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

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THE ANGEL IS IN THE BIG PICTURE: A RESPONSE TO LEMLEY

*Samson Vermont**

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An invention within close reach of multiple inventors differs from an invention within distant reach of a lone inventor. The differences between these two archetypes of invention—"reinvertables" and "singletons"—remain unexploited under current U.S. law. Should we reform the law to exploit the differences? Mark Lemley¹ and I agree that we should. To date, those economists who have closely examined the issue concur.²

What are the differences between reinventables and singletons? First, reinventables can be brought into existence with incentives of lower magnitude. This suggests that we can obtain reinventables at a lower price than we currently pay—i.e., with less monopoly loss than we incur today. Second, reinventables 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 rent dissipation and lost opportunity, for reinventables than for singletons (holding all other things equal). Third, reinventables generate disproportionately more litigation as the race winners, or the "trolls" to whom the winners transfer patents, eat up time and

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1. Mark A. Lemley, *Should Patent Infringement Require Proof of Copying?* 105 MICH. L. REV. 1525 (2007).

2. See Carl Shapiro, *Prior User Rights*, 96 AM. ECON. REV. 92 (2006); Emeric Henry, *Runner-up Patents: Is Monopoly Inevitable?* (June 2006) (unpublished manuscript), available at <http://ssrn.com/abstract=922316>. See also Vincenzo Denicolò & Luigi Alberto Franzoni, *Patents, Secrets, and the First-Inventor Defense*, 13 ECON. & MGMT. STRATEGY 517 (2004); Manfredi La Manna, Ross Macleod & David de Meza, *The Case for Permissive Patents*, 33 EUR. ECON. REV. 1427 (1989); 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. at 1, June 20, 2004, <http://economicsbulletin.vanderbilt.edu/2004/volume12/EB-04L10005A.pdf>.

resources suing the inventors who finished a close second or third.³ This suggests that we already pay more in administrative costs for reinventables than for singletons.

The angel is in the big picture in that there is consensus among those who have closely examined the issue that we should reform the law to exploit these differences. The devil is in the details of just how to reform it. Naturally, professional economists have elided the law-related details, focusing instead on their models—models that show an increase in social welfare if the law is reformed so that reinventables hold out the prospect of shared duopoly.⁴

Lemley and I, in contrast, take a stab at some of the details of how legal reform could take shape. My proposal is that we 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.⁵ Lemley expresses three reservations about my proposed reinvention defense, and then offers four alternative proposals.

I. LEMLEY’S THREE RESERVATIONS

Lemley’s first reservation is a general one: we are playing with fire. History shows that the most important inventions are often 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 reinvention defense might turn out to be penny wise and pound foolish.

Point well taken. 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 as to justify the insurance premium we pay in the form of the social 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 to be vetted for a few years. Ideally, the vetting process would provide some answers to the following questions about *magnitudes*:

3. Recent scholarship suggests that many if not most patent suits are against independent inventors and not against pirates or firms that deliberately tried to invent around the patent. See James E. Bessen & Michael J. Meurer, *Patent Litigation with Endogenous Disputes*, 96 AMER. ECON. REV. 77 (2006); James E. 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>.

4. See, e.g., Shapiro, *supra* note 2; Henry, *supra* note 2.

5. 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 ordinary 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.

How much monopoly loss is attributable to reinventables under current law? How much hasty and redundant R&D is there? What percentage of important inventions are invented by multiple inventors at about the same time? How often would reinvention lead to Cournot duopoly (under which prices moderately exceed those under free competition) rather than Bertrand duopoly (under which prices are driven down to those under free competition)? Most importantly, to what extent are reinventables more a function of forces exogenous to the patent system than singletons are?

Lemley's second reservation addresses my claim that the fact of reinvention—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 the invention in a timely manner. He argues that the truth of my claim depends on the type of invention in question. Some inventions (e.g., pharmaceuticals) are cheap to invent but expensive to test for safety and efficacy. These inventions may require the extra incentive provided by our current winner-take-all patent system.

Again, point well taken. One would expect underproduction of drugs if inventors could invent them cheaply and then free-ride on the costly efforts of other inventors to test the drugs 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.⁶ 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 point is less well taken. It 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. Almost half of all litigated patents are either invalidated or held unenforceable for inequitable conduct.⁷ Other potential gaps in exclusivity include the following: shop rights, patent exhaustion, laches, failure to mark, lapse of patent for failure to pay maintenance fees, the existence of an 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.

6. 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. Drug Price Competition and Patent Term Restoration (Hatch-Waxman) Act of 1984, 21 U.S.C. § 355 (2000).

7. 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 in 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 Q.J. 185 (1998).

To minimize the size of that drop, the reinventor should be allowed to transfer the reinvention 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.⁸ 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 the reinventor will share a Cournot duopoly rather than a Bertrand duopoly.

II. LEMLEY'S 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.⁹ As 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).

Reserving willfulness damages for pirates is certainly compelling from the standpoint of fairness and equity. At first glance, it is also 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. Pirates pay once in the form of damages, whereas reinventors pay twice—once in the form of damages and again in the form of the unrecouped costs of R&D.

8. Statement by Martin J. Adelman, Professor, George Washington Univ. Law Sch. (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 (Fall 1993).

