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Patent Reform: No Time Like the Present

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Abstract: The patent system plays a vital role in encouraging innovation, by providing a measure of protection for investments made to commercialize new products and processes. Changes in patent law and practice in the last two decades have made the system less effective, by making it too easy to get patents on trivial and non-original ideas, while also making it easier to wield patents as legal weapons against competitors. Reform of the patent system should be based on an analysis of the effects of patent practice and policy on the incentives to apply for dubious patents, to share information with the patent office about technologies under consideration, and to litigate patent disputes. Key elements of reform include review processes that afford the opportunity and incentive for outside parties to bring to the patent office information that they have that bears on the novelty of patent applications, and changes to litigation rules to diminish the risk of large uncertain costs from infringement suits.

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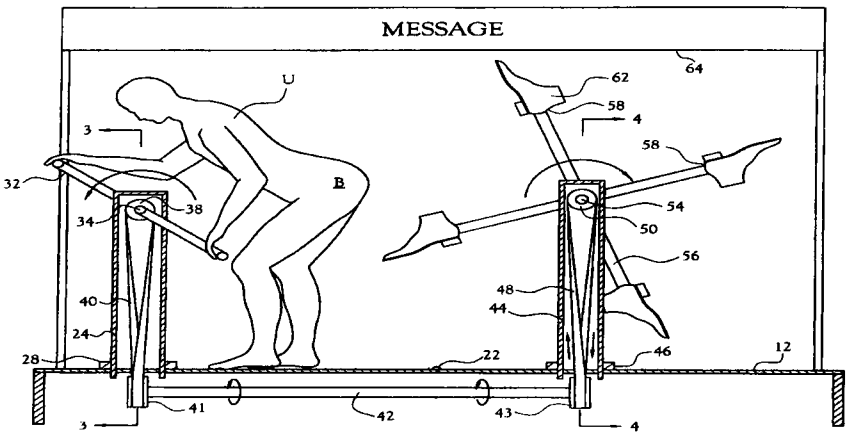
I. INTRODUCTION

United States Patent 6,293,874 (2001): User-operated Amusement Apparatus for Kicking the User's Buttocks

> Abstract: An amusement apparatus including a user-operated and controlled apparatus for self-infliction of repetitive blows to the user's buttocks by a plurality of elongated arms bearing flexible extensions that rotate under the user's control. . . . As the user rotates the crank, the user's buttocks are paddled by flexible shoes located on each outboard end of the elongated arms to provide amusement to the user and viewers of the paddling . . . .[1]



Over the course of the nineteenth and twentieth centuries, the United States evolved from a colonial backwater to become the preeminent economic and technological power of the world. The foundation of this evolution was the systematic exploitation and application of technology to economic problems: initially agriculture, transportation, communication, and the manufacture of goods, and then later health care, information technology, and virtually every aspect of modern life.

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[1] U.S. Patent No. 6,293,874 (filed Jan. 4, 2000) (issued Sept. 25, 2001). Professor Paroma Sanyal first brought to my attention the patent reproduced in part above.

From the beginning of the republic, the patent system has played a key role in this evolution. Derived from the Constitution itself, and codified in roughly its modern form in 1836, the patent system was an essential aspect of the legal framework in which inventions from Edison's light bulb and the Wright brothers' airplane to the cell phone and Prozac were developed.

Popular discourse regarding the patent system emphasizes its role in creating an economic incentive for the creative act of invention. From an economic perspective, this incentive for invention is not paramount because creativity seems to be inherent in human nature, making a flow of new creative ideas likely under any incentive system. But a creative idea does not help society unless it is taken further and converted to a commercially useful new product or process and this stage is costly and uncertain. The economic function of the patent system is to provide a measure of predictability and protection to this expensive and risky process of product and process development. As such, the patent system lies at the very heart of technological process, which is in turn the primary engine of economic growth.

In the last two decades, however, the role of patents in the U.S. innovation system has changed from fuel for the engine to sand in the gears. Two apparently mundane changes in patent law and policy have subtly, but inexorably, transformed the patent system from a shield that innovators could use to protect themselves, to a grenade that firms lob indiscriminately at their competitors, thereby increasing the cost and risk of innovation rather than decreasing it. As a result, inventors, research and development managers and entrepreneurs involved with the patent system have come to feel like users of the patented device illustrated above, punished by the system in ways that would be amusing were the consequences not so serious.

