

# AS MANY AS SIX IMPOSSIBLE PATENTS BEFORE BREAKFAST: PROPERTY RIGHTS FOR BUSINESS CONCEPTS AND PATENT SYSTEM REFORM

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## ABSTRACT

In this paper, Professor Merges describes the emergence of patents for business “methods” or concepts, such as Internet airplane ticket purchase systems. Professor Merges is agnostic about whether these patents are worthwhile. Nevertheless, he argues that the increased volume of patent applications stemming from this newly patentable subject matter has pushed the patent system into crisis. In particular, he focuses attention on determining an acceptable “error rate” for issued patents, with an eye toward reducing the number of invalid business concept patents that are actually issued. In the process, he calls for new appreciation of the relationship between the patent office and private parties. He argues for policies that will efficiently coordinate the efforts of both groups to achieve the socially desirable end, which is an appropriate expenditure to determine patent validity. Some of these reforms involve restructuring jobs and incentives in the Patent Office. Others involve obtaining the input of those parties that suffer most if a firm receives an invalid patent—i.e., the firm’s competitors. These also tend to be the parties with the best information about patent validity. It is therefore logical, according to Professor Merges, to get these competitors into the patent process as early and as thoroughly as possible. This leads to a proposal to adopt a patent opposition system in the U.S., much like the one currently in place in Europe. Only reforms such as these will lower the incidence of poor-quality patents. And only then, Merges argues, will we be able to decide whether patents for business concepts make sense or not.

## TABLE OF CONTENTS

I. INTRODUCTION .....	578
II. BACKGROUND: THE “IMPOSSIBLE” IS NOW POSSIBLE .....	581
III. HOW WE GOT TO WONDERLAND .....	584
IV. EVALUATING THE PATENT EXAMINATION SYSTEM.....	588

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A.	Why Is Patent Quality So Poor? .....	589
B.	Sketching an Ideal Patent Office.....	591
	1. <i>The function of a patent office</i> .....	591
	2. <i>The goals of a patent office</i> .....	592
	3. <i>Pros and cons of a simple registration system</i> .....	594
C.	Optimal Public Expenditures on Patents.....	596
	1. <i>The benefits of sorting applications</i> .....	596
	2. <i>The problems (and politics) of sorting</i> .....	597
	3. <i>Second-best solutions</i> .....	598
	a) Why not penalize holders of invalid patents? .....	599
	b) Who is the cheapest cost-avoider? .....	599
D.	Examining the PTO .....	600
	1. <i>The PTO's examination budget</i> .....	600
	2. <i>Setting the ideal PTO budget</i> .....	603
V.	SOME SIMPLE SUGGESTIONS FOR IMPROVING THE EXAMINATION PROCESS .....	606
	A. Job Design .....	606
	B. Alternative Bonus Systems .....	609
	C. Reforming Reexaminations: The Common Sense Case for Patent Oppositions .....	610
VI.	CONCLUSION.....	615

"Now I'll give you something to believe!" the White Queen remarked.] "I'm just one hundred and one, five months and a day."

"I can't believe that!" said Alice.

"Can't you?" the Queen said in a pitying tone. "Try again, draw a long breath and shut your eyes."

Alice laughed. "There's no use trying," she said, "one can't believe impossible things."

"I daresay you haven't had much practice," said the Queen. "When I was your age, I always did it for half-an-hour a day. Why sometimes I've believed as many as six impossible things before breakfast."<sup>1</sup>

## I. INTRODUCTION

The White Queen would be right at home in the U.S. patent system today. First software, once thought too purely mathematical, and now business "methods" or concepts, once thought too abstract, have become per-

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1. LEWIS CARROLL, *THE ANNOTATED ALICE* 250-51 (Martin Gardner, ed. 1960). This passage comes by way of political scientist Don Herzog. See Don Herzog, *As Many as Six Impossible Things Before Breakfast*, 75 CALIF. L. REV. 609 (1987) (critiquing "Critical Legal Studies"), quoting from LEWIS CARROLL, *THROUGH THE LOOKING GLASS* (1871).

fectly acceptable subject matter for patents. For better or for worse, whole new landscapes have been opened to the possibility of patents.

To get right to the heart of the issues surrounding patents for business concepts, log on to <http://www.walkerdigital.com/html/information.html>. This is the website of Walker Digital, Inc., the company that recently “spun off” its Priceline.com subsidiary, a separate company that uses the Internet to match buyers with sellers.<sup>2</sup> Here is what you will read:

We [Walker Digital, Inc.] conceive, research, and prepare our patented business systems in-house. Our team of specialists prepares cases that solve real-life problems for a wide variety of industries such as retail, telecommunications, credit cards, casinos and more. So far, we’ve filed over 250 U.S. and international patent applications to create a portfolio that we believe is unlike anything anywhere else in the world.<sup>3</sup>

Until very recently, Walker Digital would not have existed. The patent system did not embrace the abstract patents on business concepts that are the company’s key assets.<sup>4</sup> There would be no cornerstone patents on internet price-matching, personified by Walker Digital’s “Priceline.com” subsidiary.<sup>5</sup> Without patents, in fact, it is difficult to see how a firm could survive as an independent “idea factory” for Internet commerce.

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2. See generally Priceline.com, *Priceline.com* (visited Apr. 19, 1999) <http://www.priceline.com/>.

3. Walker Digital Corp., *Information* (visited Apr. 24, 1999) <http://www.walkerdigital.com/html/information.html>.

4. See *State Street Bank & Trust Co., Inc. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed Cir. 1998) (overruling cases holding or suggesting that claims to “methods of doing business” were not patentable). In many ways, *State Street Bank* did not initiate a new practice; it lent judicial authority to existing PTO policy:

With regard to “methods of doing business” in particular, it is worth mentioning that there are a large number of patents in this category that have been granted by the U.S. Patent and Trademark Office (PTO) prior to the Federal Circuit’s *State Street* decision. In effect, *State Street* will serve to help confirm their validity.

Scott M. Alter, *Federal Circuit Broadens Scope For Software Patents*, 15 COMPUTER LAW. 24, 27 (1998).

5. Consider one line of business that Priceline.com is apparently interested in: airline ticket options, i.e., the purchase and sale of the right to buy tickets at a later time for a specified price. See U.S. Patent No. 5,797,127, issued Aug. 18, 1998 (entitled “Method, Apparatus, And Program For Pricing, Selling, And Exercising Options To Purchase Airline Tickets”). This patent has the two attributes of a business concept patent: (1) it describes an essentially *commercial* (as opposed to technological) activity, typically some

Walker Digital is therefore a perfect test case. It can tell us whether formerly "impossible" patents on business concepts are a good idea. If there were some way to determine whether this firm had initiated business concepts that no one else would have, or had hurried them into practice faster, we could ask: is the game worth the candle? Alas, no such knowledge has been revealed to us. The instruments we have at hand are simply too imprecise, at least for the time being. We may see an explosion of activity. Or we may hear horror stories about good, solid businesses aban-

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way to make or save money; and (2) the hardware and software elements are described and claimed at such a high level of generality that they are for all practical purposes nominal. These features are readily apparent from the abstract and claim 1:

An apparatus, method, and program for determining a price of an option to purchase an airline ticket, and for facilitating the sale and exercise of those options. By purchasing an option, a customer can lock in a specified airfare without tying up his money and without risking the loss of the ticket price if his travel plans change. Pricing of the options may be based on departure location criteria, destination location criteria, and travel criteria.

[Claim 1:]

A data processing apparatus for determining a price of an option to purchase an airline ticket, comprising:

    a central controller including a CPU and a memory operatively connected to said CPU;

    at least one terminal, adapted for communicating with said central controller, for transmitting to said central controller option pricing information including departure location criteria, destination location criteria, and travel criteria;

    said memory in said central controller containing a program, adapted to be executed by said CPU, for calculating a price of an option to purchase within a future period, for a particular ticket price, an airline ticket satisfying the departure location criteria, destination location criteria, and travel criteria;

    wherein said central controller receives said criteria from said terminal and calculates the option price based upon the criteria.

The emphasis on the *commercial function* of the program ("calculating a price of an option to purchase ... an airline ticket"), together with the complete generality of the hardware and software elements ("central controller," "at least one terminal," "CPU," "memory," and "a program" are all completely general), leads to the conclusion that this is a patent on the business idea of using computers, in particular the Internet, to price and purchase options on airline tickets. For other examples of patents such as this, see U.S. Patent No. 5,732,400, issued Mar. 24, 1998 (entitled "System And Method For a Risk-Based Purchase Of Goods"); U.S. Patent No. 5,787,402, issued July 28, 1998 (entitled "System and Method for Performing Automated Financial Transactions Involving Foreign Currencies").

done in the face of predatory patent extortionists. It is simply too soon to tell.

But there *are* some positive steps we can take to limit any negative effects from business method patents. The most important is to make sure that the business concept patents that do issue are good, solid patents. It may be too late to argue to a court that business concept patents are universally bad. And it may be too early to ask Congress to rein them in. But it is neither too late nor too early to argue forcefully that *bad* business concept patents are bad.<sup>6</sup> In fact, the time is just right: minimizing the number of worthless business concept patents makes a great deal of sense just now. Only by improving the overall quality of these patents can we begin to determine whether or not they make any sense. Once we disentangle the bad from the good, we can see whether the good ones are worth the trouble. If, in the process, this entails improving the overall quality of issued patents, all the better. If it tweaks us into fixing some deep-seated flaws in the way the Patent and Trademark Office ("PTO") examines patents, the advent of business method patents may even turn out to serve a useful purpose.

## II. BACKGROUND: THE "IMPOSSIBLE" IS NOW POSSIBLE

Before addressing the question of bad business concept patents, let us first consider how we came to patent this subject matter in the first place. Although the older cases do not articulate their reasoning very clearly, they seem to center around one idea: that the patent system was meant to protect *technology*—actual machines, devices, and new chemical compositions—rather than pure concepts.<sup>7</sup> Because business methods are not tied to particular machinery or devices, they are clearly not patentable under this view.

This antipathy to patenting mere abstractions actually grew out of older cases which questioned the patentability of processes per se.<sup>8</sup> How,

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6. It will become clear as I go along what I mean by a "bad" patent. Succinctly put, it means a patent that should have been weeded out after a reasonable investment of effort, but was not.

7. See, e.g., *Gottschalk v. Benson*, 409 U.S. 63 (1972). See generally ROBERT P. MERGES, *PATENT LAW AND POLICY: CASES AND MATERIALS* ch. 2 (2d ed. 1997).

