

Patent Reform's Weakened Grace Period: Its Effects On Startups, Small Companies, University Spin-Offs And Medical Innovators

ABSTRACT

The Patent Reform Act of 2010 proposes to redefine the deadline for filing patent applications. Where today's law gives an inventor a "grace period" to test the invention, seek financing and assemble necessary strategic partners *before* bearing the cost of beginning the patent process, the Patent Reform Act changes the law so that all public disclosures (public use, offers for sale, publications and the like) would become bars to a patent, except those disclosures that the inventor can *prove* originated "directly or indirectly" with the inventor. However, proving the flow path for an idea is one of the most difficult showings in the law, and the Patent Reform Act omits any process for an inventor to obtain information to support the necessary proof. The theoretical grace period is procedurally inaccessible. The internal contradiction in the Patent Reform Act removes low-cost options for businesses, and forces them to follow higher-cost processes. The Act will force companies to file more patent applications, earlier in the development cycle. This will prohibitively increase patent and business transaction costs for small companies, university spin-offs, and startups, and place them at a substantial disadvantage to international companies and market incumbents. Data from Canada and Europe confirm our fears.

This radical and disruptive provision of the Patent Reform Act should be removed or replaced with a narrowly-tailored alternative.

INTRODUCTION

The section of the Patent Reform Act of 2010¹ titled "First Inventor to File" contains a misguided proposal to redefine the deadlines for filing a patent application. Under current law, legal determinations are organically based on an inventor's ordinary business practices, and the steps the inventor takes to get a company off the ground. Current law stays out of the way of the innovation process. In contrast, the Patent Reform Act imposes a legalistic regime where low-cost business options are foreclosed. Normal business activities raise intolerable "prior art"² risks of barring patent rights. By raising costs and risks during innovation phase, Patent Reform effectively repeals the grace period. This effective revocation will force all inventors, and selectively small companies, university spin-offs, startups, and individual inventors, to file more patent applications, earlier in the development cycle than they do today. This forced earlier filing will increase costs and weaken patent quality. The costs of Patent Reform's weakened grace period are many times the hoped-for savings. Moreover, impairments of investment flows and consequent economic activity are almost certain to be many hundreds of times larger than the hoped-for benefits. The most vocal proponents of the

bill—patent counsel and patent office officials—urge the myopic view that business practice should be redesigned for the convenience of the patent system. This paper urges that priorities should remain the other way around, as they have been for a century.

Proponents of the change, mostly established market incumbents with international patent portfolios, argue that the bill would (a) improve harmonization with other countries' patent laws, (b) improve certainty by reducing the complexity of the facts needed to determine the validity of issued patents, and (c) reduce "self collisions" that make patenting difficult for large companies. However, as we note in footnotes to this article, the claimed savings all but vanish when analyzed carefully, and appear far overbalanced by increased business risks, legal complexities, and transition costs. Proponents' written pieces have not considered the unintended consequences and changes in behavior that Patent Reform will require, let alone balanced the costs against benefits.

1. The Patent Reform Act was introduced simultaneously in the Senate as S. 515 and the House of Representatives as H.R. 1260. The "first inventor to file" provisions were identical as introduced and have since diverged slightly during the Senate amendment process.

2. "Prior art" is a patent law term meaning the publications and uses of an invention that make an invention "old" and therefore unpatentable. Current U.S. law has a "grace period," a period of time during which the inventor can publicly disclose the invention without losing patent rights. "Prior art" and the grace period are defined by the Patent Act, as discussed in section 1 of this paper.

Opponents, most of whom are small companies, startups, universities and their spin-offs, and independent inventors, observe that the bill creates considerable uncertainties and state of mind inquiries, and that the only way to acceptably reduce the business risks threatened by Patent Reform's weak grace period would likely cost around \$1 billion per year in additional legal fees and diversion of the time of key business people. Ironically, the incremental expenditures will be almost entirely wasted on inventions that turn out to be useless (we discuss this near-perfect adverse selection in section V.C).

Opponents point out that Patent Reform's weak grace period directly impairs an inventor's ability

in the life cycle of startup companies. Because the costs fall in the most vulnerable part of a company's life, they are likely to constrict the point of the idea-to-product pipeline that is already narrowest.

The bill has a crucial ambiguity at its heart: the bill purports to grant an inventor a reliable one year grace period only after the inventor "publicly disclosed" the invention. The term "publicly disclosed" is not defined in the bill. Under the definition that most comports with the goals of the bill's proponents, the only "public disclosure" that secures a grace period is a written document that discloses the invention at the level of technological detail required for a patent application, but not use or sale. If "publicly disclosed" has this

100. These numbers are *orders of magnitude* larger than the proponents' hoped-for benefits. If Patent Reform raises costs or risks, or reduces profitability, enough to discourage even a few percent of venture capital investments or startups from being formed, then that loss will outweigh any benefit of the legislation. Experience from other countries suggests that the adverse effect of Patent Reform is likely to be far more than a few percent, and thus the bill is almost certain to be a net drag on the economy.

The change to the grace period is unnecessary. The majority of the benefits that proponents hope for would be achieved by a far simpler change to the "tie-breaker" rule between two near-simultaneous inventors. The harm Patent Reform's radical changes pose to early-stage innovation is many times greater than even the most optimistic estimate of efficiencies. And proponents' claims of cost savings become illusory on scrutiny.

