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THE CASE FOR REGISTERING PATENTS AND THE LAW AND ECONOMICS OF PRESENT PATENT-OBTAINING RULES

F. Scott Kieff

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THE CASE FOR REGISTERING PATENTS AND THE LAW AND ECONOMICS OF PRESENT PATENT-OBTAINING RULES

F. Scott Kieff *

Abstract

The legal rules for determining whether an inventor is entitled to a patent are presently enforced in the first instance by the Patent Office through ex parte examination of patent applications. Critics of various aspects of the patent system suggest that these rules should be ratcheted up in some way, subjecting patents to more scrutiny during Patent Office examination. Departing from existing literature, this paper offers a hypothetical model system under which patent applications are merely registered, not examined, to show how hard look approaches like examination increase social costs over soft look approaches like registration. The paper presents a new normative view of present positive law rules for obtaining patents that sees these rules as primarily operating to minimize social cost, and accounts for otherwise puzzling aspects of the patent system. This "registration" theory for the patent-obtaining rules is a companion to the "commercialization" theory for the patent-enforcing rules presented in prior work by the same author and these together are shown to offer a more coherent view of the patent system than other theories in the literature, such as the so-called "prospect" and "rent dissipation" theories. Far from defending the status quo of the present system, the registration theory identifies those rules that are essential and those that should be reformed. The registration theory reveals inherent registration aspects of our present system; and elucidates reasons for eschewing reforms presented elsewhere in the literature and adopting those presented here.

* Associate Professor, Washington University School of Law, and John M. Olin Senior Research Fellow in Law, Economics, and Business, Harvard Law School. I gratefully acknowledge the financial support of the John M. Olin Foundation and the Washington University School of Law. I also gratefully acknowledge contributions from participants in the American Law and Economics Association 2003 Annual Meeting, the Harvard Law School Visiting Scholars and Visiting Researchers 2002-2003 Colloquium, the Federal Trade Commission and Department of Justice Antitrust Division 2002 joint hearings on Competition and Intellectual Property, the 2001 Workshop Series of the John M. Olin Program in Law and Economics at the University of Chicago Law School and the 2002 and 2001 National Lawyers Conventions of the Federalist Society for Law and Public Policy Studies, as well as the more detailed comments provided by Michael Abramowicz, John Barton, Chris Bracey, Richard Epstein, Wendy Gordon, Jay Kesan, Michael Meurer, Mark Lemley, Doug Lichtman, Clarissa Long, Rob Merges, Troy Paredes, Richard Posner, Randall Rader, Arti Rai, Steve Shavell, Henry Smith, Jay Thomas, Polk Wagner, and John Witherspoon. Please send correspondence to *fskieff.91@alum.mit.edu* (permanent address).

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I. INTRODUCTION

Allowing an Internet shopper who is a regular customer of a web site to buy what she has selected on the site, without her having to click a confirmatory button indicating she really meant to buy it, may hardly seem like something that should have been found appropriate for patent protection by a well functioning patent office in 1997.[1] Yet, the preliminary injunction a federal court issued to enforce such a patent against the web site operated by Barnesandnoble.com during the 1999 Christmas season required shopping on the site to proceed only if done with two or more clicks, which was a potential annoyance to customers and cause of lost revenue for the company.[2] Although the preliminary injunction was eventually vacated on appeal based on the questionable validity of the patent in view of the prior art,[3] the defendant's litigation costs to obtain this result could not have been minor.[4]

[1] *But see* U.S. Patent No. 5,9604,11 (issued Sept. 28, 1999), entitled "Method And System For Placing A Purchase Order Via a Communications Network," listing Jeff Bezos and others as inventors and assigned to Amazon.com, Inc., which covers what is colloquially called "one-click shopping," the application for which was filed on September 12, 1997.

[2] Amazon.com, Inc. v. Barnesandnoble.com, Inc. 73 F.Supp.2d 1228 (W.D. Wa. 1999) (granting motion for preliminary injunction on December 1), *vacated and remanded by* 239 F.3d 1343 (Fed. Cir. 2001).

[3] 239 F.3d at 1366 (vacating and remanding because "substantial questions as to the validity of the '411 patent").

[4] The published order of the trial court lists fourteen different attorneys on the side of the defendant. 73 F.Supp.2d 1228. The case was filed on October 21, 1999, and the preliminary injunction was entered roughly seven weeks later, after expedited discovery including depositions, and five days of oral arguments. Given the emergent need to handle so many tasks in such a case it fairly may be assumed that the listed attorneys were billing most, say two-thirds, of their time on the case while working most of the time, say 12 hour days six days a week. At a blended rate of $250 per hour, this suggests the total legal fees through the entry of the preliminary injunction were over one million dollars ($1,176,000). The fees through the appeal are likely to have been at least another one million dollars, based on similar calculations. *See*, AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION 2001 REPORT OF ECONOMICS SURVEY, Tab 22 (2001) (reporting total cost of litigation including discovery, motion practice, trial, and appeal to be

(Footnote Continued)

The threat of cases like this and others has prompted the Federal Trade commission and the Justice Department's Antitrust Division to ask in their announcement of joint hearings on such issues

To what extent do questions about the scope and types of patents (*e.g.,* business methods patents), and the procedures and criteria under which they are issued, raise competition issues? To what extent do substantive and procedural rules, both at agency and judicial levels, have implications for initial and sequential innovation, competition, and appropriability?[5]

The hearings that followed this announcement spanned most of 2001, during which many critics of the patent system argued that the system may be in steep decline due to an increase in the number of patents issued by the Patent Office that these critics suggest do not meet the proper patentability standards and as a result are too broad or too narrow, unduly tax and retard negotiations, or frustrate competition.[6]

$1.5-$2.9 million, depending upon whether the amount at stake in the lawsuit is either from $1-$25 million or greater than $25 million).

