The Global Nature of Intellectual Property: Discussion

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Introduction

In his very interesting paper written for this conference, Keith Maskus reviews Canadian patent policy in the light of changes in the treatment of intellectual property (IP) in the United States and the rest of the world and makes a series of recommendations concerning its future evolution. In general I find myself in complete agreement with his suggestions. In this discussion I will provide some additional context for two of his suggestions, specifically the recommendations against shifting to the recognition of broader claims and towards the U.S. standard on "burden of proof" in re-examination and litigation. I will also present evidence on the operation of the post-grant challenge system that is drawn from the U.S. and European experiences. I begin with a brief review of the "political economy" of IP protection, before giving a more detailed comparison of the U.S. and European legal and administrative systems for patent enforcement.

The Political Economy of IP Protection

The central IP problem for most countries today is that IP laws are largely nationally-based, whereas competition and innovation is global. The implication of this fact is that regulation is being carried out one level below where it ought to be. In this respect IP policy is similar to antitrust or competition policy. The TRIPS agreement on patent harmonization is an attempt to deal with the fact that competition in IP policies has something of a prisoner's dilemma nature: strengthening IP protection for its own inventors may benefit a single country (because it will attract innovative activity), but if all countries do it, there could be lower social welfare overall (if the strength of protection is greater than what is needed to achieve the "optimal" level of invention).

At the national level, the benefits and costs of stronger IP protection are at least conceptually simple: stronger IP rights provide stronger incentives for innovators and increases the potential for local (within country) spillovers from R&D. The costs are higher prices due to the monopoly power thus created and an increase in the cost of follow-on innovation, which may reduce local R&D due to the increasing transaction and other costs of acquiring prior technology.[1] Choosing an optimal national policy depends on weighing these costs and benefits.

The more difficult problem arises because the very externalities that lead a country to adopt a policy of IP protection mean that the effects of the policy do not stop at the national border, nor are countries immune from repercussions from the policies of other countries. A country with a strong IP policy in place has increased the *global* incentives for innovation and the potential for spillovers, while at the same time reducing the *relative* incentive for innovative

[1] See Heller and Eisenberg (1998) on this topic in biotechnology and Hall and Ziedonis (2001) on semiconductors.

activity elsewhere both by attracting R&D to move within its borders and by raising the cost of follow-on invention elsewhere.[2]

Of course, the actual size of these cross-border effects varies enormously with a country's size, capacity for innovation and R&D, education levels, trade position, and even commercial language, with those countries whose business is conducted in English being privileged due to the prominence of that language in international patenting and scientifc publication. Such factors mean that countries like the United States will be less impacted by developments elsewhere than smaller economies like Canada. The optimal national policy that takes account of international consideration may therefore by quite different in different countries. Nevertheless, the collective view expressed in the TRIPS agreement is that harmonization in intellectual property protection is desirable.

Although desirable in general, harmonization of patent laws has proved difficult to achieve, mostly for political reasons, and can sometimes be costly in terms of social welfare, both because of extreme differences among countries in the costs and benefits of IP protection and because harmonization generally proceeds by raising all countries up to the level of the country with the strongest IP laws.

As an illustration of the difficulty of achieving harmonization, consider the European patent system: for approximately 20 years (since 1978), the European Patent Office has offered one-stop patent application for up to 20 European countries.[3] This provides considerable harmonization across European countries up to the point where a patentholder wishes to enforce his patent. At this point he or she must turn to one of the 20 national court systems for enforcement; there is little harmonization in the litigation process, and it varies substantially across countries.

An effort to create a true "European Community" patent that could be enforced at the European level failed in March 2002 at the Stockholm congress, in spite of near-universal demand for such an instrument on the part of European businesses. The problems appear to lie in the very different national court systems that exist in European countries: creating such a patent requires harmonization of enforcement and therefore effectively requires extensive change to these national systems of litigation. This type of change is more difficult to achieve that harmonization of the patent itself. Specifically the breakdown in negotiations was reported to have been caused by the fact that Spain and Portugal, who have very different legal systems, felt that "their languages and national traditions are being overlooked."[4]

The tendency for harmonization to raise the level of protection is one that is often observed: once a property right has been granted to a group of voters, it is extremely difficult to take it away, which means it is far easier politically to strengthen IPR in countries where it is weak

[2] For evidence that this factor matters, see Bloom, Griffith, and Van Reenen (1999), who show that changes in the relative tax-adjusted prices of R&D across countries induce cross-border movements in R&D spending. On this point, see also Hall and Van Reenen (2000).