If Patent Reform raises costs or risks enough to discourage venture capital investment or startup formation by even a few percent, that loss will outweigh any benefit

to discuss the invention with third parties—investors, strategic partners, and the like—with disastrous consequences for small companies' abilities to turn ideas into practical realities. Because costs would rise and likelihood of long term profitability would fall, the flow of venture capital into new businesses is likely to fall—which, in turn, would impair the flow of breakthrough technologies to market. Data from countries with patent systems similar to the one proposed under Patent Reform show that these adverse effects on small companies are not merely theoretical. Moreover, these burdens would fall early in the patenting process and early

meaning, all offers for sale, public demonstrations, field testing, commercial uses, even innocuous advertising brochures that give a customer's eye view of the product rather than an engineer's view, including those by the inventor himself, are sufficient to bar a patent, but are not sufficient to secure any grace period at all. This is a total repeal of any commercially-meaningful grace period.

The National Venture Capital Association reports that its members invested \$25 billion in small businesses in 2008. Venture-backed businesses generated \$3 trillion in annual economic activity, reflecting a multiplier of more than

I. CURRENT LAW

Since 1870, U.S. law has provided a "grace period" before the deadline for filing a patent application.³ The grace period anchors the inventor's right on the date the invention is first conceived, and that right is only terminated a year after someone (either the inventor or another inventor) discloses the invention. These two end points give an inventor one year to communicate outside a single firm, to raise capital, to assemble strategic partners and to field test the invention. In contrast, in countries with no grace period (Japan and all European countries), if there is any use

3. Before 1870, U.S. law had no grace period. From 1870 to 1939, the grace period was two years.

or disclosure of the invention by any person (the inventor or a third party) before a patent application is filed, then the right to a patent is gone as of that day.

The grace period of current law allows a year to sort good inventions from bad before significant resources must be committed to the patent process. The grace period reduces business risk by allowing better assessment of commercial potential prior to patenting. It gives the inventor a year to find out whether anyone else invented first, and reduces the risk of wasting money on a patent application that cannot be granted. The general contours of the grace period under current law are as follows:

- If anyone (the inventor or a third party) publishes a written description of the invention or makes a public use or offer for sale of the invention more than one year before the filing date of the patent application, that disclosure is prior art that invalidates the patent.
- If any third party publishes a written description or makes a public use or files a patent application describing the invention before the patentee invented, then the patent is invalid.
- Only an original inventor can get a patent—you can't get a U.S. patent on an invention that you learned from someone else.⁴

This grace period is most frequently relied on by small companies and startups. The grace period permits companies to delay the costs of filing until an invention can be evaluated and until investment capital to exploit the invention is obtained. Once an invention establishes its worth,

and a decision is made to file, the additional year of information—gained through additional development and testing of the invention, evaluation of best approaches to its use, and the like—results in an improved patent application. Consequently, the information received by the Patent Office (and the public) is more complete, reflecting the latest and best thinking, and is more focused on the most-important technology. The writing is better and clearer, making the document easier for the Patent Office to examine, and easier for the public to read and interpret.

II. THE WEAK GRACE PERIOD

The proposed Patent Reform Act would redefine the grace period, so that any disclosure of the invention (filing a patent application, public use, offer for sale, actual sale, publication, etc.) by anyone other than the inventor at *any time* before the filing date (not one year before the filing date, as under current law), would bar a patent. The bill would exempt disclosures by the inventor and by those that derived their knowledge from the inventor.⁵

Depending on the eventual definition of the ambiguous and yet undefined phrase “publicly disclosed,” the effect of Patent Reform could range from a total repeal of any grace period whatsoever on any commercial use, to “only” replacement by a grace period that is so risky and problem-fraught as to be commercially useless. The weak grace period provision changes outcomes in several important situations:

1. If only the first inventor files a patent application, but a later inventor also invents and discloses the invention, uses it in public, or offers it

for sale before the first inventor files,⁶ then the disclosure by the second inventor bars the first inventor's patent—no one gets a patent, regardless of the merit or diligence of the original inventor. In situations where the invention cannot be commercialized without patent protection,⁷ the invention falls into disuse.

2. If someone learns of the invention from an inventor and uses, sells or publishes a description of the invention before the inventor files, then the inventor loses the right to a patent, unless the inventor can establish evidence to show the link to the other person's disclosure. This is true even if the party who discloses does so purposely or maliciously.
3. The undefined term “publicly disclosed” may be determined to mean that any sale or public use other than a patent-quality written document bars the inventor from getting a patent, even if the sale or use is by the inventor himself. This shuts the patent system down for the vast majority of small companies. Even a sizeable fraction of patents for large companies would be affected: everyone, including large companies, uses the

4. 35 U.S.C. § 102(f).

5. The proposal also permits an inventor to “lock in” a date for a year by publishing the invention but very few non-academic businesses will want to give up the advantages of maintaining secrecy from the outset of a project.

6. In a typical scenario, the second inventor does not file a patent application because he/she does not intend to commercialize the invention, only to publish a paper—that lower threshold of development of the invention is typically the reason that the second inventor was first to publish.

7. This is almost always the case where the initial R&D costs are high, and can only be recouped if a patent will support cost-recovery pricing. Almost all inventions that require FDA approval fall into this category.

grace period to choose which inventions are worth spending money on, based on commercial testing. Without that testing, companies must make wasteful decisions.

4. If an inventor files early under the proposed rules, from fear of being beaten in the race to the patent office, and finds during the year following filing *that the invention doesn't work* (during the period which would have placed it within today's one-year grace period), the inventor has *wasted the significant amounts of time and money required for filing the patent application*. Current law gives the inventor a year to

Current law gives the inventor a year to investigate and think, and to decide not to waste money on a pointless filing. The Patent Reform Act takes away that time, and forces applications to be filed before the invention can be fully considered and tested.

investigate and think, and to decide not to waste money on a pointless filing. The Patent Reform Act takes away that time, and forces applications to be filed before the invention can be fully considered and tested. This will be discussed (and quantified based on data from other countries) in more detail in Sections V.C, V.D and V.E.