[5] NOTICES FEDERAL TRADE COMMISSION Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, 66 Fed. Reg. 58146, 58147 (Nov. 20, 2001) (announcing joint hearings and explaining the reasons for them). *See also*, FTC Press Release: Muris Announces Plans for Intellectual Property Hearings, available at http://www.ftc.gov/opa/2001/11/iprelease.htm (last visited Dec. 10, 2002) (including links to Federal Register Notice and to speech by Chairman Muris) (collecting sources and questioning these and other aspects of the patent system).

[6] For a schedule of the hearings including participants and topics see http://www.ftc.gov/opp/intellect/detailsandparticipants.htm (last visited Dec. 10, 2002). For a collection of academic and popular literature making these criticisms *see* Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1496, n.1 (2001).

Although many see only broad scope as a potential problem because the patent right to exclude may be seen as extending too far, others see a couple of problems associated with narrowness. First, the work by Eisenberg and others points out how too many patents of too narrow scope can be seen to unduly tax and retard transactions. *See* Arti Kaur Rai, *Regulating Scientific Research: Intellectual Property Rights and the Norms of Sci-ence*, 94 NW. U. L. REV. 77, 126-29 (1999) (suggesting that patents on multiple gene fragments, such as ESTs, could block the use of a larger DNA sequence of which they are a part, and citing Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCIENCE 698 (1998) (arguing that patents can deter innovation in the field of basic biological research)). This argument and its implications are explored in depth in the other important works by Eisenberg. *See*, *e.g.*, Rebecca S. Eisenberg, *Property Rights and the Norms of Science in Biotechnology Research*, 97 YALE. L. J. 177 (1987) [hereinafter Eisenberg, *Norms of Science*] (exploring potential negative impact of patent rights on scientific norms in the field of basic biological research); Rebecca S. Eisenberg, *Patents and the Progress of Science: Exclusive Rights and Experimental Use*, 56 U. CHI. L. REV. 1017 (1989) [hereinafter Eisenberg, *Experimental Use*](exploring an experimental use exemption from patent infringement as a device for alleviating potential negative impact of patent rights on

(Footnote Continued)

While a ratcheting-up of the screening done in the first instance by the Patent Office, to achieve a more "hard look" examination, is both an intuitive and often urged response, this paper makes the counterintuitive suggestion that instead the Patent Office should do a "soft look" examination, if any examination at all.[7] Because the question any evaluator must always ask is not whether any one system has negative aspects, but rather how it compares to alternatives, this paper focuses on such a comparative analysis.[8]

To best understand the intuition behind soft look systems generally, this paper offers as a model a hypothetical alternative system under which patent applications are registered, not examined.[9] Study of this model reveals both how the social costs associated with "hard-look" examination systems are especially large and how the costs associated with "soft-look" systems – such as the present system and the model registration system – are especially small.[10]

In focusing on social cost, the paper offers a new normative account of the positive law rules for obtaining patents.[11] The registration theory offered in this paper shows how the essential patentability rules mitigate significant social costs and how existing normative views of the patent system fail to account for the social costs that are mitigated by these rules.[12] Far from defending the present patent system, the paper offers

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scientific norms in the field of basic biological research); Rebecca S. Eisenberg, *Public Research and Private Development: Patents & Technology Transfer in Government-Sponsored Research*, 82 VA. L. REV. 1663 (1996) [hereinafter Eisenberg, *Public Research*] (offering preliminary observations about the empirical record of the use of patents in the field of basic biological research and recommending a retreat from present government policies of promoting patents in that field). Second, the work by Jacob and others point out how claims of narrow scope may be enforced in ways that avoid significant antitrust scrutiny. Robin Jacob, *Side Bar: Objectionable Narrowness of Claim*, *in* DONALD S. CHISUM, CRAIG A. NARD, HERBERT F. SCHWARTZ, PAULINE NEWMAN, AND F. SCOTT KIEFF, PRINCIPLES OF PATENT LAW 1097-1099 (2nd ed. 2001) (providing examples and collecting sources of early arguments supporting pro-competitive aspects of narrow claims).

[7] The "hard-look" and "soft-look" terminology refers to the level of scrutiny given a patent upon filing. While at least some patents should get a hard look at some point, this paper shows how the social costs associated with providing a hard look through civil litigation are expected to be less, especially when accompanied by the other important features of the patent system discussed *infra* in Part IV.

[8] *See*, Harold Demsetz, *Information and Efficiency: Another Viewpoint*, 12 J.L. & ECON. 1, 1 (1969) (critiquing so-called nirvana approaches in favor of comparative institutional approaches).

[9] *See infra* Part III.

[10] *See infra* Parts IV-V.

[11] The paper thereby builds on earlier work by the present author that offers a normative account of the rules for enforcing patent. *See*, *e.g.*, F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697 (2001).

[12] *See infra* Parts II-V.

a number of significant modifications that are expected to be successful in further mitigating social costs by embracing, somewhat counter-intuitively, the admittedly expensive tools of commercial litigation.[13]

In the final analysis, the prescriptive conclusions the paper reaches are somewhat modest.[14] Although the conclusions of the paper are limited in part because they are based largely on empirical determinations and balancing that cannot be done responsibly without further data, the paper does provide a new and practicable framework for making such evaluations.[15] In addition, although the conclusions of the paper may also be limited in part because we already may be operating under a soft look system *de facto*, at least in many respects, the paper does offer several reforms designed to bring the present system more in line with soft look systems like the proposed registration model.[16] Furthermore, the conclusions drawn here also may be influenced by our broader views on the comparative strengths of different decision-making regimes, such as between those that are centralized and those that are individualized and dispersed, and between those based on rules and those based on standards.[17] Regardless of the prescriptive value any of the paper's conclusions may have for positive patent law directly, the paper's elucidation for the first time of a normative account of the patent systems rules for obtaining patents as

[13] *See infra* Part V.