Examples of dysfunctional patent behavior have become staples of the business and popular press:

- Patents on inventions that are trivially obvious, such as the "Method for Swinging on a Swing"[2] ("invented" by a five-year-old), and "User Operated Amusement Apparatus for Kicking the User's Buttocks"[3] ("invented" by a supposed grown-up);

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[2] U.S. Patent No. 6,368,227 (filed Nov. 17, 2000).

[3] U.S. Patent No. 6,293,874, *supra* note 1.

- Patents in areas where patents have historically been uncommon, but covering purported discoveries familiar to practitioners and academics alike, such as Amazon.com's attempt to prevent barnesandnoble.com from allowing customers to buy books with a single mouse-click,[4] and a bright MBA student's patents on an option-pricing formula published in the academic finance literature two decades earlier[5];

- Patents that have become weapons for firms to harass competitors, such as the decade-long effort by Rambus, a semiconductor designer, to control computer memory technology by ensuring that a long string of patents, all derived from a single 1990 patent application, incorporated important features of an industry-wide standard developed through a voluntary industry standard-setting association[6];

In the last several years, a variety of groups concerned with different aspects of public policy related to innovation have undertaken studies and issued reports calling for major reform of the patent system. These include the Federal Trade Commission's 2003 report ("FTC report")[7], and the Board on Science, Technology and Economic Policy of the National Research Council's 2005 report ("STEP report").[8] After the issuance of the FTC report and the STEP report, the American Intellectual Property Law Association ("AIPLA") joined with

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[4] Amazon.com, Inc. v. Barnesandnoble.com, Inc., 239 F.3d 1343, 1346–47 (Fed. Cir. 2001).

[5] ADAM B. JAFFE & JOSH LERNER, INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS, AND WHAT TO DO ABOUT IT 145–48 (2004).

[6] *Id.* at 68–74.

[7] FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY (2003), http://www.ftc.gov/os/2003/10/innovationrpt.pdf.

[8] BD. ON SCI., TECH., AND ECON. POL'Y, NAT'L RESEARCH COUNCIL, A PATENT SYSTEM FOR THE 21ST CENTURY, NAT'L RESEARCH COUNCIL (Stephen A. Merrill, Richard C. Levin & Mark B. Myers eds., 2004) [hereinafter STEP REPORT], *available at* www.nap.edu/html/patentsystem. *See also* BD. ON SCI., TECH., AND ECON. POL'Y, NAT'L RESEARCH COUNCIL, PATENTS IN THE KNOWLEDGE-BASED ECONOMY (Wesley M. Cohen & Stephen A. Merrill eds., 2003), *available at* http://www.nap.edu/catalog/10770.html.

the FTC and STEP Board to sponsor a series of "Town Meetings" across the country in 2005, and the AIPLA endorsed many of the FTC and the STEP Board's reform recommendations.

II. PATENT POLICY DEVELOPMENTS OVER THE LAST TWO DECADES

The origin of today's problems relates back to 1982 when Congress amended the process for judicial appeal of patent cases in the federal courts so that all appeals are now all heard by the United States Court of Appeals for the Federal Circuit ("CAFC"), rather than the twelve regional courts of appeals, as had previously been the case. And in the early 1990s, Congress changed the structure of fees and financing of the U.S. Patent and Trademark Office ("PTO") itself, attempting to turn it into a kind of service agency whose costs of operation are covered by fees paid by its clients (the patent applicants). Through a complex interplay of politics and organizational dynamics, this change seems to have been the origin of a change in the PTO's orientation, from an agency focused on protecting the public from the issuance of inappropriate patents, to an agency focused on keeping patent applicants happy by processing their applications speedily.

