better overall for each state (albeit not for every person in each state), and the underlying political argument that this in a sense supports democratic values by promoting the interests of the majority (consumers) over minority interests who are privileged by protectionism.⁶⁸¹ Restraints on domestic governments to assist them in resisting pressure narrow protection-seeking interest groups is seen as a benefit of the WTO system.⁶⁸² However, with the drastic reduction in tariffs and consequent focus on non-tariff barriers, the traditional focus on reducing tariffs to the exclusion of other concerns has come under attack even within the WTO's core mandates.

Whatever their validity in a general sense, traditional theories about the trade system under the GATT seem ill-fitted to support the WTO's post-1996 role

⁶⁸¹ P.M. Gerhart "The Two Constitutional Visions of the World Trade Organization" (2003) U. Pa. J. Int'l Econ. L. 1 at 17-21; J.O. McGinnis & M.L. Movsesian "The World Trade Constitution" (2000) 114 Harv. L. Rev. 511; R.E. Hudec "Circumventing Democracy: The Political Morality of Trade Negotiations" (1993) 25 N.Y.U. J. Int'l L. & Pol. 311. Trebilcock and Howse, *The Regulation of International Trade* (3rd ed.) *supra* note 32, chapter 1.

⁶⁸² See S. Charnovitz, "Triangulating the World Trade Organization" (2002) 96 Am. J. Int'l L. 28 at 44. See also W.F. Schwartz and A.O. Sykes, "The Economic Structure of Renegotiation and Dispute Resolution in the World Trade Organization" (2002) 31 J. Legal Stud. 179 at 195: "In sum, the political balance of interests favoring and opposing the results of a trade agreement may be expected to tilt quite systematically toward those favoring the agreement as time passes."

in patent or intellectual property law. Unlike trade rules which generally prohibit actions (do not raise your tariffs once bound; do not discriminate against foreign entities), the TRIPs Agreement imposes positive obligations on states to adopt patent laws of at least a minimum standard. There is no well-supported theory of global welfare enhancement underpinning the TRIPs Agreement, particularly in the detailed design of patent laws, and no theory of the alignment of private interests to promote welfare enhancing domestic laws.

With the adoption of the TRIPs Agreement, the World Trade Organization has moved firmly away from organizing tariff reductions to a broader role of reconciling competing state economic and political interests. Gerhart describes this as an external, participatory vision:

“This vision understands the WTO as overseeing international political processes through which states can seek to influence the policies of other states when they find those policies to be harmful. ... this vision recognizes that when governments make economic policy, they often impose costs on people in other countries, and that those people who are adversely affected have little influence over, or participation in, the policymaking. The WTO provides a forum that allows those who are adversely affected by the policy made in other countries to have a voice in changing that policy. ... The WTO is a form of participatory policymaking for foreigners who would otherwise not have effective influence over economic policies that hurt them.”⁶⁸³

This thesis is not about the WTO in its broader sense, and does not pass judgment on whether an embrace of this external, participatory role for the WTO is desirable for the trade realm as a whole.⁶⁸⁴ Indeed, some trade specialists opposed the inclusion of intellectual property in the trade realm on the grounds

⁶⁸³ Gerhart *supra* note 681 at 3, 21-22

⁶⁸⁴ Gerhart *supra* note 681 argues that it is desirable for the trade system as a whole.

that it would open the door for the world trading system to become engaged with many economic and social issues – labour, environmental, competition – and possibly imperil the success of the trade system in its core areas.⁶⁸⁵ However, I take the view that Gerhart’s “external, participatory vision” describes accurately the WTO’s role in respect of international patent law. Whether this animating idea is suitable for the WTO in general, or should be restricted to the TRIPs Agreement as an aberration, is beyond the scope of this thesis.

ii. Are WTO patent law obligations bilateral or multilateral?

Are international patent law agreements multilateral or bilateral obligations? Goldsmith and Posner state that “we are skeptical that genuine multinational collective action problems can be solved by treaty.”⁶⁸⁶ To the extent that multilateral treaties are seen to work, they claim that many bilateral cooperative relationships are in play with the treaty as a focal point. One basis for this is the lack of evidence of multilateral as opposed to bilateral retaliation for treaty breaches. This claim has been disputed by other authors, including those taking a rationalist viewpoint, using examples such as the World Trade Organization.⁶⁸⁷ One criticism is that Goldsmith and Posner’s analysis focuses

⁶⁸⁵ J. Bhagwati, *In Defense of Globalization* (Oxford: Oxford University Press, 2004) at 183; G. O. McGinnis and M.L. Movsesian, “Against Global Governance in the WTO” (2004) 45 Harv. Int’l L.J. 353 at 354

⁶⁸⁶ J.L. Goldsmith and E.A. Posner, *The Limits of International Law* (Oxford: Oxford University Press, 2005) at 87.

⁶⁸⁷ Guzman, *Promise supra* note 50 at 553.

on retaliation and ignores the effect of reputation, which is more likely to have a multilateral effect.⁶⁸⁸

The claim that international patent law obligations are of a collective or multilateral nature raises interesting questions in the WTO context. As Pauwelyn has stated:

“In discussing the public goods nature of the WTO, it becomes crucial to ask whether WTO obligations can be reduced to bundles of bilateral obligations, comparable to the domestic law analogue of a contract, or whether we should construe WTO obligations as “collective” in nature, which would make them comparable to a domestic criminal law statute or even domestic constitutions.”⁶⁸⁹

Whatever the answer is in other trade areas, it seems that, similar to the domestic context, international patent law is a mixture of private and public law. In utilization, exploitation and litigation, it takes a private form: two opposing parties, an expression of entitlement in terms of a property right, and a rough idea of corrective justice - that one party has taken something from the other, and as best the law can, it returns that abstracted something in terms of money.⁶⁹⁰ However, patent law is equally about public law: it is enacted normatively to further a public purpose of increasing innovation (as described in chapter 2), patent rights are rights against the world, and the result of private litigation may be the loss (or lessening) of the patent right against the entire world.⁶⁹¹

⁶⁸⁸ Guzman, Promise *supra* note 50 at 553.

⁶⁸⁹ J. Pauwelyn, “WTO Dispute Settlement: Of Sovereign Interests, Private Rights and Public Goods” in K.E. Maskus and J.H. Reichman, eds., *International Public Goods and Transfer of Technology* (Cambridge: Cambridge University Press, 2005) 817 at 821

⁶⁹⁰ See E.J. Weinrib, *The Idea of Private Law* (Cambridge: Harvard University Press, 1995)

⁶⁹¹ Specifically, if a patent as a whole is found invalid, the court typically renders the patent invalid against everybody. In Canada, a judgment by a court that a patent (or

In contrast to traditional trade disciplines, the public law nature of patent law, or the idea of the TRIPs Agreement as a collective obligation, is important.

A major reason is suggested by Pauwelyn:

“Classifying WTO obligations as bilateral/contractual in nature offers more scope for two WTO members to settle trade disputes between themselves, or to renegotiate or modify their WTO contract (so long as they do not thereby change the rights or obligations of third parties).”⁶⁹²

But it is difficult to amend patent laws so as to “not thereby change the rights or obligations of third parties.” Short of a blatant violation of most favoured nation principles (most likely in the area of ownership), it would be difficult to write patent laws in many disputed areas (such as the obviousness standard, or subject matter, experimental exceptions, or remedies) that only affect one bilateral relationship.⁶⁹³

The collective or public law nature of patent law suggests that two WTO members should not simply settle a patent law dispute between themselves as they see fit without considering the interests of other WTO members. As collective obligations, deviations from minimum standards are difficult for the

claims of a patent) is invalid shall upon request be registered in the patent office and “the patent, or such part as is voided, shall thereupon be and be held to have been void and of no effect” (see Canadian Patent Act, s. 62).

⁶⁹² Pauwelyn, *supra* note 689 at 820.

⁶⁹³ For example, Canada and the United States could sign a bilateral treaty requiring both countries to allow software patents. However, Canadian and American software patents would then be available to applicants from all countries. Indeed, this was the case when the United States pioneered many new subject matters for patents: applicants from all countries could obtain software, life form and business method patents regardless of their availability outside of America. After the signing of the TRIPs Agreement, the United States has concluded several bilateral treaties that raise the minimum standards of protection for patents and other intellectual property in the treaty partner; similarly, they raise the standards for nationals of all countries.

TRIPs logic to tolerate. Agreements to settle disputes necessarily carry the potential to affect other members.

Consider, for example, the question of the stockpiling exception in Canadian patent law challenged by the European Union in the *Canada – Patent Protection of Pharmaceutical Products* case.⁶⁹⁴ In that case, the Canadian government had passed legislation to allow competitors of patent holders (primarily in the pharmaceutical field) to stockpile inventory covered by a patent in the last six months of the patent's life to facilitate prompt entry into the market upon the expiry of the patent. How could the European Union and Canada have negotiated a bilateral solution that did not affect the position of third party industries?⁶⁹⁵ Removing the stockpiling permission for patents owned by European companies would have violated the most favoured nation clause. Even a side payment of money to the European Union would have affected the interests of third party industry if the payment had been delivered by the EU to affected European companies (and of course would have left Canada in a position of TRIPs-violation in respect of other WTO countries).⁶⁹⁶

It is interesting to look at the reasons Pauwelyn gives for WTO obligations being bilateral obligations and compare them to the patent law context:

⁶⁹⁴ See Panel Decision reported in WTO document WT/DS114/R (June 17, 2000)

⁶⁹⁵ The same observation applies in respect of the regulatory review or BOLAR exceptions, which were also part of the *Canada – Patent Protection of Pharmaceutical Products* case.

⁶⁹⁶ The possibility of a side-payment to settle a TRIPs dispute instead of a move to compliance is also troubling since it implies that large states with more bargaining power may receive disproportionate payments for a state's non-compliance while leaving less-wealthy or developing countries in a disadvantaged position.

These comments on the settlement of disputes via side payments would also apply to many non-intellectual property trade disputes as well.

“These include:

- Their subject matter (country to country trade)
- Their origins (reciprocal trade concessions negotiated bilaterally and multilateralized subsequently under the most-favoured nation doctrine)
- The objective of WTO obligations (trade liberalization as a common interest, though not a genuine collective interest, like the one at stake when protecting human rights, which transcends the sum total of individual state interests (trade as an instrument, not a value);
- The treatment of breach and the enforcement of WTO obligations (through an almost exclusively bilateral, state-to-state mechanism, explicitly permitting bilateral suspensions of obligations in response to continuing breach).”

In contrast, in respect of international patent law:

- The subject matter is patent laws within a country and their availability to foreign entities, not country to country trade or monetary flows *per se*
- The origins of international patent law are a multilateral treaty (the Paris Convention); *not* bilateral obligations subsequently multilateralized (and in fact, the attempt to achieve bilateral treaties positively failed)⁶⁹⁷
- The normative objective of patent law obligations is to facilitate an international system to promote innovation (a collective interest, not just common interests (in Pauwelyn’s terms))

The treatment of breach and enforcement of WTO obligations is the topic of this chapter.

As noted above in chapter 4, in the pre-*Paris Convention* period, it is reported that considerable interest arose in bilateral treaties for industrial

⁶⁹⁷ See footnote 370 and accompanying text.

property, and that in fact 68 bilateral agreements were signed before 1883.⁶⁹⁸ However, only one of these bilateral agreements covered patent law – and that was between Lichtenstein and Austria, which were only semi-independent entities. It was not until the *Paris Convention* – a multilateral relationship – that nations could overcome their collective action problems and reach agreement in the patent field.

It is also interesting to note that when the informal norm of a substantive law was challenged by the defection of the Netherlands and Switzerland in the late 1800's, the proposed retaliation included both multilateral and bilateral retaliation – bilateral retaliation from the German government, multilateral retaliation by amending the Paris Convention to allow states to demand reciprocity (which may be interpreted as permitting multiple bilateral reciprocity retaliations), or by amending the Paris Convention to insert strong minimum standards for patent laws – a multilateral response. It is also interesting to note that the United States, who at the time was not a serious competitor of Switzerland, particularly in chemicals, was a leading advocate of amending the Paris Convention to allow retaliation against the Swiss.⁶⁹⁹ The acquiescence of Switzerland and the Netherlands denied us the opportunity to see whether a multilateral response would have eventually been adopted. It is also interesting to note that the literature claims that reputational concerns lay behind both the

⁶⁹⁸ Also, bilateral copyright treaties were in force in 1886, not counting many treaties between German states. See Ricketson, *supra* note 371 at 38.

⁶⁹⁹ Schiff, *supra* note 408 at 93

Swiss and Dutch decisions to adopt meaningful patent laws.⁷⁰⁰ This is consistent with Guzman's rationalist analysis of reputation and the idea that non-compliance with agreements (including informal norms of behavior) can harm a state's reputation multilaterally.⁷⁰¹

It is also suggestive in this context to note that India has already complained about multiple actions brought by different states (the United States and the European Union) for the same alleged TRIPs violation in the patent field.⁷⁰² A patent-related violation of the TRIPs Agreement is likely to harm more than one member state.

As discussed above in Chapter 5, international patent law should be seen as a collective interest – a solution to interrelated collective action problems. Patent-related incentives spill over borders, while patent-related costs (particularly deadweight cost) largely do not. Thus, the world-wide incentive for innovation is a summation of the incentives provided by national patent laws – or more accurately, there is an increase in domestic incentives in each country, following a weighted summation technology of each country's patent-related

⁷⁰⁰ Schiff, *supra* note 408 at 77-81, 88-90 and 124-126

⁷⁰¹ Guzman, Promise, *supra* note 50 at 553-554.

⁷⁰² See *India - Patent Protection for Pharmaceutical and Agricultural Chemical Products*, Complaint by the European Communities and their member States - Report of the Panel Doc. WT/DS79/R at para. 7.9 to 7.17. The other complaint in question was *India - Patent Protection for Pharmaceutical and Agricultural Chemical Products*, Complaint by the United States, doc. WT/DS50/R.

Note that the characterization of patent law obligations as multilateral or bilateral does not speak to the question of whether the WTO system follows a liability or property rule approach to violations. (See Schwartz and Sykes, *supra* note 682 at 181-183.) Under a liability rule approach, a multilateral obligation will raise the price the violator expects to pay for non-compliance, but does not render a liability rule approach infeasible.

incentives, since the effects of a country's domestic market providing incentives in a foreign country is affected by market size and by ease of access. For most countries, domestic incentives to innovate are significantly affected by foreign patent laws. Meanwhile, there will always be a free-rider problem in international patent law. If some countries are committed to an open patent system, other countries can attempt to free-ride on these countries, avoiding many of the costs of operating a domestic patent system. The acceptability – or the acceptable extent of – free riding is a collective issue (see chapter 5, above, under reduction of discord). Due to patent law's multilateral effect, the strength of national patent laws, their availability to foreign entities, and the willingness of states to incur the costs of a patent system is a collective problem. Put more broadly, the innovation system including the international patent system is a global innovation system.

Pauwelyn suggests that regarding WTO obligations as bilateral is supportive of state autonomy, while viewing them as collective obligations “would transform the WTO into a one-size-fits-all construct where all WTO members could complain about any breach of WTO law, no matter whether they were individually affected, and all WTO relations could only be altered by a consensus of WTO members. This interpretation makes WTO law the world's trade “constitution”...”⁷⁰³ However, this is taking a bleak view of the situation. While it is true that ignoring the collective nature of international patent law obligations would result in greater flexibility, the collective nature is inherent in the subject

⁷⁰³ Pauwelyn, *supra* note 689 at 820

matter (patent law) being agreed on. Entering into an agreement on minimum standards in patent law is indeed to negotiate a one-system-fits-all agreement. Of course, the agreement or system itself may include flexibilities – and the TRIPs Agreement does incorporate many such flexibilities⁷⁰⁴ – but adherence to the minimum standards agreement itself flows from the nature of the subject matter.

An interesting question is why international patent cooperation seems to take the form of a multilateral obligation. While modern patent law has taken a form that treats all foreigners equally – the norm which underlies a multilateral rather than a bilateral obligation – this is not dictated by any underlying and unalterable feature of patent law. A patent law could discriminate between foreigners based on ownership or domicile, or perhaps based on citizenship or domicile of the inventor. Yet, breaches of the most favoured nation clause seem to be rare.⁷⁰⁵ This thesis cannot give a definitive answer to why this is so; however, it can make some suggestions.

The most likely factor is the values of two overlapping transnational epistemological groups that have driven international patent law cooperation:

⁷⁰⁴ See, for example, TRIPs Agreement, *supra* note 92, articles 7, 8, 30, 31 and 65 (particularly paragraph 2).

⁷⁰⁵ One exception: the United States traditionally discriminated against foreigners by only allowing evidence of inventive acts in the United States to be used to claim a date of invention earlier than the filing date of an application (See *Application of Hans Hilmer* 359 F.2d 859 (CCPA 1966) and *In re Hilmer* 424 F.2d 1108 (CCPA 1970)). Recall that the United States has a first to invent system of awarding patent rights, and proving an early date of invention is critical in some cases. In the period between the implementation of NAFTA and the implementation of the WTO agreements, evidence of acts in Canada and Mexico, but not the rest of the world, were also admitted to establish an earlier date of invention. See G.B. Dinwoodie, W.O. Hennessey and S. Perlmutter, *International and Comparative Patent Law* (Newark: LexisNexis Matthew Bender, 2002) at 327-328.

patent sensitive professionals and industries, and science/technical professionals. As defined by Braithwaite and Drahos, “Epistemic communities are loose collections of knowledge-based experts who share certain attitudes and values and substantive knowledge, as well as ways of thinking about how to use that knowledge.”⁷⁰⁶

As noted at several parts of this thesis, international patent law cooperation has been driven by the actions of international industry and related patent professionals, whose interests largely coincide. Internationally oriented business wishes for a transparent and level (and favourable) playing field in foreign countries, which is gained by a norm of the equal treatment of foreign entities (and equal treatment with domestic entities). Recall that the first serious movement for a multilateral patent treaty at the Austrian exposition of 1873 was driven by patent professionals from Germany and Austria,⁷⁰⁷ then the meetings leading up to the Paris Convention were dominated by delegates from France,⁷⁰⁸ and only then signed by diplomats. The idea of the multilateral nature of patent law is also nourished by a belief in, or at least rhetoric invoking, the natural rights of inventors, which inherently opposes discrimination based on nationality or domicile.⁷⁰⁹

The epistemological community of science also plays a role. Questions such as “is this new,” “is this obvious,” “does this work?,” “can a person skilled in

⁷⁰⁶ Braithwaite and Drahos, GBR *supra* note 18 at 501

⁷⁰⁷ May, *The WIPO*, *supra* note 385 at 16

⁷⁰⁸ Ladas, *supra* note 356 at 62. These meetings were held in Paris.

⁷⁰⁹ A.R. Sommer, “Trouble on the Commons: a Lockean Justification for Patent Law harmonization” (2005) 87 J. Pat. & Trademark Off. Soc’y 141

the art understand the invention as written in the specification” or “can a person skilled in the art understand what is claimed?” are all fundamental patent law questions that are as much scientific or engineering questions as legal questions. Obviousness and claim construction – the two central issues in patent law – are dealt with from the point of view of a person skilled in the art: a scientist or engineer, who views the technical inventiveness or language inherently without regard to national origin, from the point of view of an international epistemological community. Generally, science and the scientific community aspires to a blindness towards origin.

Similar thinking in these two transnational epistemological communities (patent and scientific) is reinforced as international communication becomes easier and more frequent.

This explanation is consistent with the rationalist approach to international law adopted in this thesis. As discussed in the introduction, this thesis adopts the model of states as the primary actors in international law and relations, but with state interests largely determined by domestic patent-sensitive industry interests.⁷¹⁰ To the extent that domestic patent-sensitive industry regards international patent law obligations as multilateral, that attitude is adopted by the state.