[14] *See infra* Parts V-VI.

[15] As discussed *infra* in Parts II-V, the registration theory's ease of implementation is one of the theory's important comparative benefits over other theories of the patent system, such as the "prospect" and "rent dissipation" theories.

[16] *See infra* Part V.

[17] For a discussion of the broader debate between legal systems based on rules and those based on standards, *see generally*, MARK KELMAN, A GUIDE TO CRITICAL LEGAL STUDIES, 15-64 (1987) (describing basic framework of the debate and collecting sources); Russell B. Korobkin, *Behavioral Analysis And Legal Form: Rules vs. Standards* Revisited, 79 OR. L. REV. 23 (2000) (reviewing more recent literature and collecting sources); Louis Kaplow, *Rules Versus Standards: An Economic Analysis*, 42 DUKE L.J. 557 (1992) (exploring the costs implicated by the choice between rules and standards and showing: rules typically are more costly than standards to create; standards typically are more costly for individuals to interpret, both by individuals deciding how to act under them and by government decision-makers deciding how to apply them; and individuals are more likely to act in accordance with the goals of rules as long as the individuals can determine how they will be applied). *Also compare*, Jason Scott Johnston, *Bargaining Under Rules Versus Standards* 11 J.L. ECON. & ORG. 256 (1995) (showing how parties may negotiate with each other under both types of regimes and arguing that in certain two-party cases bargaining may be more efficient under a standard than under a rule), *with* ROBERT COOTER AND THOMAS ULEN, LAW AND ECONOMICS 100 (1988) (arguing that private bargaining over the allocation of the legal entitlement may be more efficient if the entitlement is clearly defined and assigned *ex ante* according to a rule, rather than made *ex post* by a judge applying a standard).

operating to minimize certain social costs will help commentators and policy makers evaluate other proposed reforms in the future.[18]

The paper proceeds in the five remaining parts as follows: Part II reviews the existing normative theories of the patent system and shows how they fail to offer practicable approaches for a positive law regime and fail to minimize social costs.[19] Part III explores the case for an alternative hypothetical model of a registration system and shows how social costs can be minimized by use of such a system.[20] Part IV reviews the law and economics of the core patent obtaining rules and shows how the registration theory dominates other normative theories both in ability to be implemented and in ability to account for the patent-obtaining rules in the present system.[21] Part V compares the pure registration model to the present system we have operating today and offers some proposed reforms to the present system.[22] Part VI concludes.[23]

II. CONTEXT WITHIN THE PATENT LAW & ECONOMICS LITERATURE

Prevailing normative views of the patent system fail to account for significant social costs that are mitigated by many of the present patentability rules.[24] While the prevailing views do provide important lessons about how the patent system can mitigate certain social costs, they fail to show, in any practical way, how to mitigate others, or how to mitigate social cost overall. More specifically, they fail to address important issues such as how to evaluate an invention, either to determine its entitlement to some patent or other reward, or to determine its relative entitlement when compared with other inventions.[25] These issues turn out not to be small administrative matters.[26] The

[18] As discussed *infra* Parts II-V, the registration theory's explanatory power for the present patent system is another of the theory's important comparative benefits over other theories of the patent system, such as the "prospect" and "rent dissipation" theories.

[19] *See infra* Part II.

[20] *See infra* Part III.

[21] *See infra* Part IV.

[22] *See infra* Part V.

[23] *See infra* Part VI.

[24] *See infra* Part IV, elucidating the law and economics of the core patent obtaining rules and showing how the registration theory dominates other normative theories both in ability to be implemented and in ability to account for the patent-obtaining rules in the present system.

[25] *See infra* notes 48-51 and accompany text.

[26] *See infra* Part IV, showing how these issues are addressed by the present patent-obtaining rules.

normative view offered in this paper shows how the present patent system has evolved essential tools for making these determinations in ways that mitigate social cost.[27]

The patent system in this country has generally been seen as offering inventors an incentive to do something they might not otherwise do – for example, invent, disclose, commercialize, or design around.[28] These incentives are generated by the grant in each patent of the right to exclude others from doing whatever is covered by the patent's claims.[29] Recognizing that discrete incentives like these, focused on inventors, could be provided directly, without the output restricting effects of the patent right to exclude, commentators have for over a century explored alternative ways to provide these incentives using tools such as cash rewards and tax credits.[30]

In his 1977 piece on the so-called prospect theory of the patent system, which builds upon work by Barzel and others, Kitch showed how the granting of formal property rights, as opposed to cash rewards, is important for avoiding the social costs associated with racing towards a common prize.[31] Called rent dissipation by Grady and Alexander in 1992,[32] the racing problem can be demonstrated by the example of community characterized by a prize having a known value and an uncoordinated group of individuals who are each seeking the prize and who therefore each might rationally elect

[27] *Id*.

[28] For a review of the literature and a collection of sources see CHISUM ET AL.*supra* note 6, at 58-90 (reviewing various incentive theories for the patent system). *See also*, Eisenberg, *Experimental Use*, *supra* note 6, at 1024-46 (same).

[29] Patents give only a right to exclude use of whatever product or process is covered by the patent's claim or claims. Thus, for example, patents do not interfere with other governmental efforts to restrict use, such as to mitigate environmental impact. *See* F. Scott Kieff, *Patents for Environmentalists*, 9 WASH. U.J.L. & POL'Y 307, 308 (2002) (Invited symposium piece for National Association of Environmental Law Societies annual meeting entitled "Sustainable Agriculture: Food for the Future," held March 15-17, 2002, at Washington University School of Law) (citing 35 U.S.C. § 154 (a) (1994) ("Every patent shall contain . . . a grant to the patentee . . . of the right to exclude others.")).