5. Notably, all disclosure within a single firm or within the scope of a joint research agreement would be exempted. Of course this works just fine for large companies, but detriments small companies that, in today's economy, must rely on strate-

gic partners for non-research expertise, an option stripped away by Patent Reform.

The change in law affects scenarios commonly faced by small companies. Consider, for example, the situation in which inventor A invents first and works to investigate or perfect the invention, seek investors, ensures that there's a viable business, or the like. In the mean time, party B does one of the following:

- B invents, but has no intent to commercialize, and chooses to disclose anyway: an academic publication, a casual conversation at a professional conference, a demonstration of a "toy"

prototype that is not commercially robust, etc. Because B is not pursuing commercialization, it frequently happens that B's disclosure comes before A's, or before A files a patent application.

- B learns of the invention from A and discloses, but does not attribute A, and A cannot prove where B learned the invention at reasonable cost.

Under current law, B's disclosure does not affect A for a year, and the fact that B learned from A is irrelevant. Under Patent Reform, B's disclosure is an absolute or cost-prohibitive bar to A's patent.

Proponents of the bill suggest two rationales.

First, proponents say, Patent Reform would improve "objectivity" and "certainty" in determining validity of patents. Proponents note that validity of a patent under today's law often turns on who did what and when, and that researching such facts can be difficult and expensive. This argument is relevant in the narrow circumstance discussed in section III of this paper, but as proponents themselves note, that's less than one case in 10,000. Proponents' analysis only considers the issues that arise post-issuance, when facts can be researched and assembled, but neglects the changes in behavior and unintended consequences that arise before filing of applications.⁸ We have not seen any analysis by the proponents of the loss of business certainty in situations where Patent Reform would force key *pre-filing* business decisions to be made on much less information, with much less time, as discussed in section V of this paper.

Proponents' second rationale is "harmonization" to bring U.S. law closer to European and Japanese

8. Proponents have not apparently considered (at least not in any public discussion) the costs that the bill will create, through its "obtained ... directly or indirectly from the inventor" provision. Under Patent Reform, a party that needs to know whether a given patent is or is not valid will need to review any prior art arising in the year before filing of the application, to determine whether that disclosure *might* be a derivation from the inventor. In other words, almost every case that presents difficulties under today's "date of invention" law will present "derivation" problems under Patent Reform. Under Patent Reform, resolution is likely to be more expensive. About half of all today's date of invention issues are resolved relatively cheaply, because the information needed is in the hands of the patentee or infringer who needs to know, while under Patent Reform, the information necessary to evaluate derivation will almost always be in the hands of a third party where it can't be readily accessed, for reasons we discuss in section V.B.

law, with the hope of reducing legal costs. Experience with similar international law issues today shows that the benefits of harmonization are illusory.⁹

Proponents also observe that under the bill, a company's own "secret prior art" will not bar patentability where a company uses an invention in secret for more than a year before filing of an application, and permit a company to obtain redundant patents by allowing "self collisions," where two inventors working within a single company both invent the same thing. To the degree that these are advantages at all, they accrue overwhelmingly to market incumbents, with limited or no benefit to new market entrants.¹⁰

III. WHAT THE DEBATE IS NOT: FIRST TO INVENT VS. FIRST TO FILE

Unfortunately, the weakened grace period was entangled with a fairly reasonable amendment to the Patent Act, a change from first-to-invent to first-to-file. The seemingly innocuous title of this section of the bill, "First Inventor to File," has led most of the patent world to assume that Patent Reform makes only this salutary change. This unfortunate nomenclature has diverted attention from careful analysis and reading of the proposed statutory language.

If you ask any patent lawyer what the terms "first to file" or "first inventor to file" mean, you will get a consistent answer. When two inventors invent the same thing at about the same time, and each files a patent application, but neither is prior art to the other (typically each invented within a few months of each other, so each is within the other's grace period), who gets the patent? Current law

looks at records to find out which of the two inventors was first to invent, which first had a "definite and permanent idea of an operative invention."¹¹ This is called a "first to invent" system. In contrast, in a "first to file" system, as in Europe and Japan, and as proposed in Patent Reform, the patent is awarded to the first inventor to file the patent application. Obviously this confluence of nearly-simultaneous invention and filing is a rare occurrence, affecting less than 0.01% of applications.¹² As a matter of economic behavior, the difference almost doesn't matter.

However, the term "first to file" has never implicated the grace period. Historically and in practice, the grace period serves an entirely different purpose than the rule for breaking near-ties between two near-simultaneous applicants. It is crucial to recognize the fundamental importance of preserving a robust grace period, to recognize that the two issues can be separated, and that arguments in favor of first-to-file as a tie breaker between two applications have nothing to do with the grace period for filing a single application.

A meaningful¹³ change to first to file could be accomplished by

9. A partial harmonization pays almost no dividends—legal costs and uncertainty are not significantly reduced until two bodies of law are *unified*. We see this in Europe, under the European Patent Convention. The member countries agreed to a unified examination system, which—because the law of examination is *unified*—does indeed reduce costs. However, validity and infringement are still evaluated under the law of each member country. First, even though the Convention *almost* "harmonizes" the law of member countries, validity and infringement must be determined country-by-country and different countries often decide the identical issues differently. Likewise, a U.K. patent attorney cannot opine on validity or infringement of a German patent,

etc. even if it is identical (except for translation). Legal opinions are not interchangeable until the laws are unified and moving "closer" generates almost no savings. Proponents do not clearly identify any point in a patent's life cycle where significant cost savings would arise from the partial harmonization of the Patent Reform Act, or how those savings would exceed the cost of disrupting well-established U.S. law.