8. This history, which culminated in the acceptance of process patents in *Cochrane v. Deener*, 94 U.S. 780, 788 (1877), is well recounted in DONALD CHISUM, *CHISUM ON PATENTS* § 1.03 (1978 & Supp. 1999). See generally Edward C. Walterscheid, *The Early Evolution of the United States Patent Law: Antecedents (Part 3 Continued)*, 77 J. PAT. & TRADEMARK OFF. SOC'Y 847 (1995).

it was asked, could a list of steps not tied to particular machinery or devices be patentable? In time, the opposition to process patents died away, partly because they came to be understood as *physical transformations* rather than mere abstractions.<sup>9</sup> It also did not hurt that they were perceived as crucial to the growing chemical industry of the early twentieth century. Yet, the prohibition on patents for business methods lived on.<sup>10</sup>

With the acceptance of patents for software, courts could no longer persuasively rely on the distinction between concepts and machines.<sup>11</sup> Even so, for a brief time the rule against business method patents survived. Those who defended this rule justified it on other grounds. Most powerfully, it was argued that such patents were simply not necessary.<sup>12</sup> After all, there seemed to be no shortage of new accounting methods, financial instruments, or financial services techniques throughout the history of the American economy, when business methods were not patentable. Even into the mid-1980s, when business method patents were just beginning to appear, the U.S. was considered the world leader in this service industry. Thus, according to this view, the proper question is: why fix it if it ain't broke?

The conventional answer is dictated by the logic of patent principles and current practices. It holds that there is no sound reason *not* to protect business methods. The history, logic, and accepted practices of our method of granting patents essentially compels us to allow patents on business concepts, because there is no principled basis on which to distinguish this "industry" from the myriad other industries that routinely obtain patents. Further, we should all have faith that this wave of patenting will unleash an Edisonian tidal wave of inventiveness—that, if we thought entrepreneurs rapidly introduced new ideas such as overnight package deliv-

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9. See *Cochran*, 94 U.S. at 780.

10. See, e.g., *Hotel Security Checking Co. v. Lorraine Co.*, 160 F. 467, 469 (2d Cir. 1908).

11. They certainly tried, nonetheless: See, e.g., *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) (en banc) (emphasizing hardware components of claimed "rasterizer" invention). But see Pamela Samuelson, *Benson Revisited: The Case Against Patent Protection for Algorithms and Other Computer Program-Related Inventions*, 39 EMORY L.J. 1025 (1990) (making strong case against software patents).

12. See MERGES, *supra* note 7, at 156 ("Regardless of specific strategies, the point is the same: firms can capture the value of innovations many ways. The question for policymakers is whether patents should be permitted, in light of the other "appropriability mechanisms" available. Again, the relatively frequent innovations in the financial services industry prior to the era of patentability suggest that firms had adequate means to appropriate the value of their new financial innovations.").

ery and 1-800-Flowers *without patents*, then Watch Out!, because we haven't seen *anything* yet in this field!

Certainly Walker Digital sees it this way. Again, their web page:

We're not believers in traditional commercial inventing, where old methods are shoehorned into new technologies. Rather than think outside the box, we seek to reinvent the box. We create practical new ways to do things based on the inherent benefits of new technologies. We then take our core ideas, protect them with patents and establish licensing partnerships with major industry players who bring our ideas to market. These ideas are our intellectual property, our product.

Who are we?

Our team includes entrepreneurs, inventors, technologists, patent attorneys, industry analysts and even a world-renowned cryptographer. It also includes folks who, in previous lives, were some of the country's top CEOs and marketing executives. It's a group of highly intelligent, inventive, business-savvy people, with plenty of room for even more bright people, like you.

We earn profits from our intellectual property through a variety of business strategies ranging from direct licensing agreements—selling an idea to another company—to spinning off new businesses in which we retain an equity stake. Our first business spin-off was a home run—Priceline.com, our patented buyer-driven commerce system.

Priceline.com is the only system, on or off the Internet, where buyers can name their own price for specified goods and services. Like all of our spin-offs, its success has become our success.<sup>13</sup>

Not surprisingly, the patent covering the Priceline.com service is in dispute. A rival inventor—a patent lawyer, in fact—had filed a patent application with somewhat analogous claims earlier. An interference is now afoot.<sup>14</sup> And so commences the inevitable shakeout period when rival patentees jockey for position. This much, at least, is not new. For example, the Bell System had 600 patent infringement suits pending in the late

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13. Walker Digital, *Information* (visited Apr. 24, 1999) <<http://www.walkerdigital.com/html/information.html>>.

14. See Teresa Riordan, *It May Be "Big, Really Big," But An On-Line Airline Ticket Discounter is Also Being Challenged*, N.Y. TIMES, Jan. 18, 1999, at C1. A patent interference is a proceeding to determine priority among two or more rival inventors. See 35 U.S.C. § 135 (1998).

nineteenth century,<sup>15</sup> and the past fifteen years have seen a steady stream of foundational litigation in the biotechnology industry.<sup>16</sup>

What *is* new is this: the shakeout has begun without answers to some important threshold questions. Chief among these is whether Walker Digital and other firms like it are doing anything that would not be done in the absence of patents. Put another way, in an ideal world, society would have addressed whether or not the types of business concept patents sought by these firms contributed any value in excess of what they cost society. If the answer was no, we would deny patents to them; if yes, patents would be allowed.

### III. HOW WE GOT TO WONDERLAND

It would certainly be nice to have a theory that would tell us when one type of invention is unpatentable, while another is patentable. But the problem with such a normative theory of patentable subject matter is no less vexing for its familiarity. Where do you draw the baseline? One conventional candidate, historical practice, is not helpful. There would seem to be little hope in constructing an “originalist” interpretation of the Intellectual Property Clause of the Constitution<sup>17</sup> to limit its subject matter: By definition, the clause envisions the creation of unanticipated inventions and writings. It provides no built-in limits. Hence it does little good to argue that the patent law traditionally protects only conventional “hardware” inventions. It is quite true that the canonical patented technology in the eighteenth century was a simple agricultural tool (an axe or a plow) which then became a more complex implement (a cotton gin or reaper) in the nineteenth century; even later, it became a machine, electrical device, or chemical process. These are true, but useless, historical facts; they say nothing about the appropriateness of patenting modern business concepts.

Indeed, following in the general spirit of the Intellectual Property Clause, Congress early on seems to have embraced a kind of blind technological optimism, ignoring economic costs. The value of a limited and well-administered patent system was little debated in the early Republic.

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15. See DAVID NOBLE, *AMERICA BY DESIGN: SCIENCE, TECHNOLOGY AND THE RISE OF CORPORATE CAPITALISM* 10 (1977); JOHN BROOKS, *TELEPHONE: THE FIRST HUNDRED YEARS* 77 (1975).

16. See generally KENNETH BURCHFIEL, *BIOTECHNOLOGY AND THE FEDERAL CIRCUIT* (1995 & Supp. 1997).

17. U.S. CONST., art. I, § 8, cl. 8 (“The Congress shall have Power ... To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries...”).

There were no detailed cost-benefit analyses when the first few patent acts were passed. And there was consequently no real effort to separate patentable subject matter from things that were not to receive patents. Perhaps this was in part a function of an understanding—shared widely among legislators, courts, patent office officials, and inventors—about what patents were meant to protect. Everyone knew that manufactures and machines were at the core of the patent system.<sup>18</sup> Agricultural and industrial machinery was almost synonymous with “patents.” For Thomas Jefferson and his cohorts, a piece of technology was readily identifiable: it had substance, and moving parts, and did something out in the practical world of farming or manufacturing. At the very least, for Jefferson, if you put technology in a bag and shook it, it would make some noise.

Against this background, it would have been seen as absurd for an entrepreneur to file a patent on a new finance technique such as publicly traded corporate shares, techniques for obtaining private financing for a bridge to compete with an existing bridge, or a security interest in uncut timber. These were the earmarks of commerce, of enterprise; laudable, surely, but something altogether distinct from the realm of “invention” and “the useful arts.”

Indeed, it might well have been argued that patents on such things were precluded by the British Statute of Monopolies—a statute which itself grew out of abuses in the grant of exclusive franchises in various lines of business such as trading cards, alehouses and various staple products.<sup>19</sup> The Statute of Monopolies, after all, prohibited the grant of monopoly rights in various lines of business, rights which had been used as a device to raise public revenue and reward court favorites.<sup>20</sup> And the line that the Statute drew precisely reflected the eighteenth century view that technology was special: only new and useful inventions could receive patents, because these were the only property rights that could enhance social wel-

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18 See, e.g., DAVID A. HOUNSHELL, *FROM THE AMERICAN SYSTEM TO MASS PRODUCTION, 1800-1932*, at 5 (1984) (describing the McCormick reaper and the Singer sewing machine, classic examples of nineteenth century technology).

19. See Robert P. Merges & Glenn H. Reynolds, *The Proper Scope of the Patent and Copyright Power* (Nov., 1998) (working paper on file with author). It has recently been argued that the report of one early case in this area may well have been distorted. See Jacob Corre, *The Argument, Decision, And Reports of Darcy v. Allen*, 45 EMORY L.J. 1261, 1266 (1996) (“[T]he opinion in *Darcy v. Allen* should not be viewed as a late-Tudor instance of the kind of explicit and concerted constitutional attack on the Crown that contributed so significantly to the Civil War forty years later.”).

20. See MERGES, *supra* note 7, at 6.

fare.<sup>21</sup> The old, discredited monopolies in everyday household items were understood to contribute nothing new, except higher prices.<sup>22</sup> A reasonable extension of the underlying logic of the Statute would have been to preclude patents on new business techniques, on the ground that the statute prohibited any special privilege to a commercial enterprise, as opposed to a new technology.

Alas, no such consensus on what patents are meant to protect exists today. Computer software—a sort of quasi-machine constituted out of written programs, or a written code that does machine-like work—has clouded and confused our working definition of “technology.” Program writers, or “software engineers,” labor to solve complex, demanding problems with standard toolkits, much as a determined inventor worked to design a new textile machine or seed drill in Jefferson’s day. Just because the end product of today’s engineering mind is manifested in a string of bits, it is no less a piece of “technology” than practical solutions of old, expressed in wood or steel.

Patent lawyers, paid to push the outer limits of what is protectable, have responded to the new technological realities with remarkable creativity. In the realm of financial instruments and Internet business concepts such as Priceline.com, the ubiquitous presence of computer technology permits inventors and their lawyers to characterize new businesses as essentially new combinations of hardware and software, and in some cases as new software packages per se. Once the Wall of Jericho holding back the forces of software patents was breached—and there can be no doubt anymore that the breach has occurred<sup>23</sup>—the way was open for computer-related business concepts to be patented. When these software-embedded concepts are characterized as novel computer programs, there is little to separate them from any other computer program. They are therefore just as patentable as any other software.<sup>24</sup> QED.

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21. *See id.*

22. *See* Statute of Monopolies, 1623, 21 Jam., ch. 3, § 6 (Eng.) (stating that no patents that raise the “prices of commodities at home, or hurt of trade, or generally inconvenient ... [will be allowed]”).