[3] Countries currently covered are the 15 EU members plus Cyprus, Liechtenstein, Monaco, Switzerland, and Turkey. The protection conferred by European patent applications and patents can also be extended to a number of central and eastern European states.

[4] James (*IHT*, March 26, 2001). Quoted on http://www.ipr-helpdesk.org/t_en/n_006_cat_en.asp?cat=4. At the current time, EPO applications may be submitted in one of three languages, English, French, or German, and presumably there is also substantial resistance to changing that requirement to become more inclusive.

than to weaken it in countries where it is strong. One example is the European database directive, an extremely strong piece of legislation that the U.S. federal government has been under some pressure to imitate.[5] We have also seen the negative welfare effects that this leveling can have in its consequences for the marketing and sale of generic (lower cost) pharmaceuticals in developing countries when stronger patent protection is introduced.[6]

Post-grant Challenges in the U. S. and European Patent Systems[7]

A variety of authors have critiqued several recent developments in the operation of the U.S. patent system, mostly on the grounds that these developments have increased the number of patents granted without a commensurate increase in social welfare.[8] Controversies center on the following issues: 1) the expansion of patentable subject matter to include software, business methods, and gene fragments; 2) an apparent shrinking of the size of inventive step required (especially in some of the new subject matter areas); 3) inadequate prior art search, again especially in new subject matter areas where prior patents do not exist; and 4) excessive claims breadth and failure to supply enough information for someone skilled in the art to reproduce the patentable product or process.

Merges (1999) has argued that an improved post-grant opposition system in the U.S., one that looks more like the EPO opposition system, could address some of these concerns. There is no doubt that competitors are often the best placed to supply prior art, especially in areas where there is little available in prior patents. In this section I review the two systems and present some facts about their operation and outcomes.

Both the U.S. re-examination and EPO opposition systems are designed to allow third parties to question the validity of a patent after it has been granted. In the U. S., re-examination can be requested any time during the life of the patent, whereas in the EPO system, opposition must take place within 9 months of the patent grant. The actual mean (median) lag between the date of the patent application and the date of the re-exam/opposition request is about 6 (3.5) years in the U.S. and 5.9 (5.5) years in Europe; in the case of the EPO, most of the delay is due to the lag in granting the patent so the distribution is much tighter. The U.S. system is an *ex parte* administrative proceeding, whereas the EPO system is an adversarial administrative proceeding. This latter difference probably accounts for most of the real differences across the two systems in takeup and outcomes.

As mentioned, the current U. S. is third party-initiated, but the resultant administrative proceeding is *ex parte*. The requestor role is limited to application for re-exam, and the right to receive a notice of the decision, a copy of the patentee's response, and the right to file a rejoinder to that response. The only admissible evidence is prior patents and publications, and the burden of proof rests with the applicant. A claim or patent can only be overturned if there is a substantial question of patentability. Any questions raised in re-exam or *which could*

[5] See Maurer and Scotchmer (1999) for more information on this question.

[6] See Lanjouw (1998) for a discussion of this issue.

[7] This section draws extensively on joint work with Stuart Graham, Dietmar Harhoff, and David Mowery (Graham, Hall, Harhoff, and Mowery 2001).

[8] See Merges (1999), Hunt (2001), Heller and Eisenberg (1998), among others. Some of these developments can be traced to recent and not-so-recent court decisions which have then been incorporated into patent office practice. See Quillen (2001).

have been raised cannot be used again in litigation, which is a substantial discouragement to third parties who truly believe a patent is invalid. There are thus significant limitations to the U.S. re-exam system and as a result it is rarely used, with a total takeup rate roughly equal to 0.3% of patents granted.

In contrast, the European opposition system is adversarial, initiated by any third party, usually a competitor. The patent may be challenged on any patentability grounds: novelty, inventive step, or industrial application and there is no limit on the kinds of evidence admissible. Patent examiners hear the challenge, and if there is an appeal, it is heard by a panel of administrative judges. It can be a very slow process and occasionally litigation is delayed in order to wait for the outcome of opposition. The average length of time until a case is closed is around 2-3 years, compared to 1.6 years for re-examination. The takeup rate is between 4 and 8%, with the higher rate characteristic of patents in the biotechnology/pharmaceutical area.