Second, there is no uniform law to harmonize to. U.K. German, French, Japanese, Chinese, and Canadian law are all different.

Third, the bill does not harmonize toward the major issues that *are* more or less uniform in the rest of the world. For example, Patent Reform does nothing to harmonize U.S. rules for claim construction (the most important issue in any patent suit). Current U.S. law is harmonized with all other major systems on a technical issue of anticipation and obviousness; Patent Reform "deharmonizes" this issue.

The House version of Patent Reform, H.R. 1260, provides that the "first inventor to file" section only comes into effect 90 days after the President finds that "major patenting authorities" have adopted a grace period. The Senate version, S. 515, lacks the requirement for a *quid pro quo* harmonization by other countries. If the first-inventor-to-file provision is to have any meaningful benefit, then the Senate should restore the *quid pro quo* trigger of the House bill.

10. Under current law, a secret commercial use for more than a year is a bar to a patent, but only for the company that engaged in the secret use. Thus, a company that invents a new manufacturing machine or process, and uses it to make goods that are sold while the machine or process is held secret, is barred after a year. However, secret use by others is no bar at all. Thus, these issues arise very seldom, because inventors do not file on inventions that they know to be barred. They cost relatively little to litigate, because the discovery from the patentee party relating to this issue is almost always required for other issues as well. The Patent Reform Act permits a company to practice an invention in secret for an arbitrarily long time and still file for a patent, so long as the filing occurs before a competitor discloses that it also is making use of the invention. Obviously, anything that benefits only long-term users of an invention benefits primarily market incumbents, which in turn makes it more difficult for insurgent entrants.

11. *Sewall v. Walters*, 21 F.3d 411, 415, 30 USPQ2d 1356, 1358-59 (Fed. Cir. 1994)

12. <http://www.uspto.gov/inventorseye/kappos-Letter.htm>

13. Even here, costs will not be reduced as much as proponents suggest, because each inventor in a derivation proceeding will do what interference parties do today: each will try to prove that the other is not entitled to a patent at all (independent of and before the proceeding even begins to consider the issue of which of two valid applications wins). Those preliminary patentability issues consume well over half of the costs of an interference under today's law and this expense would not be reduced by the Patent Reform Act.

a simple and (likely) uncontroversial¹⁴ amendment to § 102(g) of the Patent Act, leaving the remainder of § 102(a)-(f) and their definition of the grace period unperturbed. But that's not what's proposed in the Patent Reform Act of 2010.

IV. SMALL COMPANIES AND STARTUPS USE THE PATENT SYSTEM DIFFERENTLY

Small companies use the patent system somewhat differently than large companies. As we'll demonstrate in section V, most of these differences become key disadvantages to small companies under Patent Reform.

Several aspects of filing behavior are driven by startups' focus on survival. Startups are in a constant race against insolvency and they must shepherd every dollar carefully. They avoid diverting staff time to activities other than getting to first revenue shipment. For most startup companies, patents are a necessary evil (often at the insistence of the venture investors, who have a longer-term perspective); patents demand expenditures that will not translate into revenue for years, and because patents demand time from the company's most crucial personnel. Because of these constraints, small companies tend to focus their filings on a small number of "crown jewel" inventions, those inventions that are core to the viability of the company, inventions that have survived a harsh selection process. In contrast, large companies tend to file applications for inventions further down the importance hierarchy and farther afield from the company's core business.¹⁵

International patenting is strongly differentiated. Small U.S. companies seldom seek foreign patents. Many American startups' technologies are often uniquely directed at

domestic applications or standards that are not applicable abroad. For others, a U.S. patent is often sufficient to protect the profits of a U.S. company during its startup phase. International patent applications overwhelmingly originate from large companies. Non-U.S. patents are almost always far more expensive per dollar of revenue protected, because a foreign patent requires the cooperation of at least two sets of lawyers (the U.S. instructing counsel and foreign associate counsel), translators, and substantially higher governmental fees. These major cost components drive the total average cost of acquiring a European patent to about 10 times that of U.S. patents.¹⁶ Consequently foreign applications are usually unaffordable for a small company.¹⁷ None of the large cost components are reduced by the Patent Reform Act.

Small companies tend to file late in the grace period year, after an invention has survived a basic level of testing and commercial vetting. Large companies are more likely to file early in the grace period year, in order to meet the requirements of national laws in Europe and Asia.

Patenting costs per invention tend to be higher for small companies than for large ones. First, as noted above, small companies' patents tend to be more complex than large companies'. Second, inventors at big companies generate detailed documents in the ordinary course of doing science and engineering, and these documents can be turned into patent applications at small cost. In contrast, at small companies, patent-quality documents are rarely generated in the ordinary course of business; the patent process usually calls for a diversion of several days of an inventor's time to generate such a document. Third, small companies typically have to rely on outside

counsel instead of in-house patent counsel, and outside counsel cost far more. Startup companies often have no patenting experience and must pay for billable hours merely to be educated. Fourth, startup companies often have difficulty monitoring outside counsel and have limited bargaining leverage to limit overall costs. Finally, a small company typically has significantly more at stake in the relatively few applications it files. Between these factors, the cost of filing a patent application is generally at least twice as much for a small company as for a large company.¹⁸

14. Gerald J. Mossinghoff, *The U.S. First-to-Invent System has Provided No Advantage to Small Entities*, 84 J. Pat. & TM Off. Soc'y 425 (2002) (showing that for 1983-2000, small entities would have had almost the same win-loss ratio under a first-to-file regime as they had in a first-to-invent), *updated in* Mossinghoff, *Small Entities and the "First-to-Invent" Patent System: an Empirical Analysis*, Washington Legal Foundation, <http://www.wlf.org/upload/0505WPMossinghoff.pdf> (2005).