It is now apparent that these seemingly mundane procedural changes, taken together, have resulted in the most profound changes in U.S. patent policy and practice since 1836. The CAFC has interpreted patent law to make it easer to get patents, easier to enforce patents against others, easier to get large financial awards from such enforcement, and harder for those accused of infringing patents to challenge the patents' validity. At roughly the same time, the new orientation of the Patent Office has combined with the court's legal interpretations to make it much easier to get patents. However complex the origins and motivations of these two Congressional actions, it is clear that no one sat down and decided that what the U.S. economy needed was to transform patents into much more potent legal weapons, while simultaneously making them much easier to get.

An unforeseen outcome has been an alarming growth in legal wrangling over patents. More worrisome still, the *risk* of being sued, and demands by patent holders for royalty payments to avoid being sued, are seen increasingly as major costs of bringing new products and processes to market. Thus, the patent system—intended to foster and protect innovation—is generating waste and uncertainty that both hinder and threaten the innovative process.

The growth in the sheer magnitude of the patent phenomenon has been breathtaking. The weakening of examination standards and the increase in patent applications has led to a dramatic increase in the

number of patents granted in the U.S. The number of patents granted in the U.S., which increased at less than 1% per year from 1930 until 1982 (the year the CAFC was created), roughly tripled between 1983 and 2001 (from sixty-two thousand per year to over 180 thousand per year, an annual rate of increase of about 6%).[9] After dipping slightly in 2004 and 2005, the number granted in 2006 set a new record of over 196 thousand.[10] Applications, too, have ballooned, from less than 120 thousand in 1982, to 453 thousand in 2006, with no sign of slowing down.[11]

While some of this increase appears to reflect real growth in innovation, it is clear that a large part of the increase is a response to the increased laxity of the PTO, which grants a significantly larger fraction of the applications it receives than do its counterparts in Europe and Japan. More worrisome still is a dramatic and inexorable increase since the early 1990s in the rate of litigation around patents. The number of patent cases filed has doubled in a decade and continues to rise. And the cost of defending a patent suit has risen as well; a patent infringement allegation from a competitor can now mean legal fees in the millions. For an under-capitalized startup, this prospect creates an overwhelming pressure to settle even frivolous complaints. Consumers therefore have less access to new products—from lifesaving drugs to productivity-enhancing software—than would be the case if innovative companies were not distracted from innovation by litigation and fear of litigation.

Much public attention has focused on the expansion of patenting into areas where it was previously unimportant or non-existent, such as biotechnology, software and business methods. Indeed, some of the worst abuses are in these areas. But concern about specific technologies potentially masks the deeper, fundamental problem. The incentives in the system now encourage frivolous applications, cursory review of those applications by the PTO, and indiscriminate filing of patent infringement suits as a generic competitive weapon. To get the system back on track, the system must be changed so that its incentives discourage frivolous applications, encourage rigorous

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[9] U.S. PATENT AND TRADEMARK OFFICE, U.S. PATENT STATISTICS CHART: CALENDAR YEARS 1963–2006, http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm. For a more extensive discussion of these data and historical trends, see JAFFE & LERNER, *supra* note 5, at 11–13.

[10] U.S. PATENT AND TRADEMARK OFFICE, *supra* note 9.

[11] *Id.*

patent examination, and discourage patent litigation where there is not a true invention to protect.

III. GOALS AND OBJECTIVES

While different analysts of the patent landscape have emphasized different aspects of the patent policy problems, there is general agreement on broad goals for system reform:

- *Improve patent quality.*[12] As illustrated by examples discussed above, people are getting patents for inventions that are not new and/or are obvious. One way to solve this, of course, would be to make it much harder to get a patent on anything. If this occurred, the few patents that were issued would be of very high quality, in the sense of being deserved by the applicant. But the objective of patent quality has to be more than just making sure bad patents *don't* issue. It has to include also making sure that inventors *do* get patents when they have a truly novel, non-obvious invention, that such patents are processed relatively quickly and reliably, and that once granted they provide an adequate property right to protect subsequent investment in the invention.