Of course, this analysis will not satisfy those who are skeptical about multilateral international obligations. E. Posner and Goldsmith, for example, concede that some aspects of the GATT structure – such as the

⁷¹⁰ See Schwartz and Sykes, *supra* note 682 at 183: “Public choice teaches that the objectives that individual countries pursue through international agreements are determined by an interaction among organized interest groups.”

nondiscrimination or most favoured nation terms - can only be understood as an attempt to address a multilateral collective action problem.⁷¹¹ However, they view such aspects as attempts to impose a multilateral framework on a fundamentally bilateral structure, and predict their failure.⁷¹² Similarly, one might predict that conceptions of patent law obligations as multilateral, no matter how widely held, are incorrect and predict future observable departures from a multilateral structure as the system matures.

iii. The Developing Countries

The same factors that underlie international cooperation in the area of the recognition of foreign patentees (as discussed in chapter 3(b)) also imply that the least developed countries should not be strictly tied to the TRIPs Agreement standards. The basis for the arguments regarding National Treatment and minimum standards for patents in both the economic and political aspects rest upon variation between countries as to their size and innovativeness. If one can equate innovativeness to development by saying that the least developed countries have little innovative capacity (whether in terms of creating an invention or innovation or in terms of exploiting a spillover from a foreign innovation via

⁷¹¹ Goldsmith and Posner, *supra* note 686 at 149

⁷¹² Goldsmith and Posner, *supra* note 686 at 149. See also p. 158: "Then why did GATT's drafters include rules designed to solve collective action problems? They might have erred, or they might have thought that the United States could unilaterally enforce the entire system. But the more plausible explanation is that the draft drafters did not have a clear idea of what GATT would and could accomplish."

imitation), then the least developed countries essentially fall out of the global social welfare equations;⁷¹³ they have nothing to gain from accepting patent law and potential profit flows to innovators from those countries are small. For the least developed countries, the economic arguments in favour of the recognition of foreign patentees (either National Treatment or minimum standards) fall away. Similarly, the political arguments seem to be minor: the least developed countries are not serious competitors of the developed countries. To the extent that the least developed countries are included in the TRIPs Agreement, it is because of the “one deal” idea from trade law and, possibly, capture of developed country negotiating positions by corporate interests.⁷¹⁴

As discussed above, some commentators take the view that it is in developing countries’ self-interest to have a strong patent law to attract investment, stimulate technology transfer and encourage their citizens to invent and take advantage of the developed countries’ patent systems.⁷¹⁵ However, this does not speak to the systemic reasons for harmonization discussed in the previous paragraph which rest on interstate profit flows based on inventions and patents.⁷¹⁶

⁷¹³ See Appendix C

⁷¹⁴ See D. Eshanov, “The Role of Multinational Corporations from the Neoinstitutionalist and international Law Perspectives: The Concept of the Three-Level Game” (2008) 16 N.Y.U. Envtl. L.J. 110 at 160-161, 168-169; Sell, Private Power, *supra* note 18 at 41-43

⁷¹⁵ See above, footnote 190 and text accompanying footnotes 190 to 193

⁷¹⁶ Also, it does not seem credible to argue that the TRIPs Agreement or Paris Convention rest on the developed countries altruistically requiring developing countries to adopt strong patent laws. Even if it is in developing countries’ self interest to adopt strong patent laws, this does not appear to be an animating normative force behind the international patent system. It would also be paternalistic to require developing countries to adopt patent laws for their own good via an international trade agreement.

A position that least developed countries should not be strictly tied to the TRIPs Agreement standards is controversial and difficult –the text of TRIPs itself suggests that all states should implement a patent law with these minimum standards. However, I suggest that recent developments reflect a realization of the undesirability of nominally forcing patent laws on the least developed nations, specifically the extension of deadlines for least developed states to comply with TRIPs, and recent changes to allow the importation of patented pharmaceuticals under compulsory license from a third country.⁷¹⁷

As a least developed nation develops and leaves “least developed” status, assume that it also gains in innovative capacity. The economic, and thus the political, arguments in favour of National Treatment start to come into play. In particular, the developing country would like to integrate into the international economic system which includes the international trade and intellectual property systems. It may wish to encourage technology transfer, and to provide its citizens with the incentives provided by patent systems in the developed countries. On the other hand, developed countries begin to see the developing country as free-riding on their innovative efforts with little spillover effects in return, and also see the possibility of returns for their innovative industry. As a result, interests in National Treatment in patent laws arise on both sides. However, the interests in minimum standards are much less strong: the differences between the countries’ economies would still leave a large role for

⁷¹⁷ See footnotes 553, 554 and accompanying text.

domestic autonomy. The demand for minimum standards would become more urgent only as the developing country continues to develop.⁷¹⁸

Thus, from a pure innovation economics point of view, as a state develops it should be expected to conform to higher levels of patent protection.⁷¹⁹

However, this theoretical welfare based analysis must still take into account the need to foster cooperation between states that are domestic, not global, welfare maximizers. A suggestion that each state's legal obligations or minimum standards under the TRIPs Agreement should depend upon their level of development in a finely calibrated manner (theoretically, each state's obligations could be individually construed) is difficult to handle from an institutional point of view (who will decide, and how in the face of considerable uncertainty about the welfare effects of patent law?) and likely is politically infeasible. As a result, it is likely overreaching to suggest strong differences in compliance for developing countries as a group. However, this should not prevent the recognition of the position of the least developed countries and responses to restrict their scope of obligations under the patent provisions of the TRIPs Agreement.⁷²⁰

Institutionally, the WTO creates two bodies to consider the interpretation of and future amendments to the TRIPs Agreement. These two bodies are the

⁷¹⁸ See Maskus, *supra* note **Error! Bookmark not defined.** at 2228:

“The finding that patent protection falls as incomes rise to moderate levels before rising again suggests that economies in the early stages of industrialization have the strongest interests in weak IPRs. As their manufacturing sectors deepen they find stronger patents helpful in ensuring orderly technology transfer and protecting their own innovation.”

⁷¹⁹ Although not to ever-increasing levels of patent protection. As a country moves to developed country status, it confronts the trade-offs between rewarding world-first innovation and allowing access to technology for follow-on innovators.

⁷²⁰ A problem this raises, but this thesis will not deal with, is the classification of countries into least developed status.

Dispute Resolution Process and the Council for TRIPs, colloquially known as the TRIPs Council, and are described in the next two sections. However in a general sense, in respect of the need for flexibility towards the least developed countries (or indeed toward developing countries in general), the dispute resolution process is not designed to handle such questions. Such issues are better handled through the TRIPs Council.

iv. The WTO and the Legitimacy Problem

These tensions (the role of patents in the WTO; the multilateral nature of patent law, and the treatment of developing countries) are reflected in what is often called a “legitimacy” problem with the WTO, and specifically in respect of the TRIPs Agreement and patents.

The legitimacy issue has at least two levels: the WTO/TRIPs apparatus as a whole; and for the Dispute Settlement Process specifically. At the WTO/TRIPs level, there is a need for the institution as a whole to generate legitimacy for its international norm-creation and regime management roles in the patent law field. This question of external legitimacy involves the political (TRIPs Council and other state bodies in the WTO), juridical (the Dispute Settlement Process) and administrative (the various WTO secretariats) bodies, their interaction, and importance. To foreshadow a later discussion, it is sometimes suggested that one source of legitimacy problems for the WTO is the ineffectiveness of the WTO’s political bodies.⁷²¹

⁷²¹ T. Broude, *International Governance in the WTO: Judicial Boundaries and Political Capitulation* (London: Cameron May, 2004)

The Dispute Settlement Process is the focus of much criticism of the WTO. In part, this is because it is the most visible WTO organ, because difficult and important issues are in practice decided by the Dispute Settlement Process, and arguably because the political organs of the WTO have abdicated decision-making power to the dispute settlement panels and Appellate Body.⁷²² However, the Dispute Settlement Process faces a problem of internal legitimacy as well as the problem of external legitimacy. As identified and discussed by Weiler, internal legitimacy refers to the need for the dispute settlement system to build legitimacy among signatory states and their diplomatic corps, and is established by evolving only incrementally beyond the diplomatic-based system under the GATT.⁷²³

The remainder of this chapter considers these three sometimes-conflicting legitimacy problems (external legitimacy of the WTO; external legitimacy of the Dispute Settlement Process; and internal legitimacy of the Dispute Settlement Process) and makes some modest observations and suggestions.

⁷²² *Ibid.* Generally, Broude argues that the WTO dispute resolution process is formally designed as a weak institution, vertically subservient to the legislative oversight of the Members via the DSB and TRIPs Council. However, the legislative or political process is ineffective, essentially leaving the dispute resolution process to assume a more important role in practice than in design. Since this shift of decision-making power to the dispute resolution process may be seen as in the interests of Members (and the shift is thus done with their tacit approval), Broude describes the shift as “abdication”.

⁷²³ Weiler, *supra* note 791. Interestingly, D-C Ehlermann, a former member of the Appellate Body, describes the Appellate Body from its formation being concerned with its legitimacy: see Ehlermann, “Reflections on” *supra* note 737 at 696-697.

v. The DSU Process

The signatories to the TRIPs Agreement agree that the Dispute Settlement Understanding or DSU will apply to disputes under TRIPs.⁷²⁴ The DSU defines a process that applies to WTO disputes in general, and it was not designed with TRIPs particularly in mind. The DSU itself was a major achievement of the Uruguay Round, replacing the previous consensus based regime (where a state that lost a case before a trade panel had a veto over the results⁷²⁵) with a formal regime that can only be overruled by consensus. The WTO dispute resolution process is a move towards an “adjudicatory” or rule-based approach as compared to an approach based on negotiation and diplomacy.⁷²⁶

From the institutional perspective adopted in this thesis, the primary purpose of the DSU in the TRIPs context is to encourage compliance with the minimum standards in the TRIPs Agreement, by identifying defection and authorizing retaliation in a rational, legally based process. Notably, the dispute resolution process is not constructed to attempt a renegotiation or amendment of

⁷²⁴ TRIPs Agreement, *supra* note 92, Article 64. Understanding on Rules and Procedures Governing the Settlement of Disputes, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 2, Legal Instruments--Results of the Uruguay Round, 33 I.L.M. 1125 (1994) (hereinafter DSU).

⁷²⁵ The pre-WTO regime implemented with the Tokyo Round referred complaints to a panel of experts, whose decision had to be approved by consensus of the Member States, effectively giving a veto to the losing Member. Dispute resolution before the Tokyo Round was less legalistic, with “working parties” often formed that were groups of states (including the parties to the dispute) who sought a mutually satisfactory outcome. See Trebilcock and Howse, *The Regulation of International Trade* (3rd Ed.), *supra* note 32 at 112-114.

⁷²⁶ See Trebilcock and Howse, *The Regulation of International Trade*, *supra* note 32 at 112-114; G.R. Shell, “Trade Legalism and International Relations Theory: An Analysis of the World Trade Organization” (1995) 44 Duke L.J. 829 at 833; J. Pauwelyn, “The Transformation of World Trade” (2005) Mich. L. Rev. 1.

the TRIPs Agreement. Nonetheless, it is still necessary for the dispute resolution process to interpret the TRIPs Agreement and the Agreement's minimum standards, and give the Agreement substance. As a result, the DSU can be said to have a bounded generative role – described by Raustiala as “the ability of international institutions to produce new substantive rules that modify or extend given legal agreement.”⁷²⁷ This is a difficult task, and highlights the limitations of the dispute resolution process as opposed to negotiations via the TRIPs Council. However, the discussions in the TRIPs Council take place in the shadow of the DSU, and the dispute resolution process thus has a wide impact. The “one size fits all” nature of the TRIPs Agreement, the uncertainty in the application of many of the TRIPs Articles (such as Articles 7 and 8, Objectives and Principles), the uncertainty surrounding the welfare effects of patent law, the dynamic and changing welfare effects of patent law, and the inherent uncertainty in any attempt to capture patent law in a legislative text, raise many institutional difficulties in respect of the use of the dispute resolution process.

The preferred method of resolution under the DSU is negotiation: the first step of the dispute resolution process is a formal request for consultations, which for disputes under TRIPs may be assisted by the TRIPs Council. If, however, the parties cannot resolve their dispute within 60 days, the complaining state may request that a panel be established to take evidence and hear arguments, and render a decision. If the parties cannot agree on panel members, the WTO Secretariat appoints a panel of three members, who hear representations from

⁷²⁷ K. Raustiala, “Sovereignty and Multilateralism” (2000) 1 Chi. J. Int'l L. 401 at 410.

the parties.⁷²⁸ If a state involved in the process is a developing country, at the request of the developing country at least one member of the panel must be from a developing country.⁷²⁹ The panel should make its report within 6 months of the hearing, or report to the Dispute Settlement Body (“DSB”) why it is late.

The panel decision may be appealed to the Appellate Body. Three of the seven members of the Appellate Body will hear an appeal.⁷³⁰ The appeal is limited to questions of law.

The final panel or Appellate Body report is transmitted to the DSB for adoption. It may only be rejected by consensus: i.e. if all states (including the winning state) agree that the report should not be adopted. At this point, if a state is found to be non-compliant with TRIPs, it will have 30 days to announce what steps it will take to comply. The state will be given a “reasonable period of time”, typically 15 months, to comply with the decision. Arbitration is used if the parties cannot agree on the reasonable period of time to remedy the defect.

If a state will not comply, the injured state may apply to the DSB for permission to retaliate in a manner commensurate with the harm by suspending the injured state’s obligations to the non-compliant state under the WTO agreements. Typically, this retaliation should be limited to the same area as the non-compliance: i.e. if a state is non-compliant in its patent laws, ideally the complainant will suspend concessions in the area of patent law, then intellectual

⁷²⁸ The Dispute Settlement Body comprises all of the signatory states to the WTO. WTO Agreement, Article IV paragraph 3.

⁷²⁹ DSU *supra* note 724 Article 8.10

⁷³⁰ Members of the Appellate Body are appointed by the Dispute Settlement Body. DSU, *supra* note 724 Article 17 paragraph 2.

property more generally, and only if necessary in other trade areas.⁷³¹ However, states are often asymmetric in their economies, and it is not unknown for intellectual property violations to give rise to non-intellectual property retaliation, and vice-versa.⁷³²

Strict Constructionism/Ordinary Meaning

The task facing the dispute resolution system in the TRIPs area is a difficult one. A core goal of the WTO dispute resolution system (i.e. the panels and Appellate Body) is to support the WTO Agreements as signed, by identifying cheating, encouraging compliance, and if necessary authorizing sanctions. This gives all states confidence in the negotiation process. As a result, the Appellate Body has rejected arguments that look to the “legitimate expectations” of members in favour of a strict construction⁷³³ or ordinary meaning⁷³⁴ interpretation of the TRIPs text:

⁷³¹ DSU, *supra* note 724, Article 22 paragraph 3

⁷³² See, for example, EC-Bananas III, where the complaint concerned the EC regime for the importation, distribution and sale of bananas. The panel and Appellate Bodies decided against the EC. One of the complainants, Ecuador, requested and received a DSB decision on May 18 2000 that Ecuador be allowed to suspend concessions under GATT 1994, GATS and, to the extent that these suspensions do not reach the level of US\$201.6 million per year, obligations under TRIPs Section 1 (copyright and related rights); Article 14 on protection of performers, producers of phonograms and broadcasting organizations), Section 3 (geographical indications), and Section 4 (industrial designs). The dispute between Ecuador and the EC was settled on April 30, 2001. See WTO Document WT/DS27/ARB/ECU (March 24 2000).

⁷³³ As stated by G.B. Dinwoodie. “The Architecture of the International Intellectual Property System” (2002) 77 Chi.-Kent L. Rev. 993 at 1005-1006: “Indeed, the methodology of panels has been quite strict in tying decisions to the literal language of the TRIPs Agreement; Webster's Dictionary has become an essential research tool in WTO TRIPs litigation.”

⁷³⁴ This approach has been described in several different ways (strict constructionism: Okediji, *infra* note 736 and Reichman, Securing Compliance *infra* note 772; ordinary meaning: Ehlermann, *infra* note 737; textualism: D. Zang, “Textualism in GATT/WTO Jurisprudence: Lessons for the Constitutionalisation Debate” (2006) 33 Syracuse J. Int'l L. & Com. 393), which all reflect an emphasis by the Appellate Body on reflecting the “ordinary meaning” of the text with little reference to context: Dinwoodie, *ibid*.

“Furthermore, Article 19.2 of the DSU provides:

In accordance with paragraph 2 of Article 3, in their findings and recommendations, the panel and Appellate Body cannot add to or diminish the rights and obligations provided in the covered agreements.

These provisions speak for themselves. Unquestionably, both panels and the Appellate Body are bound by them.

For these reasons, we do not agree with the Panel that the legitimate expectations of Members and private rights holders concerning conditions of competition must always be taken into account in interpreting the TRIPS Agreement.”⁷³⁵

From an institutional point of view, this ordinary meaning approach or strict constructionism⁷³⁶ is desirable as an initial or formal guiding principle in view of the Appellate Body’s need to develop internal legitimacy in the WTO system. It defers to the agreement as negotiated between sovereign states, and thus gets to the heart of the question “does this law violate the Agreement?” as opposed to “is this a desirable law?”.⁷³⁷ It is thus useful as a statement of intent by the

⁷³⁵ *India – Patent Protection for Pharmaceutical and Agricultural Chemical Products* (1997) WT/DS50/AB/R (Report of the Appellate Body), Section V.

⁷³⁶ R.L. Okediji, “Public Welfare and the Role of the WTO: Reconsidering the TRIPS Agreement” (2003) *Emory Int’l L. Rev.* 819 at 826

⁷³⁷ See C-D Ehlermann, “Experiences from the WTO Appellate Body” (2003) 38 *Tex. Int’l L.J.* 469 at 480, 481:

“Even greater are the benefits of the open and transparent choice of the Appellate Body’s interpretative methods to the outside world. This choice has given clear guidance to Members of the WTO and to panels. It has thus contributed to “providing security and predictability to the multilateral trading system.” The choice has been approved both by Members of the WTO and by critical observers, in particular by experts of international (trade) law. The recognition of Articles 31 and 32 of the Vienna Convention as customary international law has been accepted fully in conformity with the requirement that the existing provisions of the covered agreements be clarified “in accordance with customary rules of interpretations of public international law.” The heavy reliance on the “ordinary meaning to be given to the terms of the treaty” has protected the Appellate Body from criticism that its reports have added to or diminished the rights and obligations provided in the covered agreements. On a more general level, the interpretative method established and clearly announced by the Appellate Body has had a legitimizing effect. This has been true since the very beginning of the Appellate Body’s activity.”

Appellate Body to adhere to the text where possible, and it supports the internal legitimacy of the Dispute Settlement System, as discussed below.⁷³⁸ However, as also discussed below, an adherence to ordinary meaning does not hold up to closer scrutiny, and one may predict that the useful fiction of ordinary meaning will not suffice to justify Appellate Body decisions in the long run or in hard cases.⁷³⁹

In adopting this approach, the Appellate Body is resisting two possible alternatives: assessing compliance (with TRIPs minimum standards) based on expectations of market access, and assessing laws based on welfare considerations. Both of these approaches raise considerable difficulties, and in this thesis' view should be avoided.

Problems with Market Access

Traditional trade law puts a heavy emphasis on negotiated expectations for conditions of access to foreign markets. It seems unsuitable for the patent field, however. Normatively, international patent law is about innovation and access to the protection of foreign patent laws and regulations. Normatively and positively, it is to be expected that patent laws will often effectively exclude foreign companies from certain markets rather than facilitate entry, and that such results will be dynamic – changing over time, and possibly changing quickly.

See also C-D Ehlermann, “Reflections on the Appellate Body of the WTO” (2003) 6 J. Int’l Econ. L. 695 at 697-701.

⁷³⁸ See footnote 805 and associated text.

⁷³⁹ See section below “What is the content of ‘Strict Construction’”

Finally, from a practical point of view, it would be difficult to identify market access expectations separate from expectations of the content of patent laws, and difficult to assess why a state's industries have not achieved greater market access. In one context – possibly the same patent in different countries – patents may promote access in one national market for the patent holder (by providing rights of exclusivity to a valuable innovation) while simultaneously blocking access by foreign competitors in the patent-holder's home market.⁷⁴⁰ Although some commentators are concerned that if new areas are introduced into the WTO,⁷⁴¹ they will inevitably be influenced by the WTO's market access orientation, at least in the area of patent law under TRIPs that does not seem to be a problem.

Problems with Welfare Assessments

Another potential basis for decision making under the DSU is for panels to explicitly consider and weigh public welfare. As advocated by Okediji:

“The explicit consideration of public welfare in assessing TRIPs compliance is a necessary aspect of resolving competing claims brought in the shadows of ambiguous or politically sensitive treaty provisions. It is an important constitutional function of the state to advance these goals, and of the WTO dispute settlement process to integrate them in interpreting TRIPs provisions. Both these elements are necessary for the development of a global

⁷⁴⁰ More complicated results could also be imagined. For example, company #1 may hold a broad, market powerful patent in country A, facilitating market entry, while in country B the same company #1's equivalent patent is narrow in scope and in fact it is necessary to license company #2's blocking patent to produce a product saleable in country B. Or, to vary this example, country B's patent laws allow owners of improvement patents a compulsory license over the underlying, basic patent, so that company #1 finds itself effectively barred from the market in country B in favour of company #2.