15. One oft-cited example is IBM's U.S. Pat. No. 6,329,919, directed to "providing reservations for restroom use."

16. Bruno van Pottelsberghe de la Potterie and Didier Francois, "The Cost Factor in Patent Systems," *Journal of Industry, Competition and Trade*, Vol. 9, No. 4, pp. 329-355, (December, 2009) DOI: 10.1007/s10842-008-0033-2.

17. See Pat Choate, *Global Publication of U.S. Patent Applications & Select Patent Reform Proposals*, Manufacturing Policy Institute under Grant from U.S. Small Business Administration, excerpted at http://www.uspto.gov/web/offices/dcom/olia/harmonization/p_choate.pdf (Apr. 27, 2007). About half of all patent applications filed in the U.S. (the population of applications affected by the legal issues in this article), approximately 28% are from small entities and those mature into about 31% of all patents granted. Of applications first filed in the United States (as opposed to first filed elsewhere, and then filed in the U.S. as a daughter), only 36% of applications filed in the U.S. are later foreign filed. Overwhelmingly, the applications that are filed in multiple countries are owned by large entity organizations.

18. S. J. H. Graham, R. P. Merges, P. Samuelson and T. M. Sichelman, "High Technology Entrepreneurs and the Patent System: Results of the 2008 Berkeley Patent Survey", 67 (June 30, 2009). Available at SSRN: <http://ssrn.com/abstract=1429049>. (A survey of U.S. startup companies revealed that the average out-of-pocket cost to acquire each company's most recent patent was over \$38,000 - more than double that of the AIPLA survey of average expenditures).

For a cutting-edge innovation in a complex technology, a cost differential of three or four times is probably typical.

Small companies must discuss their inventions outside the firm, with investors, strategic partners, and the like. In contrast, large companies *internally* have all the financial, R&D, manufacturing and marketing resources that an invention needs to get to market, so they need very few external disclosures. Under both current law and Patent Reform, discussions within a firm do not raise any bars to patentability, but outside discussions generally do raise risks. This obviously gives large companies an advantage, and as we'll see, Patent Reform will exacerbate the disadvantages for small firms.

Finally, small companies and large companies use their patents quite differently. Small companies use their patents around the time the invention is first conceived (often before an application is even filed) to negotiate with friends, while large companies tend to use their patents after issue to exclude or license enemies. Small companies rely on their patents (or rights to file future patents) for credibility and negotiating leverage with investors and strategic partners. They must be able to disclose the invention in sufficient detail to get funding and commitments from partner firms, while still holding a right to exclude, so that the disclosure does not fuel a competitor.

For all these reasons, small companies rely much more heavily on the grace period than large companies. If disclosure has a high risk of turning into a forfeiture, small high-tech companies will be much more constrained in their ability to confer outside the firm and to perfect and test the invention, before bearing the cost of patent filings.

V. ADVERSE EFFECTS ARE CONCENTRATED ON SMALL BUSINESSES

Today's law is generally aligned with normal business practice: the law determines patentability based largely on acts that businesses take as a matter of ordinary course. A business needs to do very little other than file an application in order to preserve rights. Under Patent Reform, patentability determinations shift away from ordinary business activity to acts taken specifically and solely to comply with the patent laws. This change in incentives will force inventors to change their business and filing behavior and to spend time and money on activities that have no value to the business outside the patent system. To our knowledge, neither the bill's proponents, nor the Patent Office, nor Congress have acknowledged, let alone estimated, the likely adaptive responses on filing rates or the costs of those responses. Nor have they accounted for the increase in costs to the Patent Office (as discussed in section V.E)

A. Efficient Behavior By Small Companies Creates Great Risk Under The Weak Grace Period

As discussed in section II, the Patent Reform Act proposes to limit the grace period to excuse only activities attributable to the inventor, and perhaps to limit the grace period to only written publications—that is, a patent would be barred unless the inventor can trace every disclosure back to his/her own work. Anyone with experience litigating such issues will be able to confirm that as a practical matter, this can't work in the way the bill's authors intend, especially in the age of the internet.

One only has to look at the incentives and information available

to the parties, and consider the behavior of similarly-situated parties under today's law to see that inventors—small or large—simply can't rely on Patent Reform's grace period. Consider these fact patterns—in each case, A is entitled to a patent under the law, but would face a practical impossibility or unreasonable cost in getting that patent, because the Patent Reform Act fails to provide a practical process for reaching the intended result:

- Inventor A needs to show that a disclosure by B originated with A. But B usually has no incentive to cooperate—if B simply stands silent, then A will be unable to get a patent and B will be able to freely use the invention. The bill neglects the incentives of the parties.
- When A wants to show that B derived his/her knowledge of the invention from A, the information needed by A is almost always in the possession of B and not readily available to A. A will have to compel B to produce documents or testify—but the Patent Reform Act does not provide applicants with subpoena power for the vast majority of situations, where B only disclosed but did not file a second application.
- Venture capitalists, most investors and most large companies that would be potential strategic partners *never* sign non-disclosure agreements covering initial pitches. Tracing the flow of information back through a chain involving such parties will be very difficult.
- A disgruntled employee or free-thinking lab staffer may publish a paper on the internet through an anonymous post. Under Patent Reform, it would be easy for such a person to poison the well in a way that makes it

impossible for the true inventor to show derivation.