- *Reduce uncertainty.* A primary objective of reform should be to reduce the uncertainty that now pervades many aspects of the patent system. (Ironically, the only aspect of the patent process that has become more certain is the application process itself, because the ultimate granting of some patent from each original application has become almost a sure thing!) The sand in the gears of the innovation machine is that companies and individuals must constantly fear that their research and product development may come to naught, because someone is going to assert an as-yet unknown or untested patent against them. Further, when such an

[12] *See* STEP REPORT, *supra* note 8, at 87–95.

assertion of patent infringement is made, the uncertainty about the ability to defend against that assertion often leads either to abandonment of the allegedly infringing technology, or to an agreement to pay possibly unnecessary royalties. Of course, minimizing uncertainty is also important for the holders of valid patents. Reforms designed to increase patent quality must be designed in such a way that novel, non-obvious inventions receive patent protection that their owners can rely upon.

- *Keep costs under control.* In fiscal year 2006, the Patent Office spent roughly $1.7 billion for its operations. In recent years, Congress has increased PTO fees and budgetary appropriations, thereby responding to one aspect of the recommendations of groups such as the FTC, the STEP Board and the AIPLA. It is important to remember that appropriations to the PTO represent only a small fraction of what society spends on the patent system. Patent applicants spend several times that amount, and patent litigants billions more. These resources might be well spent if they achieved a reasonably smooth functioning system. But the system is not working well and it is reasonable to wonder whether we need to invest more of society's resources in the patent process. We need to look for solutions that go beyond throwing money at the problem.

IV. SOME SIMPLE TRUTHS

The next step towards reform is to understand some basic realities about the innovation process.

A. MISTAKES WILL ALWAYS BE WITH US

Patent examination is never going to be perfect. Examiners are human. More important, there is an essentially irreducible aspect of judgment in determining if an invention is truly new. After all, even young Albert Einstein faced challenges while assessing applications as a "Technical Expert-Third Class" in the Swiss Patent Office.[13]

[13] RONALD W. CLARK, EINSTEIN: THE LIFE AND TIMES 46–50 (1971).

Therefore, we cannot hope to have a system in which no "bad" patents ever issue. But we can hope to have a system with fewer bad patents. Since there will always be mistakes, it is important to have a system that functions reasonably well despite the issuance of some bad patents.

At current application rates, it would be very expensive to give all patent applications an examination sufficiently thorough to reduce significantly the problems with bad patents being issued. The patent system is important, however, so it is possible that spending several billion additional dollars on the PTO would be worthwhile for society. But this kind of dramatic increase in PTO resources does not seem very realistic in the current fiscal environment. Fortunately, it is also not necessary to expend the resources necessary to provide very reliable examination for *all* patent applications.

B. MUCH MORE CHAFF THAN WHEAT

The first step to understanding why greatly increasing the resources for examination is not the best solution to the problem is to understand that most patents are, and always will be, worthless and unimportant. This is not a feature of the Patent Office; it is a feature of the innovation process. It is partly due to the human tendency for each of us to think that our ideas are better than other people think they are. But it also reflects a deeper attribute of the process of technological development: the significance of a new idea usually cannot be known when it is first developed, because that significance depends on subsequent developments, both technological and economic. Many, many, "good" ideas are patented but never actually turn out to be worth anything. It is not that they should not have been patented to begin with. It is just that for every invention with lasting technological or economic significance, there will always be dozens or hundreds of ideas that seemed *potentially* worthwhile, but that eventually proved to be valueless.

The fact that almost all patents are ultimately worthless has an important implication for the "patent quality" problem. If most patents are doomed to be consigned to the dustbin of technological history, it cannot make sense to spend a lot of resources to make sure that they all receive very high quality examinations before issuing. The legions of inventors and patent attorneys may not like to think about this, but for the vast majority of patent applications, it will simply never matter—either to the inventor, her employer, or competitors—whether the patent is allowed to issue or not.