⁷⁴¹ Tarullo, *supra* note 655 at 492-493.

jurisprudence of public welfare that might more readily permit intellectual property rights to coexist with other regimes designed to improve the conditions of human existence worldwide.”⁷⁴²

Okediji points out that measures taken to weaken patent protection may well be welfare enhancing, and should not be regarded automatically as protectionist actions (which might be a reasonable assumption in traditional trade areas). As such, it becomes important for a panel to examine the normative explanations for a particular measure when examining an ambiguous TRIPS standard.

“First, deference to policy arguments should be considerable primarily in respect of interpretation of the TRIPS standards. In other words, for those rules specified in TRIPS – for example, that patent protection should last for twenty years from the date of filing – deference should be minimal and the domestic policy at stake must be compelling to warrant such deference. Second, a dispute panel might employ a balancing test to determine whether a redressable violation has occurred. Such a test would comprise a determination of whether the asserted policy basis for the challenged law is in reality a non-tariff barrier to trade in intellectual property goods. Consistent with GATT jurisprudence, the focus of the inquiry would not be on the specific operation of the practice, rule or policy, but on the normative and prescriptive rationale. A practical step in the analysis would be whether a less trade distortive option is available to the state. This step would allow the TRIPS panel to view the policy measure in light of the broad principles in the TRIPS preambular statement, particularly the explicit acknowledgement of the public policy objectives of national systems for the protection of intellectual property.”⁷⁴³

Unfortunately, as reflected in the above quote, the uncertain nature of welfare considerations in the patent field immediately drive the test in application away from an analysis of welfare to an analysis of a measure’s normative rationale and whether a measure is the least trade-distortive. However, as described above,

⁷⁴² Okediji, Public Welfare and the Role of the WTO *supra* note 736 at 824-825.

⁷⁴³ Okediji, Public Welfare and the Role of the WTO, *supra* note 736 at 871-872

tests on the basis of market access or trade distortion founder in the patent field, given the lack of a baseline for “normal” trade or market access.

Interestingly, the possibility of a welfare based assessment suggests both a deference to national assessments of welfare interests and an overruling of national decision-makers, depending on where the welfare considerations lie. Okediji sees an opportunity for the dispute resolution process to correct the problems of patent owner capture at the national level.⁷⁴⁴ However, it is again unclear how a dispute resolution panel is to judge competing claims of welfare enhancement, or why a panel is in a better position to judge national welfare considerations than national bodies. This approach also seems to discount a central point in respect of cooperation in the area of the recognition of foreign patentees – that national welfare maximization is constrained deliberately and by definition in the interests of international order.

What is the Content of Strict Constructionism/Ordinary Meaning?

While “ordinary meaning” is a useful guidepost, further thought shows that it is itself largely contentless, serving primarily as a statement of normative intent that the dispute settlement process’ intrusions into domestic lawmaking should be conservative. The focus in institutional analysis on identifying cheating and authorizing sanctions rests upon an assumption that this will reinforce a cooperative equilibrium. However, in the patent field dispute resolution panels

⁷⁴⁴ Okediji, Public Welfare and the Role of the WTO, *supra* note 736 at 82 “In this context, contrary to modern assumptions in public international law and international relations theory, government failure at the national level is not likely to be rectified, but instead reinforced if the TRIPS Agreement is interpreted and enforced without significant analysis and accommodation of domestic constitutional goals or policy objectives.”

potentially will be forced – and arguably already have been forced – into making judgments and interpretations that go well beyond merely construing a treaty. The reasons may be organized into two groups that both reflect the nature of patent law itself: the defiance of core patent law concepts to written description; and the balancing of interests normatively inherent in patent law from a welfare point of view.

The basic terms of the TRIPs Agreement setting out minimum standards for patents – such as Article 27(1) “Subject to the provisions of paragraphs 2 and 3, patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application” – are replete with terms and concepts that themselves defy easy textual capture at the national legislative, judicial, or international level. One theme of this thesis is that the central issues of substantive patent law – how to interpret claims, and how to judge obviousness – along with many other issues (subject matter, experimental exceptions, adequate support and description, definition of invention, patent misuse or abuse) are themselves impervious to precise definition. Domestic patent laws are themselves only framework-type laws with a thin legislative text, typically giving only vague guidelines on these subjects and leaving their elaboration to courts.⁷⁴⁵ This places much discretion in the hands of judges, and outcomes in cases depend as much on trends in thinking and application among the judiciary as on the written text. For example, in the United States courts (generally, the

⁷⁴⁵ See Burk and Lemley (Policy Levers), *supra* note 89 at 1638-1639. Patent law is somewhat like competition law in this respect, and may be contrasted with tax law, which has a very thick legislative text.

Federal Circuit) have attempted to reduce the slipperiness of various patent concepts through judicially created bright line rules, but these have recently been “overturned” by the United States Supreme Court, not by changing the tests, but by overturning their specific application.⁷⁴⁶ The general, non-specific nature of patent law contrasts with the more typical WTO approach of specifying rules as precisely as possible to increase certainty and compliance.⁷⁴⁷

Consider how these difficulties might play out in a possible WTO complaint. As an example, it has been suggested in the past that Japan’s patent laws, while generally similar to those of the United States and Canada, were designed to grant only narrow patents for pioneer patents, strictly limited to the central invention.⁷⁴⁸ This created incentives for domestic Japanese companies to invent around the pioneer patent with small improvements and variations (which themselves may then be patented in Japan), which reflects a culture that embraces cross-licensing and allowed Japanese companies to rapidly introduce

⁷⁴⁶ See *KSR International Co. v. Teleflex Inc. et al.*, 127 S. Ct. 1727 (April 30, 2007) regarding the test for obviousness; *EBay Inc. et al. v. MercExchange, LL.C.*, 126 S. Ct. 1837 (May 15, 2006) regarding the test to issue a permanent injunction; and *Festo Corporation v. Shoketsu Kinzuko Kogyo Kabushiki Co., Ltd., et al.*, 122 S. Ct. 1831 (May 28, 2002) regarding the flexibility of the prosecution history estoppel bar in respect of the doctrine of equivalents.

⁷⁴⁷ See Tarullo, *supra* note 655 at 490; see also A.K. Dixit, *The Making of Economic Policy: A Transaction Costs Politics Perspective* (Cambridge, MA: MIT Press, 1996) at 66, stating “This conflict between commitment and flexibility could be handled in principle by committing the government, not to an unconditional rule, but to a rule that specifies exactly which contingencies it can respond to and how. In practice such rules become too complex to be usable. Sometimes the flexibility they provide can be manipulated by a future government, thereby eliminating their commitment value. For both these reasons, practical rules have to be simple, either unconditional or conditioned on a very few clear and broad contingencies. Such rules must strike a balance.”

⁷⁴⁸ See D.J. Abraham, “Shinpo-Sei: Japanese Inventive Step Meets U.S. Non-Obviousness” (1995) 77 J. Pat. & Trademark Off. Soc’y 528

improved versions of foreign innovations.⁷⁴⁹ In fact, this led to Congressional complaints that Japanese companies facing a US-owned pioneer patent application filed in the Japanese Patent Office would “flood” the US-owned application with a multitude of close but not identical applications for small improvements. In some cases, the final, market-ready version of the product might infringe one of these Japanese-owned improvement patents. The U.S. company might then be forced to cross-license their underlying, basic pioneer patent with Japanese inventors of improvements, thus sharing any supra-competitive returns.⁷⁵⁰

It may be further alleged (following this example) that since (1) many pioneer patents are foreign owned, and (2) Japanese companies have the best access to information on the strategic uses of their domestic patent system, Japanese patent practice is a non-tariff barrier to the entry of foreign industry into the Japanese marketplace. Suppose that a case was brought to the dispute resolution process by the United States arguing that Japan was in breach of

⁷⁴⁹ See Rosen and Usui, *supra* note 199.

⁷⁵⁰ For a general description, see J.A. Wolfson, *Patent Flooding in the Japanese Patent Office: Methods for Reducing Patent Flooding and Obtaining Effective Patent Protection*, 27 Geo. Wash. J. Int'l L. & Econ. 531 (1994) and Linck & McGarry, *ibid.* A short list of congressional complaints about the Japanese patent system may be found starting on page 549.

I am not in a position to judge the credibility of these complaints.

See also John C. Lindgren and Craig J. Yudell, *Protecting American Intellectual Property in Japan*, 10 Santa Clara Computer & High Tech. L.J. 1, 19 (1994).

The same underlying point is made in an unrelated context in J.R. Thomas, “Formalism at the Federal Circuit” (2003) 52 Am. U. L. Rev. 771 at 773 (“ A lenient view of nonobviousness is ordinarily seen as inventor-friendly and pro-patent. But this trend allows the patenting of marginal inventions, increasing the possibility that primary inventors will have to share the rewards of their pioneering inventions with follow-on inventors of improvements.”)

TRIPs Article 27(1), arguing that Japan is failing to give adequate protection to inventions that are “new, involve an inventive step and are capable of industrial application” and furthermore that this breached the expectations of the TRIPs signatory parties as to the scope of market exclusivity available to creators of valid, pioneering inventions.

This hypothetical difference between the United States and Japanese patent systems arguably rests on philosophical differences about the way patent law can best encourage innovation:

“Japan’s intellectual property regime is so intricate that some say it effectively discriminates against foreigners. ... At the most fundamental level, differences in patent procedure may stem from different philosophical attitudes toward intellectual property. Japan’s patent system is a first-to-file system which has as its primary goal the promotion of technological development through the dissemination of new technology. This aim is nationalistic, however, in that it indirectly increases protection for Japanese inventions at the expense of foreign inventions.

The US system, by contrast, is a first-to-invent system geared towards promoting innovation by protecting the inventor. ... The right to exclude others from using the invention is a key aspect of patent protection in the United States, enabling the patentee to reap the rewards of his or her hard work.”⁷⁵¹

As noted above in chapter 2, both the dissemination of new technology and rewarding the pioneer inventor are thought from an innovation policy perspective to be desirable in different industries, and possibly at different times in the same

⁷⁵¹ T.K. Giunta and L.H. Shang, “Ownership of Information in a Global Economy” (1994) 27 *Geo. Wash. J. Int’l L. & Econ.* 327 at 348-350; see also Rosen and Usui, *supra* note 199.

industry. These philosophies both may find support in the prospect, competitive innovation and cumulative innovation theories.⁷⁵²

How would a dispute resolution panel address such an allegation? Is it a case of public or private action? Would a panel opine on whether a nation's obviousness standards or claim construction practices are too narrow or broad? Would such a judgment be made on the notoriously difficult standard of domestic welfare, or on the basis of market access? Even if the ruling was appropriate given the nations before it, will the dispute resolution body be able to consider the effects of its ruling on other, unrepresented countries? And would such newly exemplified minimum standards be flexible enough to adapt to new market conditions, new technologies and industries, or even new economic thinking about patents? Could we end up with JPO and USPTO arguing via trade lawyers at the WTO about patent law? Would that be damaging to trilateral cooperation between the patent offices?⁷⁵³ Finally, what is the appropriate remedy – a refusal by one country to recognize the patents of another?

It is thus understandable that the Appellate Body defines the task facing the dispute resolutions panels as considering only issues that are necessary to implement the implied long term bargain – primarily, what are the minimum standards for patent law, and minimum standards for enforcement (damages, injunctions, and compulsory licensing) – as written in the text. However, in the

⁷⁵² See footnotes 147 to 150 and associated text.

⁷⁵³ “Trilateral cooperation” refers to cooperation between the Japanese, American and European patent offices.

hypothetical case versus Japan given above, the panel would be forced to make a judgment on the adequacy of Japan's core patent doctrines.

This, in turn, raises difficult questions of how a dispute resolution body should determine whether a measure meets minimum standards. In general, it might be suggested that if a measure exists in a pre-existing mature, developed country patent system (such as those of Europe or the United States), it might be presumed to meet minimum standards.

However, the European Union has successfully challenged this suggestion. The *Canada – Protection of Pharmaceutical Products* decision is a good example of this. In this case, two measures in Canadian patent law (which predated the TRIPs Agreement): (1) allowed companies (subject to further regulations) to stockpile products covered by a patent before the patent expired, to allow prompt market entry once the patent expired; and (2) allowed companies to work patented subject-matter for the purpose of satisfying regulatory agencies that a product is safe to market (the BOLAR or regulatory review exemption).

The European Union challenged both measures on the grounds (among others) that they violated Article 30 of TRIPs as exceptions that “unreasonably conflicted with the normal exploitation of the patent and unreasonably prejudiced the legitimate interests of the patent holder.”

In the case of stockpiling, the WTO dispute resolution panel looked to the customary patent laws in other states, finding that it was customary for patent owners to enjoy some extension of market exclusivity beyond the expiration date of a patent based upon the time it took for competitors to come to market, and

held that the Canadian measure was impermissible.⁷⁵⁴ They reasoned that market exclusivity beyond the expiration date of the patent was the natural result of restrictions on “making, using or selling” the invention during the patent term, and so a stockpiling provision unreasonably conflicted with the normal exploitation of a patent.

Canada was alone among the developed countries in having such a stockpiling provision. However, the WTO dispute resolution panel in the same case when considering Bolar or regulatory review exceptions, which also exist in United States and other countries’ laws, stated that “because the subsequent acts by individual countries did not constitute ‘practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation’ within the meaning of Article 31.3(b) of the Vienna Convention”, evidence of widespread adoption of a measure held little weight. Nevertheless, since the patent holder’s patent rights were only suspended for limited purposes under the regulatory review provision, the Canadian regulatory review provision was held to be TRIPs compliant.

Somewhat troublingly, this decision raises the question of whether states will ever be able to confidently introduce an innovation into patent law. There is no fundamental normative or economic reason apart from legal formalism why patentees should be entitled to a post-expiration period of exclusivity.

Presumably, such a factor is subsumed into the general balancing of benefit to the inventor versus benefit to the public. Canada’s loss in this case in respect of

⁷⁵⁴ See *Canada – Patent Protection of Pharmaceutical Products* (2000) WT/DS114/R (Report of the Panel) at paragraphs 7.36 to 7.39

stockpiling suggests that any move to decrease the business advantage accruing to patentees that does not fall within the range of already well-established practice will be open to attack.

The reasoning of this decision exposes the lack of an underlying theory to guide panels in their interpretation of the TRIPs Agreement in the area of patent law. The reasons given seem more to be justifications for an intuitive decision rather than based on any strong theory or evidence as to the intent of the signatory states. Inevitably, the WTO panel or Appellate Body is making a judgment on patent clauses that affect welfare, whether or not the panel or Appellate Body claims to be doing so.

TRIPs dispute resolution panels should also be sensitive to preventing a sort of “issue creep”, whereby patent practices that heretofore have been left in the realm of informal, diverse patent norms (such as the experimental use exemption, obviousness or claim construction) become formalized and harmonized through WTO dispute resolution. This may be difficult, given the tightly interwoven nature of patent law issues. In general, the line between patent practices that are part of the long term bargain and subject to WTO discipline and those that are not is difficult to define precisely, and is perhaps best left to inter- state negotiation rather than the WTO dispute resolution process.

These issues are complicated further by Articles that write flexibility into the TRIPs Agreement itself. These include the Preamble, statement of Objectives (Article 7) and Principles (Article 8):

Article 7

Objectives

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

Article 8

Principles

1. Members may, in formulating or amending their laws and regulations, adopt measures necessary to protect public health and nutrition, and to promote the public interest in sectors of vital importance to their socio-economic and technological development, provided that such measures are consistent with the provisions of this Agreement.
2. Appropriate measures, provided that they are consistent with the provisions of this Agreement, may be needed to prevent the abuse of intellectual property rights by right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology.

In specific respect of patents, there is also Article 30 which provides for limited exceptions to patent rights (and was extensively discussed in the *Canada – Protection of Pharmaceutical Products* decision):

Article 30

Exceptions to Rights Conferred

Members may provide limited exceptions to the exclusive rights conferred by a patent, provided that such exceptions do not

unreasonably conflict with a normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interests of third parties.

Article 31 also applies specifically to patents, and allows use without the authorization of the right holder if, among other requirements, “the proposed user has made efforts to obtain authorization from the right holder on reasonable commercial terms and conditions” except “in the case of a national emergency or other circumstances of extreme urgency or in cases of public non-commercial use” and “the right holder shall be paid adequate remuneration in the circumstances of each case, taking into account the economic value of the authorization.”

In light of these objectives, principles and similar highly judgmental Articles in TRIPs, how can the dispute resolution process be said to be only construing the agreement as written?⁷⁵⁵ Articles 7 and 8 expressly permit states to take into account innovation and non-innovation concerns when writing their patent laws. It might be true in some cases that recourse to such clauses is not necessary, but in general it would seem to be necessary in many cases to

⁷⁵⁵ Modern theories of legal interpretation have largely rejected the “plain meaning” approach: see R. Sullivan, *Sullivan and Driedger on the Construction of Statutes*, 4th Edition (Toronto: Butterworth’s Canada, 2002) at 9-18, 23-24. See at p. 12:

“Those who criticize the plain meaning rule ... object rather to using the rule to avoid responsibility for choosing and justifying the outcome in a case. When the plain meaning rule is invoked, the court effectively claims it had no choice – the outcome is dictated by the language of the text. In fact, however, a judge can conclude that a text has a plain meaning only after

- identifying the text to be interpreted
- determining the relevant context, and
- applying some standard of, or test for, ambiguity.”

evaluate the meaning and impact of such Articles, even if only to explain why they do not excuse conduct in a particular case.

Overall Market Exclusivity

As suggested by Okediji, above, one solution is to take a position that a panel need only judge that a TRIPs-restrictive measure is permissible if (a) it is reasonably directed at a goal identified in the TRIPs Agreement as permitting a deviation (such as the protection of health (Article 8) or increasing technology transfer (Article 7)) and (b) it is the least TRIPs-non-compliant (analogous to least-trade restrictive) measure to achieve the goal.

However, this approach seems likely to resurrect some basic problems. In particular, it does not address how core standards of patent law (such as obviousness or claim construction) should be evaluated. Given the necessarily broad language written into the exceptions, such an approach might also be seen as giving countries too much leeway to write patent laws to reflect domestic welfare concerns. While an unduly restrictive reading of TRIPs is undesirable, so too is a reading that permits deviation from the intent of the parties.

One intuitively appealing approach is for dispute resolution panels to assess national actions by making judgments based on whether a country's laws maintain an overall minimum "market exclusivity" for patent holders.⁷⁵⁶

Dinwoodie and Dreyfuss express this: "our argument is that a provision reducing

⁷⁵⁶ Dinwoodie and Dreyfuss, *infra* note 760 at 104. They explicitly draw this from Article XXVII where "a state that adopts a policy impinging on its trade commitments can nonetheless be regarded as GATT-compliant if balancing concessions maintain market access overall." Dinwoodie and Dreyfuss, *infra* note 760 at 104, citing Bagwell, Mavroidis & Staiger, *supra* note 677.

the level of protection should survive scrutiny so long as it ... preserves market exclusivity overall”⁷⁵⁷ and “the ability of producers to capture the amount of return guaranteed by [the TRIPs Agreement]”.⁷⁵⁸

This is an appealing approach as it cuts to the heart of state concerns in the negotiating of the TRIPs Agreement, and to the core of the theoretical bases for cooperation discussed in Chapter 3. Like other suggestions canvassed above, it still entails the difficulty of assessment. However, an assessment of whether a patent-holder (with an acknowledged valid and market-powerful patent) is making a certain level of return under a country’s laws is at least a more accessible measure than domestic welfare writ large. The panel still needs to decide what such a patent-holder “should” be able to achieve, but at least the decision can be based on some facts: the experiences of the specific patent holder.⁷⁵⁹

Unfortunately, such a basis for decision-making seems necessarily to involve an inquiry not only into an impugned provision, but into the operation of a

⁷⁵⁷ Dinwoodie & Dreyfuss, *infra* note 760 at 103.

⁷⁵⁸ Dinwoodie & Dreyfuss, *infra* note 760 at 107. It should be noted that the latter metric is not strictly dependent on market exclusivity. For example, a compulsory license could guarantee an adequate – theoretically, even extravagant – return to a rights holder while denying market exclusivity.

⁷⁵⁹ An additional complication is whether a company’s ability to make (or not make) a certain level of return is due to the patent or other factors, such as marketing, sales strategy, or general reputation.