[30] For a detailed review of the history and modern iterations of prize proposals, including a new improvement thereon, *see*, Michael Abramowicz, *Perfecting Patent Prizes*, __ VAND. L. REV. ___ (forthcoming 2003). (collecting sources and arguing for the establishment of an agency to distribute a fund that would be used to reward corporate efforts to reduce the monopoly effects of patent rights).

[31] Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265 (1977) (citing Yoram Barzel, *Optimal Timing of Innovations*, 50 REV. ECON. & STAT. 348 (1968)).

[32] Mark F. Grady & Jay I. Alexander, *Patent Law and Rent Dissipation*, 78 VA. L. REV. 305 (1992).

to spend up to just less than the value of the prize to get it, which would mean that as a group they are spending more in aggregate than the value of the prize.[33]

While rent dissipation can be a problem in theory, recent work by Abramowicz adroitly points out a number of factors that may mitigate rent dissipation effects in practice.[34] These include risk aversion by those racing, opportunity costs facing those racing, diversity among those racing, the importance to the group of the time it takes to get the reward, and externalities in the form of the costs or benefits imposed on others by those racing, such as the income to those who sell goods and services needed by those racing or the costs to those who are bothered by the activities associated with racing.[35]

[33] Consider a case in which the value of the prize is X and the group of individuals is Y in number. Each individual might rationally elect to spend up to just less than X to obtain the prize, say some amount equal to X minus a small discount, say δ, or $(X\text{-}\delta)$. Yet, if all individuals spend that amount, then the community has spent the amount equal to $[(X\text{-}\delta)\ x\ Y]$ to obtain something worth only X. The following mathematical representation will be true as long as X and Y are numbers greater than one and δ is a number less than one:

$$[(X\text{-}\delta)\ x\ Y] > Y$$

This means that the amount society spent to obtain the prize is greater than the amount society got by obtaining the prize, which would be a waste or resources.

[34] MICHAEL ABRAMOWICZ, COPYRIGHT REDUNDANCY, GEORGE MASON UNIVERSITY SCHOOL OF LAW, LAW AND ECONOMICS WORKING PAPER SERIES, 10-18 (2003) (collecting sources and showing how each of these issues may operate to mitigate rent dissipation effects).

[35] *Id*. A more palpable, albeit mythological, example of these positive externalities of racing might include the joy children experience when they drink the Tang® and use the Velcro® that many think were brought to society through the NASA-sponsored space race and the corresponding negative externalities might include the cavities some children got from increased exposure to this sugared drink and their difficulty tying knots after growing up with shoes kepts on by hook-and-loop fasteners ifnstead of laces. *See*, *e.g.*, A. Samuel Oddi, *An Uneasier Case For Copyright Than For Patent Protection of Computer Programs*, 72 NEB. L. REV. 351, 378, n.95 (1993):

> The creation of "spin off" inventions has often been urged as one of the benefits of government-funded research. *See* George J. Howick, *The NASA Technology Utilization Program*, in UTILIZING R & D BY-PRODUCTS 69, 78-82 (Jerome W. Blood ed., 1967) (describing NASA program and examples of spin-off inventions, including inorganic paint, walking wheel chair, maintenance-free lubricated bearings, and sight-controlled switches). Some other examples of commercial products arising out of the space program include, smoke detectors, graphite, an artificial pancreas, heated ski goggles and hang gliders, but not velcro, teflon or tang. *See* Paul Hoversten, *Space Technology Put to Earthly Use*, USA TODAY, April 6, 1989, at 3A.

What is more, rent seeking presumes there is a single prize, or at least a discrete number of prizes.[36] But those seeking to solve a problem may not get to the same solution; they may get to different solutions and there may be even more solutions to be gotten.[37] While an interesting question explored at some length in other recent work by Abramowicz[38] is whether multiple solutions to a given problem can be wasteful when the good at issue is not really needed,[39] when the utility of the good at issue is substantial, the benefits of multiple solutions may dominate.[40] That is, while more may not always be better, it also may not always be worse. Consider the multiple, independently patentable and non-infringing solutions to the problem of pain and inflammation: aspirin, acetaminophen (Tylenol®), ibuprofen (Advil®, Motrin®), selective COX-2 inhibitors (Vioxx® and Celebrex®), and various steroids.[41] Some patients can only take some of

[36] Although it is often useful when modeling a problem to reduce it to a manageable form to construct the model, the single-solution element of the rent seeking models cannot be extrapolated to provide meaningful guidance for policy makers without at least consideration of whether in the real world the set of possible solutions to a given problem (prizes) is limited, and whether we are nearing such a limit.

[37] *See infra* note 41 and accompanying text.

[38] ABRAMOWICZ, *supra* note 34.

[39] Interestingly, the fair use defense and the utility exception to copyrightable subject matter may combine to make uses that are needed effectively beyond the enforceable reach of any valid copyright rights.

[40] An increase in the number of available solutions will increase the chance of each person gaining access to any one solution. This is one reason why the patent system does not require the claimed invention to be "better" than the prior art, only new and nonobvious. As then-judge Warren Burger wrote, quoting Judge Rich:

> Progress is most effectively promoted by protecting those who enrich the art as well as those who improve it. Even though their inventions are not as good as what already exists, such inventors are not being rewarded for standing still or for retrogressing, but for having invented something. The system is not concerned with the individual inventor's progress but only with what is happening to technology

Commissoner of Pats. v. Deutsche Gold-und-Silber-Scheideanstalt, 397 F.2d 656, 667 (D.C.Cir.1968) (Burger, J.) (quoting Giles S. Rich, *Principles of Patentability*, in JOHN F. WITHERSPOON NONOBVIOUSNESS – THE ULTIMATE CONDITION OF PATENTABILITY 2:1 (1979), reprinted from 28 GEO. WASH. L. REV. 393 (1960) (admonishing that we must avoid "the unsound notion that to be patentable an invention must be better than the prior art.")).

