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The Angel is in the Big Picture: A Response to Lemley

Samson Vermont

An invention within close reach of multiple inventors differs from an invention within distant reach of a lone inventor. U.S. law does not exploit the differences between these two archetypes of invention. Should it? Mark Lemley¹ and I agree that it should. Those economists who have closely examined the issue – Carl Shapiro², Emeric Henry³, Manfredi La Manna⁴, and others⁵ – concur.

A key difference between these two archetypes of invention – “reinventables” and “singletons” – is that

¹ Mark Lemley, Should Patent Infringement Require Proof of Copying? 106 Mich. L. Rev. X (2007).

² See Carl Shapiro, Prior User Rights, 96 Am. Econ. Rev. 92 (2006).

³ See Emeric Henry, Runner-up Patents: Is Monopoly Inevitable? (June 2006), available at SSRN: <http://ssrn.com/abstract=922316>

⁴ See Manfredi La Manna, Ross Macleod and David de Meza, The case for permissive patents, 33 European Economic Review 1427 (1989).

⁵ See Stephen M. Maurer & Suzanne Scotchmer, The Independent Invention Defence in Intellectual Property, 69 Economica 535 (2002); Elisabetta Ottoz & Franco Cugno, The Independent Invention Defence in a Cournot Duopoly Model, Econ. Bull., June 20, 2004, at 1, <http://economicsbulletin.vanderbilt.edu/2004/volume12/EB-04L10005A.pdf>. See also Vincenzo Denicolò and Luigi Alberto Franzoni, Patents, Secrets, and the First-Inventor Defense, 13 Journal of Economics & Management Strategy 517 (2004).

reinventables can be brought into existence with incentives of lower magnitude. This difference suggests that we can obtain reinventables at a lower price than we currently pay, *i.e.*, with less monopoly loss than we incur today.

Reinventables also generate disproportionately more haste and redundancy, as the rival inventors race and duplicate each other's efforts. This suggests that we already pay more, in terms of rent dissipation and lost opportunity, for reinventables than we pay for singletons (holding all other things equal).

Finally, reinventables generate disproportionately more litigation as the race winners, or the "trolls" to whom the winners transfer patents, eat up time and resources suing the inventors who finished a close second or third.⁶ This difference suggests that we already pay more, in terms of administrative costs, for reinventables than we pay for singletons.

To date, those economists who have examined the issue closely appear to agree that the law should exploit the differences between reinventables and singletons. The angel resides in this consensus that we have an opportunity to improve the law. The devil is in the details of just how to do it. Naturally, the economists have elided the

⁶ Recent scholarship suggests that many if not most patent suits are against independent inventors as opposed to pirates or firms that attempted to invent around the patent. See James Bessen & Michael J. Meurer, Patent Litigation with Endogenous Disputes, 96 Amer. Econ. Rev. 77 (2006); James Bessen & Michael J. Meurer, The Patent Litigation Explosion (Boston Univ. Sch. of Law Working Paper No. 05-18, 2005), available at <http://ssrn.com/abstract=831685>. [Alternatively or in addition, cite to Bessen & Meurer's forthcoming book.]

law-related details, focusing instead on their models, models that show an increase in social welfare were the law reformed so that reinventables held out the promise of shared duopoly rather than solely the promise of exclusive monopoly.

Lemley and I, in contrast, take a stab at some of the details of how reform could take shape in the law. My proposal is that we simply regard an independent inventor ("reinventor") as exempt from the first inventor's patent, provided that the reinventor completed the invention before receiving notice that the first inventor had already completed it.⁷ Lemley expresses three reservations about my proposed reinvention defense, and then offers four alternative proposals.

I. THREE RESERVATIONS

Lemley's first reservation is a general one: we are playing with fire. History shows that the most important inventions tend to be invented by multiple inventors at roughly the same time. This implies that the reinvention defense will have a disproportionately greater effect on the most important inventions, which implies that the

⁷ More precisely, the reinventor must complete the invention before receiving the earlier of sufficient actual notice or sufficient constructive notice that the first inventor already invented it. Notice is sufficient when it includes enough information about the invention that a person of average skill in the relevant technical art could, by reading the notice, make and use the invention. The reinventor receives constructive notice when the first inventor first discloses the requisite information to the relevant public via, for example, a scientific article, conference, press release, or published patent application.

reinvention defense might turn out to be penny wise and pound foolish.

Of course, Lemley is right to make this point. We are indeed tinkering near the bull's-eye of invention. The expected social cost of delaying an important invention – one as important as, say, the polio vaccine – may be so high that it exceeds the insurance premium we pay in the form of the costs attributable to treating reinventables and singletons as if they were the same. I concede, therefore, that neither the courts nor Congress should adopt the reinvention defense tomorrow. It needs more vetting.