A more theoretical difficulty is that from an innovation policy point of view, successful innovations requires a *ex post* rate of return sufficient to balance the *ex ante* risk. In other words, the *ex post* rate of return should take into account the failures by the patentee and his competitors in assessing a sufficient rate of return. See A. Katz, “Making Sense of Nonsense: Intellectual Property, Antitrust and Market Power” (2007) 49 Ariz. L. Rev. 837 at 859-860. However, this is more a theoretical than a practical problem, since there is little to suggest that the TRIPs Agreement standard for what returns a patentee “should” be able to generate reflects such issues. Rather, the TRIPs Agreement standard is seen (and probably should be seen) as the compromise, negotiated minimum standard.

country's innovation laws in general. Dreyfuss and Dinwoodie attempt to limit this by asserting that panels should consider whether an impugned patent measure is part of a legislative package decision rebalancing intellectual property rights – and giving deference to national legislatures as long as the total package of legislative reforms meets the minimum market exclusivity test. This is based upon their assertion that national intellectual property law frequently can only be amended if “a balanced package of rules can be reached”, reflecting the role of industry lobbyists on national legislatures.⁷⁶⁰

However, once one adopts the market exclusivity approach, it is difficult to understand why a measure that amends a patent law but still leaves a patentee with sufficient market power (in the context of the state's patent law as a whole) should be treated differently based on whether it is presented as part of a “legislative package” or not. A primary problem is that of identifying such a “package,” and a second problem is why logrolling trade-offs are preferable in a domestic welfare sense. For example, Dinwoodie and Dreyfuss examine the *Canada-Protection of Pharmaceutical Products* decision.⁷⁶¹ As described by Dinwoodie and Dreyfuss, in the United States a package deal was reached (the Hatch-Waxman Act) under which a generic drug company could perform otherwise patent infringing activities to satisfy government regulators; in return,

⁷⁶⁰ “To be sure, in a democracy, packaging is an inherent part of the legislative process generally: benefits are traded off until a measure is produced that commands a majority. But in intellectual property legislation, this dynamic tends to play out in ways that pit different stakeholders in the creative industries against one another, prompting tradeoffs internal to the intellectual property system itself.” G.B. Dinwoodie and R. Dreyfuss, “TRIPs and the Dynamics of Intellectual Property Lawmaking” (2004) 36 *Case W. Res. J. Int'l L.* 95 at 97-98.

⁷⁶¹ *Canada – Patent Protection of Pharmaceutical Products* (2000) WT/DS114/R (Report of the Panel)

patent holders received extensions to the patent term in cases of regulatory delay.⁷⁶² In Canada, although a similar regime now exists, Dinwoodie and Dreyfuss note that patent term extension is not part of the regime.⁷⁶³ Under the Dinwoodie and Dreyfuss suggestion, the United States exemption is presumably immediately more defensible as part of a package that compensates the holders of patents than the identical Canadian exemption. This leads to the possibility that the United States exemption will be TRIPs-legal, but not the Canadian exemption.

First, to argue about whether the Canadian patent system came about as part of one package through another mechanism seems to be putting form above substance. Perhaps the regulatory review exemption came about as part of a different package than in the United States, or perhaps it was part of an ongoing attempt to update patent laws by the Canadian bureaucracy. Attempting to identify the bounds of a package deal seems quite difficult. (As a further example, it is widely believed that the repeal of Canada's compulsory licensing system for patented pharmaceuticals was part of an unwritten concession as part of the Canada-United States Free Trade Agreement. However, there is no formal linkage between the abolishing of compulsory licensing and the CUSFTA.)

Second, it is entirely possible that the regulatory review exemption was written into Canadian law as an express copy from the United States law. If that was the case, and particularly if that may often be the domestically welfare

⁷⁶² Dinwoodie and Dreyfuss, *supra* note 760 at 98-99

⁷⁶³ Dinwoodie and Dreyfuss, *supra* note 760 at 99: "The Canadian law did not, however, include any patent-enhancing features. Although the WTO panel noted this key difference between Canadian and American law, it clearly did not believe that the absence of a tradeoff should in any way affect the panel's decision."

maximizing move for Canada, why is that approach to legislation inappropriate? The Dinwoodie and Dreyfuss approach seems to promote logrolling deals above legislation arising from other motivations.⁷⁶⁴

Third, a focus on packages as opposed to the patent system in general would seem to undermine the possibilities for countries learning from the experiences of other states, and experimenting in their own jurisdictions. A country may find that its patent laws already incorporate one side of another state's legislative bargain, and simply wish to adopt the other side. Why should one state be TRIPs-compliant, and the other TRIPs-non-compliant? This could be politically unstable, as consumers or producers in one country see benefits in clauses of a patent law in a second country that they are not allowed to adopt due to international law. Put another way, another troubling implication of the Dinwoodie & Dreyfuss approach is that the TRIPs-compliance of an identical package of trade-offs will vary from state to state, depending upon the package's impact on "overall market exclusivity".

Another objection is the inherent difficulty and unpredictability of such an assessment. It should be noted that the only patent law example Dinwoodie and Dreyfuss give is in the area of pharmaceutical regulation. Pharmaceuticals is a field in patent law where interests between brand name patent holders and generic users clearly divide. In contrast, in other areas of patent law, an amendment is not limited in impact to one industry, interests even among patent-

⁷⁶⁴ This is also inconsistent with some theories that the world trade system should disfavour log-rolling processes that favour highly organized interest groups: see Hudec, *supra* note 681 at 313; J.O. McGinnis, "The Political Economy of Global Multilateralism" (2000) 1 Chi. J. Int'l L. 381 at 382-385

holders within an industry may divide, companies are often both patent holders and potential users of other's patented technologies, and the assessment of trade-offs becomes extremely complex and speculative.⁷⁶⁵

Finally, it is unlikely that any package of patent law reforms will affect each of a country's partners equally, and it is likely that this trade-off will vary over time. It would only take one powerful patent (recall the skewed nature of patents⁷⁶⁶) to change the interests of any state.

vi. Non-Violation Complaints

The choice between a formalistic "strict construction/ordinary meaning" approach and an approach based on assessing "market power" (or other similar standard) is also reflected in the area of non-violation complaints. A non-violation complaint is brought when a state alleges that it has been deprived of advantages it reasonably expected under a WTO agreement (typically through the action of a second state), but no actual or technical violation of an agreement

⁷⁶⁵ See, for example, R.P. Wagner, *supra* note **Error! Bookmark not defined.** at 38-39:

"It has been conventional wisdom for decades that the politics of the U.S. patent system are unusual for issues of this level of economic importance – unusual in the sense that there are thought to be no clear camps on the pro and con sides of the issue. This is the case for many reasons, including the fact that most of the major players in the patent system occupy roles as both producers and consumers of patents ...

Now, however, the uneasy status quo may be changing. At the same time that the patent system is plainly becoming more economically important, more utilized, and more complex, the emergence of the technology industry as a major player – and one with divergent interests from the traditional players – seems likely to have a deeply politicizing effect.

As the patent law becomes more politicized and the stakes rise, the opportunities for substantial reform of the system narrow."

⁷⁶⁶ See Scherer, *supra* note 254 and accompanying text.

has taken place. Non-violation complaints are designed to maintain a cooperative equilibrium between states over time “through vindicating the reasonable expectations of Contracting Parties concerning the benefits obtained from reciprocal concessions.”⁷⁶⁷ Rooted in Article XXIII(1)(b) of the GATT, the logic of such complaints was discussed by a GATT panel in the *Oilseeds* case:

“The idea underlying [non-violation nullification and impairment] is that the improved competitive opportunities that can legitimately be expected from a tariff concession can be frustrated not only by measures proscribed by the General Agreement but also by measures consistent with the Agreement. In order to encourage contracting parties to make tariff concessions they must therefore be given a right of redress when a reciprocal concession is impaired by another contracting party as a result of the application of any measure, whether or not it conflicts with the General Agreement.”⁷⁶⁸

For example, if a first country lowered tariffs in a sector according to a WTO agreement, but then implemented a tax regime that effectively disadvantaged foreign entry into that sector but did not violate any agreement, other states could complain that their expected benefit of entry into the first country’s marketplace in that sector had been denied.

⁷⁶⁷ Trebilcock and Howse, *The Regulation of International Trade*, *supra* note 32 at 143. See also T. Cottier and K. Nadakavukaren Schefer, “Non-Violation Complaints in WTO/GATT Dispute Settlement: Past, Present and Future”, in E.U. Petersmann, ed. *International Trade Law and the GATT/WTO Dispute Settlement System* (Boston: Kluwer Law international, 1997) 143 at 163-81, which emphasizes that the idea of non-violation complaints reinforces a “good faith requirement” for the WTO Agreement; C. Taylor, “Impossible Cases: Lessons from the First Decade of WTO Dispute Settlement” (2007) 28 U. Pa. J. Int’l Econ. L. 309 at 386-394.

⁷⁶⁸ Panel Report – *European Economic Community – Payments and Subsidies Paid to Processors and Producers of Oilseeds and Related Animal-feed Proteins*, adopted 25 January 1990, BISD 37S/86, para. 114

In the TRIPs context, one could cast the earlier example of a complaint about the Japanese patent system⁷⁶⁹ granting only narrow patents even for pioneer inventions as a non-violation complaint. Assuming that such measures do not violate the TRIPs Agreement, the United States could complain that it has been denied access in Japan to the economic power or exclusivity associated with patents for pioneer inventions that it had expected and bargained for.

Non-violation complaints may become particularly contentious in the TRIPs context, since the understanding of the TRIPs Agreement as a minimum standards treaty under most approaches (such as the Okediji approach or plain meaning approach, but notably not the Dinwoodie and Dreyfuss approach) invite states and courts to implement changes via patent practices that are not explicitly mentioned in the TRIPs Agreement (such as claim construction) to circumvent the bargained for minimum standards for patent protection. Given the tightly interwoven nature of many patent law doctrines, many results may be easily characterized, understood – or implemented - under several parallel doctrines.

In another variation of a TRIPs related non-violation complaint, a state could complain that although a country's patent laws are TRIPs-compliant, its health care, environmental, tax or other laws effectively reduce the ability of patent holders in an industry to retain exclusivity and obtain profits in a particular industry.⁷⁷⁰

⁷⁶⁹ Given above: see text accompanying footnote 750

⁷⁷⁰ For example, in Canada it is possible that provincial governments could extract lower prices or other deals from owners of pharmaceutical patents in return for listing on provincial formularies.

There is presently a moratorium on the filing of non-violation complaints under the TRIPs Agreement.⁷⁷¹ There is wide disagreement among states as to the desirability of lifting the moratorium.⁷⁷² Some states, particularly developing countries fear that non-violation complaints could have wide-ranging, unanticipated and almost unlimited effect.⁷⁷³ According to Abbott:

“If a broad reading of the non-violation concept was accepted in the TRIPS context, there is a myriad of potential complaints that could be envisaged under the Agreement. These may be broken down into three broad categories: (1) actions that attempt to limit the range of permissible internal government measures, as these measures are argued to undermine the value of IPRs; (2) actions that effectively seek to expand the express language of the Agreement; and (3) actions addressed to enforcement mechanisms and remedial processes. Under each of these broad headings, many possible claims might be foreseen. For example, regarding the range of internal measures, actions challenging price controls on patented pharmaceuticals; liberal compulsory licensing legislation; IPRs-related taxation policies, packaging and labeling requirements; consumer protection legislation; censorship policies; cultural policies; and parallel trade rules are all candidates. Regarding expansive interpretation of the express language of the Agreement, non-violation actions might challenge fair use allowances, public order and public health exceptions, and legislative uncertainty in areas such as industrial design protection. Regarding enforcement mechanisms, there are a number of

⁷⁷¹ TRIPs Agreement, *supra* note 92, Article 64.2 places a five year moratorium on the filing of non-violations complaints under TRIPs, which expired in 1999. The moratorium has since been extended by the TRIPs Council to the next (7th) Ministerial Conference. See http://www.wto.org/english/tratop_e/trips_e/nonviolation_background_e.htm (accessed December 15, 2007)

⁷⁷² Reichman, *Comes of Age*, *infra* note 824 at 455; F.M. Abbott, “TRIPS in Seattle: The Not-so-surprising Failure and the Future of the TRIPs Agenda” (2000) 18 Berkeley J. Int’l L. 165 at 172-178; J.H. Reichman, “Securing Compliance with the TRIPs Agreement after US v India” (1998) 1 J. Int’l Econ. L. 585; R. Dreyfuss, “Coming of Age with TRIPs: A Comment on J.H. Reichman, The TRIPs Agreement Comes of Age: Conflict or Cooperation with the Developing Countries?” (2001) 33 Case W. Res. J. Int’l L. 179 at 179-180; R. Dreyfuss and A.L. Lowenfeld, “Two Achievements of the Uruguay Round: Putting TRIPs and Dispute Settlement Together” (1997) 37 Va. J. Int’l L. 275 at 283-97 ;

⁷⁷³ See also *Asbestos*, where the Appellate Board rejected an argument by the European Community that bona fide non-economic measures such as health measures are *a priori* excluded from challenge under a non-violation complaint.

potential avenues under which failures to effectively enforce IPRs could be pursued as non-violation actions; the aggressive application of competition laws might also be challenged. Finally, non-violation complaints regarding over-protection of IPRs might be considered, as well as complaints against those who use coercive threats without basis in WTO law and practice.”⁷⁷⁴

Authors such as Reichman are concerned that non-violation complaints could lead to considerable intrusion into the domestic decisions of even the developed countries, especially those with common law systems.

“Those who favor lifting the ban on nonviolation complaints underestimate the extent to which this doctrine, once set loose in the fluid world of intellectual property rights, could boomerang against developed countries, especially those wedded to a common law approach, such as the United States. It could, indeed, expose many federal appellate decisions affecting foreign intellectual property rights holders to second guessing actions filed before the WTO in Geneva. Should the WTO panels or the Appellate Body become receptive to complaints of this kind, it could hamper the ability of the U.S. authorities to formulate domestic intellectual property policy over time.

The availability of nonviolation complaints would also magnify existing temptations to wring unnegotiated benefits out of the dispute-resolution process rather than seeking to resolve pending intellectual property issues by offering to exchange greater market access for higher levels of protection.”⁷⁷⁵

Non-violation complaints reflect the larger issues discussed above. Consistently adopting a position that the dispute resolution system is only applying the minimum standards in the TRIPs Agreement as written is deferential to states as negotiators, but creates room for states to undermine the spirit of the TRIPs Agreement while adhering to its text. This approach may also submerge the

⁷⁷⁴ Abbott, “TRIPs in Seattle” *supra* note 772 at 173-174

⁷⁷⁵ Reichman, Comes of Age, *infra* note 824 at 455.

generative role of the dispute resolution process given the textual imprecision of many patent-related TRIPs minimum standards.⁷⁷⁶ Adopting a position that some assessment of an impugned measure from a welfare or market exclusivity point of view creates a better possibility of defence of the spirit of the TRIPs Agreement, including the possibility of defending a measure as violating the literal language of TRIPs but adhering to the overall level of promised market power for patents, but raises adjudicative and normative difficulties and would seem necessarily to lead to the consideration of non-violation complaints. In particular, the absence of normative baselines for minimum standards in patent law under TRIPs would make it difficult to identify benefits reasonably expected to flow from specific TRIPs provisions.

vii. Trade Stakeholders: NGOs and Transparency

The above discussion has largely focused on the theoretical difficulties confronting the dispute resolution system in the patent area, resulting structurally from the nature of patent law. In light of the difficulties inherent in establishing approaches or baselines for decision-making in the TRIPs field, an alternative, fruitful approach is to consider changes that might be made to the processes and institutions by which decisions are made and dispute settlement occurs. This raises the issue of the normative approach to dispute resolution under TRIPs.

The regime management approach, as discussed in the previous chapter, in part supports international cooperation by identifying activities which constitute compliance and sanctioning retaliation in cases of non-compliance. However, an

⁷⁷⁶ Generative as in Raustiala, *supra* note 727

obvious implication of the difficulties discussed above facing the DSU in the patent field is that an approach based solely on lowering transaction costs is incomplete. This raises troubling issues of the external legitimacy of the DSU.

As noted by Trebilcock and Howse:

“In these circumstances, the Regime Management goal of sustaining a cooperative equilibrium through the sanctioning of cheating becomes intertwined with the need to produce rulings that have legitimacy with a range of stakeholders whose interests are affected by the way that policy trade-offs are made in interpreting the GATT and other WTO Agreements.”⁷⁷⁷

In response to these concerns, Shell suggests moving from the Regime Management model of the role of international institutions to that of a Trade Stakeholders’ model:

“Both the Regime Management Model and, to an even greater extent, the Efficient Market Model seek to promote trade over other domestic and transnational values. The third model presented here, the Trade Stakeholders Model, offers an alternative vision of the interplay between trade and other social policies. This model emphasizes broader participation in trade adjudication, democratic processes for resolving trade conflict, and open dialogue regarding the goals of economic trade. Like the Efficient Market Model, the Trade Stakeholders Model is based on liberalism’s insight that individuals, not states, should be the primary subjects of international law. Unlike the Efficient Market Model, the Trade Stakeholders Model sees trade legalism as an opportunity for domestic and transnational interest groups of all kinds, non-business as well as business, to participate with nations in the activity of constructing common economic and social norms that will make global trade a sustainable aspect of a larger transnational society.”⁷⁷⁸

⁷⁷⁷ Trebilcock and Howse, *The Regulation of International Trade*, *supra* note 32 at 115.

⁷⁷⁸ Shell, “Trade Legalism” *supra* note 726 at 837. See also Hudec, *supra* note 681 at 321: “The charge that trade negotiations are anti-democratic is usually just an expression of concern about the likely success of bad-guy business interests in reducing or eliminating valid health and welfare regulations. The charge is not really about democracy at all. It’s just that the good guys (from the environmental or consumer advocate point of view) are not well enough represented.”

I regard the stakeholders model as a natural extension of the regime management model. In both cases, the underlying idea is that international institutions should facilitate sustainable international cooperation. In the TRIPs context, which in some cases may necessarily involve decisions that trade off competing values, for cooperation to be sustainable the content of the cooperation must be seen to be legitimate by stakeholders with conflicting desires.

In the realm of ideas and interests, given the integration of patent laws with many other concerns, it seems appropriate for the dispute resolution process to be open to monitoring and submissions from interested NGO and IGO third parties.⁷⁷⁹ Openness in monitoring could be enhanced by allowing written and oral presentations to panels to be open to the public. Submissions from NGO and IGO third parties could be accommodated via an *amicus* brief process.⁷⁸⁰ Through direct *amicus* briefs, NGO's and other stakeholders in the WTO process can present their views directly, rather than "filtered through a national government."⁷⁸¹ *Amicus* briefs appear to have become accepted in the WTO dispute resolution process:⁷⁸² the Appellate Body in *Shrimp/Turtles* has

⁷⁷⁹ Trebilcock and Howse, *The Regulation of International Trade* (3rd ed.) *supra* note 32 at 114-118 and 145-146; G.R. Shell, "The Trade Stakeholders Model and Participation by Nonstate Parties in the World Trade Organization" (2004) 25 U. Pa. J. Int'l Econ. L. 703.

⁷⁸⁰ Although note that the acceptance of *amicus* briefs should not be automatic, and should depend on their relevance, as already occurs in the domestic context.

⁷⁸¹ Trebilcock and Howse, *The Regulation of International Trade* (3rd ed.) *supra* note 32 at 126.

⁷⁸² See Trebilcock and Howse, *the Regulation of International Trade supra* note 32 at 126; C.L. Lim, "The *Amicus* Brief issue at the WTO" (2005) 4 Chinese J. Int'l L. 85; C.L. Lim "Asian WTO Members and the *Amicus* Brief Controversy: Arguments and Strategies" (2006) 1 Asian J. WTO & Int'l Health L. & Pol'y 85; A.K. Schneider,

found that WTO dispute resolution panels have authority under Articles 11, 12 and 13 of the Dispute Resolution Understanding to accept *amicus* briefs from NGOs,⁷⁸³ and in the *US-Softwood Lumber* case one of the dispute resolution panels requested that the parties respond to an *amicus* brief.⁷⁸⁴

It should be noted that WTO dispute resolution panels have sought and obtained formal opinions from the WIPO International Bureau as to the content of WIPO treaties incorporated into the TRIPs Agreement.⁷⁸⁵ As argued above, WIPO and the WTO can be perceived as one institution governing the area of international patent law, and as such reference to WIPO sources should be especially encouraged (as long as such references are formal and public). Similarly, in some cases it may be appropriate for panels to seek formal opinions from other intergovernmental organizations such as the World Health Organization.

More difficult questions arise if one considers the role of the DSU in conjunction with the TRIPs Council, discussed below. Given the myriad difficulties discussed above, idealistically one could posit that the dispute resolution process should be used for traditional regime management questions, and the TRIPs Council is to be preferred as an avenue for the solution of other

“Unfriendly Actions: The Amicus Brief Battle at the WTO” (2001) 7 SPG Widener L. Symp. J. 87 at 98; P. Ala’i “Judicial Lobbying at the WTO: The Debate over the Use of Amicus Curiae Briefs and the U.S. Experience (2000) 24 Fordham Int’l L.J. 62 at 83.