[41] It is not always the case that an independently patentable invention will avoid infringement of earlier patents. Patentability of the second invention turns on a very different set of questions than its possible infringement of the first patent. The patentability analysis of the second invention will turn largely on the scope of information in the art at the time that invention is sought to be patented, which includes the disclosure in the first patent. For more on the rules of patentability over the prior art see CHISUM ET AL. *supra* note 6 at 323-706 (treatise and casebook teaching and collecting sources). The possible analysis of infringement of the first patent by the second invention on the will turn on the claims of the first patent.

(Footnote Continued)

these drugs, and some patients can take all, but not at all times. In the real world we don't know *ex ante* whether more solutions are going to be redundant, or whether they will both increase consumer choice and provide access to more consumers (those who could not consume the earlier solutions).[42]

An additional problem with the prospect and rent dissipation theories is that they present themselves with the very problem they attempt to solve. As McFetridge and Smith pointed out soon after Kitch, the more effective the patent is in coordinating activities of those in the industry after the patent has issued,[43] the greater will be the problems of racing towards the patent application before filing.[44] Kitch's response was to argue that the coordination costs are likely to be low in such early stages because there are likely to be only a small number of players at this stage.[45] But this response does not fully answer the problem. As Abramowicz correctly points out, the transaction costs may be high in such a community because the members may have significant cognitive biases.[46] The transaction costs to coordinating may also be high if the racers do not even know about each other.[47]

But the central limitation of the prospect theory is that it does not offer a way to use the social cost lessons of prospecting to design legal rules for obtaining patents that can operate to *ex ante* to mitigate social costs of prospecting. Instead Kitch argues that

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For more on the rules of patent infringement see CHISUM ET AL. *supra* note 6 at 829-1041 (treatise and casebook teaching and collecting sources).

[42] In areas where we can make good judgments *ex ante* about which avenues of research are most likely to be productive it may be possible to fund the work prospectively. The government grant making processes such as those at NIH and NSF basically operate this way by empanelling experts in the field to review grant applications.

[43] Kitch, *supra* note 31, at 276.

[44] Donald G. McFetridge & Douglas A. Smith, *Patents, Prospects, and Economic Surplus: A Comment*, 23 J.L. & ECON. 197 (1980).

[45] Edmund W. Kitch, *Patents, Prospects, and Economic Surplus: A Reply*, 23 J.L. & ECON. 205 (1980).

[46] Abramowicz, *supra* note 30 at 57 (collecting sources on cognitive biases of overconfidence and overoptimism).

[47] They may not know each other because the field may be so new that the community of people working in it is not defined. Or, the potential members of the community may generally be known but without the freedom to divulge their work to each other that is given by a patent they may not know enough about each other to coordinate. This latter type of coordination problem is known generally as the Arrow Information Paradox. *See* Kenneth Arrow, *Economic Welfare and the Allocation of Resources for Invention*, RATE AND DIRECTION OF INVENTIVE ACTIVITY 609 (1962).

the prospect theory explains why the commercial success associated with a patented invention should be an important factor in determining whether it is patentable.[48]

Similarly, the rent-dissipation theory urges a finely tuned patent system that will grant and enforce patents only when the balance of these pre patent and post patent racing costs tips just the right way.[49] But the rent dissipation theory does not provide a framework for making such determinations *ex ante*, at the time a private party would decide whether to file a patent application or at the time the Patent Office would examine it, and instead only identifies a select few reported judicial decisions that according to the summary accounts of Grady and Alexander turn out to be *ex post* examples of results that may have avoided rent dissipation.[50]

In the final analysis, at least to date, the prospect and rent dissipation theories provide important insights about how the patent system can have the effect of both increasing and decreasing rent dissipation-type social costs. But the theories do not offer a tool for comparing these costs against other social costs, assessing net social costs, or for doing all of this in a way that would work for making patentability determinations in a timely fashion.[51]

The importance of being able to make determinations about patentability and patent scope around the time of the application recently has been emphasized in a number of areas of the literature. Wagner, in his work on the patent infringement doctrine called

[48] Kitch *supra* note 31, at 283 (discussing commercial success). Later, in the same work, Kitch may be advocating that the test for patentability over the prior art should merely be novelty, without nonobviousness. *Id*. at 284 ("Thus substantial novelty is an economically rational test of patentability."). Such an argument would accord with the social cost saving benefits of the registration theory outlined here. *See infra* Part IV.A.

[49] *See* Grady and Alexander *supra* note 32 (offering a complicated method for making patentability determinations using a host of factors many of which are determined long after a patent application is filed, such as the importance of the patent in controlling down-stream rent dissipating effects).

[50] *Id*., at 343-347 (discussing only a few cases in summary). Furthermore, one of the few cases Grady and Alexander rely upon as illustrative of the rent dissipation theory, General Mills v. Pillsbury Co., 378 F.2d 666 (8th Cir.1967), does not accord with any of the prevailing trends in the case law over time. An electronic search using the Westlaw® KeyCite® service did not reveal a single case after 1972 that cited *Pillsbury* and further revealed that if anything the case is mis-cited by a commentator as announcing a *per se* rule against patents in the field of culinary arts. *See*, Malla Pollack, *Intellectual Property Protection for the Creative Chef, or How to Copyright a Cake: a Modest Proposal*, 12 CARDOZO L. REV. 1477, 1523 (1991) ("Food items are patentable, but the culinary creativity of chefs is not the type of creativity which meets the standards for patentability.").