Lemley's second reservation concerns my claim that the fact of reinvention – the fact that multiple inventors converged on the same invention at about the same time – is evidence that a moderately smaller incentive would have sufficed to bring forth that invention in a timely manner. How true that claim is depends, he argues, on the type of invention in question. For example, inventions that are cheap to invent but expensive to test for safety and efficacy (namely, drugs) may require the extra incentive provided by our current winner-take-all patent system.

Lemley is also right to make this point. One would expect under-production of drugs if inventors could invent them cheaply and then free-ride on the costly efforts of other inventors to test them for safety and efficacy. This problem, however, is fairly confined to drugs, and the FDA already deals with it by granting five years of market exclusivity to a new drug applicant who conducts the trials

required for FDA approval.⁸ If the reinvention defense nevertheless exacerbated the free-riding problem, we could respond by extending the term of FDA market exclusivity beyond five years.

Lemley's third reservation is that the reinvention defense would degrade the market for patents. It is much easier, he argues, to sell a guaranteed right of exclusion than to sell a potentially defeasible right of exclusion. If the reinvention defense were available, buyers of patents would never know if they were buying a patent monopoly or merely the right to participate in a duopoly or triopoly.

This argument paints a false dichotomy between guaranteed exclusivity and potentially defeasible exclusivity. Under current law, sellers of patents already fall far short of being able to guarantee exclusivity. For one thing, almost half of all litigated patents are either invalidated or held unenforceable for inequitable conduct.⁹ Other potential holes in exclusivity include: shop rights, patent exhaustion, laches, failure to mark, lapse of patent for failure to pay maintenance fees, the existence of an

⁸ Under the Hatch-Waxman Act, the FDA will not accept a competitor's application to sell the same drug until five years after the date of approval of the first application. See Drug Price Competition and Patent Term Restoration Act of 1984. [needs more specific cite]

⁹ I derived this estimate from numbers reported in Kimberly A. Moore, Judges, Juries, and Patent Cases - An Empirical Peek Inside the Black Box, 99 Mich. L. Rev. 365 (2000), reprinted at 11 Fed. Cir. B.J. 209 (2001). See also John R. Allison and Mark A. Lemley, Empirical Evidence on the Validity of Litigated Patents, 26 AIPLA Quarterly J. 185 (1998).

interfering or overlapping patent, and ambiguous patent scope. In short, the additional uncertainty generated by the reinvention defense would be a drop in the bucket.

To minimize the size of that drop, part of my proposal is that the reinventor be allowed to transfer the defense only through assignment to a single party and not through license to multiple parties. The assignee of the defense could likewise transfer the defense only through subsequent assignment to a single party. In countries that recognize prior user rights, the transfer of such rights is similarly limited.¹⁰ This limitation ensures that only one party at any given time possesses a given defense to a given patent, which spares buyers of patents from the prospect of playing whack-a-mole with a multitude of defense-raising infringers.

By retarding the reinventor's ability to coordinate multi-party production, this limitation also amounts to a *de facto* constraint on the reinventor's output. The patentee, in contrast, would retain the unlimited rights of transferability that she has under current law, including the right to license out the patent to multiple parties. This asymmetry between the transferability of the patent rights and the transferability of the reinvention defense increases the chances that the patentee and reinventor will share a Cournot duopoly (under which prices moderately

¹⁰ Personal communication, Professor Martin J. Adelman, George Washington Univ. Law School (Oct. 11, 2006). In some countries, the transfer of prior user rights is further limited to transfer only through sale of the business or enterprise in which the rights arose. Robert L. Rohrback, Prior User Rights: Roses or Thorns? 2 U. Balt. Intell. Prop. L.J. 1, 3 (1993).

exceed those under free competition) rather than a Bertrand duopoly (under which prices are driven down to those under free competition).

II. FOUR ALTERNATIVE REFORMS

Lemley floats four alternative reforms that merit consideration and that should serve as invitations to further research. Below are preliminary observations about each reform.

A. Exempt Reinventors from Willfulness Damages

Lemley proposes that we reserve willfulness damages for those who actually copy the patentee's technology. The Patent Act grants courts the discretion to award up to treble damages if the infringer infringed willfully.¹¹ As the courts have defined it, willfully means knowingly. For example, an infringer willfully infringes if the infringer continues to make, use or sell the invention after learning that a patent on it exists (unless the infringer obtains a reasoned legal opinion that the patent is invalid or does not cover the invention).