⁷⁸³ *United States – Import Prohibition of Certain Shrimp and Shrimp Products* (1998) WT/DS58/AB/R (Appellate Body Report); DSU *supra* note 724.

⁷⁸⁴ *United States – Preliminary Determinations with Respect to Certain Softwood Lumber from Canada* (2002) WT/DS236/R (Panel Report) para. 7.2.

⁷⁸⁵ See Attachment 4.1 (“Letter from the Chair of the Panel to the Director General of WIPO”) to the panel report on “US- Section 110(5) of the US Copyright Act” (DS160); Appellate Body Report, US – Section 211 Omnibus Appropriations Act of 1998” (DS176), para. 189

disputes. In some cases⁷⁸⁶ a country will be in simple non-compliance (for example, if it grants patents a lifespan of less than 20 years, in contradiction of TRIPs Article 33) and the dispute resolution process can identify non-compliance, sanction retaliation if necessary, and provide a justification for the non-complying state to come into compliance. In other cases, the dispute resolution process will work well where the two parties simply want to settle a dispute, and are willing to live with the results – generally, issues with low impact, as seen in the *Canada – Term of Patent Protection* or *Canada – Protection of Pharmaceutical Products* cases. In those cases, although the results might be very important for individual patent holders and the repeal of the stockpiling provision has permanently altered the Canadian pharmaceutical marketplace, Canada's losses did not greatly inconvenience Canada, a developed and wealthy country. However, as the stakes increase, thus raising the interests of a country in maintaining a measure (and the interests of third party states in defeating or supporting the measure), the difficulties with the dispute resolution process elaborated above become more acute.

On the other hand, if a particular measure is desirable but requires an amendment to the TRIPs Agreement (as may have been the case for the amendment to allow the importation of pharmaceuticals under a compulsory

⁷⁸⁶ One of the roles of the dispute resolution system, under both the regime management and stakeholder's model, is to provide national governments who might wish to comply but feel threatened by domestic pressure groups with additional legal arguments in favour of compliance. In effect, the national government can point to an adverse ruling and argue that they must comply.

license by the LDCs),⁷⁸⁷ deliberation of the measure in the TRIPs Council would seem to be necessary.

This analysis leaves large difficulties remaining in the relationship between the TRIPs Council and the dispute resolution process. First, the boundary between what is a pure regime management issue and a broader issue involving the interest of various stakeholders is itself subjective. Even if the notion that regime management issues should be resolved under the DSU is accepted, it invites conflict over the characterization of the nature of disputes. Secondly and more fundamentally, a state that insists on going to the DSU for an interpretation of the TRIPs Agreement cannot be denied. While the dispute resolution panels and Appellate Body may be able to find ways to avoid ruling on sensitive issues,⁷⁸⁸ even this would seem to be tantamount to ruling that a particular measure is not subject to TRIPs, leaving states free to use their own judgment on the matter.

More fundamentally, the notion that the panels and Appellate Body process should focus on regime management and the TRIPs Council on determinations of substance may itself be challenged, as stated by Schwartz and Sykes:

“Indeed, as suggested earlier, there may be instances in which WTO provisions have been intentionally left vague because an expert body, deciding ex post what conduct is value maximizing, may be a better instrument for facilitating mutually advantageous conduct than the ex ante predictions of members as to what will be

⁷⁸⁷ See text associated with footnote 553, *supra*

It may not have been necessary for the developing countries to obtain a formal amendment to the TRIPs Agreement, as similar measures may have been TRIPs-complaint in any case. However, it is probably preferable to have such rules specifically authorized in TRIPs rather than leave their TRIPs-compliance in the hands of a WTO panel.

⁷⁸⁸ Shell, Trade Legalism, *supra* note 726 at 871-872

in their mutual advantage in the many circumstances that may arise.”⁷⁸⁹

It is not necessary to agree that the negotiating parties to TRIPs deliberately left provisions vague intending them to be solved by the dispute resolution process to accept that the panel and Appellate Body process might be a better instrument to decide on mutually advantageous conduct if one argues that the TRIPs Council will always be hopelessly divided and unable to reach agreement on contentious issues. It seems unlikely that an idealistic division between regime management and other issues can be maintained. As discussed further below, ideally a dialogue of sorts can occur between the TRIPs Council and Appellate Body.

Inevitably, then, it seems that the DSU will be faced with difficult cases involving interpreting and giving content to the TRIPs Agreement. In such cases, panels and the Appellate Body will have to make decisions as best they can, weighing such concerns as the stability of the international intellectual property regime, identifying a cooperative equilibrium, the welfare impact of their decision, the effect of their decision on third party states, the effect of their decision on stakeholders, and faithfulness to the text of the Agreement itself. While hardly a clean analysis, such balancing and weighing of different dimensions of a judgment is commonly seen in domestic courts.⁷⁹⁰ This may be a disturbing conclusion for traditional trade lawyers or those concerned with the WTO

⁷⁸⁹ Schwartz and Sykes, *supra* note 682 at 201.

⁷⁹⁰ For example, see S. Waddams, *Dimensions of Private Law* (Cambridge: Cambridge University Press, 2003), particularly the conclusion at 222-233.

becoming a world trade constitutional court; however, I would claim that the conclusion necessarily arises from the nature of patent law and the TRIPs Agreement itself.

viii. Juridification of the DSU Panels and Appellate Body

Given the role of the WTO dispute settlement system will have in interpreting the TRIPs Agreement and potentially generating new international norms in patent law, changes may be suggested to the structure and appointment processes for the panels and Appellate Body. These suggestions involve increasing the legitimacy and independence of the dispute resolution system – generally, by further juridifying the panels and Appellate Body.

The juridification of the trade system's dispute resolution system in the move from the GATT to the WTO has been controversial. It changes the paradigm of the world trade system from a diplomatic to a legal settlement of disputes. This moves decision making power from diplomats to lawyers, but more dramatically changes the trade system as an institution – changing all three of the factors of structure, interests and ideas that determine how an institution acts. The impact of this change is far reaching and perhaps unknowable, and some question whether the diplomats who negotiated the DSU fully appreciated the impact of their actions.⁷⁹¹

⁷⁹¹ J.H.H. Weiler, "The Rule of Lawyers and the Ethos of Diplomats: Reflections on the Internal and External Legitimacy of WTO Dispute Settlement" (2001) 35(2) *Journal of World Trade* 191 at 201; see also Raustiala, *supra* note 727 at 414-415

Under the old GATT system, the focus was on the settlement of disputes through diplomacy. Weiler characterizes the system as dominated by a relatively small group of diplomats who shared normative, institutional and personal ambitions, were isolated from international relations in general, and who viewed trade disputes as an “internal” affair to be settled as quickly, smoothly and quietly as possible within GATT.⁷⁹² The process tended to treat disputes as discrete conflicts between governments (specifically trade ministries) requiring settlement, with minimal regard for the possible impact on broader systemic issues beyond the issues and parties directly involved.⁷⁹³ Disputes were treated as confidential, both in proceedings and even in respect of the panel reports.⁷⁹⁴ The members of panels were chosen to facilitate settlement, were predominantly diplomats, and focused on seeking a decision that would be acceptable to both sides rather than on a normatively correct decision.⁷⁹⁵ The legal technicalities to underpin the decisions were only of a secondary importance, and it was typically left to the GATT Secretariat to reconcile legalities with the decision.⁷⁹⁶ This is broadly consistent with the regime management model of dispute resolution discussed above. Schwartz and Sykes write:

“By serving as a vehicle for transmitting information about violations throughout the trading system, central dispute resolution enhances the reputational costs of cheating. We think that under the consensus-based system of the old GATT, this was the primary function of the dispute system.”⁷⁹⁷

⁷⁹² Weiler *supra* note 791 at 195

⁷⁹³ Weiler *supra* note 791 at 195-196

⁷⁹⁴ Weiler *supra* note 791 at 196

⁷⁹⁵ Weiler *supra* note 791 at 197

⁷⁹⁶ Weiler *supra* note 791 at 197

⁷⁹⁷ Schwartz and Sykes, *supra* note 682 at 197.

This approach to disputes may still be seen in the WTO DSU, particularly at the panel level. Panel members are typically chosen by the Secretariat in the absence of agreement between the disputing parties.⁷⁹⁸ Panel members are selected from a roster, but the roster is open and panel members have been added to the list simultaneously with appointment to a panel.⁷⁹⁹ Panelists still are largely from a diplomatic background.⁸⁰⁰ There has been strong criticism by diplomats of the acceptance of amicus briefs or participation of NGOs.⁸⁰¹ Panel proceedings are still held in secret by default, although recently cases where the disputing parties are both in favour of opening panel proceedings to the public have been open for public viewing upon request of the parties.⁸⁰²

Such procedures have led, in Raustiala's terms, to the WTO being criticized for "insularity": a lack of transparency and of non-executive branch (i.e. legislative, such as the TRIPs Council or WTO General Council) participation in

⁷⁹⁸ Weiler, *supra* note 791 at 202; Ehlermann, "Experiences from" *supra* note 737 at 471

⁷⁹⁹ C-D Ehlermann, "WTO Dispute Settlement and Competition Law: Views from the Perspective of the Appellate Body's Experience" (2003) 26 *Fordham Int'l L.J.* 1505 at 1552

⁸⁰⁰ Weiler, *supra* note 791 at 202.

⁸⁰¹ Ehlermann "Experiences from" *supra* note 737 at 484; Weiler, *supra* note 791 at 200, 203-204; and Broude, *supra* note 721 at 199-200

⁸⁰² Panel meetings with the parties are closed under DSU *supra* note 724 Appendix 3 paragraph 2. The first panel proceedings opened to the public were in the "*United States - Continued suspension of obligations in the EC — hormones dispute*" (DS320) in September, 2005. Since then, open proceedings have also been successfully requested in "*Canada — Continued suspension of obligations in the EC — hormones dispute*" (DS321), "*United States — Continued Existence and Application of Zeroing Methodology*" (DS350), "*European Communities — Regime for the Importation, Sale, and Distribution of Bananas: Recourse to Article 21.5 of the DSB by the United States*" (DS27), and "*United States — Subsidies and Other Domestic Support for Corn and Other Agricultural Products*" (DS357).

the institution and its decisions.⁸⁰³ This criticism is reinforced by those who perceive the role of the World Trade Organization changing from organizing tariff reductions to a broader role of reconciling competing state economic and political interests.⁸⁰⁴

Weiler characterizes the issue as conflicting pressures on the DSU to build internal and external legitimacy.⁸⁰⁵ Internal legitimacy refers to the need for the dispute settlement system to build legitimacy among signatory states and their diplomatic corps, and is established by evolving only incrementally beyond the diplomatic-based system under the GATT. This conflicts with the need to build external legitimacy: legitimacy among external groups affected by WTO decision making. External legitimacy of the dispute resolution process may be built along three lines: procedural legitimacy, substantive legitimacy, and a balance with political or legislative bodies in WTO.⁸⁰⁶

This thesis investigates international patent law, not the WTO in general. However, the characteristics of patent law disputes discussed above suggest changes to the dispute resolution process that would increase legalization and external legitimacy. As argued above, patent law obligations and disputes are multilateral in nature and effect. Patent law obligations are less defined than in

⁸⁰³ Raustiala, *supra* note 727 at 410.

⁸⁰⁴ See, for example, Gerhart's "external, participatory vision" *supra* note 681 at 3, 21-22

⁸⁰⁵ Weiler, *supra* note 791. Interestingly, D-C Ehlermann, a former member of the Appellate Body, describes the Appellate Body from its formation being concerned with its legitimacy: see Ehlermann, "Reflections on" *supra* note 737 at 696-697.

⁸⁰⁶ See R.O. Keohane and J.S. Nye, "The Club Model of Multilateral Cooperation and Problems of Democratic Legitimacy" in R.O. Keohane, *Power and Governance in a Partially Globalized World* (New York: Routledge, 2002) 219, particularly at 220, 234-235, 241-242.

general trade law, and as has already been discussed in some detail, cannot be precisely defined due to the slippery nature of core patent law concepts. In opposition to a role for the DSU as fighting protectionism,⁸⁰⁷ in patent law the DSU will often be at least implicitly reconciling welfare concerns among many affected groups. These welfare effects may be expected to vary over time and between countries.

To reflect these factors, from a patent law point of view it would be desirable to create stability and consistency among both panel decisions and the Appellate Body, allowing for the development of a coherent jurisprudence. The DSU should look beyond the immediate issues and parties in dispute to the broader impacts of decisions, reflecting the multilateral nature of patent law. The DSU should also aspire to greater procedural legitimacy given that its decisions may have an impact among a broad range of stakeholders.

The most important reforms reflect such concerns would be at the level of the Panels. Panels should be selected from a small standing roster, with a greater automaticity of selection.⁸⁰⁸ This will improve consistency of decision-making, and encourage panelists to think about the systemic impact of their decisions on third parties. Automaticity of selection will improve the procedural legitimacy of the panels by removing the perception that panel members may be

⁸⁰⁷ McGinnis and Movsesian, *supra* note 681 at 531: “The WTO’s most significant function is settling members’ disputes under these agreements. Disputes are bound to arise because protectionist groups inevitably seek discriminatory legislation.”

⁸⁰⁸ Weiler, *supra* note 791 at 202

influenced in their decision making by the views of the Secretariat and a desire to be named by the Secretariat to panels in the future.⁸⁰⁹

To preserve expertise in panelists, specifically in the area of patent law, the standing roster could have “divisions”, with automatic selections reflecting some expertise of the panelists.⁸¹⁰ However, it is unclear whether patent law expertise among panel members is a critical issue. While the application of patent law doctrines to specific facts (often heavily scientific in nature) may undoubtedly be difficult, it is unlikely that the WTO dispute resolution will or should be reviewing specific decisions. Instead, the panels will be making decisions on broader issues. Under a trade stakeholders model, there is a benefit to adding patent law perspectives to panels that are otherwise monolithically diplomatic in orientation, but the same may be equally said of many other perspectives. Ultimately the parties before the panel bear the burden of educating the panelists about the trade-offs and ambiguity inherent in patent law issues.

To promote independence and continuity, the panels could have their own support staff or secretariat, rather than relying on the WTO secretariat (which

⁸⁰⁹ Weiler, *supra* note 791 at 205-206: “The views of the Secretariat as to the proper outcome of a dispute will, thus, come out and more invidiously will be consciously and subconsciously pushed on the Panel. The ability of Panels to be aware of this and to resist it varies considerably. In discussion with quite a few Panellists I have been told that when it came to points of law they did not feel they could meaningfully challenge the legal secretary. ... This advice has huge influence over Panellists (in the selection of which the Secretariat plays a key role). See also Ehlermann, “WTO Dispute Settlement” *supra* note 799 at 1553: “Because serving on a panel is an honor and a personal distinction, it is not surprising if a panel member is interested in being appointed for another panel in the future.”

⁸¹⁰ See Ehlermann, “Experiences from”, *supra* note 737 at 473. Note that the present extent of expertise in panelists is unclear, as the majority of panelists are current or former trade diplomats rather than legal scholars or practitioners, who presumably have a better chance of having expertise in patent law. See Broude, *supra* note 721 at 162.

also serves the legislative bodies of the WTO).⁸¹¹ To promote procedural fairness, a comprehensive set of procedural rules for panel proceedings should be introduced.⁸¹² The WTO should consider having full time panelists.⁸¹³ Finally, panel proceedings should by default be opened to the public⁸¹⁴ and as discussed above should be more open to hearing from interested third parties.

The Appellate Body is already constituted much like a court, and so less dramatic suggestions along these lines can be made. In part, this is because of the Appellate Body's own initiative, since it has always perceived of itself as a legal body.⁸¹⁵ Claus-Dieter Ehlermann, a former member of the Appellate Body, describes a body with a heavy emphasis on collegiality,⁸¹⁶ that consult as a totality before releasing decisions,⁸¹⁷ and that has established methods for interpretation of the WTO agreements.⁸¹⁸ It has taken control of its own procedures, and has its own supporting secretariat.

⁸¹¹ See Ehlermann, "Experiences from", *supra* note 737 at 473; Weiler, *supra* note 791 at 205-206

⁸¹² Preferably these could be drawn up by members of the roster of panelists. There are a set of rules the panels must follow (see Article 12.1 and Appendix 3 of the DSU *supra* note 724), but these are "extremely rudimentary". See Ehlermann, "WTO Dispute Settlement", *supra* note 799 at 1544-1545. Ehlermann suggests that these rules cover the treatment of confidential information and the duty of states to provide information to panels (and the consequences of not providing information, such as negative inferences) at 1542-1552.

⁸¹³ Albeit this raises concerns about cost: see Ehlermann, "WTO Dispute Resolution" *supra* note 799 at 1554, who reports that the cost has already been raised in negotiations.

⁸¹⁴ See Ehlermann, "Experiences from", *supra* note 737 at 472; Weiler, *supra* note 791 at 203. Panel meetings with the parties are closed under DSU *supra* note 724 Appendix 3 paragraph 2, but as noted above in association with footnote 802, if both parties make a request panel hearings can be opened to the public, which has occurred in a number of cases since 2005.

⁸¹⁵ Ehlermann, "Reflections on" *supra* note 737 at 695;

⁸¹⁶ Ehlermann, "Reflections on" *supra* note 737 at 695-697;

⁸¹⁷ Ehlermann, "Experiences from" *supra* note 737 at 477

⁸¹⁸ Ehlermann, "Reflections on" *supra* note 737 at 698

The primary concerns regarding the Appellate Body are in terms of appointment and tenure. Appellate Body members are appointed by the DSB to a renewable four year term. According to the DSU, the Appellate Body shall:

“comprise persons of recognized authority, with demonstrated expertise in law, international trade and the subject matter of the covered agreements generally. They shall be unaffiliated with any government. The Appellate Body membership shall be broadly representative of the WTO.”⁸¹⁹

The open-ended nature of the appointment process and the requirement that Appellate Body members be broadly representative of the WTO raises some concern over the workability of the appointment process, although the process seems to be functioning reasonably well in practice.⁸²⁰ More urgently, the short tenure of Appellate Body members (four years) coupled with a renewable term raises questions about the independence of the Appellate Body from the DSB. Appellate Body members presumably would like to serve a full eight year term and the four year renewal essentially introduces a performance review half way through the eight-year period. Given that the DSB seems to have a good record at appointing Appellate Body members, it would be desirable to appoint the Appellate Body members to a non-renewable eight year term to reinforce their independence and procedural legitimacy.⁸²¹

⁸¹⁹ DSU, *supra* note 724, Article 17.3

⁸²⁰ Ehlermann, “Experiences from”, *supra* note 737 at 475; Broude, *supra* note 721 at 166.

⁸²¹ See Ehlermann, “Experiences from”, *supra* note 737 at 476

ix. The TRIPs Council

The Council for TRIPs, the legislative or political branch of the TRIPs system, is open to all members of the TRIPs Agreement, and is supported in its work by the WTO Intellectual Property Secretariat. It has a role, combined with WIPO, in providing information and monitoring compliance: under Article 68 of the TRIPs Agreement, the TRIPs Council shall monitor compliance and shall afford members the opportunity for consultation. As such, it can request (and regularly does request) that members provide information regarding their intellectual property laws and compliance with TRIPs (this is done in conjunction with WIPO, and is required for members under Article 63(2) of TRIPs), and provides other states the opportunity to receive answers to their questions regarding the member's compliance.⁸²² This process in itself can be seen as the first step in avoiding and settling disputes, by raising concerns in a public forum that carries less consequence than a complaint under the DSU.⁸²³ It also might have the effect of encouraging states to more carefully consider their TRIPs obligations when drafting legislation, given that it will be quickly subject to review in the TRIPs Council.

The first stage of the Dispute Resolution Process (DSU Article 4) is consultations between the two parties, and the TRIPs Council under TRIPs Article 68 has a mandate to assist the parties in this stage.

⁸²² See, for example, P. Vandoren, "The Implementation of the TRIPs Agreement" (1999) 2 J.W.I.P. 25 at 29-30 and P. Vandoren, "The TRIPs Agreement: A Rising Star?" (2001) 4(3) J.W.I.P. 307 at 309. ("The review puts significant pressure on the countries concerned because their intellectual property protection is put on the spot from all possible angles.")

⁸²³ The exchange of views in the TRIPs Council has no particular weight in respect of the DSU, *supra* note 724.

In addition to a role in dispute resolution, Article 71(1) of the TRIPs Agreement envisions a permanent role for the Council in the review and revision of TRIPs:

“1. The Council for TRIPS shall review the implementation of this Agreement after the expiration of the transitional period referred to in paragraph 2 of Article 65. The Council shall, having regard to the experience gained in its implementation, review it two years after that date, and at identical intervals thereafter. The Council may also undertake reviews in the light of any relevant new developments which might warrant modification or amendment of this Agreement.”