[51] *See supra* notes 48-50, and accompanying text.

the "doctrine of equivalents," elucidates the importance of information forcing default penalty rules as inducement to potential patentees to produce socially valuable information early in the life of the patent.[52] In addition, Long, in her work on the often over-looked signaling function of patents, shows how in certain circumstances the information signaling function of patents may even be more valuable to the rights holder than the substantive rights conferred by patent law.[53]

Similarly, my own earlier work on the commercialization theory of patents shows how the patent right to exclude operates, as designed, at the time after inventions are made to help bring such nascent inventions to market through the process called commercialization.[54] According to this view, patents allow patentees, and the many others with whom they must negotiate to achieve commercialization, by allowing them to internalize the full benefits of the subject matter claimed, in keeping with the work by Demsetz on the emergence of property rights generally.[55] Also according to this view,

[52] R. Polk Wagner, *Reconsidering Estoppel: Patent Administration and The Failure of Festo*, 151 U. PA. L. REV. 159 (2002) (arguing for a shift in focus from the allocation of liability during infringement (*ex post*) towards rules that generate incentives both during and before inventors apply for patents (*ex ante*) so as to better understand information-forcing default penalty rules like the limitation on the doctrine of equivalents known as the "doctrine of prosecution history estoppel," which holds out the possibility of lost patent scope as an inducement to potential patentees to produce socially valuable information early in the life of the patent.).

[53] Clarissa Long, *Patent Signals*, 69 U. CHI. L. REV. 625 (2002)(exploring the signaling function of patents generally, including the potential role of the patent document itself to convey information that would not be as credible when revealed in other contexts.).

[54] Kieff *supra* note 11, at 707-10 (explaining how the right to exclude use promotes commercialization by facilitating the social ordering and bargaining around inventions that are necessary to generate output in the form of information about the invention, a product of the invention, or a useful embodiment of the invention).

[55] *Id*., at 717-718, 727-41 (discussing Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347, 354 (1967), and Harold Demsetz, *The Private Production of Public Goods*, 13 J.L. & Econ. 293 (1970)). The commercialization theory may resemble some aspects of the prospect theory. *See Id*., at 707, n. 47 ("The incentive to commercialize theory discussed herein is similar in some respects to the 'prospect' theory elucidated by Kitch, which views the patent as important in providing incentives for investment in increasing the value of a patented technology.") (citing Kitch, *supra* note 31). But Kitch focused on Barzel's work and on coordination as a tool to decrease pre-patent and post-patent rent seeking, or what can be viewed as over-use of certain resources. *See* Kitch *supra* note 31 at 265 (citing Barzel, *supra* note 31). In contradistinction, commercialization focuses on Demsetz's work and on coordination as a tool to prevent the under-use of certain resources. Kieff *supra* note 11 at 717-718, 727-41 (citing work by Kitch and Demsetz). Although the earlier literature does suggest some correlation between these works of Kitch and Demsetz, it merely collects them together, without elucidating their interrelationships and differences. *See*, *e.g*., Eisenberg, *Experimental Use*, *supra* note 6, at 1040 (citing work by Kitch and Demsetz and noting: "The prospect theory offers a justification for patents that is in keeping with broader theories of property rights elaborated by Harold Demsetz."); Neil Weinstock Netanel, *Copyright and a*

(Footnote Continued)

determinations about the property right must be made early in the commercialization process in order for that process to occur.[56] Indeed, as pointed out in this earlier work, the desire to help the commercialization of inventions was a central motivating factor behind the present patent system, which remains largely based on the 1952 Patent Act.[57]

To be sure, the commercialization view of the patent system, as elucidated thus far, may not be without its problems. First, as Abamowicz exhaustively explores in at least two of his present projects, there may be ways to modify the patent right to exclude so that commercialization is still achieved while at the same time minimizing potential output restricting effects of the strong right to exclude.[58] Second, as Abamowicz also points out, the commercialization view may be both over-inclusive and under-inclusive.[59] Stated differently, the commercialization view as discussed thus far does not fully explain, for example, why the patent system does not afford protection to help

Democratic Civil Society, 106 YALE L.J. 283, 309, n. 108 (1996) (citing work by Kitch and Demsetz and noting: "For neoclassicists, therefore, intellectual property is less about creating an artificial scarcity in intellectual creations than about managing the real scarcity in the other resources that may be employed in using, developing, and marketing intellectual creations."); Julie E. Cohen, *Lochner in Cyberspace: The New Economic Orthodoxy of "Rights Management,"* 97 MICH. L. REV. 462 (1998) (citing work by Demsetz and noting: "Similar reasoning underlies Edmund Kitch's proposed 'prospect' approach to patents."); Arti Kaur Rai, *Regulating Scientific Research: Intellectual Property Rights and the Norms of Science*, 94 NW. U. L. REV. 77, 121, n. 236 (1999) (citing work by Kitch and Demsetz but seeing the under use problem as "not readily apparent in the context of intellectual property").

[56] This is because the property right is not serving a reward function or a simple cost-subsidization function but rather is serving a coordination function. Kieff *supra* note 11, at 712 ("Thus, as compared with a reward system, the patent system may be not only better able to improve coordination among market players engaged in the invention commercialization process, it also may be better able to avoid rent dissipation.") (citing Grady and Alexander *supra* note 32).

[57] *Id.* at 736-46 (showing how the drafters of the 1952 Patent Act were motivated by the commercialization theory).

[58] Abramowicz offers some important add-on tools for the patent system that would take the core rules for obtaining and enforcing patents as given but at some point during the patent term buy out the patent right through a carefully crafted system to ensure the right price is paid. *See*, Abramowicz *supra*, note 30. *See also* Michael Abramowicz, *The Human Genome Project in Retrospect*, *in* F. SCOTT KIEFF, PERSPECTIVES ON PROPERTIES OF THE HUMAN GENOME PROJECT ___ (2003) (forthcoming).