B. A Law That Puts Derivation In A Central Position Is The Problem, Not The Solution

Even where there is some possibility of showing derivation, actually doing so is *terribly* expensive. Under current law, derivation proceedings are not common, but when they do arise, they are among the most expensive issues in patent law to decide.¹⁹ The reason for the expense is that the information is in the wrong place. Under today's law, when a dispute turns on the date of invention, the most important information is usually in the files of the party who has the most interest in proving that date. In contrast, under Patent Reform, an inventor that needs to prove derivation needs information that is in the hands and mind of the purported deriver. Under current law, it's almost always very difficult to get that information; under Patent Reform, where the path the information took determines the legal outcome and the party with the information often has incentives not to divulge it, it will be all the more difficult.

Further, the Patent Reform Act does not provide an original inventor with subpoena power to get that information, except in the rare case where the alleged deriver also files a patent application. Patent Reform's theoretical protection against derivation will seldom be any practical protection at all.

Finally, derivation proceedings are rare under today's law, because derivation disputes are almost always more easily resolved on other grounds before one has to inquire into the deriver's mental state. If the Patent Reform Act is passed, derivation will become a substantial question in many prosecutions and most

litigations, and will often be central to outcome. Today's dozen or so derivation proceedings a year will grow to several hundred or several thousand, each involving a detailed questioning of the purported deriver to retrace his entire mental journey.

C. Adaptive Responses Will Be Wasteful And Expensive

Because Patent Reform would create so many more situations that lead to loss of rights, and any attempt to recover those rights by showing derivation is so expensive, as a practical matter, inventors will have to behave almost as if the grace period were repealed entirely. If the ambiguous phrase "publicly disclosed" is resolved to mean only printed publications, then the loss of any commercially-relevant grace period is complete, not merely a matter of risks and incentives. Even if patent loss proves to be quite rare, those losses will almost certainly have a large behavioral effect—if fear of occurrence crosses a tipping point, then inventors have to change behavior to meet them. (Only about 1 home out of 100 has a fire each year, yet a very high proportion of homeowners and renters buy fire insurance.)

The risks created and rights lost by the weak grace period of the Patent Reform Act deprive inventors of time to gather information and make sound business plans; the bill requires them to act precipitously, on the information available, when better information will become available later. Small companies will be forced to file patent applications far earlier and more often, before the commercial value and technical feasibility of an invention is known, very much as if Patent Reform had no grace period at all.²⁰

The alternative is to go "patent naked" into meetings with investors

and strategic partners and hope that information about the invention does not leak and will not be used by the recipient to preempt the small company's patent application. Different companies will make different choices, but it is clear from European and Canadian data and experience that a great many small companies will be forced to spend money on patent filings that they do not spend today.²¹

19. Charles L. Gholz, *Would Derivation Proceedings Be The Same as Derivation Interferences?*, 16 *Intellectual Property Today* No. 5 at page 8, May 2009, reprinted and revised on page 39 of this issue. The issue is similar in the U.K. - in 2006, in *IDA Ltd. v. University of Southampton*, [2006] EWCA Civ. 145, <http://www.bailii.org/ew/cases/EWCA/Civ/2006/145.html>, the court observed "Many disputes of fact are likely to arise — who thought of what and who suggested what to whom are the sort of issues where perceptions after the event are all too likely to differ ... Parties to these disputes should realise, that if fully fought, they can be protracted, very very expensive and emotionally draining. ... very often development or exploitation of the invention under dispute will be stultified by the dead hand of unresolved litigation."

20. Proponents note that there is another alternative theoretically available: a company can lock in a *quasi* grace period by publishing the invention. The proponents ignore three crucial facts. First, publication-quality descriptions of inventions are written only by large companies, almost never by small companies. Generating such a document will cost about the same as a provisional patent application. Second, business secrecy is crucial—no business wants to publish a detailed description of its technology and business plans as a project begins, to invite larger competitors into the market. Third, though foreign patents are not usually a concern for small companies, publication is an absolute bar, a closing of options that is not forced under today's law. The "publication" grace period is of no commercial value.

21. See Letter of the Small Business Coalition on Patent Legislation to SBA Administrator Karen Mills, (December 15, 2009) at <http://j.mp/SB-Coalition-Letter-to-SBA>, p.3 and Slide 16 (showing that nearly 60% of applications filed under no-grace-period filing date pressures in Europe become useless to their owners and are abandoned. In contrast, only 12% of applications filed at the EPO without being subject to such pressure are abandoned prior to examination). It's indisputable that the number of applications filed in the U.S. will grow very substantially, and that new filings will be directed largely to inventions that are determined to lack value with a year's additional under the one year delay of today's law.

These filings will be almost pure waste. *Nearly every application filed* under Patent Reform's early filing deadline that would not have been filed under current law will turn out to be worthless within a year:

- If the invention had turned out to be valuable with one more year's information, the application would have been filed under today's law. In the worthwhile case, Patent Reform makes no difference.
- When the year's information gathered under current law shows that the invention is of low value, then no application is filed at all, and it is simply a waste to force a company to file an application that is highly unlikely to mature into a valuable asset. Yet that is precisely the application that Patent Reform forces to be filed.