As seen above in the discussion of the Doha Agreement, the TRIPs Council was able to negotiate an amendment to the TRIPs Agreement when a new circumstance arose, specifically the need for affordable pharmaceuticals to be exported under a compulsory license to poor countries with no domestic pharmaceutical manufacturing capability.

In practice, the Council for TRIPs seems to be operating as designed. Reichman states that:

“the Council for TRIPS and the WTO secretariat that services the Council have truly been forces for mediation, consultation and persuasion. ...”⁸²⁴

The attitude of both the Council and the Secretariat is, as stated by the then Director of the Intellectual Property and Investment Division of the World Trade Organization:

“The Council will constitute a forum for consultations on any

⁸²⁴ J.H. Reichman “The TRIPS Agreement Comes of Age: Conflict or Cooperation with the Developing Countries” (2000) 32 Case W. Res. J. Int’l L. 441 at 444-445.

problems relating to TRIPS arising between countries as well as for clarifying or interpreting provisions of the Agreement. The aim is, whenever possible, to resolve differences between countries without the need for formal recourse to dispute settlement.”⁸²⁵

As discussed above, the question of when developing countries should adhere tightly to TRIPs, particularly the least developed countries, is a particularly difficult issue. To handle this issue in a welfare-enhancing manner, a dynamic view of TRIPs would be helpful. Such a view is more easily accommodated in the informal, diplomatically driven TRIPs Council environment than the dispute resolution process. Similarly, a welfare-enhancing response to experimentation by different states as well as responses to new industries and new economic thinking in innovation policy are better accommodated in the TRIPs Council, where it is unnecessary to be bound by a textual interpretation of an agreement negotiated in the early 1990s.

An interesting issue is the participation of non-governmental organizations in the TRIPs Council as observers. At the time of writing, non-governmental organizations cannot be granted observer status at the WTO.⁸²⁶ Input from a wide range of sources is generally preferable under the stakeholders model, and

⁸²⁵ A. Otten and H. Wager, “Compliance with TRIPS: The Emerging World View” (1996) 29 Vand. J. Transnat’l L. 391 at 411.

⁸²⁶ Interestingly, there is also a list of International Intergovernmental Organizations that have applied for observer status at the TRIPs Council but have not been approved, primarily due to objections that the applicants do not deal with topics relevant to the TRIPs Agreement. See document IP/C/M/55 (minutes of the last TRIPs Council meeting) and IP/C/W/52/Rev.11 (list of 17 pending requests for observer status with the TRIPs Council by international intergovernmental organizations). Perhaps the most contentious application is from the Secretariat of the Convention for Biological Diversity (see minutes and L.R. Helfer, “Human Rights and Intellectual Property: Conflict or Coexistence?” (2003) 5 Minn. Intell. Prop. Rev. 47 at 60-61, noting that the United States is blocking the admission of the Secretariat of the Convention for Biological Diversity as an observer).

it would be desirable to have non-governmental organizations admitted as observers. Even if an NGO had a sympathetic state that represented its position before the signing of the TRIPs Agreement, it is uncertain whether the state will continue to be a voice for those interests as issues arise, leaving the NGO without a representative voice on the Council.⁸²⁷ Having NGOs participate in the TRIPs Council discussions can assist in placing issues before the Council that do not command state support, building legitimacy for the TRIPs system.

Ideally, the TRIPs Council can engage in a sort of “dialogue” with the Appellate Body by adopting interpretations and amendments when decisions of the panels and Appellate Body having unintended and undesirable effects, or contradict the will of a consensus of the TRIPs Council. This sort of process is often seen as desirable in the domestic context.⁸²⁸ More directly, increasing the political and legislative input into the WTO decision making process would generally increase the legitimacy of the WTO. In the absence of legislative input, the Appellate Body is forced to make rules, which may not command adequate political acceptance.⁸²⁹ Judicial decision-making in the absence of political input may also lead to a difficulty in amending judicial decisions with adverse welfare consequences, albeit this assumes that decisions with adverse welfare effects will influence political decisions in the TRIPs Council. Inactivity by political

⁸²⁷ Okediji, Public Welfare, *supra* note 736 at 872. In particular, NGOs may wish to use the TRIPs Agreement to positively constrain state action, which may conflict with the interests of a previously (or even presently) sympathetic state.

⁸²⁸ See P.W. Hogg and A.A. Bushell, “The *Charter* Dialogue between Courts and Legislatures (Or Perhaps the *Charter of Rights* Isn’t Such a Bad Thing After All” (1997) 35 Osgoode Hall L.J. 75. The Spring 2007 Osgoode Hall Law Journal is largely devoted to a review of dialogue theory.

⁸²⁹ Broude, *supra* note 721 at 331.

bodies may also prevent the formulation and emergence of norms when the norms are of a type that will never arise before the dispute resolution system.⁸³⁰

Formally, the TRIPs Council or states more generally have several avenues to assert themselves after a panel or Appellate Body decision. Most dramatically, decisions of the panels or Appellate Body must be adopted by the DSB before they come into affect. In this sense, the panel and Appellate Body system is hierarchically subservient to the political control of member states. However, since panel and Appellate Body decisions can only be rejected by a consensus of states in the DSB (including the winning party), more realistically panel and Appellate Body decisions are always adopted.⁸³¹

Less dramatically, any state can formally comment on or object to a report, including formally objecting to a panel report that is under appeal to the Appellate Body.⁸³² Under Article IX of the WTO Agreement, the General Council (acting on the recommendation of the TRIPs Council) can issue formal interpretations of the TRIPs Agreement. Traditionally such decisions are reached by consensus, but there is provision to pass interpretations with a three quarters majority.⁸³³

The states may amend the TRIPs and WTO Agreements (as foreseen in Article X of the WTO Agreement). Finally, as part of a formal amendment process, or as a separate measure, the TRIPs Council may issue waivers for the

⁸³⁰ Broude, *supra* note 721 at 331.

⁸³¹ DSU, *supra* note 724 , Articles 16.4 and 17.4.

⁸³² DSU, *supra* note 724, Article 16.2 and 17.4

⁸³³ WTO Article IX, paras. 1,2

requirements of the TRIPs Agreement for temporary periods.⁸³⁴ This is the process presently being followed in respect of the export of pharmaceuticals produced under a compulsory license to countries with no domestic pharmaceutical manufacturing capacity.⁸³⁵ Although intended as temporary, Member-specific measures, waivers may apply to the entire membership and be long-term in duration.

While these avenues for the legislative or political bodies of the WTO to respond to the dispute resolution institutions exist, there is some question as to their actual effectiveness. A formal overruling of the dispute resolution system under Article IX or X is a heavy-handed strategy, and the traditional requirement of consensus makes it unlikely that such responses will ever be a meaningful source of “dialogue” with the panels or Appellate Body.

The TRIPs Council could seek less dramatic ways to communicate with the DSU system, through statements that fall short of a formal interpretation of the TRIPs Agreement (similar to “soft law”), or through open and public but informal communication with the Appellate Body. For example, the Chairman of the WTO General Council has, in the past when considering the issue of the acceptance of *amicus* briefs, agreed to convey the views of the Council to the Appellate Body in the absence of consensus.⁸³⁶ Indeed, the lack of consensus was presumably communicated to the Appellate Body along with the position of

⁸³⁴ WTO Agreement, Article IX, paragraphs 3-4.

⁸³⁵ See text associated with footnote 553, *supra*.

⁸³⁶ WTO, General Council, *Minutes of Meeting* (held on 22 November, 2000), WTO Doc. WT/GC/M/60 at para 127-131. It should be noted that after the Chairman presumably communicated the objection of many members regarding the acceptance of *amicus* briefs to the Appellate Body, the Appellate Body apparently ignored the objections. See Broude at 200-201

many states in opposition to the Appellate Body's allowance of *amicus* briefs. Such informal communication may provide a useful albeit weak form of political influence on judicial institutions, and assist in increasing the WTO's overall legitimacy.

f. Is There a Need for an Additional WTO/WIPO Link?

At present, there is no formal route or mechanism for states to coordinate decisions in the WTO and WIPO contexts. Should there be?

One advantage that cannot be claimed for the separation of the grounds of cooperation between WIPO and the WTO is the elimination of issue-tying within patent law itself. Since roughly the same states are involved in each type of cooperation, a state or groups of states can still demand concessions in one arena in return for cooperation in the other arena. For example, developing countries could block otherwise acceptable agreements on patent prosecution until concessions are made by developed nations at the TRIPs Council. As a result, desirable innovations in the area of reducing duplication in prosecution (desirable in the sense that all states would agree on the innovation taken in isolation) would be blocked for strategic reasons.

It is unclear, however, that this is a poor result. It is hard to imagine any institutional arrangement that would eliminate this possibility. As long as the same states are involved, any two issues may be tied. Any attempt to render such linkages impossible is likely to be either futile, or to freeze and prevent

cooperation. The history of the lack of cooperation under WIPO during the 1970's and 1980's in the area of minimum standards is an example of this.

Furthermore, the analysis in this thesis suggests that this is not a crucial issue. To the extent that one is in favour of diversity in the international patent system, one is not troubled by the possibility of subgroups – such as the developed countries, or the trilateral offices, or groups of developing countries – making agreements or sub-unions amongst themselves, so long as it does not lead to the undermining of the overarching TRIPs, Paris Convention, Patent Cooperation Treaty and Patent Law Treaty agreements.

While international institutions cannot prevent such cross-issue linkages, they can facilitate agreements to incorporate all relevant issues. Indeed, this is what drove the move of international patent law to the world trade system and the TRIPs Agreement – the need to implement agreements jointly covering intellectual property, textiles and agriculture.

An ideal institution dealing with patent law would at least more easily permit states to reach agreements linking patent issues in the patent prosecution and minimum standards areas. States should therefore at least accept the possibility of joint WIPO/TRIPs negotiations. An international patent law regime that more easily facilitates some linkages (patent law with agriculture or textiles) while not facilitating others (linking patent prosecution concessions with TRIPs concessions) is itself structurally biasing the development of international patent law.⁸³⁷

⁸³⁷ “Structure” in this sense referring back to the three factors that influence how an international institution will develop. See Trebilcock *supra* note 654.

Nevertheless, this idea should not be taken too far. While the door should be open to joint TRIPs/WIPO agreements, such agreements will not take place unless an acceptable combination of concessions is possible. It has been suggested that linking prosecution and minimum standards issues can be advantageous for the negotiating positions of developing countries versus the developed countries. While this is probably true, the linkage between intellectual property and agriculture/textiles in the Uruguay Round was successful because the developed countries were able to offer sufficient incentives to attract developing country concessions on intellectual property (while simultaneously raising the cost of non-cooperation by engaging in aggressive bilateral negotiations backed by the threat of sanctions).⁸³⁸ It is an open question whether developing countries have sufficient leverage in the patent prosecution context to entice significant changes in the TRIPs regime.

⁸³⁸ The cost of non-cooperation refers to the Special 301 process. See footnote 496, *supra*. It is often thought that developing countries had a better negotiating strength negotiating as a group under the GATT rather than individually in bilateral negotiations with the US and Europe. See Ryan, *supra* note 4 at 110.

CONCLUSION

Two related questions have been investigated: when is international patent law harmonization well-founded, and how do international institutions facilitate such harmonization? These questions have been investigated from a global welfarist, rational stance. Attention has been paid to how patent law as a particular subject matter affects the analysis of international cooperation. Also, theory has been related to the historical record, reconciling past cooperation with the theoretical reasons for international cooperation.

Basic Assumptions

This thesis adopts as a normative stance an instrumental view that international law should maximize or at least improve global welfare subject to realistic constraints. These constraints – which may be described as institutional constraints – involve three positive assumptions:⁸³⁹ that the preferences of the world population are heterogeneous; that governments try to maximize the welfare of their citizens⁸⁴⁰ and ignore the welfare of non-citizens; and that international legal organization and enforcement are constrained by collective action problems. Five propositions follow:

International law should improve global welfare: it is assumed as a background premise that patent protection (at least in developed countries)

⁸³⁹ E.A. Posner, *supra* note 1 at 499.

⁸⁴⁰ Albeit often imperfectly, perhaps maximizing the welfare of a subpopulation of their citizens, such as an elite or government supporters, creating agency costs.

encourages a higher and more desirable rate of innovation and increases welfare over the long term.

States have heterogeneous preferences: patent law is an area where there is high heterogeneity of preferences between states – between Least Developed Countries, Developing Countries, and Developed Countries, but also between states at similar levels of development.

Reasons for harmonization: balanced against high heterogeneity between states are at least three reasons for harmonization: recognition of foreign patentees (which provides the benefits of a larger economy, regional insurance and the possibility of transfers); reduction in prosecution costs (which provides the benefit of providing public goods at a lower cost); and integration-driven harmonization.

Collective action problems: recognition of foreign patentees cooperation involves difficult up-front negotiations, the need to compensate countries for entry into a welfare-enhancing international ordering that is not in their self-interest, and ongoing disputes; reducing prosecution costs is largely in each country's self interest, and dispute resolution is largely unnecessary as there is no strong reason to defect, and it is easy to detect defection, but it can involve difficult up-front negotiations; and integration-driven harmonization does not raise collective action problems as it involves unilateral action.

International institutional design: the main international institutions of the World Trade Organization and World Intellectual Property Organization have evolved in response to the several grounds for cooperation, and are generally

justified on those grounds. However, an argument for close adherence to the reasons for harmonization suggests particular approaches to various policy questions, and can suggest reforms to these institutions.

The Nature of Patent Law

International cooperation is shaped by the subject-matter under consideration. Patent law has a number of internal characteristics which are particularly important.

Innovation is important in a modern economy, and over time it is the main source of economic development and improvements in productivity. Patent law is one of the elements of “innovation policy”: the policies and laws that affect innovation in the economy. Patent law has two primary positive effects: it encourages the creation of world-first inventions, and it encourages investment in developing such inventions into products that may be brought to market. Importantly, once the patent laws have been set by the government, the amount of reward or externalities directed to provide incentives to individual innovators is determined in the marketplace. This avoids problems with government rewards, and is an example of a public purpose being carried out through private action. However, patent law also generally inhibits non-world-first innovation, including both imitation and innovation building on another’s invention. Ideally, a welfare-enhancing patent law should strike an acceptable balance between its positive (encouraging largely world-first innovation) and negative (inhibiting largely non-world-first innovation) effects on innovation.

The welfare effects of patent law are unproven and unclear and may be expected to vary between industries, particularly in respect of the detailed doctrines of patent law. From an economic point of view, the preferred patent law for a state treated as a complete autarchy will depend on at least five factors: the size of the economy; relative strength in imitation versus innovation; the level of economic development; industrial mix; and complementary innovation policies. The preferred patent law may also be expected to vary over time in both an absolute and conceptual sense: absolute, in that the preferred patent law will vary as a nation's economy and industries vary and new fields of activity arise; and conceptually, as our understanding of the economic effects of patent law change over time.

Patent law concepts are difficult to capture in a legal text. As a result, great discretion is placed in the hands of judges and administrative patent office officials in the interpretation and application of basic patent law concepts such as obviousness, claim interpretation, or utility. In an attempt to minimize the harmful effects of uncertainty on the economy, countries with patent laws require applications to be examined in patent offices. Patent office officials examine patent applications to see that they meet the criteria for patentability, and most critically that they give adequate notice to the public (competitors, potential partners, and administrative and judicial officials) of what is and is not protected by a patent. This process, called patent prosecution, is costly for both states and applicants. There is a critical trade-off between the cost, speed and quality of the examination services provided by a patent office.

An underlying feature of international cooperation in patent law is our lack of detailed knowledge or theory of the welfare effects of patent law. This is best understood as a feature, since this uncertainty drives many of the institutional recommendations of this work, and indeed may be seen in the history of international patent law cooperation. Of course, one might wish for better understanding of welfare effects of international patent laws; however, this is not different from patent law theory in general, and equivalently development theory related to patents. The development of more reliable theories of the welfare effects of patent law might be of critical importance to international institutions, changing the nature of the underlying collective action problems. This thesis has performed an analysis assuming that our knowledge is and always will be limited, and has aspired to be robust in that sense.

Main Conclusions

Following the basic approach outlined above, this thesis reaches eleven main conclusions:

- 1) International Patent Law involves two linked grounds for cooperation: the recognition of foreign patentees, and the reduction of duplication in patent prosecution. These present different collective action problems.
- 2) While linked, the two grounds for international harmonization are separable
- 3) Because the two grounds are separable and present different collective action problems, they can and should be dealt with in two separate international institutions: WIPO and the WTO.

- 4) There are strong reasons to preserve national diversity of patent laws: unification of patent law is normatively unsupported.
- 5) While a detailed analysis can inform decision-makers, ultimately the extent and nature of patent law harmonization is a political decision.
- 6) The WIPO and the national and regional patent offices should take responsibility for the reduction of duplication in patent prosecution.
- 7) The WIPO is best suited for, and should emphasize, the information or ideas function for international patent law for both grounds of cooperation.
- 8) The WTO is best suited to assist cooperation in the area of the recognition of foreign patentees. However, there exist concerns regarding the structure of the dispute resolution process and the TRIPs Council. These concerns are best addressed through a stakeholder approach, by opening the TRIPs processes to input from a wide range of stakeholders and otherwise supporting the perceived legitimacy of TRIPs-related decisions.
- 9) International Patent law is a multilateral obligation.
- 10) The overall system should be aware of the influence of industry-oriented NGOs, and should be open to civil society and consumer NGOs.
- 11) The overall system should be flexible enough to accommodate the concerns of developing countries.

These main conclusions are discussed in the following sections:

1) International Patent Law involves two linked grounds for cooperation: the recognition of foreign patentees, and the reduction of duplication in patent prosecution. These present different collective action problems.

The literature lists four benefits of constructing or expanding legal regimes: lower per capita costs of providing public goods; the larger size of the relevant economy; regional insurance; and the possibility of redistributive schemes. These four benefits may be seen in the international patent law system; however, they coalesce into two distinct grounds for cooperation: the reduction of duplication in patent prosecution, and the recognition of foreign patentees.

The Reduction of Duplication in Prosecution

The reduction of duplication in patent prosecution seeks to lower the costs for patent prosecution, as the various patent offices around the world are performing roughly similar work. To the extent that practices in the various countries are harmonized, these costs may be reduced by patent offices and applicants taking advantage of prosecution before a foreign patent office. States thus gain the first benefit listed above: lower per capita costs of providing public goods. However, the welfare impact of such harmonization needs to be considered. For example, putting control of the prosecution process in applicants' hands raises the spectre of cost-containing rules that are not welfare-enhancing.

Reducing duplication in patent prosecution provides non-excludable and non-rivalrous public goods with a better-shot aggregation technology.⁸⁴¹ This type of public good challenges states' ability to coordinate activities, and this challenge is increased by the highly technical nature of patent prosecution, requiring a high level of expertise to properly understand the field and enter into meaningful negotiations with other states. As a result, negotiations between countries to initially reach or extend an agreement can be predicted to be difficult. However, once agreement has been reached, there will be good information available in respect of compliance; what counts as cooperation is likely to be clearly defined; and defection will be relatively easy to detect. More fundamentally, it will be in the interest of all states to comply, and temptations to defect will be minimal. In principle every state can gain from cooperation in patent prosecution. Decision makers can see positive results within a short timeframe (probably within a few years) and decision makers are likely to be more informed about benefits than costs. Serious disputes that might threaten already existing cooperation are unlikely to arise.

The Recognition of Foreign Patentees

Motivations for states to cooperate in allowing patents for foreign entities arise from differences in economic size and innovative capacity, as well as the skewed values of patentable inventions, leading to an imbalance of externalities

⁸⁴¹ As discussed in chapter 5 (see also T. Sandler, "Regional Public Goods and International Organizations" *supra* note 601 at 11 and *Global Collective Action supra* note 597 at 65) a better-shot technology is a public good where the contributions to the overall level of the savings are weighted, with the heaviest weighting to the largest contribution, the second-heaviest weighting to the second largest contribution, and so on.

and an imbalance of incentives to innovate. Further motivation can arise from threats of sanctions for non-cooperation. Countries that provide patent-related externalities to other countries in the absence of cooperation have an interest in recapturing some of those externalities, while small countries have an interest in obtaining patent protection for their nationals in large-market countries to provide a sufficient domestic incentive to innovate. The simplest solution to this collective action problem that still respects national diversity is a system of national treatment, where foreign patent owners are treated at least as well as domestic patent owners. However, a system of national treatment will itself be unstable without an element of minimum standards. Having secured access to foreign patent systems for their nationals, it is then in each country's self interest to minimize the scope and length of their patent laws to minimize their profit outflows. This can lead to a "race to the bottom", or at least a deterioration in the underlying national treatment agreement. Minimum standards in patent law, whether informal or formal, are needed to stabilize cooperation on national treatment.