23. The surest sign that software is widely accepted as appropriate patentable subject matter is that we are beginning to see software-related patent infringement cases that do not even mention section 101 as an issue. *See, e.g.,* Enpat, Inc. v. Microsoft, Inc., 26 F. Supp. 2d 806 (E.D. Va. 1998).

24. Indeed, there is a fair argument that a business concept is patentable whether or not it is implemented on a computer:

[In *State Street Bank*] the Federal Circuit indicated that whether an invention is directed to patentable subject matter under § 101 does not

The acceptance of business concept patents is not due simply to the underlying technology. Another important cause is the shifting baseline in the intellectual property field. Beginning in the earliest days of the patent system, and extending until perhaps as late as the early 1980s, the legal system assumed that intellectual creations were *not* protectable *unless* (very) good cause was shown. Today, it often seems the opposite. We now ask: why not protect a new form of intellectual creation? We're protecting everything else like it.<sup>25</sup>

This leads us back to the Constitution. At the practical level of this essay, we ask: does Article I clause 8 tell us what to do about the Walker Digitals of the world? Can we constitutionalize the implicit understanding of the framers and early patent system actors that patents are at their core about machines and manufactures—about nineteenth century technology, in other words? The question seems to answer itself. Given a constitutional provision rooted in a blind faith in “progress,” we cannot read in historically contingent limitations on patentable subject matter.<sup>26</sup> Put simply, there are no plausible subject matter limits, express or implied, in this broad, enabling clause.

If we want limits, we must look to Congress and the courts to provide them. While Congress is still a possibility, it has shown little inclination to limit intellectual property rights in recent years. And as for the courts, we have their definitive answer in such cases as *State Street Bank*, mentioned earlier.<sup>27</sup> In upholding claims to software inventions, the court has sup-

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depend on whether a “physical” transformation takes place or whether the claim is directed to a process or a machine. From this, it might then follow that a claimed process for, e.g., performing the function similar to Signature’s invention, is patentable even absent its use with a computer. As long as the variables represent some set monetary values, it arguably should not matter who or what does the “transforming.” After all, regardless of the transforming mechanism (e.g., machine or human), the invention can be said to have “practical utility,” and produce a “useful, concrete and tangible result.” As can be appreciated, arguments can also be made as to why *State Street* might not be so broadly interpreted.

Alter, *supra* note 4, at 28 (citations omitted).

25. See generally Robert P. Merges, *The Economic Impact of Intellectual Property Rights: An Overview and Guide*, 19 J. CULTURAL ECON. 103 (1995).

26. For an argument that the phrase “for limited times,” in the historical context of the Intellectual Property Clause, does set limits on Congress’ ability to extend individual patents and copyrights through so-called “private bills,” see Merges and Reynolds, *supra* note 19.

27. See *supra* note 4.

plied a broad interpretation of the statutory classes of “process” and “machine.” Unless something changes in the statute or the courts’ interpretation of it, we can expect few subject matter limits on patents. This is one important reason we can expect to see continued increases in the number of patent applications, and hence, continued pressure on patent quality, in the coming years.

#### IV. EVALUATING THE PATENT EXAMINATION SYSTEM

At first glance, it ought to be easy to predict whether the whole idea of business concept patents makes any sense. All we need is a simple theory of when patents are necessary to call forth innovation, and when they are not. Once we have understood the category of things that will not be created in the absence of business method patents, we then ask the simple question: is it worth the social costs of granting exclusive property rights so that those things will be created? In essence, can we design a property right so that we gain more than we give up by granting such a right to those who qualify for it?

Probably not. Put simply, there is no easily-identified “ideal” menu of property rights for a given economy at a given moment in time. While it is clear in theory that only efficiency-enhancing property rights ought to be granted,<sup>28</sup> it is not always so simple in practice to tell what they are.

It is virtually impossible to determine—at least at this time—if truly valid business concept patents are a net drag on the economy, a net plus, or neutral. So I am *not* going to argue about that. But I *will* argue that we need to pay very close attention to the process by which these patents are granted, because, where the net effects are possibly negative, there is even more reason than usual to be concerned about improperly granted patents. I will therefore focus my attention on improving patent quality, generally.

My proposals are directed primarily at the PTO, the courts, and Congress. Because there is very little chance that any of these entities will act on them, I can be bold. My goal is to convince these people that while we may not be sure whether business concept patents are good or bad, we do know that *bad* business concept patents are bad. We must take steps to limit the damage from the ones already out there, and prevent more of them from issuing.

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28. See DOUGLASS C. NORTH, INSTITUTIONS, INSTITUTIONAL CHANGE AND ECONOMIC PERFORMANCE 52 (1990).

Prevention can be achieved best by revamping the patent examination system in the PTO. Business concept patents are not the only reason to make these changes, but they are certainly a sufficient reason. And they might be just the straw that tips the balance in favor of much-needed reforms without which the proud tradition of the U.S. patent system is sure to continue its slow decay.

### A. Why Is Patent Quality So Poor?

There are persistent reports that patents in the software area, and perhaps especially, patents for "business methods" implemented in software, are of extremely poor quality.<sup>29</sup> People familiar with the technology involved and the history of various developments in it report that patents in this area are routinely issued which overlook clearly anticipating prior art.<sup>30</sup> The average number of prior art references cited in software-implemented business concept patents has been said to be fewer than five.<sup>31</sup> Three out of the five, on average, are citations to other U.S. patents, leaving an average of two non-patent citations per patent. What is disturbing about this figure is that patents have only recently become available for this technology. Consequently, we would expect that most of the prior art in this field would be of the non-patent variety. There is every reason to believe that there is a vast volume of non-patent prior art in the software-implemented business concept field, as is widely believed to be the case with software patents in general. Given that businesspeople have been pioneering new concepts since commerce began, and that Internet commerce has seen exponential growth in recent years,<sup>32</sup> very few of the

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29. See, e.g., Brenda Sandburg, *Patent Applications Flow Freely*, LEGAL TIMES, Feb. 22, 1999, at 12; Kenneth W. Dam, *Some Economic Considerations In The Intellectual Property Protection Of Software*, 24 J. LEGAL STUD. 321, 369-71 (1995) (discussing many of the problems with patent quality that had been identified with respect to software patents, and voicing optimism that problems can be addressed).

30. See Andrew M. Riddles & Brenda Pomerance, *Software Patentee Must Conduct Own Search: Prior-Art Searches Made By The Patent Office Often Are Not Thorough Enough To Be Trusted*, NAT'L L.J., Jan. 26, 1998, at C19. (accusing PTO of being little better than a "registration process" for some kinds of software patents).

31. See Greg Aharonian, *17,500 software patents to issue in 1998*, INTERNET PATENT NEWS SERVICE (Oct. 18, 1998), available at <<http://lpf.ai.mit.edu/Patents/ipns/ipns-19981018.txt>>.

32. See, e.g., *Quantel, Ltd. v. Adobe Systems, Inc.*, 1997 U.S. Dist. LEXIS 16779 at \*14-23 (D. Del. Sept. 22, 1997) (jury verdict invalidating software patents; special verdict form shows numerous "prior public use" references). Cf. MERGES, *supra* note 7, at

developments in this area have found their way into patents. They are reflected instead in actual businesses, business plans, the financial services industry literature, and the like.<sup>33</sup> It therefore seems likely that many of the patents being issued in this area overlook highly relevant prior art. Thus, the error rate for these patents is likely to be quite high.<sup>34</sup>

No doubt part of the problem is that the patent system has only recently begun to issue patents in this field. Thus, perhaps we can expect some low quality patents now, until the patent system has time to adjust. This has certainly been our experience in other fields: there were numerous complaints in the early years of biotechnology and software patents that the PTO was allowing too many overly broad patents.<sup>35</sup>

At the same time, the scope of the problem seems to be worse this time. Partly, this is a simple matter of overall volume: the PTO has experienced a very rapid increase in the number of patent applications filed in the past few years.<sup>36</sup> For reasons that will be explained later,<sup>37</sup> there are numerous incentives inside the PTO to issue rather than reject patent applications. As a consequence, the number of patents issued has also grown sharply in the past few years.<sup>38</sup>

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416; George Gates, *Trade Secret Software: Is It Prior Art?*, 6 COMPUTER LAW. 11 (1989).

33. See OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONG., FINDING A BALANCE: COMPUTER SOFTWARE, INTELLECTUAL PROPERTY AND THE CHALLENGE OF TECHNOLOGICAL CHANGE 24 (1992) (noting need to "fill[] in" the prior art to improve software patent quality).

34. The Attorney-Advisor to Commissioner Christine A. Varney of the Federal Trade Commission has this to say on the topic:

Given continuing data and expertise problems, any expansion of the scope of statutory subject matter will inevitably result in the issuance of more patents that do not meet the statutory requirements of novelty and nonobviousness, but instead have the potential to block further software development. Given the non-public nature of the patent application process, the absence of effective post-award review and the substantial transaction costs associated with defending patent infringement litigation, many improvidently granted patents are likely to go unchallenged.

J. Beckwith Burr, *Competition Policy And Intellectual Property In The Information Age*, 41 VILL. L. REV. 193, 204 (1996).

35. See, e.g., Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 905-06 (criticizing an early monoclonal antibody diagnostic kit patent).

36. See fig.1 *infra* p. 601.

37. See *infra*, Part V.A.

38. See fig.1 *infra* p. 601.

The concerns about quality, especially in light of the data on overall volume, point to one conclusion: the patent system is in crisis. Therefore, this is an opportune moment to take a step back and ask an important preliminary question: how thorough should patent examinations be? A thorough analysis of these fundamental issues will help immensely in deciding whether the reported crisis is genuine.

## B. Sketching an Ideal Patent Office

In this section, I discuss how we would design a patent system if we were starting from scratch today. It seems to me there are four important subissues here: (1) How much time and effort should the PTO spend on each patent application, and is there any way for the PTO to sort patent applications by anticipated economic value? (2) Inasmuch as the competitors of a company that receives a patent will potentially bear the costs of an improperly granted patent, is there any way to harness their self-interest and their intimate knowledge of the technology to bear on the patent application process? (3) What is the proper “division of labor” between the PTO which issues patents and the courts which later review them—in essence, what is the ideal standard of review for the validity of an issued patent? And (4) what are the optimal remedies and punishments for acquiring an invalid patent or asserting it against competitors?

I will address the first two issues in this article, leaving the others for later analysis. Of course, it should be understood that changes in one area of the system may have important consequences for other areas. But we must start somewhere, and the PTO—as the government agency that serves as the first and important line of defense against socially wasteful patents—is as good a place as any.

