

The Economics of Open Innovation

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From “Open Access” to “Open Innovation”

- Copyright protects expression
- Patent protects functionality
- Hence open access will not, cannot, allow “use” in functional sense, to the extent that the underlying research results are patented
- Most countries permit universities to patent inventions from public research, and to license those patents on exclusive basis to private parties
- So what might “open innovation” mean in a world in which inventions are protected by patents?

Openness and Transparency

- Even if exclusive rights continue to be granted, the ideal of open innovation would be fostered by “transparency” of patent rights:
 - Clear specification of “metes and bounds” of patent rights
 - Public record of owners of patent rights
- Economic analysis of transparency



Punch Lines

- *Assuming* transparency, merits of patent regimes versus more open legal regimes depend on:
 - Degree of complementarity and cumulativeness in innovation process, together with
 - Nature and extent of transaction costs in assembling complementary rights
 - ➔ greater complexity and/or greater transactions costs undermine case for granting patent rights
- In the *absence* of transparency, theoretical arguments in favor of patents are dubious at best
- As innovation is more about complex systems, the need for transparency increases



Simple (Simplistic?) Economics of Patents I

- Assume:
 1. Inventions are distinct and separable: every useful product/process is covered by at most a single patent
 2. While inventions may occur spontaneously, it costs money to convert inventions into innovations (economically useful products/processes)
 3. Once an innovation is observed, others can recreate it at low cost.
 4. The goal of the patent system is to maximize the rate of innovation.
- Result: strong patents are needed, because investment (2) will not occur in the face of easy imitation assumed in (3).



Simple (Simplistic?) Economics of Patents II

- Now assume the goal is maximizing consumer welfare, rather than innovation rate.
- This introduces a tradeoff:
 1. Strong patents maximize innovation rate, but innovative products are sold at higher prices because of monopoly power conveyed by patents.
 2. Optimal public policy is some intermediate patent “strength:”
 1. If patents are too “weak,” consumers will suffer because there will not be enough innovation
 2. If patents are too “strong,” consumers will suffer because the new products will be too expensive



Simple (Simplistic?) Economics of Patents III

- Now allow for the reality that innovative products depend on multiple complementary inventions, which may be made by different people.
- Commercializing an innovation now requires assembling a portfolio of rights from multiple parties in order to operate without fear of litigation
- In a world with no transactions costs—negotiating, contracting, enforcing, all costless—this will not matter. If there is a profitable product to be sold, parties will figure out how to do it (Bessen and Maskin, 2009)



In the Real World of Transactions Costs

- The question of whether patents make consumers better off becomes ambiguous at a theoretical level
 - Transactions costs could overwhelm incentive effects of exclusive rights, so that innovation is inhibited rather than encouraged
 - Even if net effect is to encourage innovation, the costs may be so high that the net benefit is negative
- Mechanisms have evolved to cope with transactions costs associated with patents on complementary inventions
 - Patent pools
 - Compulsory licensing with Reasonable and Non-discriminatory (“RAND”) royalties



Transactions Costs and “Systems” Innovations

- The greater the number of complementary rights needed to market an innovation, the greater the burden of transactions costs becomes
- For complex products, difficulty of assembling the necessary rights may prevent innovation even if all of the “components” have been created— “tragedy of the anticommons” (Heller and Eisenberg, 1998)
- Increasingly “systems” nature of innovation is part of why patent system seems to be failing
- Concerns about patent trolls, litigation costs, etc. are all manifestations of this reality



Transparency

- Transactions costs are real costs—they can't be banished, but their magnitude depends on institutions and rules
- If identity of patent owners and/or boundaries of existing patent rights is not known—*opaqueness* rather than *transparency*—then transactions costs are greatly increased
- Mechanisms such as patent pools and reasonable royalty rules *depend* on transparency
- If the set of people who “need to be at the table” cannot be determined, “anticommons” problem may be overwhelming
- More generally, risk of innovation investment is increased—potential innovators do not know what IPR-related costs they may bear if they develop an innovation

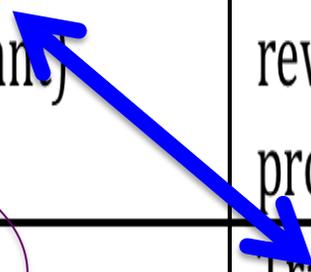


Transparency as a Policy Issue

- Patent policy in general is fraught with tradeoffs
- But lack of opaqueness of patent rights has limited if any policy benefits
- Patent owner who seeks to profit by implementing innovations has little to lose by identity being known
- Main benefit of concealing ownership is enticing others into making investments in infringing products, so they can be “held up” for significant royalties (Lemley and Shapiro, 1991)
- If people choose to maintain trade secrets, that is their business, but holders of publicly-sanctioned monopoly should be publicly identified

Openness and Transparency

Ownership Revelation	IPR	
	Granted	Not Granted
Required	Transparent IPR (ownership revelation as condition of grant)	Infeasible (no way to compel revelation with no property right)
Not Required	Opaque IPR	Trade secret regime



Parting Thoughts

- Empirical evidence on the innovation-stimulating effect of IPR is limited
 - Some patent protection appears better than none (Lerner, 2005)
 - But enhancements do not seem to increase innovation (Sakakibara and Branstetter, 2001)
- Evidence of significant transaction costs seems to be all around us
- Increasing concern that actual and potential litigation are not just costly, but actually inhibiting innovation
- Many important innovations are systems, for which transactions costs are likely to be high
- Focus of patent policy attention should be on reducing transaction costs as much as possible
- Maximizing transparency would be a good place to start.



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