This reasoning in favour of harmonization via the recognition of foreign patentees involves increasing the size of the economy in which patent law operates. Each inventive entity in all cooperating countries is exposed to increased incentives to innovate and increased potential patent-related earnings as the number of cooperating states grows. Each entity in each cooperating country is also subject to patents obtained by foreign nationals of cooperating countries.

In addition, this basis for harmonization involves a form of regional insurance (the third benefit of harmonization listed above) against a skewed, highly valuable invention occurring in a state's territory. Patents and inventions are known to be skewed in value, with few patents having value, and few of those having a very high value. In a world of states each with patent laws but no recognition of foreign patentees, each country runs a risk that a highly valuable invention and resulting patent will be located in that country, exacting a high cost from domestic consumers and competitors while providing foreign countries with a tremendous windfall. By providing for the recognition of foreign patentees, this risk is spread among all the cooperating countries, by providing patent-related profit flows back into the country originating the invention. This aspect of the international patent system is so successful it alters a state's interests from fearing domestic invention to encouraging valuable inventions to be created by domestic entities.

However, these benefits of harmonization cannot be expected to attract cooperation from states whose self-interest is not to have a patent law at all, nor will states be easily able to agree on minimum standards. A third benefit of cooperation is the spreading and stabilizing of a beneficial regime by systemizing transfers from states that benefit from the regime to states whose motivations to comply are marginal. Unfortunately, the opportunities to make such transfers within patent law *per se* are limited since patent-related profit flows are the very substance of the cooperation. As a result, to induce borderline states (such as developing countries) to cooperate, a transfer from outside the core patent law

area is necessary. This was a prime motivation for cooperation in patent law to be introduced as a topic in the world trading system during the Uruguay Round negotiations.

Cooperation for the recognition of foreign patentees creates three joint public goods: a reduction of discord; spreading the risk of skewed patent values; and greater domestic incentives to invent (thus creating more world-first innovations globally). The first two public goods are non-rivalrous and excludable, while the increase in world-first innovations is non-rivalrous and non-excludable. The prognosis for cooperation for joint public goods depends on the ratio of excludable benefits to total benefits; in this case, the tentative prognosis for cooperation is favourable.

There is low quality of information and high uncertainty regarding the results of cooperation in this area. It is also difficult to see the results, especially positive long-term results; while in some cases it may be easy to see negative short-term costs of introducing a patent law. As a result, the ratio of benefits to costs for most countries remains obscure, and in many cases is perceived as unfavourable in the short term. It is also difficult *ex ante* to agree to or textually capture the content of minimum patent standards. Tied to this is a difficulty in detecting (and proving) shirking by states. Patent law is a complex field, and there are a multitude of ways in which states could undermine the spirit of international agreements while adhering to the text of minimum substantive and procedural standard clauses. As such, the disputes in this area are as likely to

be about whether an agreement to cooperate has been reached on a specific topic as about coordination.

Integration-driven Harmonization

In addition to the grounds for harmonization given above, this thesis briefly discusses unilateral harmonization. This thesis highlights one possible reason for unilateral harmonization: increasing economic integration with other states. In particular, under globalization, a smaller economy may become integrated with a larger neighbour. In such a situation, differences in patent laws may unnecessarily drive investment from the smaller to the larger neighbour. In such a case, if the smaller neighbour does not wish to invest time and energy in tailoring a patent law to reflect its situation, it may choose to mimic the larger neighbour's patent law, thus ending any negative effects of differences in patent laws between the two states.

Integration-driven harmonization (as defined in this thesis), being a unilateral measure, does not require international cooperation.

2) While linked, the two grounds for international harmonization are separable.

The two grounds of international cooperation, the reduction of duplication in patent prosecution and the recognition of foreign patentees, are linked, since patent prosecution is undertaken with an eye to eventual exploitation within the substantive patent laws. If states and applicants insist on a perfect examination

in each state, the two grounds of cooperation coalesce into one form of cooperation.

However, in practice patent examination is costly to both states and applicants, who are thus generally satisfied with imperfect or approximate examination. As a result, examination activity in a first patent office may often be utilized as an acceptable approximation – and in some cases, a perfect substitute - within a second patent office without correspondingly unifying the substantive patent laws in the first and second states. The reduction of duplication in patent prosecution and the recognition of foreign patentees are thus only weakly linked, and cooperation in one sphere may develop independently of cooperation in the other sphere.

3) Because the two grounds are separable and present different collective action problems, they can and should be dealt with in two separate international institutions: the WIPO and the WTO.

Because the two grounds for international cooperation, the reduction of duplication in patent prosecution and the recognition of foreign patentees, are separable and present different collective action problems, it is appropriate for them to be handled in two separate international institutions. Separating the two grounds for cooperation into different institutional structures allows each ground to be exposed to a different institutional context, including dispute resolution, reporting and transparency, and negotiation features. In fact, history has led to a bifurcation in the international institutions ordering patent law, with WIPO largely

responsible for cooperation on reducing duplication in patent prosecution, and the WTO largely responsible for cooperation on the recognition of foreign patentees.

However, it is more insightful to regard WIPO and the WTO as one joint institution ordering international patent law. Even as the WIPO and WTO grapple with different issues, they support and interface with each other in various ways. In particular, as noted below, WIPO can support the WTO in an informational or idea-generation role.

4) There are strong reasons to preserve national diversity of patent laws: unification of patent law is normatively unsupported.

Counterbalanced against the four reasons for harmonization discussed above are several reasons to preserve diversity of national patent laws.

Assuming that inter-state differences in preferences are greater than intra-state differences, the global welfare-enhancing ordering is for each state to set its own patent and innovation laws in accord with its own preferences. From a static analysis, each state's preferences will be set by its economy, by political, cultural and legal differences, and by capability limitations. The preferred patent law will vary with the size of the economy, the relative strength in innovation versus imitation, the level of economic development, the industrial mix, and complementary innovation policies. Modern innovation theory suggests that the

optimal set of patent laws and practices will vary from industry to industry, and also over time as an industry matures. Many patent-law choices are also political in nature, including the treatment of pharmaceuticals, higher life form and software patents, interactions with competition law, and whether patent law should be tweaked to support small inventors or large corporations. Political choice may be particularly important given the uncertainty surrounding the welfare impacts of many aspects of patent law. Patent-law preferences will also vary with the general legal system on such issues as the availability of preliminary injunctions, the use of juries and the specialization of the judiciary. Since patent law is based on a thin legislative text, much discretion is placed in the hands of judges to apply unwritten standards for core patent-law concepts. Finally, the preferred domestic patent system will be shaped by capability and resource constraints within a state.

Notably, these may be expected to create large variations in preferences between the developed countries. Differences between developed and non-developed countries may be expected to be even greater. This analysis suggests that observed differences in patent laws between jurisdictions to a large extent reflect normatively substantive underlying differences rather than random, path-dependent variation.

However, diverse patent laws may be most valuable by better allowing the satisfaction of preferences in the future – a dynamic view. Even if one assumes that the present or static state were to persist, the lack of knowledge of the welfare effects of patent law or what innovation will look like in the future

suggests that experimentation by states into different patent laws could uncover superior patent practices.

The underlying economies that are affected by patent law are expected to experience non-ergodic change over time, including the introduction of entirely new technologies and industries.⁸⁴² Given that patent law necessarily deals with unpredictable and often disruptive changes in technology, responsiveness to changes in the underlying economic structure may be assumed to have greater importance than in other legal subject areas. Diverse patent laws will permit more flexibility in responding to such non-ergodic changes, and will also allow experimentation to discover superior patent practices. However, it is difficult to see regulatory competition having a meaningful impact on patent law, as the response to changes in patent law is likely to have a long time lag and be confounded by many other effects.

The unification of laws is only supported if the benefits of harmonization heavily outweigh the costs of a loss of diversity in national laws. The mere facilitation of business and commerce – the mere removal of system frictions – is not a sufficient reason to support patent law harmonization.⁸⁴³ Since patent law

⁸⁴² Ergodic is defined as: “involving or relating to the probability that any state will recur, especially having zero probability that any state will never recur” (Webster’s dictionary) or

“an ergodic stochastic process simply means that averages calculated from past observations cannot be persistently different from the time average of future outcomes” (Davidson)

⁸⁴³ See M.J. Trebilcock, “Competition Policy and Trade policy – Mediating the Interface” (1996) 30(4) *Journal of World Trade* 71 at 92-93:

“In a world of Nation-States, system frictions are everywhere. If the whole world spoke the same language, there would be fewer system frictions (for example, in facilitating foreign investment). If everybody in the world drove on the same side of the road, there would again be fewer system frictions (in exporting automobiles). If preferences and priorities regarding education policies, labour policies, environmental policies,

exhibits strong reasons for maintaining diversity between states, the case for the unification of patent laws into a true “global patent” is normatively unsupported.

5) While a detailed analysis can inform decision-makers, ultimately the extent and nature of patent law harmonization is a political decision.

As a field with both strong differences in preferences between states and strong reasons for international cooperation, accompanied by high uncertainty regarding welfare effects of policy decisions, it is unsurprising that patent law is a highly politically contested field. Moreover, it should be recognized that decisions about the extent and content of patent law harmonization are inextricably political decisions. A detailed analysis can inform decision makers, but cannot predict or dictate the appropriate political trade-offs.⁸⁴⁴

6) The WIPO, the national and regional patent offices should take responsibility for the reduction of duplication in patent prosecution.

The World Intellectual Property Organization has desirable institutional features to foster cooperation on reducing duplication in patent prosecution. With

culture, health care, law and order and the rule of law, property rights, and almost every other area of domestic policy-making that one could identify were the same the world over, there would be fewer system frictions.”

⁸⁴⁴ For a similar conclusion about regulatory harmonization in general, see J. P. Trachtman, “Regulatory Competition and Regulatory Jurisdiction” *supra* note 350 at 331

an active and independent central bureaucracy and deep technical knowledge (with over 1000 officials in 1996), WIPO is in a position to make suggestions and guide states in cooperation on patent prosecution as well as administering central patent application processing systems. Furthermore, its lack of an adjudicatory dispute resolution system should encourage states to join WIPO regimes free of a fear that they will be later forced to comply with standards to which they have not agreed, and with some assurance that they will be able to adjust their rules and regulations in response to unforeseen events. As noted above, an adjudicatory system is unnecessary because of the nature of cooperation in reducing prosecution costs. However, to truly allow international experimentation, the WIPO International Bureau should be open to ideas of sub-unions or agreements between similarly situated WIPO members.⁸⁴⁵

Much of the cooperation in the area of the reduction of patent prosecution takes place directly between patent offices and officials, without the use of WIPO and indeed without any formal agreement. To some extent, this may be seen as an example of the Coase theorem in action in international patent law.

To allow for maximum diversity, WIPO should be open to allowing states to enter into limited unions or regional patent prosecution alliances. This may already be seen in such groupings as ARIPO, OAPI and the European Patent System. In part, this reflects the nature of patent prosecution as providing regional public goods as opposed to global public goods.

⁸⁴⁵ For example, see the description of the Patent Prosecution Highway Pilot Program at footnotes 289 and 290 and associated text.

7) The WIPO is best suited for, and should emphasize, the information or ideas function for international patent law for both grounds of cooperation.

WIPO is the best positioned institution for information and idea generation and dissemination for all areas of international cooperation in patent law, including the recognition of foreign patentees. In furtherance of this role, it holds many international meetings, its representatives travel the globe, and it publishes statistics and reports that are widely available. It also encourages participation in discourse from many sources, and non-governmental organizations and inter-governmental organizations are welcome at WIPO proceedings. WIPO supports the participation of developing countries in the international intellectual property process, both through technical assistance, but also by providing financial support for developing countries to participate in international meetings. Finally, WIPO has a significant amount of in-house knowledge and capability in the patent field. This activity is institutionally supported by the high level of funding received from the running of international intellectual property prosecution services (under the Patent Cooperation Treaty and the Madrid Protocol for trademarks), making WIPO financially independent of funding from country donations.

8) The WTO is best suited to assist cooperation in the area of the recognition of foreign patentees. However, there exist concerns regarding

the structure of the dispute resolution process and the TRIPs Council.

These concerns are best addressed through a stakeholder approach, by opening the TRIPs processes to input from a wide range of stakeholders and otherwise supporting the perceived legitimacy of TRIPs-related decisions.

The institutional structure of the WTO is more suited than the structure of WIPO to support cooperation in respect of the recognition of foreign patentees. In part, this is because negotiating in the world trade context allows concessions in other fields to be traded for concessions in patent law, allowing greater scope for mutually beneficial agreements, expanding and reinforcing cooperation in the patent law area, and reducing the threat of bilateral friction over patent law (as noted below, the question of whether developed countries have fulfilled their obligations under the Uruguay Round WTO Agreements not addressed in this thesis).

Potentially, the WTO is also a superior institution as its dispute resolution system seems better suited to resolve conflicts in respect of commitments to minimum standards. It is difficult to write minimum standards *ex ante* in a legal text, particularly when the agreement includes various flexibilities to accommodate social welfare or public health and nutrition concerns.⁸⁴⁶ It is also difficult to detect or prove shirking in many cases, and there are numerous ways a state could undermine the spirit of an agreement while arguably adhering to the text of the agreement. Disputes in this area are likely to be characterized as

⁸⁴⁶ See TRIPs Agreement, *supra* note 92, Objectives and Principles, Articles 7 and 8.

much about whether an agreement on a patent issue has been reached as about the content of agreed coordination.

The first step in the WTO dispute resolution process is consultation between the involved parties with the assistance of the TRIPs Council: a diplomatic approach. If this step fails, the matter is referred to a legalistic panel proceeding, with an appeal to a permanent Appellate Body. As a last resort, sanctions against the non-complying state may be authorized. Potentially, this provides a potent blend of diplomatic solutions combined with a legal dispute resolution regime that can provide a decision in diplomatically intractable situations.

However, difficulties may be foreseen in the meshing of international patent law into the international trade system via the TRIPs Agreement. This may be attributed to fundamental differences between patent law and the traditional trade subjects. Trade law itself has a long history and strong institutional traditions, and the dispute resolution system is designed with the general trade system in mind, not the TRIPs Agreement. International patent law obligations appear to be multilateral in nature, whereas many commentators argue that traditional trade obligations are bilateral. Trade obligations tend to be highly specified in international agreements, while minimum standards in patent law obligations are difficult to textually capture. Dispute resolution is also difficult in the absence of any normative baseline for minimum patent standards. Many disputes will be difficult to adjudicate and effectively lead to dispute resolution panels determining the terms of the TRIPs Agreement. Stating that dispute

resolution panels should strictly construe the text of the TRIPs Agreement is a useful normative statement of a conservative attitude, but ultimately lacks principled substance. Ordinary meaning also faces difficulty given various Articles in the TRIPs Agreement itself conditioning the terms of minimum standards to health and technology transfer concerns, the “legitimate interests” of patent holders and third parties, and “social and economic welfare”, which would seem to demand going beyond ordinary meaning.

By adopting the TRIPs Agreement, the world trade system has moved beyond the traditional regime management system into a system that requires difficult, welfare-impacting policy trade-offs between groups of stakeholders. As sustainable international cooperation requires that the content of cooperation be seen as legitimate among impacted groups, the traditional regime management focus on identifying and sanctioning cheating should be expanded to include a focus on transparency of decision making and input from stakeholders. One implication of this stakeholders model is that NGOs should be granted observer status at the TRIPs Council, and that NGOs should be permitted to file amicus briefs before dispute resolution panels and the Appellate Body. Since the long term viability of the TRIPs system is dependent upon the legitimacy of the decision making process, attention should also be paid to the choice of panellists and members of the Appellate Body. Reflecting the multilateral nature of international patent law obligations, some consideration should be given to making it easier for members to file joint complaints or join existing complaints.

The TRIPs Council is the WTO/TRIPs institution best suited to handle non-ergodic change. Encouragingly, the TRIPs Council has already shown an ability to amend the TRIPs Agreement to accommodate some of the interests of the least developed countries. If resolution of an issue requires an amendment to the TRIPs Agreement, resort to the TRIPs Council will be necessary.

However, the division between regime management and stakeholders models is a blurred and subjective one, and in any case states may be expected to insist on a decision from the panels and Appellate Body if they think it is in their subjective self-interest regardless of the nature of the dispute. In difficult cases, panels and the Appellate Body will have to make the best determination they can, balancing the various regime maintenance, third party, stakeholder and welfare implications as best they can.

The TRIPs Council could also attempt to engage in a dialogue with the panels and Appellate Body through the use of “soft law” or non-binding declarations. Officially, panels and appellate bodies are supposed to disregard the deliberations at the TRIPs Council. However, the use of soft law pronouncements could allow the “legislative”, deliberative and diplomatic body (the TRIPs Council) to engage with but not overrule the “judicial” panel and Appellate Body system – a model that is often considered useful and legitimacy-enhancing in a domestic context. If a binding interpretation is required, Article IX paragraph 2 of the WTO Agreement permits the WTO Ministerial Conference and

General Council, acting on the recommendation of the TRIPs Council, to adopt formal interpretations of the TRIPs Agreement.⁸⁴⁷

9) International patent law is a multilateral obligation.

In form, international patent law obligations are multilateral. Obligations are owed to all states, and indirectly to patent owners from all states. More pragmatically, short of a blatant disregard for the most favoured nation and national treatment clauses, it is difficult to write patent laws in key and disputed areas that only affect one bilateral relationship. Historically, patent cooperation originated in a multilateral agreement, not bilateral agreements that were subsequently multilateralized. Normatively, international patent law cooperation facilitates an international system to promote innovation – a collective interest, not just common interests.

A more difficult question is why international patent law is multilateral in form. It is certainly possible to write patent laws that treat foreigners of different nationalities differently, yet this seems to be rare. One reason may be the multilateral flows of innovation and innovation incentives across borders combined with the local assumption of costs. This thesis also suggests that

⁸⁴⁷ Marrakesh Agreement Establishing the World Trade Organization, Article IX Paragraph 2, reads:

“The Ministerial Conference and the General Council shall have the exclusive authority to adopt interpretations of this Agreement and of the Multilateral Trade Agreements. In the case of an interpretation of a Multilateral Trade Agreement in Annex 1, they shall exercise their authority on the basis of a recommendation by the Council overseeing the functioning of that Agreement. The decision to adopt an interpretation shall be taken by a three-fourths majority of the Members. This paragraph shall not be used in a manner that would undermine the amendment provisions in Article X.”

transnational epistemological groups of patent professionals and industry along with a science or technical transnational epistemological group have influenced state perception such that patent law is seen as a multilateral obligation.

This thesis has attempted to take history seriously, attempting to reconcile theory with the historical record. However, it is ultimately a theoretical, not a historical investigation. Undoubtedly, a more thorough historical investigation and analysis could be concluded. Of most interest would be an analysis of why bilateral attempts at patent law cooperation failed in the 1800's, and whether this sheds light on the multilateral versus bilateral nature of international patent law cooperation. This could lead to insights as to the nature of patent law commitments at the WTO and WIPO.

10) The overall system should be aware of the influence of industry-oriented NGOs, and should be open to civil society and consumer NGOs.

Unlike many areas of international harmonization, in patent law there is a political constituency in favour of harmonization, and indeed unification.⁸⁴⁸ This is an inevitable consequence of a public law goal – increased innovation - being implemented through private means. Patent law has a built-in constituency of some patent owners and their related professionals for whom the spread of patent law worldwide, and the unification of those patent laws, are quite desirable. It seems likely that patent law and other intellectual property laws

⁸⁴⁸ See Sykes, *supra* note 22 at 49: “Related, as a positive matter, harmonization will lack any political constituency and thus instances of true harmonization will be rare.”

became the subject of international cooperation at such an early date compared to other areas of international agreement with political implications (like trade law or competition law) and have reached such high levels of agreement because of private sector actors such as the AIPPI (the International Association for the Protection of Intellectual Property). Indeed, Ladas writes that the organization of WIPO should reflect the private nature of patent law:

“It is proper to make the observation here that these organizations [international organizations whose structure was used as a model for the WIPO restructuring in 1967] deal with public administrative problems or with State problems of a public nature. The Paris Union was established as a result of efforts of inventors and industrialists, and the main reason for its creation was to afford a better or more uniform or harmonious protection of private rights on an international level.”⁸⁴⁹

From the point of view of a stakeholders model, it is desirable that patent-sensitive industry and professionals are involved when decisions on international cooperation are being debated. However, given that patent law normatively involves a balance between patent owners and the users of patented information, and that patent law impacts many important areas other than innovation, it is equally important that civil society NGOs, as well as concerned IGOs, be granted access to decision making as well.