C. "RATIONAL IGNORANCE"

If careful examination is expensive, and the vast majority of patents will never matter to anyone, then it would be inefficient to expend society's resources on careful examination of all patent applications. In the colorful phrase of Mark Lemley, we can think of the poor quality of patent examination as representing "Rational Ignorance," by which he means that society is rationally choosing to remain ignorant about which patents really should be granted by the PTO.[14] Lemley argues that it is, in fact, reasonably efficient to simply accept that PTO examination will be of poor quality, and that the cases that really matter will have to be sorted out in the courts.[15] Court cases are expensive, but because only the small fraction of patents that matter will ever get litigated, Lemley argues that the cost of litigation is, overall, efficient.[16]

I agree with Lemley that it would be inefficient to provide thorough examination for all applications at the current rate of patent application. I disagree, however, that the current situation is acceptably efficient. First, while the out-of-pocket cost of litigation may be tolerable, the intangible cost of a system with pervasive low-quality patents is much higher than just the cost of paying lawyers to file and defend patent cases. The uncertainty that the current system creates for all parties regarding who can legally use what technologies is a cost that is difficult to quantify, but is surely significant. Talk to anyone involved in trying to commercialize new technologies, and you are likely to hear complaints about the headaches and uncertainty created by overlapping patent claims. Further, this uncertainty undermines everyone's incentives to invest in new technology. From the perspective of society as a whole, the loss of new products and processes that never make it to market, or that gain a toehold and are then abandoned after a threatened patent fight, is much larger than the visible costs of patent litigation. And, fortunately, there are changes that could be made in the system that would improve patent quality without requiring dramatic increases in the resources used in the examination process.

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[14] Mark Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1497 (2001).

[15] *Id.* at 1531–32.

[16] *Id.*

D. INVENTORS RESPOND TO HOW THE PATENT OFFICE BEHAVES

The key to more efficient patent examination is to go beyond thinking about what patent examiners do, and consider how the nature of the examination process affects the behavior of inventors and firms. To put it crudely, if the Patent Office allows bad patents to issue, this encourages people with bad applications to apply. While the increase in the rate of patent applications over the last two decades is driven by many factors, one important factor is the simple fact that it has gotten so much easier to get a patent, so applications that never would have been previously submitted now look like they are worth a try. Conversely, if the PTO consistently rejected applications for bad patents, people would understand that bad applications are a waste of time and money. While some people would still try—either because they are not smart enough to *know* they have a bad application, or because they are willing to take a roll of the dice—the number of applications would likely be considerably fewer that it has been in recent years.

E. GET INFORMATION TO FLOW INTO THE PTO

Another important aspect of incentives has to do with information: who has it and what do they do with it? Much of the information needed to decide if a given patent application should issue—particularly information about what related technologies already exist—is in the hands of private parties, rather than in the hands of the PTO. And in many cases there are strong incentives for firms to share this information. If a competitor of mine has filed a patent application, the last thing I want to see is for them to be issued a patent on an application that would have been rejected if the PTO had known about my technology. I would thus have a strong incentive to provide this information, if only the PTO would give me an opportunity for input, and if taking advantage of such an opportunity does not create strategic disadvantages for me down the road. Further, if the PTO routinely invited such input, various kinds of brokers and consultants would likely emerge who would specialize in helping firms stay abreast of developments at the PTO. Creating opportunities of this sort is another way that the system could exploit the incentives of private parties in order to increase efficiency.

F. POTENTIAL LITIGANTS RESPOND TO HOW THE COURTS BEHAVE

When the CAFC issues rulings that increase the chance of the patentee prevailing in an infringement suit, the consequences of this change are not limited to possible changes in the outcome of specific cases. Such a change in perceived success probabilities changes what disputes are, in fact, litigated. Conversations with attorneys involved in patent disputes make clear that the CAFC's strengthening of the offensive and defensive weapons of the patentee has significantly increased patentees' willingness to bring suit. Similarly, the change has significantly decreased the willingness of accused infringers to fight, even when they believe that the patents being used to threaten them are not valid. In particular, firms with highly successful products—when faced with a jury trial over complex issues of novelty and obviousness, and the risk that defeat might mean large penalties for willful infringement and/or an injunction shutting down their product—may feel that they have no rational business choice but to pay a ransom to avoid litigation. When this happens, the cost of innovation rises and society is the loser. Constraining the growth in litigation, and the uncertainty created for all innovators by the risk of suit, will require a change in these incentives.

V. BUILDING BLOCKS OF REFORM

There are three key conceptual pieces for thinking about patent policy reform:

- Investigate ways to create incentives and opportunities for parties that have information about the novelty and obviousness of inventions to bring that information to the PTO when it is considering a patent grant.