Based on data from Europe and Canada, the weak grace period of the Patent Reform Act is likely to remarkably increase patent application filings by U.S. companies to include a large volume of premature and poor-quality applications that, with the benefit of one more year's information, would not have been filed under the current system. If European ratios of various classes of filings extrapolate to the future in the U.S., the total number of applications filed by U.S. entities could nearly double, increasing total U.S. filings (including provisional applications) by about a third.²² This could be up to 150,000 extra patent applications per year, at an average approaching \$10,000 each in attorney fees²³ and a similar cost in drain of the inventors' time. The overall effect is almost certainly

well in excess of \$1 billion per year, drained largely from small companies. This alone is many times the likely cost savings of any additional "certainty" or "harmonization." As we'll see, this is only the beginning of the adverse economic effect.

D. The Weak Grace Period Will Reduce Patent Quality

Applications prepared in haste will be of poorer quality. Whether U.S. applications will end up as technically incomplete and poorly written as typical European or Japanese patents is hard to predict.²⁴ Some effect is inevitable, however.

Because of this, many more patents will end up invalidated for failure to meet the "how to make and how to use" enablement requirement and the written description requirement. This concern was remarkably elevated on March 22, 2010, when the Federal Circuit issued its long-awaited decision in *Ariad Pharmaceuticals Inc. v. Eli Lilly and Co.*, 598 F3d 1336 (Fed. Cir. Mar. 22, 2010), which significantly raised the standard for complete disclosure in patent applications.

Any poorly-written legal document creates significant costs and patents are no exception. It is much harder to advise a client with respect to a U.S. patent that originated in a "no grace period" jurisdiction: because the patent was written with haste and incomplete information before the invention was mature, it takes much longer to determine what the patent covers and the resultant advice to the client is much "fuzzier." If Patent Reform's weakened grace period reduces the quality of U.S. patents to the quality of a typical foreign

patent, the costs of *uncertainty* will overwhelm any cost savings the proponents hope to achieve.

E. The Weak Grace Period Will Increase Loading And Backlog At The PTO

As we discussed in section V.C, the weak grace period of the Patent Reform Act is likely to increase patent application filings by roughly one third. These applications will be abandoned before they issue as patents. Because the majority of these applications will be non-provisional applications and because of the Patent Office's fee structure, the Patent Office will be forced to bear a majority of the costs of examination, but because very few patents will issue, the Office will receive only about 25% of the fees that it gets for a typical application under today's law. As a user-fee-funded agency, the Patent Office will have to raise its application fees, making patent acquisition more expensive.

For the same reasons discussed in section V.D, hurriedly-prepared patent documents will also be more difficult to examine.

22. See <http://j.mp/Startup-FTF-Letter> (obtaining a composite estimate that the weak grace period of S. 515, will force applicants to file about 37% more applications per year including provisional applications).

23. American Intellectual Property Law Association, Report of the Economic Survey 2009. The survey gives means for applications of \$13,200 for complex electrical/computer applications, \$12,300 for complex biotech/chemical applications, \$7,900 for simple applications and \$4,900 for provisional applications. As noted in section V, small companies' applications tend to fall on the high end of the spectrum.

24. See Ron D. Katznelson, Patenting Strategies Under a Proposed First-To-File Patent System, statement to Federal Trade Commission's hearing on The Operation of IP Markets, (March 18, 2009), available at <http://www.ftc.gov/bc/workshops/ipmarketplace/mar18/docs/katznelson.pdf>. (Slide 10 shows that, on average, patent applications filed at EPO from the top 10 patenting European countries have significantly shorter disclosures compared to disclosures of U.S. applicants).

These two factors will drive the Patent Office's costs, backlog and delay even higher.

F. The Canadian Experience Shows Measurable Harm To Small Companies

In 1989, Canada changed from a system much like current U.S. law to a system much like the Patent Reform Act's weak grace period, exempting only activities "directly or indirectly" traceable to the inventor.²⁵ Canada's experience bears out many of the fears we express in this paper.

Any direct analysis is difficult because Canada implemented two major changes three months apart. Nonetheless, the data shows that applications filed as non-treaty Canadian applications by Canadian inventors (a close proxy to U.S. filings by U.S. companies) went up by 50% over two years.

The option to wait and see, to not file, is especially crucial in a startup's early stages, when the company is coming up with lots of inventions and must shepherd its cash especially carefully.

One of the authors (Marquardt) is a U.S. lawyer now practicing patent law in Canada. During the decade in which he practiced in the U.S., he routinely advised both large and small companies. His advice to both types of clients was generally the same and consistent with the typical practice we set out above: companies should balance advantages and risks and will often find that the balance favors delayed filing. If an invention can be tested first, the company can make sure that preparing and filing

a patent application is a sound use of the company's resources. The idea, of course, is to file fewer, more thoroughly considered applications, drawn to significantly more valuable inventions.

Now he must advise Canadian companies to file quickly, because the risks of waiting under Canadian law are almost always unacceptable. His Canadian clients end up relying heavily on U.S. provisional patent applications filed very early, even where the company's primary market is in Canada. This approach is far more costly than the wait-and-investigate alternative available to U.S. companies, but it's the most cost-effective approach available for Canadians.

A recent study by McGill University²⁶ found that the transition

from first-to-invent to first-inventor-to-file had an adverse affect on small businesses in Canada. Their conclusion:

[Our] findings lend further support to the idea that a switch to the first-to-file principle benefits large corporations and puts small businesses (and independent inventors) into a disadvantageous position.⁴⁷

⁴⁷ ...[T]here is little reason to believe that the change in ownership

structure of these patented inventions [from small Canadian firms to large firms] came from other factors than the Reforms. (The decrease in small business assignments came in 1990, and none of the prior literature and policy discussion suggests probable policy shifts which would lead to such a drastic change in the distribution of firm size towards large firms during the period of our investigation.)