Lemley's proposal to reserve willfulness damages for pirates is certainly compelling from the standpoint of fairness and equity. At first glance, it also seems compelling from the standpoint of efficiency. Holding reinventors liable for the same damages as pirates seems to bias the system in favor of pirates because it effectively punishes reinventors more severely than pirates. When reinventors pay the same damages as pirates, pirates pay once in the form of damages, whereas reinventors pay twice

¹¹ See 35 U.S.C. 287.

– once in the form of damages and again in the form of unrecouped costs of R&D.

This proposed reform, however, has several shortcomings. First, its effect would be quite small. Most of the patent damages awarded each year are for compensation, not for willfulness. Under current law, damages for willfulness constitute 20-25 percent of the total combined damages awarded in patent suits every year.¹² If willfulness damages were reserved for pirates, patentees' expected damages would drop only by the fraction of this 20-25 percent that is currently attributable to reinventors as opposed to pirates. The fraction of this 20-25 percent that is currently attributable to reinventors is, I suspect, relatively low. Even when courts find that infringement is willful, they are not required to award willfulness damages. Indeed, in only about half of cases in which the courts find willful infringement do they exercise their discretion to award willfulness damages.¹³ I would bet that courts today are more likely to award willfulness damages against pirates than against reinventors. If that bet is correct, then in effect the law has already partially adopted Lemley's reform.

Second, although full and explicit adoption of Lemley's reform would generate an incrementally larger effect, the additional increment might be bad. If

¹² See Ronald B. Coolley, Overview and Statistical Study of the Law on Patent Damages, 75 J. Patent and Trademark Office Soc'y 517 (No. 7, 1993)

¹³ I derived this estimate from numbers reported in Kimberly A. Moore, Empirical Statistics on Willful Patent Infringement, 14 Fed. Cir. Bar J. 227 (2004), and in Moore, Judges, *supra* note ____.

reinventors were always exempt from willfulness damages, patents on reinventables would provide marginally lower money damages and thus marginally lower market exclusivity. Anticipating this, risk-neutral inventors ex ante would expect a slightly lower return for reinventables. Most inventors, however, are at least a bit risk-averse. Under current law, the threat of being slapped with treble damages adds to the considerable risk inherent in pursuing inventions. From the ex ante perspective of inventors – who do not yet know whether they will finish the race first or second – the absolute exemption of reinventors from willfulness damages would eliminate the threat of treble damages while only marginally reducing the objective (risk-neutral) expected return on invention. Because risk aversion rises non-linearly, and because people tend to be more sensitive to potential loss than to equivalent gain, the overall effect might be an increase in the incentive to pursue reinventables. As I argue in the main paper, an increase in the incentive to pursue reinventables is the opposite of what we want. We want to moderately reduce that incentive in order to decrease rent dissipation.

Third, this reform would not significantly reduce the rate and costs of patent litigation. In the vast majority of cases, compensatory damages and the threat of injunction provide stakes sufficient to generate litigation.

In sum, although this reform is compelling from the standpoint of fairness and equity, it seems ambiguous at best from the standpoint of efficiency. This reform holds out the prospect of only marginal decreases in monopoly loss and litigation costs, with larger increases in rent dissipation.

B. Treat Reinvention as Evidence of Obviousness

Lemley proposes that we treat reinvention as evidence of the obviousness of the patented invention. Doing so would certainly increase the internal consistency of the law of obviousness. The courts clearly regard “long felt need” for the invention and “failure of others” to achieve it as evidence of non-obviousness.¹⁴ Consistency seems to demand that the courts regard the opposite – short-felt need and success by others (*i.e.*, reinvention) – as evidence of obviousness.

This particular reform, however, seems volatile and difficult to calibrate. More specifically, the effect of this reform on the incentive to invent may be hypersensitive to small fluctuations in the weight that courts accord to reinvention as evidence of obviousness. And it is hard to see how courts could garner a feel for how much weight they should accord to it. When a court declares a patented invention obvious, anyone can enter the market. If reinvention were recognized as strong evidence of obviousness, this reform would therefore cut deeply into the incentives of inventors to pursue reinventables. Furthermore, the ability to offer reinvention as evidence of obviousness would presumably not rest in the hands of the reinventor. The ability of an infringer to offer evidence of obviousness has never been conditioned on the infringer’s status as a pirate, reinventor or anything

¹⁴ See, *e.g.*, *Eibel Process Co. v. Minnesota & Ont. Paper Co.*, 261 U.S. 45, 53-54, 59, 68 (1923); *Goodyear Tire & Rubber Co. v. Ray-O-Vac Co.*, 321 U.S. 275, 276, 279 (1944); *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966); *Orthopedic Equipment Co., Inc. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376 (Fed. Cir. 1983).

else. Presumably, therefore, if courts regarded reinvention as evidence of obviousness, any infringer could invalidate a patent based on the efforts of the reinventor, which means pirates would free-ride on the efforts of reinventors, thereby further reducing the ex ante incentives to invent reinventables.