- Consider the possibility for multiple levels of review of patent applications, with the time and effort expended escalating as an application proceeds to higher levels, so that money is not wasted on unimportant patents, but sufficient care is taken to avoid mistakes where the stakes are high.

- Address the balance of incentives and opportunities for patent holders and alleged infringers in the context of litigation. People with valid patents that

> are being infringed must have opportunity to seek redress, but the current system makes it too easy for patent holders to use threatened litigation—even when based on patents of dubious validity—too risky for alleged infringers to fight.

The first two concepts are aimed at making the PTO more effective at reasonable cost. The third addresses the reality that the best of all possible PTOs will still make mistakes, and so we need a court system that is capable of rectifying those mistakes.

Effective reform must start with the recognition that much of the information needed to decide if a given application should be approved is in the hands of competitors of the applicant, rather than the PTO. A review process with multiple potential review levels efficiently balances the need to bring in outside information with the reality that most patents are unimportant. Multilevel review, with the barriers to invoking review and the thoroughness of that review both increasing at higher levels, would naturally focus attention on the most potentially important applications. Most patents would never receive anything other than the most basic examinations. But for those applications that really mattered, parties would have an incentive and opportunities to bring information in their possession before the PTO, and the PTO would have more resources to help it make the right decision. Although there is disagreement about the details, implementation of a review procedure or procedures of this kind, has been endorsed by the FTC, the STEP Board and the AIPLA.

Legislation creating a new post-grant review procedure is currently under discussion in Congress. An issue of heated debate is the length of time after initial grant during which such a review could be invoked. Some patent reform advocates are pushing for the right of review to extend for the life of the patent. Such an approach would seriously undermine the fundamental purpose of the patent system to foster investment in development of patented products by reducing uncertainty. Balancing the need for review to ensure patent quality with the need of patent holders to be able to rely on their patent protection calls for a review process that is available only for a relatively short period of time.

If bad patents with important consequences were weeded out by the PTO, the incentive to file frivolous applications in the first place would be reduced. This would break the current vicious cycle in which inventors are induced to make marginal applications by their likelihood of success, and the resulting flood of applications overwhelms the patent office and makes it harder to separate the wheat from the chaff.

Breaking the vicious cycle of bad examination and bad applications is the key to reform of the patent review process. But there are always going to be mistakes, and so it is important that the court system operate efficiently to rectify those mistakes, while protecting holders of valid patents. Today, the legal playing field is significantly tilted in favor of patentees.

Professor Lerner and I have highlighted the role of juries in deciding patent validity questions as a crucial source of undesirable and unnecessary uncertainly in the litigation process. The evidence in a patent case can be highly technical, and the average juror has little competence to evaluate it. Having decisions made by people who cannot really understand the evidence increases the uncertainty surrounding the outcome. The combination of this uncertainty with the legal presumption of validity—the rule that patents must be presumed legitimate unless proven otherwise—is a big reason why accused infringers often settle rather than fight even when they think they are right.

For accused infringers, the difficulties associated with the presumption of validity and the uncertainty of juries are compounded by the availability of remedies or penalties for infringement that are far out of proportion to the economic harm that a patent holder may have suffered as the result of infringement. While it is important that patent holders have the ability to uphold valid patents, remedies that are vastly disproportionate to the economic significance of the patent at issue do not serve any legitimate public policy purpose, and create the incentive and opportunity for those who would use the patent system for ransom and extortion rather than innovation.

VI. CONCLUSION

The protection for true innovators created by a workable patent system is vital to technological change and economic growth. The problems in the existing U.S. patent system are structural, and the solutions need to be fundamental. As much as the PTO and the courts can, and should, address some of the weaknesses of the existing system, meaningful reform requires important modifications to the statutory framework. In these days of polarization and ideological divide in Washington, patent policy reform offers an unusual opportunity for real action in the public interest. As evidenced by the discussion in the FTC and STEP reports, being pro-reform does not make one anti-patent. On the contrary, the motivation for patent reform derives precisely from the recognition that a well-functioning

patent system is absolutely crucial to our technological progress and economic health.