### 1. *The function of a patent office*

It is curious that in all the vast economic literature on patents, virtually nothing has been written about the functioning of a patent office. When patent granting authorities are mentioned, it is usually as a “black box” bureaucracy out of which patents emerge.<sup>39</sup> There is scant literature on auctioning research projects.<sup>40</sup> This literature describes a proto-patent office that auctions off the right to investigate and develop a discrete and identifiable technological “opportunity.” But it seems self-evident that this is farfetched enough to be disregarded. Technology is rarely so readily

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39. Cf. Merges, *supra* note 25.

40. See, e.g., Yoram Barzel, *Optimal Timing of Innovations*, 50 REV. ECON. & STATISTICS 348 (1968).

identifiable, and its future prospects rarely if ever well enough understood, to induce reasonable bidding. In addition, the potential developers of a technological prospect are unlikely to be so readily identifiable as permit them to assemble in a single auction.

Because of the dearth of antecedents in this area, we will have to proceed on first principles. In that spirit, I offer the following description of the goals of an ideal patent system. This is then tempered with some real-world considerations. But first, some first principles.

## 2. *The goals of a patent office*

On one level, of course, it is easy to describe the goal of the PTO. It should follow its statutory mandate closely, issuing only patents that its enabling legislation permits or deems desirable. According to this view, no patent which lacks statutory novelty, which is obvious in light of the prior art, or which includes claims that are not enabled under the terms of the statute, ought ever be issued.

This general statement cannot be faulted on one level: the issuance of an invalid patent results in some social costs that could have been avoided. (All patents, even those that are in fact completely valid, involve social costs; the only issue here is whether those costs could have been avoided by more thoroughly searching the prior art to find invalidating references.)<sup>41</sup> Of course, the costs of invalid patents include the direct costs of filing and prosecution. There is also a myriad of indirect costs, including: unnecessary licensing fees; foregone research opportunities, abandoned or avoided by the patentee's competitors who fear infringement liability; and the activities of rent-seekers<sup>42</sup> who may respond to the combination of lax patent standards and robust rewards to patentees by diverting excessive resources out of productive activities and into the "patent game."

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41. Implicit in this statement is that the technology at issue in the patent would be disclosed and/or commercialized even if no patent were granted. Put another way, the social cost is avoidable but the benefit is still realized. This is a bedrock assumption of our patent system. Our rules of novelty and nonobviousness assume that if technology is available "off the shelf" then someone will implement it without the need for any special property right. See MERGES, *supra* note 7, at 259-63 ("Novelty and the Economics of 'Search'").

42. The term "rent-seeker" refers to those who seek a supra-competitive return. The usual sense is negative; thus, one who seeks such a return from an illegitimate, non-welfare-enhancing source is a rent-seeker. An example is a person who makes campaign expenditures on candidates who promise to back legislative action that profits one or few at the expense of the many.

The fundamental assumption behind public expenditures on a patent office in the first place is that, as a society, we do not want to bear the costs of a significant number of invalid patents. Indeed, as described below, historically the current system of a professional corps of patent examiners grew out of our disastrous experience with a patent registration system run amuck. The social costs of large numbers of invalid patents were considered high enough to justify the significant expense of setting up a real patent office.

But does this necessarily translate into a goal of zero invalid patents? If this is the goal, then the issuance of a single invalid patent—one that is in fact anticipated, or obvious, but that the patent office has erroneously issued—means the office has failed.

This is not only unrealistic, as we will see below; it is also inconsistent with certain signals we receive from our patent statute. If no invalid patents are supposed to be issued, then why have the independent court review of patent validity called for by our statute? Why have a mere “presumption” of validity rather than a “conclusive presumption,” i.e., an unreviewable determination that patents, once issued, are valid for all time? Perhaps one reason is that, sometimes, prior art does not mature or come to light until after patents are issued. But this could be addressed by phasing in a conclusive presumption after some period of time, much as a trademark can in some cases become “incontestable” five years after it is first registered.<sup>43</sup> An argument against instituting this kind of delayed presumption is that, given the high social cost of an invalid patent, even prior art discovered very late in a patent’s term should be brought to light.<sup>44</sup> The

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43. See Lanham Act § 33(b), 15 U.S.C. § 1115(b) (1998).

44. In an interesting treatment of related issues published as this article went to press, Ian Ayres and Paul Klemperer work the other side of this issue. See Ian Ayres & Paul Klemperer, *Limiting Patentees’ Market Power Without Reducing Innovation Incentives: The Perverse Benefits Of Uncertainty And Non-Injunctive Remedies*, 97 MICH. L. REV. 985 (1999). They study the relative benefits of uncertainty and delay in the enforcement of patents. Their overall point is that uncertainty and delay in enforcing patents can at times permit limited entry that erodes the patentee’s ability to price at the monopoly level. Their basic insight is that even a small amount of uncertainty regarding patent enforceability can have significant positive effects on social welfare, with much more limited negative consequences for the patentee’s incentives. (This flows from the fact that, near the monopoly price under conventional assumptions, price increases benefit the patentee only a small amount while producing very significant dead weight losses to consumers.) The authors consider a variety of doctrines that might be enlisted to increase *ex ante* uncertainty, including patent standards. This leads them to argue in favor of “underinclusive” patent standards, i.e., those that might permit more invalid patents to survive longer, and of relatively lax patent review (at the margin) by the PTO. See *id.* at

contrast with trademarks is obvious; at least traditionally, these are much weaker rights. Further, because there are many words and logos that might serve as adequate substitutes for a trademarked term, the social cost may be small enough that incontestability is a valid protection.

### 3. *Pros and cons of a simple registration system*

That Congress has chosen not to rely exclusively on administrative determinations of validity tells us something about the proper role of our patent system, something that we can build on in thinking about how to reform that system. But before we go on, we might want to consider the opposite extreme: why not revert to a registration system, similar to the one that was in effect between 1793 and 1836?<sup>45</sup> Why not, in other words, shift *all* the burden to the private sector, by registering any patent that comes along and letting the parties sort things out in litigation?

The argument in favor of registration is easy to make; it is what justifies the current copyright registration system. There are many copyrighted works that have either low intrinsic value (a brief trade press article, a schlocky picture), or have many close substitutes (most songs, many “genre” novels such as romances or mysteries), or both. To spend governmental resources sorting the good from the bad would be a waste of time. Instead, the copyright system lets private parties choose which copyrighted works are valuable enough to examine in detail. Then, in the course of litigation, the parties who deem it worthwhile will spend money describing why the copyrighted work is or is not protectable. Private sorting is more efficient.

This system was tried and rejected for patents, largely because of the high social cost. Private industry and Congress both concluded that the high cost of registering invalid patents was not worth whatever benefits

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1025-26 (“On the margin, [their argument] militates against statutory or regulatory rules that are known *ex ante* and instead militates in favor of common law standards that often produce relatively delayed and uncertain adjudication—particularly if the common law is underinclusive.”). While their general argument is intriguing, it is submitted that uncertain PTO review is a poor way to implement it. The third-party costs—in the form of researching prior art, obtaining patent opinion letters, and revising research plans to avoid masses of uncertain but potentially valid patents—are simply too high. Best to apply their insights in other areas they explore, such as the doctrine of equivalents and the standard for granting preliminary injunctions.

45. For an excellent account of the problems with the patent registration system, and a thorough discussion of the genesis of the 1836 Act, see Edward C. Walterscheid, *The Winged Gudgeon—An Early Patent Controversy*, 79 J. PAT & TRADEMARK OFF. SOC’Y 533 (1997).

were provided by this low “entry barrier” to inventors.<sup>46</sup> Even in the early nineteenth century patent litigation was complex, and therefore expensive.<sup>47</sup> Also, because courts then (and now) are not necessarily well trained in technology issues, the risk of error at trial was significant. Hence, there was even more expense, in the form of appeals to have an erroneous trial results reversed. Because of the cost and the potential for error, the threat value of even an invalid patent was substantial.<sup>48</sup> There were assertions that patents were being used to hold up bona fide manufacturers.<sup>49</sup> As patents became associated with rent-seeking rather than innovation, the net result was to undermine the integrity of the patent system as a whole, and thereby (presumably) reduce the incentive to innovate that patents are supposed to represent. Innovation was replaced with rent-seeking, as unscrupulous people and firms played the game of patent extortion.<sup>50</sup> Thus, patent examination—an increased public expenditure on patent quality—was instituted on a formal, regularized basis.

An economist reading this history would conclude that it is a classic illustration of government intervening to overcome externalities.<sup>51</sup> Private parties, responding only to market signals, produced too many invalid patents; patent litigation mushroomed; and (again, presumably) there was an overall negative effect on innovation.<sup>52</sup> In stepped the government, after

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46. *See id.* at 535-36.

47. *See* STUART BRUCHEY, *ENTERPRISE: THE DYNAMIC ECONOMY OF A FREE PEOPLE* 230 (1990) (describing Eli Whitney’s frustration at long, expensive and “fruitless” litigation over the cotton gin patent).

48. *See* Walterscheid, *supra* note 45, at 548.

49. *See id.* at 549 (quoting a federal judge, who declared “[The] very great and alarming facility with which patents are procured [under the registration system] is producing evils of great magnitude. It encourages the flagitious peculations of imposters, and the arrogant pretensions of vain and fraudulent projectors ... the community suffers under the many diversified extortions”).

50. *See id.*

51. *See, e.g.,* HAL R. VARIAN, *INTERMEDIATE MICROECONOMICS: A MODERN APPROACH* 545-65 (3d ed. 1993).

52. One commentator wrote:

[T]he major defect of the Patent Act of 1793, which remained the law of the land until 1836, [was] ... that anyone could obtain a patent for anything, merely by paying the requisite fee and meeting the ministerial requirements imposed. It mattered not that the supposed invention had already been patented or had long been known and used. The threat of litigation was sufficient for the owners of apparently invalid patents to obtain substantial royalties from literally hundreds and thousands of farmers, small businessmen, and artisans for whom it truly was cheaper to pay than to be involved in expensive and perhaps ruinous litigation.

having determined that the expenditure on patent examination would increase the net benefits of the patent system by reducing the social cost of an excessive number of invalid patents.

So, from the history and structure of our current system we learn these lessons: neither pure public (administrative) proceedings, nor pure private (registration system) proceedings are efficient. Our patent system envisions a mixture of public *and* private expenditures to determine the validity of patents. Indeed, it is part of a larger theme in patent law: the division of labor between the public and private sectors in the issuance and enforcement of these property rights.<sup>53</sup>

### C. Optimal Public Expenditures on Patents

Before we can determine the ideal mix of public and private expenditures on patents, we must address the public side of the ledger in isolation. The question of interest here is how to determine the correct magnitude of public expenditure on patent quality control.