9. See 35 U.S.C. § 287 (2000).

This proposed reform, however, has several shortcomings. First, its effect would be small. Most of the patent damages awarded each year are for compensation, not for willfulness. Under current law, damages for willfulness constitute perhaps 20% to 25% of the total combined damages awarded in patent suits every year.¹⁰ If willfulness damages were reserved for pirates, patentees' expected damages would drop only by the fraction of this 20% to 25% that is currently attributable to reinventors as opposed to pirates. This fraction is, I suspect, relatively low. Even when courts find that infringement is willful, they are not required to award willfulness damages.¹¹ Indeed, in only about half of the cases in which courts find willful infringement do they exercise their discretion to award willfulness damages.¹² I would bet that courts today are more likely to award willfulness damages against pirates than against reinventors. If that bet is right, 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, that increment might be harmful. If 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 potential 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 not what we want. What we want is to moderately decrease that incentive in order to reduce hasty and redundant R&D.

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

Although this reform is compelling from the standpoint of fairness and equity, it seems ambiguous from the standpoint of efficiency. This reform holds out the prospect of marginal decreases in monopoly loss and litigation costs, but with potentially larger increases in hasty and redundant R&D.

10. See Ronald B. Cooley, *Overview and Statistical Study of the Law on Patent Damages*, 75 J. PAT. & TRADEMARK OFF. SOC'Y 515, 531–32 (1993).

11. 35 U.S.C. § 284 (“[T]he court *may* increase the damages up to three times the amount found or assessed.”) (emphasis added).

12. I derived this estimate from numbers reported in Kimberly A. Moore, *Empirical Statistics on Willful Patent Infringement*, 14 FED. CIR. B.J. 227 (2004), and in Moore, *supra* note 7.

B. *Treat Reinvention as Evidence of Obviousness*

Lemley also proposes that we treat reinvention as evidence of the obviousness of the patented invention. This proposal would clearly increase the internal consistency of the law of obviousness. Courts routinely accept a “long felt need” for the invention and the “failure of others” to achieve the invention as evidence of non-obviousness.¹³ Consistency seems to demand that the courts accept the opposite—short felt need and the success of others (i.e., reinvention)—as evidence of obviousness.

Yet, this reform seems volatile and difficult to calibrate. The incentive to invent would be sensitive to small fluctuations in the weight that courts accord to reinvention as evidence of obviousness. And it is hard to see how courts could determine how much weight they should accord. When a court declares a patented invention obvious, anyone can enter the market. Thus, if reinvention were recognized as strong evidence of obviousness, this reform would cut deeply into the incentives to invent reinventables.

The risk of unduly large cuts in incentives is exacerbated by a free-riding problem. Presumably, the ability to proffer reinvention as evidence of obviousness would not rest exclusively 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 else. 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 we reserve injunctions for pirates. This reform, unlike his proposed reform of willfulness damages, would have a marked effect—because injunctions are quite valuable, perhaps more valuable than compensatory damages.¹⁴ 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. Whether this lesser effect is desirable cannot be answered definitively until we answer some of the questions about magnitudes listed in Part I.

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

14. 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).

D. Adopt Prior User Rights

Lemley further suggests prior user rights as an alternative to the reinvention defense. The scope and content of prior user rights vary among the countries that have adopted them.¹⁵ If we pick from the *mélange* an average or standard form of prior user rights, we can define a prior user as someone who copied or independently invented the invention and began to commercialize it before the patentee filed her application. A prior user has the right to commercialize the invention, but only to the same extent and in the same manner that he had begun to commercialize it before the patentee filed her application.

Like Lemley's reform of injunctive relief, prior user rights would have essentially the same effect 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 that more selectively targets reinventables. The reinvention defense is stronger and more targeted than standard prior user rights in three senses. First, to qualify for the defense, the reinventor must invent independently. Copying the invention from the first inventor will not do.

Second, the reinvention defense imposes neither fixed limits on how the reinventor may commercialize the invention nor a requirement that the reinventor must have begun commercializing the invention within the reinvention 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 United States, 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 eighteen 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 both to file applications earlier and to disclose their inventions earlier—because disclosure shuts the window on would-be reinventors.

If we adopt standard prior user rights, it will give inventors incentive to file applications earlier than they do under current law. It will not, however, give inventors incentive to disclose their inventions prior to the Patent Office's publication of the applications eighteen months after filing. Furthermore, the Patent Office does not publish all U.S. applications eighteen months after filing. A U.S. applicant can elect to postpone publication until the patent is granted provided the applicant is willing to forgo seeking a patent on the same invention in foreign countries. The upshot is that, compared to standard prior user rights, the reinvention defense will create

15. See Rohrback, *supra* note 8, at 3.

greater incentives for first inventors to promptly notify rivals that they have lost the race. Accordingly, the reinvention defense will lead to earlier termination of hasty and redundant efforts by rivals to achieve the same invention.

CONCLUSION

Two of Lemley's proposed reforms—concerning willfulness and obviousness—are compelling yet 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 out more monopoly loss and rent dissipation. It would also cut out more of the incentive 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. Ultimately, how far we should go 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 of forces exogenous to the patent system than are singletons. Perhaps a researcher from a discipline more equipped to characterize such forces¹⁶ will answer that question for us. Until then, all we have is the informed intuition that inventors often converge because they often 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.

16. One candidate discipline is scientometrics, which is the science of measuring and analyzing the advance of science and technology. See, e.g., D.K. Simonton, *Multiple Discovery: Some Monte Carlo Simulations and Gedanken Experiments*, 9 SCIENTOMETRICS 269 (1986).