[59] *See*, Abramowicz *supra*, note 30, at 49-50. I also thank participants in the Spring 2001 Workshop Series of the John M. Olin Program in Law and Economics at the University of Chicago Law School for raising a similar objection. My response to both begins with a reminder of the brief discussion of the screening function in the paper on which they were commenting, *see* Kieff, *supra* note 11, at 712-17, and continues with the registration theory presented in this paper.

commercialize technologies that do not meet the tests for patentability, such as novelty, but nevertheless are presently not being commercialized.[60]

The commercialization view does offer at least an implicit answer to this problem when it points out the screening role played by competitors of the patentee with the help of a court, which would have to be played by government decision-makers under a reward system.[61] Under the commercialization view, the competitors of the patentee are provided with incentives to bring information about a patent's validity to the attention of a decision maker.[62] Accordingly, the Barnesandnoble.com case discussed at the beginning of this paper[63] represents one example of the screening function contemplated by the commercialization view, albeit at a cost that is not insignificant.[64]

Although this admittedly significant cost of screening patents through civil litigation presents a serious obstacle to any theory that embraces a soft look approach, especially registration, these costs must be compared against the costs of allocating or screening patents using other approaches.[65] As shown more fully by exploring the

[60] These might be technologies that have been forgotten, that never managed to draw sufficient coordinated interest to have been commercialized, or have been only commercialized outside of this country. Indeed, although so-called "patents of importation" were available for inventions not previously commercialized in the realm in England and in the colonies before the country was established, they essentially have not been allowed in this country since its inception. *See* Edward C. Walterscheid, *Novelty in Historical Perspective*, (pts. 1-2) 75 J. PAT. & TRADEMARK OFF. SOC'Y. 689, 777 (1993) (discussing history of the novelty provision in the US patent system at the time of framing). The law and economics of the novelty provisions in the present patent system, including the treatment of foreign activity as prior art are discussed *infra* Part IV.A.1.

[61] Kieff, *supra* note 11, at 712-17.

[62] *Id*. It also appears that Kitch may also have noticed this feature of the patent system in his reply to McFetridge and Smith:

> A patent system is a grant system with the clever feature that it generates private incentives for those with comparative advantage in the innovating activity to reveal the information necessary to define the prospect right. Without this incentive, the granting agency would have to determine the appropriate scope and technical area of the prospect rights with access only to its own information.

Kitch *supra* note 45, at 207, n5. What is not clear from this text is whether "private parties" refers to patentees, the patentees' competitors, or both. As explained in more detail *infra* in Part IV, each of these players in the patent system plays a crucial role in making sure the patent claim scope is "just right" in a way that minimizes social costs.

[63] *See supra* notes 1-4, and accompany text.

[64] *See supra* note 4 (showing representative costs).

[65] *See supra* note 8 (discussing importance of comparative analysis). The advantages of screening under a soft look approach, which were identified by the commercialization theory, bring into question the

(Footnote Continued)

hypothetical model registration system below, the registration theory offers comparative practicable and inexpensive tools for screening patents.[66]

III. THE REGISTRATION MODEL

Many patent critics would begin their reform efforts by ratcheting up the level of scrutiny given to patent applications during Patent Office examination to avoid the social costs due to patents that ultimately may be adjudicated invalid through federal court litigation.[67] The registration model explored more fully below shows that the level of scrutiny given to patent applications before the Patent Office should be ratcheted down, because the cost of thorough examination would be higher than the costs of federal court litigation.[68]

The hypothetical model patent system differs from our present one in that patent applications would be merely registered in the Patent Office rather than examined.[69] Under the present system, patent applications are filed in the Patent Office and examined for compliance with the legal rules for patentability by technically and legally trained staff of that administrative agency.[70] Under the examination process, also called patent

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role of the Patent Office in a way that provides the impetus for the registration theory explored here. *See supra* notes 60-64 (citing Kieff *supra* note 11, at 712-717). Thus, the registration theory can be seen as a companion to, or application of, the broader commercialization theory, which motivated the framing of the present patent system. *See supra* note 54 (summarizing commercialization theory).

[66] See *infra* Part III for discussion of the registration model itself; and *infra* Part IV-V for application of the model to our present patent system, including proposed reforms.

[67] For sources, see *supra* note 5 and Lemley *supra* note 6.

[68] *See infra* notes 76-85, and accompany text (discussing costs of providing and evaluating the information needed to determine validity over the prior art).

[69] This involves a shift to soft look approach that is counter to the suggested shifts in the literature. For sources arguing for harder look, see *supra* note 5 and Lemley *supra* note 6.

[70] The extent to which the Patent Office is like other administrative agencies, and therefore subject to the body of administrative law, has been a topic of substantial debate over the past several years in the literature and in the case law. *Compare*, *e.g.*, Craig Allen Nard, *Deference, Defiance, and the Useful Arts*, 56 OHIO ST. L.J. 1415 (1995) (arguing that administrative law doctrines such as "*Chevron* deference" should be applied to Patent Office decisions) *with* Orin S. Kerr, *Rethinking Patent Law in the Administrative State*, 42 WM. & MARY L. REV. 127 (2000) (arguing that administrative law doctrines should not apply to patent law). *Also compare* Dickinson v. Zurko, 527 U.S. 150 (1999) (holding that contrary to almost a century of practice the Administrative Procedures Act's standard of review provisions set forth in 5 U.S.C. § 706 do apply to factual determinations of the Patent Office) *with* Merck & Co. v. Kessler, 80 F.3d 1543, 1549-50 (Fed.Cir., 1996), in which the Federal Circuit stated the following:

> As we have previously held, the broadest of the [Patent Office]'s rulemaking powers – 35 U.S.C. § 6(a) – authorizes the Commissioner to promulgate regulations directed only to

(Footnote Continued)

prosecution, the *ex-parte* exchange between applicant and Patent Office Examiner typically lasts about three years before an application that has not been either finally rejected or abandoned issues as a patent.[71] Having been examined, issued patents enjoy a procedural and substantive presumption of validity; and a party challenging a patent must prove invalidity under the heightened standard for civil litigation of "clear and convincing evidence."[72]