In theory, the answer is simple. Following conventional principles, the public expenditure should increase until it is not worth increasing it any more—until the marginal cost and benefit are equal. To determine this, we only need to know: (1) the cost to the patent office of each additional unit of validity information; and (2) the estimated social cost of each patent, expressed as a function of the volume of validity information processed for that patent. This second element is needed to reflect some sense of *reliability*: if we know that an invalid patent on average costs society \$X, and we know that each additional unit of search effort reduces the probability that the patent office will issue such an invalid patent by Y%, then we can determine the expected savings to society resulting from a more thorough and careful search of the prior art.

#### 1. *The benefits of sorting applications*

It follows from the preceding that patent applications should be subject to differing levels of scrutiny depending on how much social cost they entail. Applications for patents that would be very costly to society—because they are very broad, for example, or because there are no good sub-

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*See* Walterscheid, *supra* note 45, at 533.

53. The PTO only issues patents, it does not identify, locate, or sue infringers. At the same time, a private party cannot bring an enforcement action until his or her patent is granted, and even then this private action may be “stayed” while the patent is undergoing reexamination.

stitutes for the patented technology—ought to be examined more closely than those for minor improvements, gadgets, or novelties.

If we express this in simple qualitative terms, it means that, ideally, we would sort patents according to their prospective social cost. We could then allocate the available search resources so as to spend more resources on the patent applications likely to mature into patents with a high social cost, and less on the on the applications likely to produce patents with little social cost.

## 2. *The problems (and politics) of sorting*

While it is theoretically possible for the PTO to perform such a sort, there are currently significant barriers to doing so. One is informational: it is difficult at the time of filing to determine which applications may mature into high social cost patents. Patents are usually filed early in the development phase, and the inventor often has little idea whether or not the technology will “pan out.” Hence it makes sense to delay the sorting for as long as possible. (In Japan, and to a very limited extent in the United States, applicants themselves can in some cases approximate this: they can either “activate” a pending application through filings with the patent office, or leave it dormant.<sup>54</sup> Early activation might be taken in this context as a proxy for higher expected private value, and hence higher social cost.)

But there is another barrier to sorting. The history and culture of our patent system reflects a broad egalitarian streak. In the patent system, by custom “all patents are created equal.”<sup>55</sup> Any mechanism for separating patent applications would necessarily buck this tradition. It could of course be argued that proportional rationing of scarce examination resources still meets the test of equal treatment (in the sense that similar applications would be treated similarly). And perhaps this would prove persuasive. But there is still the possibility that any effort to segregate patents

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54. See Hideo Kodama & Jeffrey D. Tekanic, *Reducing the Costs of Obtaining and Maintaining Japanese Patents*, 81 J. PAT. & TRADEMARK OFF. SOC'Y 117, 127 (1999) (describing 7 year deadline to request examination). See also 35 U.S.C. § 111(b) (describing provisional patent applications). Provisional patent applications are not examined by the PTO and can be replaced at any time up to one year from filing with a normal patent application. See *id.* This effectively allows a one-year “option” period for inventors to delay examination of a patent application.

55. *The Public Interest and Private Patent Bills: Senate Hearings on Patent Extensions (Private Patent Bills)*, 102d Cong. 102-824 (1991) (statement of Prof. Robert Merges). An alternative would be to provide a “second tier” of patent protection to less significant inventions, as is done in foreign “utility model” protection schemes. See generally Mark D. Janis, *Second Tier Patent Protection*, 40 HARV. INT'L L.J. 151 (1999)

into various classes would be perceived with hostility by patent traditionalists. In this setting, it may prove very difficult to obtain approval for any effective sorting mechanism, which would by definition deviate from strict equal treatment.

### 3. *Second-best solutions*

If sorting is impossible for political reasons, what else might be done? Two things: (1) raise the standard of patentability and/or the filing fees, in order to induce applicants to sort out the least potentially valuable investments on their own; and (2) make a rational guesstimate regarding a reasonable *average* expenditure on examination, and set the overall patent budget accordingly.

The first proposal raises the cost of applying for a patent. In marginal cases, where the probability of receiving a patent is low, the value of the invention low, and the cost of applying for the patent high, prospective applicants will choose not to file. The filing fee might make the most sense as a screen; it could potentially raise revenue, and a fee increase is much easier to implement than increasing the standard of patentability. The easiest way to raise standards, conceptually, is to tighten the nonobviousness requirement of section 103. However, this is a notoriously subjective standard, and it may prove difficult, not only to draft a tightened requirement, but also to make it stick.

The second proposal is perhaps more workable: all inventors would presumably benefit from a rationally derived PTO budget.<sup>56</sup> In theory, the approach would simply be to set the PTO budget equal to the total social cost of all invalid patents. Then, assuming equal expenditure on each patent application, the PTO would spend an amount equal to the average cost of an invalid patent.

Note that, while valid patents would survive the examination process, so too would a certain number of invalid patents. These would be those patents that cannot be cost-effectively eliminated at the examination stage. Such invalid patents have a close corollary in the economic literature on tort law: accidents that cannot be avoided at reasonable cost.<sup>57</sup> As with these accidents, invalid patents that are too expensive to weed out must be tolerated. By definition, the money that would be spent to eliminate them is better spent elsewhere.

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56. Currently, the budget is largely a function of the fees the office collects, minus some money that Congress skims off for the general fisc. See 1995 U.S. PAT. & TRADEMARK OFF. ANN. REP. 47.

57. See ROBERT COOTER AND THOMAS ULEN, LAW AND ECONOMICS 326-71 (1988).

a) Why not penalize holders of invalid patents?

The tort/accident analogy suggests an interesting question: why does the legal system fail to require a patentee whose patent is invalidated to compensate an alleged infringer, all competitors, or even society in general (via a fine)? In tort law, legal damages are the negative incentive that induces precaution on the part of a potential tortfeasor. In our discussion so far, we have described the PTO as the relevant agent to determine the appropriate level of "precaution" against invalid patents. Why not shift some, or all, of this cost to the applicant?

The answer must be that we are concerned that such a rule would deter too many patent applications, and hence too much valuable inventive activity. Consider that, even though a good deal of the prior art that can invalidate a patent is publicly available, much is not. Internal developments at a competitor firm can manifest themselves in a number of types of prior art, and there is usually no way for a patent applicant to find out about this activity until after—sometimes, well after—a patent application is filed. If no amount of pre-filing search could have turned up this evidence, it is harsh and inefficient to punish a patent applicant when it comes to light.

On the other hand, where an applicant *did* know about a piece of relevant prior art, and failed to call it to the attention of the examiner, Rule 56 of the PTO practices results in the invalidation of the patent.<sup>58</sup> In addition, in extreme cases a patent applicant can be liable for up to treble damages in antitrust if he or she knowingly prosecuted an invalid patent application with an eye toward monopolizing a product market.<sup>59</sup> This is rare, however.

b) Who is the cheapest cost-avoider?

To complete the patent/tort analogy, it is appropriate to ask who is the cheapest cost avoider. In tort law, this consideration answers questions such as who, between two parties, ought to bear liability if there is an accident; and how should that liability be apportioned, if at all?<sup>60</sup>

By analogy, we might ask: who is in the best position to avoid the social costs of an invalid patent? One possible choice for the cheapest cost-

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58. See 37 C.F.R. § 1.56 (1999). See also Harry F. Manbeck, Jr., *The Evolution and Issue of New Rule 56*, 20 AM. INTEL. PROP. L. ASS'N Q.J. 136 (1992).

59. See, e.g., *Walker Process Equipment, Inc. v. Food Machinery & Chemical Corp.*, 382 U.S. 172 (1965); *Handgards, Inc. v. Ethicon, Inc.*, 743 F.2d 1282 (9th Cir. 1984), cert. denied, 469 U.S. 1190 (1985).

60. The classic reference here is GUIDO CALABRESI, *THE COSTS OF ACCIDENTS: A LEGAL AND ECONOMIC ANALYSIS* (1970).

avoider is a public patent authority. The reasons for a public patent authority—both rational and political—have been sketched in the above sections. They boil down to these:

- Up to a certain point, there may be economies of scale in doing “commodity” prior art searches such as searches of widely-available scientific and technical articles and prior patents;
- There is value in a public examination function which guarantees some minimum quality level to patents, in part to prevent the most egregious patent “strike suits” or extortion attempts that depend for success on the high cost of patent litigation; and
- It is politically desirable to shift some of the costs of patent searches from small inventors to the patent office.

As we shall see, much of the information that bears on patent validity is held by private parties, and especially by the patent applicant’s competitors. This leads me, in a later section, to champion an opposition system.<sup>61</sup> Such a system would get more of this information into the patent examination system, and would do so at an earlier date than under the current system. Before we get there, however, we must complete our discussion of the ideal role of the public patent authority.

#### **D. Examining the PTO**

I have to this point laid out the case that the patent system is in crisis. And I have hinted that part of the answer should come in the form of increased private investment in patent quality—in the form of an opposition system. But another part of the answer is on the public side of the ledger. Thus, we turn now to reforming the PTO.

##### *1. The PTO’s examination budget*

We begin our discussion of PTO reform by looking at the basics of our examination system. The PTO in its modern form was put in place in 1836.<sup>62</sup> Before then, except for a brief “heroic” period when Thomas Jefferson and others administered it, inventors merely registered patents.<sup>63</sup> Validity was determined solely in district court litigation. The advent of a

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61. See *infra* Part V.C.

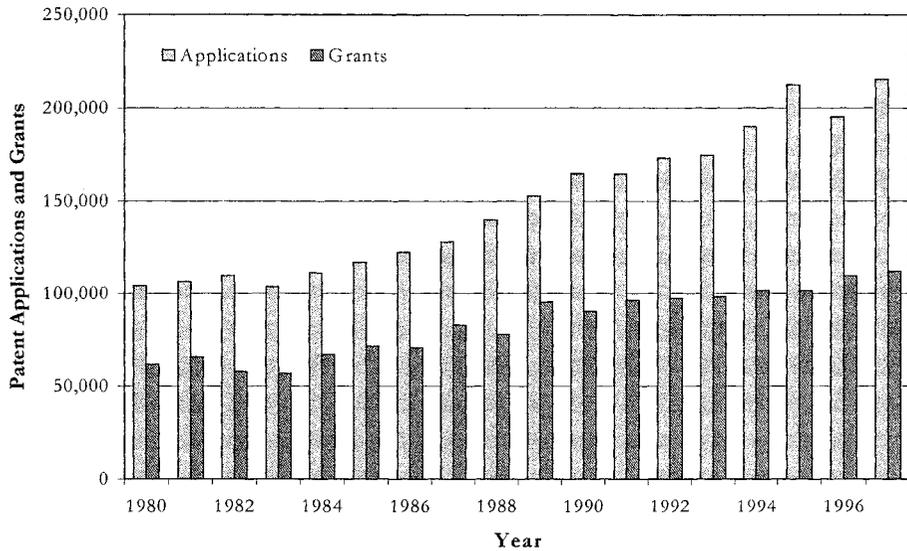
62. See MERGES, *supra* note 7, at 9-10.