C. Exempt Reinventors from Injunction

Lemley suggests that we reserve injunctive relief for pirates. This reform, unlike Lemley's proposed reform of willfulness damages, would have a detectable effect – because injunctions appear to be at least as valuable as compensatory damages.¹⁵ In addition to reducing monopoly loss and rent dissipation, this reform would reduce litigation costs insofar as hold-ups are predicated on the availability of injunction. In short, it appears that this reform would have essentially the same effect the reinvention defense would have, just less of it.

D. Adopt Prior User Rights

Lemley suggests adopting prior user rights instead of the reinvention defense. The scope and content of prior user rights vary among the countries that have adopted them.¹⁶ If we pick from the mélange an average or standard form of prior user rights, we can define a prior user as an inventor who both completed the invention and began to commercialize it before the patentee filed her application. The right that the prior user has is the right to

¹⁵ The title of the following practice-oriented article is telling: Alan Ratliff, *It's Not Just About Injunctions Anymore: An Overview of Money Damages in Intellectual Property Litigation*, 7 IP Litigator 2 (No. 3, March 2001).

¹⁶ See Rohrback, *supra* at 3, note ____.

commercialize the invention, but only to the same extent and in the same manner that he had begun to commercialize it on the date the patentee filed her application.

Like Lemley's reform of injunctive relief, prior user rights would have essentially the same effect that the reinvention defense would have, just less of it. Indeed, the reinvention defense can be characterized as merely a strong form of prior user rights. The reinvention defense is stronger than standard prior user rights in three senses. First, the reinvention defense imposes no fixed ceiling on the extent to and manner in which the reinventor may commercialize the invention.

Second, the reinvention defense casts a broader net in that inventors can qualify for it more easily than they can qualify for standard prior user rights. To qualify for the reinvention defense, one need only complete the invention within the reinvention window. One need not also have begun to commercialize it within that window.

Third, the reinvention defense generates greater and more direct incentives for inventors to disclose their inventions to other inventors earlier rather than later. This is especially true given the peculiarities of the U.S. patent system. Outside the U.S., patents are awarded to the first to file the patent application rather than to the first to invent. In first-to-file systems, inventors have very strong incentives to file applications early, and all of those applications are published 18 months after they are filed.

Under U.S. law, neither first inventors nor trailing inventors have very strong incentives to file applications early. Regardless of who files first, only the first inventor will be entitled to the patent in the vast

majority of cases. If we adopt the reinvention defense, it will generate strong incentives for inventors to disclose their inventions earlier – because disclosure shuts the window on would-be reinventors.

If instead we adopt standard prior user rights, it will give inventors incentive to file applications earlier than they do under current law. It would not, however, give inventors incentive to disclose their invention prior to the Patent Office's publication of the applications 18 months after their filing dates. Furthermore, not all U.S. applications are published 18 months after filing. A U.S. applicant can elect to postpone publication until the patent is granted provided the applicant is willing to forego seeking a patent on the same invention in foreign countries.

III. CONCLUSION

Two of Lemley's alternative reforms – concerning willfulness and obviousness – seem problematic. The remaining two – concerning injunctive relief and prior user rights – would have more or less the same effect as the reinvention defense, just less of it. The reinvention defense would cut down more on monopoly loss and rent dissipation. It would also cut down more on incentives to invent reinventables. Whether the trade-off inherent in the reinvention defense is superior to the smaller trade-off inherent in these two alternative reforms depends on how far we should go in treating reinventables and singletons differently. The economic models suggest that we should go as far as the reinvention defense if not farther. Yet, the simplifying assumptions in the models must give us pause to say the least. How far we should go

ultimately depends on how much reinventables really differ from singletons. More specifically, how far we should go depends on the extent to which reinventables are a greater function than are singletons of forces exogenous to the patent system. Perhaps a researcher from another discipline, such as scientometrics¹⁷, will answer that question for us. Until then, all we have is informed intuition, and many of us share the intuition that inventors tend to converge as they merge onto paths of least resistance – paths carved by the laws of nature, by the state of technology, by unanticipated social change, and by chance.

¹⁷ Scientometrics is the science of measuring and analyzing the advance of science and technology. See, *e.g.*, Dean K. Simonton, Multiple discovery: Some Monte Carlo simulations and Gedanken experiments, 9 *Scientometrics* 269 (1986).