Table 1 summarizes the differences in outcomes between the U. S. re-examination and the EPO opposition systems. *A priori*, if the systems were the same, we might expect the EPO system to have outcomes more favorable to the patentholder, because it is used more often, and the initiator is the firm that does not hold the patent (and presumably only the most obvious cases are brought in the U.S.). In spite of this, the outcomes of the two systems are fairly similar. The main difference seems to be that more patents are revoked than are amended in Europe, whereas in the U.S., patents are more likely to be confirmed, and least likely to be revoked. Further exploration of the effectiveness of these systems awaits the completion of the Graham *et al* study.

Table 1
Outcomes of EPO and USPTO Post-grant Challenges[9]

	EPO Opposition – pharma/biotech	USPTO Re-exam (Stacy 1997)	USPTO Re-exam (GHHM 2001)
Confirmed in full	25%	28%	33%
Amended	40%	59%	46%
Revoked in full	34%	13%	<22%

Conclusions

It would be very useful to have a model of the interaction effects of different IP regimes in different jurisdictions, one that incorporated both the costs and benefits of an IP system and explicitly allowed the migration of some R&D in response to the rights offered by a jurisdiction. This would allow us to better assess the global optimality of the array of IP systems currently in use around the world and their interplay.

In setting Canadian patent policy, it is important to keep an eye on events in the U.S. in this area. There is a considerable backlash in various quarters to the apparent subject matter expansions of the past 10-15 years, and the consequences for the ability to search the prior art. The U.S. patent office has already responded by requiring an extra layer of examination for business method patents and the U.S. Congress has responded by legislating a specific

[9] See Graham, Hall, Harhoff, and Mowery (2001) for more information.

prior use exception for these patents. It is very likely that things will continue to evolve in this area.

A final thought: because it is sometimes difficult to get the genie back into the bottle, it may be advisable to move slowly in expanding and strengthening IP rights.

References

Bloom, Nicholas, Rachel Griffith, and John Van Reenen. 1998. "Do R&D Tax Credits Work? Evidence from an International Panel of Countries 1979-1994," Institute for Fiscal Studies Working Paper W99/08.

Graham, Stuart J. H., Bronwyn H. Hall, Dietmar Harhoff, and David Mowery. 2001. UC Berkeley, Oxford University, and Ludwig-Maxmiliens Universitaet Muenich. Work in progress.

Hall, Bronwyn H., and Rosemarie Ham Ziedonis. 2001. "The Patent Paradox Revisited: An Empirical Study of Patenting in the U.S. Semiconductor Industry, 1979-1995," *Rand Journal of Economics* 32: 101-128.

Hall, Bronwyn H., and John Van Reenen. 2000. "How Effective are Fiscal Incentives for R&D? A New Review of the Evidence," *Research Policy* 29: 449-469.

Heller, Michael A., and Rebecca S. Eisenberg. 1998. "Can Patents Deter Innovation? The Anticommons in Biomedical Research," *Science* 698, May 1.

Hunt, Robert M. 2001. "You Can Patent That? Are Patents on Computer Programs and Business Methods Good for the New Economy?" *Philadelphia Federal Reserve Bank Business Review*, Spring.

James, Barry. 2001. "Agreeing on Little, EU Leaders Muddle Ahead," *International Herald Tribune*, March 26.

Lanjouw, Jean O. 1998. 'The Introduction of Pharmaceutical Product Patents in India: "Heartless Exploitation of the Poor and Suffering"?' National Bureau of Economic Research Working Paper No. 6366.

Maurer, Stephen M., and Suzanne Scotchmer. 1999. "Database Protection: Is It Broken and Should We Fix It?" *Science*, Vol. 284, p. 1129.

Merges, Robert P. 1999. "As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform," *Berkeley High Technology Law Journal* 14: 577-615.

Quillen, Cecil D., Jr. 2001. "The Patent System: Is it Broke? And Who Can Fix It, If It Is?," Presentation to the Spring Meeting of the U. S. Association of General Counsels," May 12.

http://www.european-patent-office.org

http://www.uspto.gov