63. See *id.*; Walterscheid, *supra* note 45, at 534.

modern examination system initiated the current mix of public and private review of patent validity.

Today the PTO is a large institution. Figure 1 shows the general trend in patent applications and grants over time:

Figure 1. U.S. Patent Applications and Grants, 1980 – 1997<sup>64</sup>



The fees that inventors pay for applications, issuance, and renewals now exceed \$674 million per year.<sup>65</sup> The office even generates a surplus, which Congress routinely seizes for the general fisc.<sup>66</sup> The revenue picture has been changing drastically in recent years; from 1990 to 1991 the patent processing fees collected nearly doubled, from \$175 million to \$290 million. By 1993, the number had jumped to \$423 million.<sup>67</sup>

The PTO spends this significant amount of money on a number of things, including policy development, international coordination, and, of course, patent examination.<sup>68</sup> The latter category includes not only initial examinations, but also interference proceedings to determine priority amongst rival claimants, reexaminations, reissues, and a number of related

64. See 1997 U.S. PAT. & TRADEMARK OFF. ANN. REP. 85 tbl.2; *id.* at 87 tbl.6.

65. See *id.* at 73.

66. See, e.g., *id.* at 35.

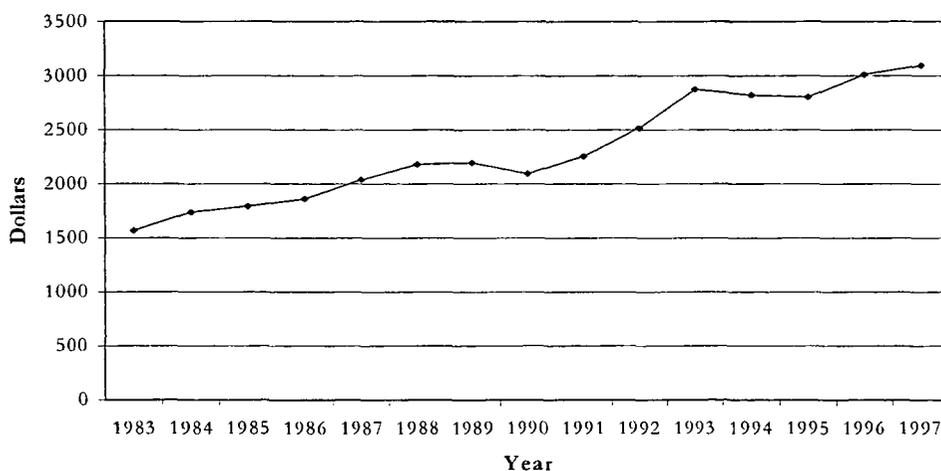
67. See 1993 U.S. PAT. & TRADEMARK OFF. ANN. REP. 51.

68. See generally 1997 U.S. PAT. & TRADEMARK OFF. ANN. REP.; 1996 U.S. PAT. & TRADEMARK OFF. ANN. REP.; 1995 U.S. PAT. & TRADEMARK OFF. ANN. REP.

activities. For brevity, I will refer to all of these as “examination expenses.”

In recent years, the PTO has received on the order of 230,000 patent applications each year.<sup>69</sup> Given current revenue, that means that it has available, in theory anyway, approximately \$3000 per patent. Figure 2 shows the trend in estimated expenditure per patent over time. On one level these are reassuring figures. It is now a truism that intellectual property is the key asset in the emerging economy. Patents are obviously an important component. Thus, it arguably makes sense that we as a society have increased our spending on the examination of patents. Patents are potentially worth more than they were in the past; thus, the cost of an improperly granted patent might also be presumed to have risen.

Figure 2. PTO Funding Availability Per Patent Application, 1983 - 1997<sup>70</sup>



69. See 1997 U.S. PAT. & TRADEMARK OFF. ANN. REP. 85 tbl.2.

70. See 1997 U.S. PAT. & TRADEMARK OFF. ANN. REP. 41 (showing the PTO's revenues for fiscal years 1996 and 1997); *id.* at 85 tbl.2 (showing the number of patent applications filed during 1996 and 1997); 1995 U.S. PAT. & TRADEMARK OFF. ANN. REP. 52 (showing the PTO's total resources for fiscal years 1994 and 1995); *id.* at 87 tbl.1 (showing the number of patent applications filed with the PTO during fiscal years 1994 and 1995); 1993 U.S. PAT. & TRADEMARK OFF. ANN. REP. 49 tbl.2 (showing the total funding PTO funding availability, per fiscal year, from 1983-1993); *id.* at 54 tbl.6 (showing the number of patent applications filed with the PTO each fiscal year, from 1983-1993). Because it is not always possible to ascertain the *patent* budget, alone, from the PTO's annual reports, I have substituted total funding availability. This is possible because we are merely observing the ratio of funding to patent applications. Note that

## 2. *Setting the ideal PTO budget*

The growth in the PTO budget and expenditures raises an obvious question: is this enough in some absolute sense to do a good job? Should we be increasing expenditures even faster, keeping them constant, or perhaps reducing them?

The economic literature on property rights provides some guidance here. For one thing, it shows that at some point the potential value of an asset is high enough to justify establishing or strengthening property rights over it.<sup>71</sup> It is implicit in academic work along these lines that a new system of rights requires a new administrative infrastructure: land registries, title recording procedures, and the like.<sup>72</sup> The simple notion is that, given the economic advantages of stronger property rights, at some point in economic development the extra public expenditure on additional property rights infrastructure creates a net benefit.

Beyond this simple statement, however, there is little guidance. Looking backward, we can see that it made sense to institute a title registry system, or to clarify the law of mining claims. But we do not have the tools to determine *in advance* the ideal public expenditure level for any given property right. In the patent context, it is entirely possible that the current budget is the right one, or at least a workable one. (I discuss some internal reforms to increase the productivity of these public expenditures below.) Given (1) the lack of information when patents are filed, (2) the fact that most technologies will not be economically viable or commercially successful, and (3) the high cost of separating out the potentially valuable inventions, it may make sense to continue to spend roughly what we do now on patent examinations.

At the same time, given the large increase in the private value of patents since the early 1980s, it is also plausible that the government should be spending more on examining patent applications. For as the average private value of a patent has increased, so has the social cost of an invalid patent.

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the numbers do not change greatly when we substitute patent funding, alone, which is given in the 1997 U.S. PATENT & TRADEMARK OFFICE ANNUAL REPORT: the amount available per patent changes little, from \$3100 to \$2800. *See id.* at 73 (showing fee collections by category).

71. *See* Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347, 347-59 (1967).

72. *Cf.* Robert Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1329-30 (1993) (describing origin of deed registries).

In an ideal world, the PTO would have a completely accurate prediction of the potential future value of a patent application. That is, the patent examiner would know: (a) the future rent stream that will flow from the patent if it is granted; (b) the number and value of future inventions that the patent application will spawn; and (c) competitive conditions in the market into which the invention will be sold, including alternative technologies and their cost.

The PTO could use this information to determine how much money to spend on the examination of each application.<sup>73</sup> The idea here is quite simple. The PTO would do a straightforward cost-benefit analysis. Following the well-known literature on the incremental value of information, the PTO would determine the marginal cost of each additional unit of patent examination effort.<sup>74</sup> The office would then calibrate this to the expected benefit from the patent application. The idea would be to tailor each patent examination to the potential future value of each patent application.

Notice that underlying this view of the PTO is the notion that it is the agent for all competitors and consumers who will be affected by the issuance of a patent. Under this view, the PTO has a simple job: to maximize social welfare by scrutinizing patents and allowing only those that survive a cost benefit-adjusted search process to issue.

Of course, this ideal world assumes that the PTO search and examination process is the most efficient one available.<sup>75</sup> What if an outside party has better information about patentability characteristics of the invention? Under these circumstances, it would be wise to permit the PTO to subcontract patent search and examination procedures to outside firms that

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73. This is very similar to Posner's discussion of optimal filing fees in civil litigation. See RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 578-82 (4th ed. 1992).

74. See JACK HIRSHLEIFER AND JOHN G. RILEY, *THE ANALYTICS OF INFORMATION AND UNCERTAINTY* 180 ff. (1992). To rigorously pursue the statement in the text, one would need to specify some additional variables, most importantly the PTO's *a priori* probability assessments of the validity of the patent (based on its internal search results information, e.g., that a search of certain stringency leads to an identical finding, and thus lack of patentable novelty, in 20% of all cases). In search theory, new information—the product of the search—operates to modify earlier probability assessments. For an application of this Bayesian approach to patent validity, see Robert P. Merges, *Uncertainty and the Standard of Patentability*, 7 *HIGH TECH. L.J.* 1 (1993).

75. That is, the cost benefit analysis that the PTO conducts is strictly a function of its own internal costs of examination and search. In that case, the PTO's cost benefit analysis will not reflect the true social welfare calculus, but instead only a "local" cost benefit analysis.

have better information, better search technologies or that simply work more efficiently. These firms would be, in effect, "private patent offices." This would yield a better decision regarding the optimal expenditure on search and examination for each application.

If we push the notion of subcontracting a bit further, we arrive at an important policy recommendation. To some extent, the ideal outside search firm—the one with the lowest cost of acquiring relevant information—would be a firm with access to all the information available to firms that operates in the same industry as the patent applicant. Indeed, because at least some of this information is considered a trade secret, the truly ideal search firm is an *actual* competitor of the patent applicant. Fortunately, this notion of subcontracting search to competitor firms does not require a radical restructuring of the patent system. It already exists, in the guise of patent oppositions, which are available in Europe and Japan, and have been proposed for the U.S.<sup>76</sup>

Even the simple analysis of information costs presented here is only a first cut. It surely would require modification. For example, search and examination are not the only functions performed by the PTO. Thus, the PTO's total search and examination budget must be weighed against its expenditures for such other functions as policy-making, international negotiations, legislative research, and general manpower and management issues. For this reason, it might make sense to put a cap on the total examination budget for the patent office. Unless we were willing to adjust patent application fees to make each patent applicant bear the precise cost of the search and examination for his or her patent application (which is too difficult and expensive to calculate), there would likely be some hard budget constraint that would be taken into account in the total search and examination budget. Even assuming a "simple optimization" view of the problem, prior art searching is likely to be subject to steep diminishing returns at some point. If the vast amount of benefit is obtained with the first few increments of search and examination effort, then a patent that is predicted to have very high value might be subject to search and examination which, at the margin, yields quite small benefits. In some absolute sense, taking the hard budget constraint just mentioned into account, extensive searches and examinations might not be considered a wise invest-

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76. For an overview of these proposals, see Allan M. Soobert, *Breaking New Grounds in Administrative Revocation of U.S. Patents: Proposition for Opposition—and Beyond*, 14 SANTA CLARA COMPUTER & HIGH TECH. L.J. 63, 128-44 (1998). We pick up the argument for oppositions, and the related argument in favor at least of reforming the U.S. reexamination system, later in Part V.C.

ment on the part of the PTO or the public it represents. Put another way, a rough judgment about the marginal value of additional searching might be substituted for a more rigorous marginal benefit analysis.