Indeed, compared to industry and professional groups, consumer groups may need to be specifically encouraged. An analysis of regulation should consider the degree to which consumers are able to “make an informed

⁸⁴⁹ Ladas, Proposed Reorganization, *supra* note 446 at 819

choice.”⁸⁵⁰ In general, consumer groups seem to be inactive in the patent field. To some extent, they are imperfectly represented by industry groups that are users of intellectual property, since these groups will seek access to patented technology on favourable terms so as to offer consumers products at lower prices.

11) The overall system should be flexible enough to accommodate the concerns of developing countries.

Although this thesis has not focused on the situation of developing countries and the international patent system, some tentative conclusions can be offered. The first is that if one assumes that the least developed countries have little innovative capacity, the LDCs are effectively not implicated in the reasons for the recognition of foreign patentees: they have nothing to gain from accepting patent law and the potential profit flows to innovators are small. Hence, there is little to gain from holding the least developed countries to the TRIPs Agreement standards.

⁸⁵⁰ J. P Trachtman, “Regulatory Competition and Regulatory Jurisdiction” *supra* note 350 at 338.

“... raises an important difference between fiscal competition – the original focus of the Tiebout model – and regulatory competition. In the regulatory context, proponents of greater competition in some areas, notably securities regulation, argue that there is a “joint” jurisdictional decision made by producers and consumers. Thus, analysis must examine the degree to which consumers are able to make an informed choice.”

Ideally, developing country issues will be dealt with in a flexible way through the activities of the TRIPs Council and the international system in general. There is reason for optimism on this point, given the ongoing amendment of the TRIPs Agreement to reflect developing countries' needs for affordable pharmaceuticals.

Some commentators suggest that it is in developing countries' own self-interest to have a strong and enforceable patent law. However, these claims are disputed, and in any case it seems unrealistic to assert that developed states are altruistically transplanting strong patent laws into developing countries. The desire to attract technology transfer and investment might be a reason to unilaterally adopt a stronger patent law, but does not speak to the grounds for multilateral cooperation discussed in this thesis.

This thesis has not addressed the argument that developed countries have not lived up to their obligations under the WTO.⁸⁵¹ If concessions in intellectual property rights were traded by the developing countries for concessions in agriculture and textiles by the developed countries, a lack of follow-through by the developed countries puts the developing countries' commitment to stronger intellectual property rights on normatively precarious ground. Similarly, this thesis does not address the question of whether developing countries were competent to understand the implications of the TRIPs

⁸⁵¹ See Yu, *supra* note 12 at 379; see also [UK] Commission for Intellectual Property Rights, *supra* note 183 at 9 (many less developed countries "feel that the commitments made by developed countries to liberalise agriculture and textiles and reduce tariffs, have not been honoured, while they have to live with the burdens of the TRIPS agreement"); Sell, *Private Power*, *supra* note 18 at 173 ("there is... no evidence that developed countries are making good on their commitments to open their markets more widely to developing countries' agricultural and textile exports").

Agreement.⁸⁵² Finally, this thesis does not address the question of whether bilateral pressure exerted by the United States and Europe at the time of the signing of the TRIPs Agreement amounts to coercion sufficient to morally undermine the consent of the developing countries to the Agreement, a difficult question even within the domestic context.⁸⁵³

Some Final Words

This thesis argues that that the normative basis for patent law harmonization rests on the reconciliation of strong reasons for the preservation of diversity with strong reasons for international cooperation. Given a diversity of national preferences along with high uncertainty surrounding the welfare effects of specific patent policies, the process of harmonization is inevitably a political process. Assuming that the political process reflects underlying welfare preferences, it is desirable that the extent of harmonization reflect political input.

It should be noted that the perception of patent law as highly political flies against much thinking about the nature of patent law, particularly in respect of the work of WIPO. For example, as argued by Hans Ballreich in 1967:

“Here, the basic assumption is that there are world-wide subject matter interests independent of national boundaries, and which in the various States are so similar and so free from political friction, that they can be said to be self-regulating and may be regulated by consent. Cooperation should be as universal as possible, not necessarily between States as political units but rather as units of

⁸⁵² See Yu, *supra* note 12 at 375

⁸⁵³ See Yu, *supra* note 12 at 372-375 for an overview. In a domestic context, see M.J. Trebilcock, *The Limits of Freedom of Contract* (Cambridge, Mass., Harvard University Press, 1993).

administration, which usually coincide, however, with a State's territory."⁸⁵⁴

Or, as suggested by May:

"The relative inattention given to the WIPO may reveal a tacit acceptance of its own public description of itself as merely a technical agency."⁸⁵⁵

Of interest are the observations of Reinsch in 1911, who wrote that a strength of the public union system was the system of "interest representation" rather than state representation.⁸⁵⁶ In his view, decision making by technical delegates with knowledge of the subject matter at hand is preferable to the participation of diplomatic representatives, who "have frequently acted as a retarding influence" by focusing on maximizing the future freedom of action of states.

In my view, patent law cannot be regarded as merely technical in nature, reducing states to mere "units of administration." Even the prosecution of patent applications, the most technical area of patent law, contains many political choices, albeit many so ingrained as to no longer be considered choices. For example, the resources put into patent examination and the balancing between patent quality and pendency are ultimately political decisions. In new subject areas or claiming strategies, the first test of the validity of these claims comes in the patent office, and patent office practice can effectively expand the range of

⁸⁵⁴ H. Ballreich, World Intellectual Property Organization 410-14 (E31 BAL.W) (copy on file at WIPO library) (as reported in Halbert, *supra* note 15 at 260). Halbert writes "It is informative that Ballreich narrates the process as being 'free from political friction,' given that even a reading of the earliest WIPO documents suggests that friction abounded." (Halbert, *supra* note 15 at 260)

⁸⁵⁵ May, *The WIPO*, *supra* note 385 at 1

⁸⁵⁶ Reinsch, *supra* note 394 at 140

possible patents and strategies, albeit subject to later examination by a court. Regarding patent law as merely technical in nature either undervalues the political nature of patent law choices, or reflects a philosophical belief in patent law as a universal right.

Recognition of the political content of patent law directly connects the topic of patent law harmonization with the institutional analysis of WIPO and the WTO. The implementation of welfare-enhancing patent law cooperation is best guarded by a process with a wide range of political inputs and transparency. However, the political process in the patent law arena, particularly in the WTO in respect of TRIPs, is often considered ineffective. To the extent this is true, it leaves patent law harmonization in the hands of administrative and judicial bodies; a second-best solution even if viewed favourably.

Despite this, I take a more optimistic view. Institutional analysis is ultimately comparative, and the comparison should be tempered with consideration of what is practical or realistic. As discussed above, there are considerable differences in interests between countries, and significant collective action difficulties. Despite this, the TRIPs Council has been able to implement modifications to the TRIPs Agreement to allow the exportation of pharmaceuticals to countries with no pharmaceutical manufacturing capacity under a compulsory license. Despite pressure from industry groups and foreign governments, the patent system in South Africa and Brazil has been shaped by national governments to reflect local health considerations. While some authors see the tardiness of the TRIPs Council to the AIDS crisis or the existence of

industry or diplomatic pressure in developing countries as failures of the international patent system,⁸⁵⁷ one can also see movement on these issues as positive indications. From an institutional point of view, it is incomplete to simply point to an institutional output and express dissatisfaction; it is also necessary to analyze whether realistic alternative institutional arrangements are available. If realistic superior alternatives are not apparent, the present institutional structure is reasonably desirable. Although I have attempted to suggest reasonable, realistic alterations to the WIPO/WTO international patent law structure, I have also concluded that the WIPO/WTO structure is generally supportable.

Patent law, in the broader context of innovation policy, has a steady influence on issues that affect the welfare of people worldwide. Although its effects are often indirect, and the area is seen as technical in nature, it is ultimately an important area of international governance. One need only contemplate the large sums spent by companies in the pursuit and defence of patent rights to conclude that patents have considerable practical importance. It is important that the theoretical underpinnings of international patent cooperation and governance be explored and understood. Ultimately, only good international governance can deliver on the potential of the international patent system to promote international innovation, economic growth and world-wide prosperity.

⁸⁵⁷ For example, see Broude, *supra* note 721 at 309-310.

APPENDICES

These appendices provide formal models and derivations to support positions advanced in this study. Although these appendices are my own work, they draw heavily on the models and discussion in S. Scotchmer, *Innovation and Incentives* (Cambridge: MIT Press, 2004).

Appendix A: The ratio of the global deadweight loss to the global profit accruing to the patentee is invariant

Appendix B: The Nordhaus trade-off

Appendix C: The relationship between the incentive to invent within a country and the incentive provided by the rest of the world

Appendix A

Assume two countries a and w (w can also represent the rest of the world to a). Assume that the market for each new commodity is the same in each country, generating consumer's surplus v^a and v^w when sold at the competitive price. Assume w is a larger market than a , so $v^w > v^a$ and assume that the marginal cost of providing the new commodity is zero.

Now, assume a monopolist sells at the monopolistic price

$$v^a = m v^a + \pi v^a + l v^a \quad (1)$$

where $m v^a$ is the consumer surplus under monopoly, πv^a is the profit to the patentee under monopoly, and $l v^a$ is the deadweight loss, so $m + \pi + l = 1$.⁸⁵⁸

If an inventor patents in both a and w , his profit = $\pi (v^a + v^w)$.

The benefit to w from an innovation by someone in a is either v^w if there is no patent, or $m v^w$ if there is a patent. Either v^w or $m v^w$ is the externality provided to w by a ; v^w would be the externality in a case of free riding.

To reflect questions of harmonization and strength of patent protection, let variables T_a and T_w representing the patent length in a and w .⁸⁵⁹ Then the profit accruing to the patentee is $\Pi = \pi (v^a T_a + v^w T_w)$ and the global or joint deadweight loss is $L = l (v^a T_a + v^w T_w)$.

⁸⁵⁸ Note that under national treatment, this is the same for both domestic and foreign patentees.

⁸⁵⁹ At this general level of analysis, patent length can represent any patent policy lever that adjusts the strength of patent protection. Of course, there are many patent issues where it is unclear how changes affect the "strength" of patents.

As a result, the global deadweight loss L is invariant for all combinations of T_a and T_w that provide the same joint profit Π . In other words, $\Pi/L = \pi/l = a$ constant, or the global deadweight loss corresponds with the profit accruing to the patentee in the two countries, and this is not generally improved through harmonization and is not generally improved by setting $T_a = T_w$.

Appendix B

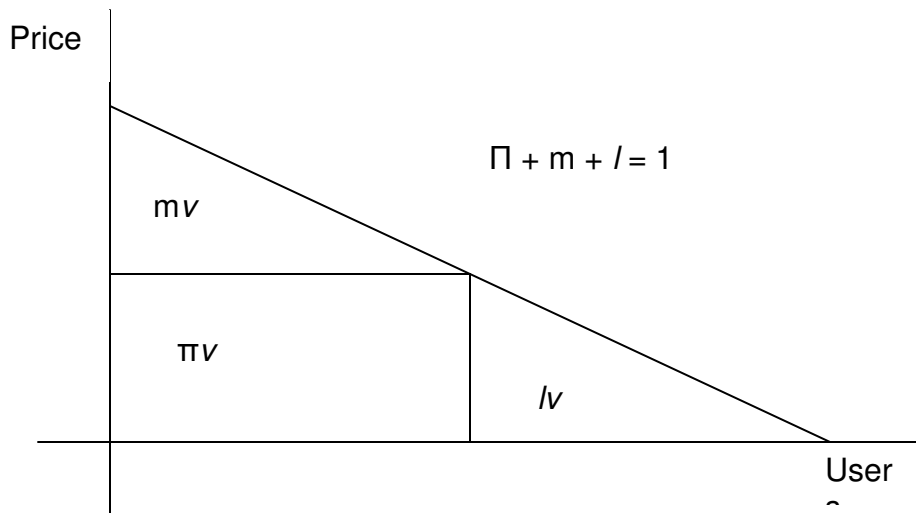


FIGURE 1

Following Nordhaus and Scotchmer, assume that a product has a consumer's surplus v at the competitive price.⁸⁶⁰ Consumer's surplus might also be called the size of the market. If a patentee sells this product at a higher price – the proprietary price - the consumer's surplus v can be divided into

$$v = mv + \pi v + lv \quad (1)$$

where πv is the profit to the patentee under the patent, lv is the deadweight loss or the loss of consumer's surplus due to consumers who are priced out of the

⁸⁶⁰ Nordhaus, *ibid.* Scotchmer, *supra* note 110 at 99-102,

market, and mv is the consumer surplus remaining to the public. Please see Figure 1. Note that $m + \pi + l = 1$.

This division of the consumer's surplus can be affected by changes in a patent's strength or breadth. For simplicity, we will vary the duration of the patent, keeping other features of the patent unchanged; however, the duration can act as representative for changes of other features. So, for a duration of patent protection T ,

$$Tv = Tmv + T\pi v + T/v \quad (2)$$

Let the cost of developing an idea into an innovation be c . For any given combination of v and c , there will be a duration of patent protection T which is sufficient so the innovator can expect a profit, or $T\pi v > c$. The higher the value of T , the more inventions with a higher cost will be made.

In contrast, the social value of an invention is $v - T/v$, or the consumer's surplus (or market) minus the deadweight loss. The social value of an innovation decreases with increasing T or patent length.

Appendix C

This can be shown formally, using the nomenclature adopted in chapter 2. Assume there are two countries a and w , and that patent laws vary with the time of duration T . Country a would prefer, if we hold total profit $\pi(v^a T_a + v^w T_w)$ fixed, to minimize T_a and have a large T_w (assuming country w is large enough to support innovation). However, this not only affects profit flows, it also affects deadweight loss, increasing it in country w and decreasing it in country a .

Assume that T_w and T_a are set independently, as is the case where there is national treatment for patents but no minimum standards, and assume innovation has cost c . If $\pi v^w T_w > c$, or the patent system in country w is by itself sufficient to induce spending of cost c , then country a can set $T_a = 0$ (i.e. have no patent) and still have a sufficient domestic incentive to incur spending of cost c . If, on the other hand, $\pi v^w T_w < c$, then country a reacts so $\pi(v^w T_w + v^a T_a) = c$, or

$$T_a = ((c/\pi) - v^w T_w)/v^a. \quad (2)$$

In other words, the “optimal” value for T_a or the patent term in country a depends on T_w or the patent term in country w . Instead of an “optimum” solution, there is instead an equilibrium bilateral solution, with multiple states of equilibria corresponding to pairs of T_a and T_w that satisfy equation 2.

Recall from chapter 1 the Nordhaus trade-off: the optimal additional patent length is when the value of increased innovation equals the additional deadweight loss on innovations that would occur regardless of the additional patent term. The Nordhaus trade-off captures the optimal or globally welfare-maximizing patent strength whether we are considering countries as an autarchy

or as an open economy, albeit the result of the Nordhaus trade-off is likely to change as autarchy is removed. However, once we add international considerations, we add an outflow of profits to foreign patent-holders to the subjective strategic analysis made by each country. So, the increase in innovation from a longer patent term (or any other change that increases the externalities captured by the patent holder) must be balanced against both the increase in deadweight loss, and also against the increase in outflow of profit. Countries will thus systematically choose lengths of patent protection that are less than the Nordhaus optimum. In other words, the introduction of national treatment among countries creates incentives for countries to reduce their patent strength below that which is globally welfare maximizing.⁸⁶¹

Stated more formally, let $\hat{c} = \pi v_a T_a + \pi v_w T_w$ = the maximum innovation cost that can be covered by the worldwide patent rights (T_a, T_w) and so can be written $\hat{c}(T_a, T_w)$. An increase in T_a increases \hat{c} so we get additional innovation at the margin in both a and w .

Assume that the cost of innovations in country a are distributed so the number of innovations with cost c or less is $F(c)$. So, there will be $F(\hat{c})$ or $F(\hat{c}(T_a, T_w))$ innovations in country a .

Let us now introduce a parameter γ to represent the relative innovativeness of a country. Assume that innovations in country w are subject to the same function F , but scaled by a parameter γ . So, there will be $\gamma F(\hat{c})$ or γ

⁸⁶¹ Scotchmer, *supra* note 110 at 331

$F(\hat{c}(T_a, T_w))$ innovations in country w .⁸⁶² Country w will be more innovative than country a if $\gamma > 1$; country w will be less innovative than country a if $\gamma < 1$.

Let aggregate social welfare be $S(T_a, T_w)$. Then

$$S(T_a, T_w) = (1+\gamma)F(\hat{c}) [v^a((1/r) - IT_a) + v^w((1/r) - IT_w)] - (1+\gamma)Y(\hat{c}), \quad (3)$$

where $Y(\hat{c})$ is the total cost for all inventions of cost \hat{c} and less (or

$$Y(\hat{c}) = \int_0^{\hat{c}} z f(z) dz \text{ where } f(z) \text{ is the density function of } F(c) \text{ and } r \text{ is the discount}$$

rate. The first term of equation 3 is the global consumer's surplus, the second term is the total global cost of innovations. Note that the discounted consumers' surplus under competitive supply is v^a/r with discount rate, and the deadweight loss over the life of the patent is $v^a T_a$.

But, what is the social welfare choice W^a confronting country a ?

$$W^a(T_a, T_w) = F(\hat{c})v^a((1/r) - IT_a) + \gamma F(\hat{c})v^a((1/r) - (1+\pi)T_a) + F(\hat{c})v^w \pi T_w - Y(\hat{c}) \quad (4)$$

The first term in equation 4 is the consumer and producer benefits in country a that accrue from innovations in a . The second term is the consumer benefits in country a accruing from innovations in w . The third term is the profit flow from w to a . The fourth term is the cost of country a 's innovations. Note that the second term includes the profit flows from a to w . Country w is in a symmetrical position in respect of a .

In this equation, T_a and W^a – the patent strength and social welfare function – have an inverse relationship: increasing (decreasing) T_a decreases (increases) W^a .

⁸⁶² i.e. assuming that the distribution of costs for innovations is the same in a and w , only scaled.

In summary, domestic policymakers have an incentive to decrease profits flows to foreign countries and discount the positive effects of innovation on foreigners. (i.e. the benefits of incremental innovation from a's stronger patent policy on w's citizens). This provides an incentive for countries under a pure national treatment regime to reduce their patent strength below globally welfare maximizing levels.

This is a robust conclusion. Even if countries start from the equilibrium point that maximizes the social welfare function $S(\bullet)$, both countries will have an incentive to weaken their patent laws. A similar conclusion also holds even if a and w are assumed to be identical (i.e. $v_a=v_w$, $\gamma=1$, and $T_a=T_w$).

The solution to this problem is for states to agree to minimum standards for their patent regimes, or in our simple model, to agree to minimum values for T_a and T_w .

If countries a and w are symmetric and possess adequate knowledge, then both countries' preferred patent lengths will be equal and will equal the globally welfare maximizing length. However, we know that countries are not identical (in our model, varying v_a and v_w or making γ not equal one) in which case for countries a and w the globally welfare maximizing patent lengths T_a^* and T_w^* will not be equal. Furthermore, at globally welfare maximizing patent lengths T_a^* and T_w^* profit flows and spillover benefits will not be equalized between the countries.

Theoretically, countries a and w could agree to different minimum values of T_a and T_w . More realistically, and especially in the presence of uncertain

information, countries tend to reach agreement on the basis of reciprocity, or all countries undertaking the same commitments. Suppose that a and w want to reach an agreement on a harmonized $T = T_a = T_w$. What might be predicted about the negotiations for a harmonized T , given disparities in size and innovativeness between a and w ?

If $T_a = T_w = a$ harmonized T , then the social welfare equation for country a given in equation 4 becomes:

$$W^a(T, T) = F(\hat{c})v^a((1/r) - IT) + \gamma F(\hat{c})v^a((1/r) - (1+\pi)T) + F(\hat{c})v^w\pi T - Y(\hat{c}) \quad (5)$$

from which it is clear that if both countries are equally innovative ($\gamma = 1$), country a will prefer a larger value for T if a has a smaller market than w (or $v_a < v_w$); and that if both countries have the same size market ($v_a = v_w$), a will prefer a longer T if it is more innovative than w (or $\gamma > 1$).

In other words, a is asking what T maximizes $W^a(T, T)$. The smaller the domestic market, the less an increase in T increases deadweight loss, and the less it increases outflow of profit. If $w > a$, then an increase in T will increase a 's net flow of profit

Similarly, the greater the domestic innovativeness, the more T will increase profit flow into the country if a and w are of the same size.

In summary, small innovative countries will prefer and negotiate for a longer term T , or more generally stronger minimum patent rights. Large non-innovative countries will prefer a shorter term T , or more generally weaker minimum patent rights.

So, a small, innovative country will prefer a longer T . However, nothing can be generally said about large innovative or small non-innovative countries from this model.

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