...We find that the adoption of the first-to-file rule did not induce additional R&D efforts made by Canadian inventors. Nor did such a policy change have any effects on Canada's overall inventive output whether measured as patenting at home or abroad. ... The policy shift also appeared unfavorable to independent inventors and small businesses, and it channeled inventive activity towards large corporations.

The fact that Canada's adoption of a first-to-file system had virtually no positive effect on its overall inventive activity but a negative impact on its domestic-oriented industries as well as independent inventors and small firms challenges the merits of the proposed 2007 U.S. Patent Reform Act. The U.S. relies even more heavily on its domestic markets than

25. Canada Patents Act § 28.2, <http://laws.justice.gc.ca/eng/P-4/page-8.html>

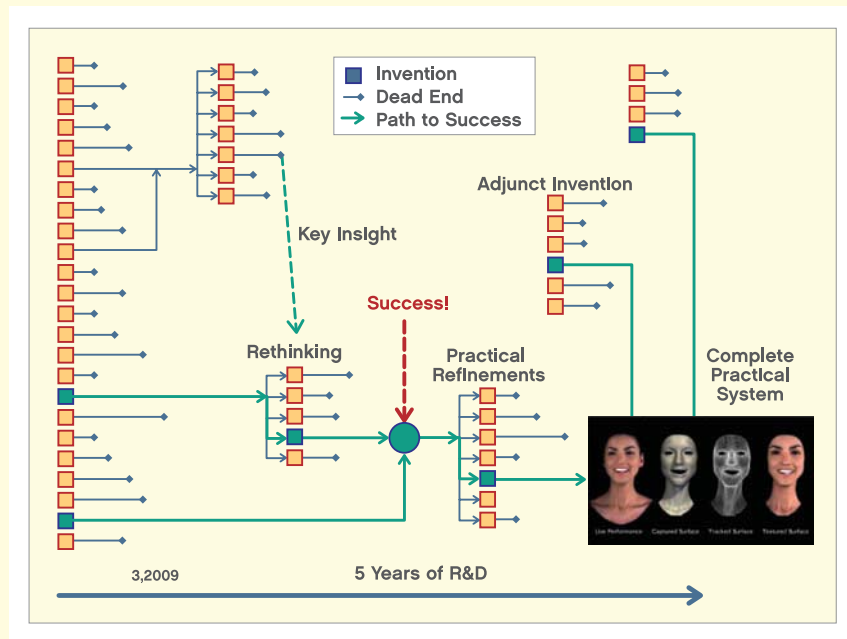
26. S.T. Lo and D. Sutthiphisal, Does it Matter Who Has the Right to Patent: First-to-Invent or First-to-File? Lessons from Canada, *NBER Working Papers*, No. W14926 (April 2009), at SSRN: <http://ssrn.com/abstract=1394833>

Canada. In addition, as independent inventors and small firms rarely have comparable resources to compete with large corporations in the race to the Patent Office, a switch to a first to file system contradicts the very essence of the longstanding U.S. patent laws: making patent protection equally accessible to anybody. More importantly, independent inventors and small firms have played an important role in U.S. technological leadership since its independence. ... It is therefore crucial to provide an unbiased legal environment for invention and innovation, which helps these independent inventors and small firms to prosper, and the first-to-invent rule apparently serves such a purpose better than its first-to-file counterpart.

G. Small Entity Case Study

The option to wait and see, to not file, is especially crucial in a startup's early stages, when the company is coming up with lots of inventions and must shepherd its cash especially carefully.

To consider one example, Mova LLC (a startup company) set out to generate truly realistic computer rendering of human faces. Mova explored dozens of initial approaches: each of the 24 blue squares at the left of the diagram²⁷ represents a separate invention that Mova explored as a starting point. Initially, Mova thought that approaches number 6 and 10 were most promising, so Mova pursued them, coming up with seven more refinement inventions shown in the upper left part of the diagram. After much study of approach number 6, Mova dis-



covered that approaches number 17 and 23 were better (the green arrows in the lower left corner). After five more "rethinking" inventions, Mova found a combination that truly worked, labeled "Success!" To turn that conceptual success into a complete practical system, Mova explored more than a dozen practical refinements, adjunct inventions, and further improvements.

During this process, Mova came up with nearly 100 iterations that were pursued to some degree. Under Patent Reform, Mova would have been under immense pressure to file patent applications on many of them, especially approach number 6 and its upper left progeny, which ultimately proved to be useless. If each application would have cost \$15,000 (a reasonable estimate for the mathematics-heavy software involved), filing on only the most promising ones of the 100 would have cost about \$1 million. But because the strong grace period of current law gave Mova

time to evaluate and target its patenting efforts, Mova only filed on six or seven, likely at a cost of about \$100,000.

VI. CONCLUSION

There has been far too little consideration of small companies, startups, university inventors, independent inventors and investors, and how they use the grace period. Likewise, there has been far too little consideration of how the weak grace period will change *investment flows* into business formation, and how changes in investment flows will affect R&D spending, jobs, growth, and technological progress.

The weak grace period of the Patent Reform Act is a very large risk to the most innovative sectors of the economy, with few if any objectively-demonstrated benefits. ■

27. http://www.rearden.com/public/090924-Innov_and_IP_in_Todays_Biz-3.pdf slide 35