So, we can summarize the discussion as follows. In an ideal world, the PTO would calibrate its search and examination to each individual patent application. Barring this, it could attempt some sort of primitive triage, separating trivial patents (e.g., for gadgets) from those with industrial promise, and the latter into “potentially significant” and “probably minor.” If the administrative costs prove too high, the idea of triage could be abandoned, and the PTO’s emphasis could return to determining a rational amount of money to spend on each patent, taking into account the value of the average patent and some rough sense of the social cost of granting invalid patents.

## V. SOME SIMPLE SUGGESTIONS FOR IMPROVING THE EXAMINATION PROCESS

Based on what we have discussed so far, from a “division of labor” perspective, how would we state the goals of our patent system? Here is one attempt:

- Issue patents whose *average* validity rate meets social welfare objectives; and
- Disseminate information about issued patents, and structure procedures, to enable efficient private-party validity review.

With these straightforward goals in mind, and admitting that we cannot determine the ideal expenditure on patent quality, we turn to some simple suggestions for improving the productivity of those funds we decide will constitute the public investment in patent quality (i.e., the PTO budget).

### A. Job Design

A recurring theme in the assessment of PTO performance is poor examination quality due to high examiner turnover. This boils down to two specific problems: (1) too few senior examiners; and (2) inadequate training for the revolving cast of inexperienced examiners.

The answer to the first problem is as simple as it is difficult to achieve: higher salaries for senior examiners. Until the PTO can make it more attractive to stay than to leave, people will continue to leave. One interesting point to consider is a radically higher salary structure for the most senior

examiners. If their productivity is high enough, it may well be worth it. The current salary structure is difficult to document, but it appears that both the absolute pay levels and the rates of pay increases lag behind equivalent measures in the private sector.<sup>77</sup> The increased expenditure on higher salaries for senior industrial researchers is apparently worthwhile, because we observe that it occurs in a wide variety of industries.<sup>78</sup> In theory at least, productivity goes up enough with seniority to make it worthwhile to pay much more. The same is likely true among patent examiners.

But raising salaries for senior examiners is not the only way to tackle the problem. The second problem could also be addressed by shifting expenditures to training for the most junior people. Currently, junior examiners complain that they receive very little effective training. There are official programs on the books, but they do not do much, according to junior examiners.<sup>79</sup> This is because the most effective trainers—the senior examining corps—do not have any incentive to spend any time training. The patent compensation system, a combination of base salary and bonus, directs their effort heavily toward their own examining activities. Bonus points are accumulated only for “dispositions,” i.e., final allowances or rejections of patents. Because of the nature of prosecution procedure, “final” rejections do not in fact always result in the end of the examination; post-“final” action amendments and the like are often permitted. Consequently, the only way to earn bonus points with confidence is to allow a patent application.<sup>80</sup> In any event, there are no bonus points for training younger examiners.

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77. The entry level job descriptions for patent examiners list salaries ranging from \$20,588 to roughly \$60,000. See U.S. Pat. & Trademark Off., *Patent Examiner Recruitment* (Apr. 12, 1999) <<http://www.uspto.gov/web/offices/ac/ahrpa/ohr/jobs/exam.htm>>. After 10 or 15 years, an examiner who has reached “Primary Examiner” status may earn \$72,000 to \$80,000. Telephone Interview with Jeff Kushan, Esq., Powell, Goldstein, Frazer & Murphy, Washington, D.C., and former Attorney-advisor with the Office of Legislation and International Affairs at the U.S. Patent and Trademark Office (Apr. 20, 1999); Cf. Jim Landers, *Perot-Backed Coalition Opposes Bill to Privatize U.S. Patent Office*, DALLAS MORNING NEWS, Sept. 8, 1998, at 1D (“[Then Commissioner of Patents Bruce] Lehman said privatizing the patent office would let him hire hundreds more patent examiners and pay them competitive salaries.”).

78. See Agnes Shanley, *You and Your Job: Shifting Career Gears Can Open New Doors*, CHEMICAL ENGINEERING 141, 141 (Dec., 1998) (reporting that average salary for entry-level chemical engineers was \$49,150 in 1998, versus an average of between \$95,700 and \$120,000 for management level engineers).

79. Telephone Interview with anonymous patent examiner (Feb. 1, 1999).

80. See Brenda Sandburg, *Patent Applications Flow Freely*, LEGAL TIMES, Feb. 22, 1999, at 12.

Economists have studied job performance when employees are assigned multiple tasks. Not surprisingly, if there are direct, "output-based" rewards for performing one task, but only diffuse, generalized rewards for performing the other(s), employees tend to devote most of their time to the directly-rewarded activity.<sup>81</sup> Examples in the literature<sup>82</sup> include salespeople who are also supposed to perform customer support. If their compensation is determined largely by sales commissions, they will tend to slight the customer support function. It requires large investments of resources to monitor and oversee their performance to prevent this effect. One suggestion of the literature is therefore that jobs should be separated by function where possible, so that there is less mixing of duties based on different compensation schemes. This thesis finds support in recent empirical work.<sup>83</sup>

This logic applies readily to the job of structuring patent examiner incentives. There is a heavy burden on senior examiners. They are the primary training resource for new examiners. Yet they are subject to the same output-based compensation scheme as other examiners. This means they will tend to slight training. The obvious solution is to institute a thorough and effective training regime, under which senior examiners who provide training are directly compensated for the service. By all reports this has not been done. Much needs to be done to improve the quality of training that new examiners receive. If one assumes that the senior examiners are the most effective trainers, this simply adds to the reasons to scrap the existing output-based compensation system, or at least redesign it. One suggestion: routinely assign senior examiners to a training role, with a salary set at their average annual base salary-plus-bonus level for the past two years. (Obviously, they will have to wait at least two years

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81. See generally Bengt Holmstrom & Paul Milgrom, *Multitask Principal-Agent Analysis: Incentive Contracts, Asset Ownership and Job Design*, 7 J.L. ECON. & ORG. 24 (1991). Holmstrom and Milgrom describe the importance of monitorability and employee incentives in jobs where employees (agents) are expected to perform multiple tasks. They present a model showing that separating tasks according to their monitorability characteristics allows the principal to give stronger incentives for tasks that are easy to measure, without fearing that the agent will substitute efforts away from harder-to-measure tasks. There are gains, in other words, from job designs that group hard-to-monitor tasks into individual jobs.

82. See, e.g., EDWARD P. LAZEAR, *PERSONNEL ECONOMICS* (1995).

83. See Trond Petersen, *Reward Systems and the Distribution of Wages*, 7 J. LAW, ECON. & ORG. 130 (1991); Holmstrom & Milgrom, *supra* note 81, at 24 (interpreting empirical studies).

between training stints.) This way they will not suffer economic loss from doing training.

## B. Alternative Bonus Systems

The current bonus system is believed to skew incentives in favor of granting patents.<sup>84</sup> An obvious reform, then, is to change the bonus system. In general, the large literature on “personnel economics” ought to be brought to bear on the problem of designing a compensation system to advance the goal of a minimum acceptable error rate in patent issuances defined earlier. Here are some suggestions in this vein:

- Institute a tracking system to determine the “error rate” for examining groups and individual examiners, by assessing the percentage of patents issued by the group or examiner that are determined to be invalid in later court proceedings or reexaminations<sup>85</sup> on the basis of prior art that the examiner could have discovered; pay bonus compensation to groups and examiners whose error rates are lower than the office average or reach a pre-determined level acceptability;
- Outsource a selected sample of issued patents to a private-sector firm commissioned to determine the “error rate” on the date of issue; award bonuses to groups and examiners that beat the average error rate.

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84. Consider these anonymous comments, posted to a patent examiners’ bulletin board:

You know what? I’m sick of finding ridiculous patents every time I look in my [files]. Part of the blame goes to the patent corps. We just don’t fight hard enough against the bull--- being shoveled by upper management. And of course, that is where the rest of the blame goes. It’s a system that’s burning up, and management just keeps adding fuel to the fire.

And why should you care? Hey, management pays you for good patents or bad, right? In fact, they pay you more for doing less. Why should you fight with management. Why reject?

Greg Aharonian, *A few patent examiners complain about patent quality*, INTERNET PATENT NEWS SERVICE (Jan. 28, 1999), available at <<http://lpf.ai.mit.edu/Patents/ipns/ipns-19990128.txt>>.

85. This would obviously necessitate a change in the current practice of giving a reexamination request to the same group or examiner that originally examined the application, but this is a good idea anyway given the normal human instinct not to admit a mistake.

### C. Reforming Reexaminations: The Common Sense Case for Patent Oppositions

After a patent issues, anyone—including the patentee—can ask that it be reexamined.<sup>86</sup> Reexamination requests must be accompanied by a \$2,520 fee and a statement of the reason for the request.<sup>87</sup> By statute, the basis for reexamination is limited to certain types of prior art, in particular patents and printed publications.<sup>88</sup> And even if the request includes a new reference in one of these categories, reexamination will be initiated only if, in the opinion of the examiner, it raises “a substantial new question of patentability.”<sup>89</sup> Because reexamination is much cheaper than district court litigation<sup>90</sup>—which can run anywhere from \$1 million to tens of millions of dollars for a patent case—it has obvious appeal. This explains the growth in reexamination requests reflected in Table 1.

Table 1. Annual Reexamination Filings<sup>91</sup>

<i>Fiscal Year</i>	<i>Annual Filings</i>
1989	243
1990	297
1991	307
1992	392
1993	359
1994	379
1995	392
1996	418
1997	376

86. Reexamination proceedings are provided for by 35 U.S.C. §§ 301-07 (1998). Anyone, including the patentee, may ask the PTO to examine the patent in light of certain types of new prior art that was not considered during prosecution. If this raises a substantial new question regarding patentability, then the PTO grants a reexamination and determines whether or not the patent claims are still valid. *See MERGES, supra* note 7, at 1123-25.

87. *See* 35 U.S.C. § 302 (1998); 37 CFR § 1.20(c) (1998) (setting forth current fee). The Commissioner of Patents can also request a reexamination. *See MERGES, supra* note 7, at 1124.

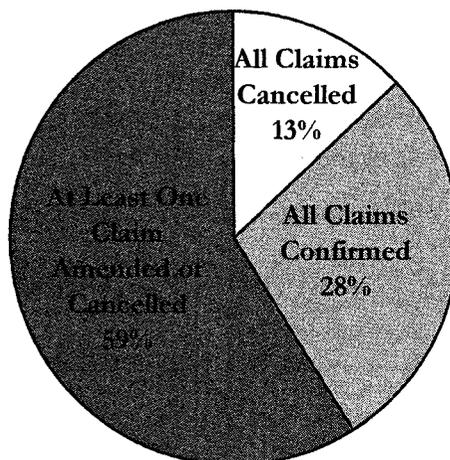
88. *See* 35 U.S.C. §§ 301-02 (1998). *See generally MERGES, supra* note 7, at 1124.

89. 35 U.S.C. § 303(a) (1998).

90. *See* H.R. REP. NO. 96-1307, at 3-4 (1980), *reprinted in* 1980 U.S.C.A.A.N. 6460, 6462-63.

91. *See* 1997 U.S. PAT. & TRADEMARK OFF. ANN. REP. 93 tbl.13; 1995 U.S. PAT. & TRADEMARK OFF. ANN. REP. 90 tbl.7; 1993 U.S. PAT. & TRADEMARK OFF. ANN. REP. 56 tbl.11.

What becomes of reexamination requests by third parties? The following chart, based on recent data,<sup>92</sup> gives a summary:



Despite the growth in the number of reexamination requests, there is widespread dissatisfaction with the current system. This is especially true in comparison with European-style oppositions.<sup>93</sup> One commentator stated the case succinctly:

[T]he reexamination system implemented under this legislation has been underutilized and has not fulfilled its promise. In general, third parties have been unable to mount meaningful validity challenges under the reexamination system. For example, third parties have been limited in their ability to raise certain issues and adequately participate in the reexamination proceedings. In most instances, such parties choose to forego reexamination and instead await litigation in federal court. Consequently, while

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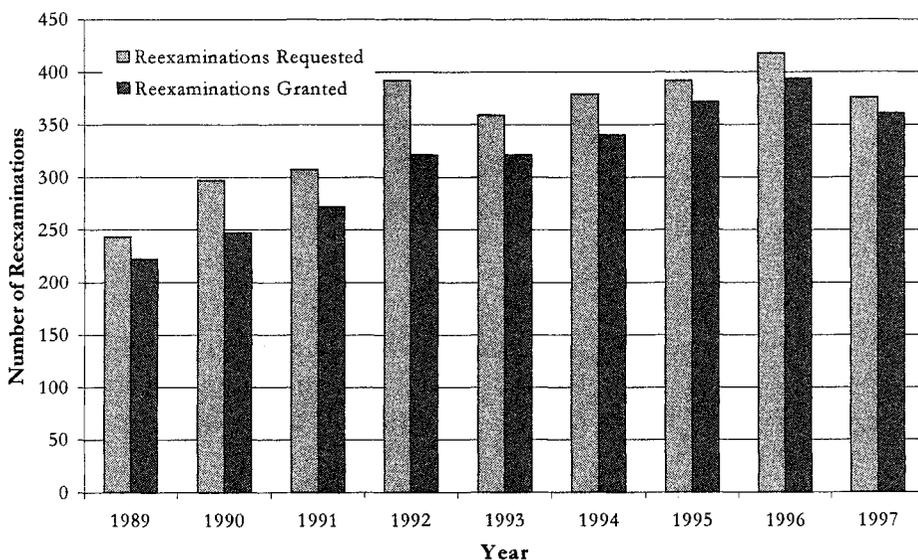
92. See Wayne O. Stacy, Note, *Reexamination Reality: How Courts Should Approach a Motion to Stay Litigation Pending the Outcome of Reexamination*, 66 GEO. WASH. L. REV. 172 (1997).

93. Oppositions, unlike reexaminations, are adversarial proceedings that allow for the introduction of physical evidence as well as the testimony of inventors and experts. In addition, oppositions occur early in a patent's life—they must be filed within nine months of issuance. This system finalizes patent validity earlier than the U.S. system, thereby benefiting patentees, potential infringers, and licensees. See MERGES, *supra* note 7, at 1131-34.

analogous systems in Europe and Japan have been effective in enhancing patent validity, the United States has struggled with an inadequate reexamination system.<sup>94</sup>

Do the data bear this out? How does the U.S. reexamination system compare with Europe, which has a true opposition system?<sup>95</sup> Compare Table 2, which shows (1) the total number of opposition requests made to the European Patent Office, and (2) the percentage resulting in *total revocation* of the patent with Figure 3, which shows U.S. reexamination data.

Figure 3: U.S. Reexamination Data, 1989-1997<sup>96</sup>



94. Soobert, *supra* note 76, at 66 (footnotes omitted).

95. The Japanese patent system also includes oppositions, but other differences between the U.S. and Japan, together with the general agreement over the efficiency of the European system, make Europe a better basis of comparison.

96. See 1997 U.S. PAT. & TRADEMARK OFF. ANN. REP. 93 tbl.13; 1993 U.S. PAT. & TRADEMARK OFF. ANN. REP. 56 tbl.11.

Table 2. European Opposition Data, 1994-1997<sup>97</sup>

Year	Oppositions Filed	Issued Patents Opposed (%)	Oppositions Resulting in Revocation (%)
1994	2,590	6.8%	not available
1995	2,720	6.5%	34.3%
1996	2,600	6.2%	33%
1997	2,500	6.2%	33%

One can see immediately that the revocation rate is much higher in Europe compared to the United States—roughly 33%, versus 12% in the United States. Because it is difficult to quantify the effect of an opposition that does not result in a complete revocation, we can only speculate about the other 67% of oppositions.<sup>98</sup> It seems at least plausible, however, that the higher revocation rate implies something about the nature of the amendments in the cases where an opposition yielded a change in patent scope. To wit: we might well believe that oppositions lead to more substantial changes in patent scope than reexaminations do. The amendments made as a consequence of the high-quality information made available in an opposition would logically be more significant than in a reexamination, because (a) there are far more *categories* of prior art information available, and (b) the party collecting and presenting the information has a greater incentive to make it accurate and convincing.

Notice also the much higher *incidence* of oppositions in Europe, than reexaminations in the United States especially in light of the lower patent grant totals there.<sup>99</sup>

97. See 1997 EUR. PAT. OFF. ANN. REP.15; 1996 EUR. PAT. OFF. ANN. REP.39; 1995 EUR. PAT. OFF. ANN. REP.44.

98. Cf. 1995 EUR. PAT. OFF., ANN. REP. 44 (Showing that, in approximately 65.7% of the cases, the patent was either maintained in amended form, or the opposition was rejected.)

99. The 2500 oppositions filed in Europe in 1995 were far in excess of the 376 U.S. reexamination requests. See 1995 EUR. PAT. OFF., ANN. REP. 15; 1997 U.S. PAT. & TRADEMARK OFF. ANN. REP. 93 TBL.13. In addition, there were far more opposition requests as a percentage of all patents issued the year before, or indeed of all outstanding patents in the system. By way of comparison, the European Patent Office granted 39,650 patents in 1997, versus 123,000 in the U.S. See 1997 EUR. PAT. OFF., ANN. REP. 15; 1997 U.S. PAT. & TRADEMARK OFF. ANN. REP. 84. Therefore, in Europe, 6.8% of issued

Creation of a coherent, efficient opposition procedure would be the ideal solution to a number of problems plaguing the current patent system. Short of this solution, recent proposals to reform reexamination in the U.S. are a step in the right direction.<sup>100</sup> They will, in the main, bring the U.S. practice more in line with Europe's. Though varied, recent proposals usually include some core components:

- More thorough participation of third-party requesters in the reexamination prosecution, e.g., presence at PTO interviews where crucial patentability advocacy takes place.<sup>101</sup>
- Possibility of appeals by third parties from adverse decisions by examiners during reexamination proceedings.<sup>102</sup>
- Reform of the law regarding "staying" district court litigation during the course of a reexamination proceeding, a process which patentees can sometimes use for strategic delay.<sup>103</sup>

Again, apart from the design details and implementation plan, the overall goal should be clear. We need to design a system that better taps

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patents were opposed, whereas, in the United States, only 0.3% of patents were reexamined.

100. For a recent summary of current reform proposals—and a radical extension of them—see generally Soobert, *supra* note 76. Soobert's idea of creating a negative incentive to pursue oppositions, by in essence fining infringers who do not use oppositions, is interesting as a general idea but may not be workable in practice. It may result in over-monitoring of patents, in industries where firms might decide that taking the risks of later infringement lawsuits is worthwhile compared to spending current dollars on extensive monitoring of issued patents. A more positive incentive, such as the award of attorney fees to accused infringers who move to stay an infringement trial and later win an opposition, might be worth exploring.

101. Congress contemplated this practice in the 21st Century System Improvement Act:

While no statutory provision is added by this Act to address interviews conducted before the examiner during reexamination, it is intended that the Office, through rulemaking, will provide third-party requesters the right to participate in any examiner interview initiated by the patent owner or by the examiner, and that such interviews will be conducted under controlled conditions before the examiner and an additional, more senior, Office representative.

H.R. 400, 105th Cong. § 503 (1997).

102. See, e.g., S.507, 105th Cong. § 506 (1997).

103. See Stacy, *supra* note 92.

into patent validity information, much of which is in private hands. Until we get better information in the system, the quality of patents will not improve. Some may charge that oppositions will unduly favor big firms at the expense of independent inventors. Two points, however, must be kept in mind. First, the enhanced enforceability of patents that have survived oppositions is likely to be attractive to the investors who back small inventors; at any rate, these investors are likely to prefer the quicker and cheaper opposition system to expensive and protracted district court litigation. Second, companies that abuse the system by filing numerous and redundant requests for oppositions can be punished through such mechanisms as the award of attorney fees.

## VI. CONCLUSION

In this paper, I have proposed some common-sense starting points to deal with the problem of business concept patents. In particular, I have tried to focus attention on determining an acceptable "error rate" for issued patents, with an eye toward reducing the number of invalid business concept patents that are actually issued. Second, I have refocused attention on the relationship between the PTO and private parties. The idea is to streamline the process so that it efficiently coordinates the efforts of both groups to achieve the socially desirable end: an appropriate expenditure for determining patent validity. The parties that suffer most if a company receives an invalid patent are that company's competitors. These parties also tend to have the best information about patent validity. Therefore, it is manifestly logical that they participate in the patent process as early and as thoroughly as possible.

Now, formerly "impossible" business concept and software patents are commonplace. The cost of the PTO's flawed granting and reexamination systems has become too high to ignore. We have fallen, like Alice, into a strange place where the normal rules do not apply, or have been inverted.<sup>104</sup> Lest vertigo get the better of us, forcing us to abandon all sense of logic and proportion, we must re-orient ourselves—take stock of the looking glass world of business concept patents, and see what we can do to restore some sense of order. The ideas in this article have been a step along this path.

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104. *See supra* note 1.