In the proposed registration model, patent applications would be filed with the Patent Office but not examined. The Patent Office would maintain original files and make authentic copies available publicly, perhaps via the web for free, as is done with the EDGAR system for securities filings at the Securities and Exchange Commission.[73] In addition, the presumption of validity would be eliminated, or at least relaxed, thereby allowing invalidity to be judged under the standard ordinarily used in civil litigation of "a preponderance of the evidence."[74]

Recent work by Lemley sheds some light on the strengths of soft-look systems – such as the present system and the proposed registration model – as compared with hard-look systems in which patents are examined under stricter scrutiny.[75] Lemley shows that

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> "the conduct of proceedings in the [Patent Office];" it does NOT grant the Commissioner the authority to issue substantive rules. Because Congress has not vested the Commissioner with any general substantive rulemaking power, the "Final Determination" at issue in this case cannot possibly have the "force and effect of law." Thus, the rule of controlling deference set forth in *Chevron* does not apply.

(Footnotes and internal citations omitted) (holding that the Patent Office is not entitled to deference due to other administrative agencies, which are vested with sufficient power by Congress, under the Supreme Court's decision in Chevron, USA., Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837, 842-45 (1984)).

[71] *See*, *e.g.*, CHISUM ET AL. *supra*, note 6, at 91-128 (describing examination procedures under present system).

[72] 35 U.S.C. § 282 (presumption of validity).

[73] *See* SEC Filings & Forms (EDGAR), available at http://www.sec.gov/edgar.shtml (last visited Dec. 10, 2002). As described on the front SEC web page about EDGAR:

> The SEC requires all public companies (except foreign companies and companies with less than $10 million in assets and 500 shareholders) to file registration statements, periodic reports, and other forms electronically through EDGAR. Anyone can access and download this information for free. Here you'll find links to a complete list of filings available through EDGAR and instructions for searching the EDGAR database.

Id.

[74] *Compare supra* note 72 (citing higher presumption of validity under current system).

[75] *See* Lemley *supra* note 6.

"[b]ecause so few patents are ever asserted against a competitor, it is much cheaper for society to make detailed validity determinations in those few cases than to invest additional re-sources examining patents that will never be heard from again."[76]

Lemley explores one important reason why the making of detailed validity determinations in litigation instead of in the Patent Office leads to lower net costs across all patents when he offers the core insight that litigation and its threat operate to provide important information about society's level of interest in a given patent – only those patents that matter receive a hard look.[77] But this information could be provided through other means, even perhaps directly to the Patent Office, which leaves open the issue of which method of providing this information is cheapest.[78]

A more complete exploration of this open issue is therefore required to understand the many reasons why the costs of providing such information through litigation are less.[79] One advantage of litigation is that because it comes later in time it allows more information about society's interest in the patent to accrue, thereby decreasing the likelihood of error associated with *ex ante* efforts to predict which patents should receive close attention.[80] Another advantage is that *ex-post* selection of those patents that turn out to matter raises fewer public choice problems than would *ex ante* efforts because the attention of both proponents and opponents of a given patent are more likely to both be at peak in later litigation.[81] Decision-making through litigation mitigates many of the well-known problems associated with making award-type decisions.[82]

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[76] Lemley, *supra*, note 6, at 1497. Merges also makes this argument in Robert P. Merges, *As Many As Six Impossible Patents Before Breakfast: Property Rights For Business Concepts And Patent System Reform*, 14 BERKELEY TECH. L.J. 577, 595 (1999).

[77] Lemley, *supra*, note 6, at 1497 (The essential insight of this Essay stems from the little-acknowledged fact that the overwhelming majority of patents are never litigated or even licensed).

[78] The screening function identified by the commercialization theory suggests the registration approach offered here. *See supra* notes 59-66 and accompanying text (discussing genesis of registration theory). For a discussion of strategies for bringing this information to the Patent Office, instead of to courts, see the discussion of systems that employ strategies that are soft-look/hard-look hybrids through various post-issuance procedures before the Patent Office *infra* Part V.D.

[79] This is the focus of the reiteration theory, as discussed throughout this paper. For a discussion of the law and economics of the patent-obtaining rules of the present system and why they make sense under the registration theory because they are cheap to enforce see *infra* Part IV. For a discussion of potential improvements that may further decrease social costs see *infra* Part V.

[80] This is essentially the Lemley insight. *See* Lemley, *supra*, note 6, at 1497.

[81] A central problem explored in the public choice literature is ensuring the proper timing of decision making so that those most interested will be able to have their views counted. To be sure, this analysis must be seen against the background of the extensive literature on public choice theory. *See*, *e.g.*,

(Footnote Continued)

This paper makes a radical departure from prior work in the field by showing how, on an individual-patent basis, the costs of providing the information needed to decide validity and the costs of "correct" adjudication with that information are likely to be lower if done in litigation than if done in a patent office.[83] The intuition for this view is because the information relating to validity in litigated cases is rarely in the hands of the government but rather is often obtainable by, or in the hands of, a private party who experiences a strong incentive to bring that information to the attention of a court.[84] As

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DENNIS MUELLER, PERSPECTIVES ON PUBLIC CHOICE (1997) (collecting views and sources); DENNIS MUELLER, PUBLIC CHOICE II (1997) (same); MAXWELL L. STEARNS, PUBLIC CHOICE AND PUBLIC LAW (1997) (same); Jonathan R. Macey, *Transaction Costs and the Normative Elements of the Public Choice Model: An Application to Constitutional Theory*, 74 VA. L. REV. 471 (1988) (same); Mark Kelman, *On Democracy-Bashing: A Skeptical Look at the Theoretical and "Empirical" Practice of the Public Choice Movement*, 74 VA. L. REV. 199 (1988) (same); Dwight R. Lee, *Politics, Ideology, and the Power of Public Choice*, 74 VA. L. REV. 191 (1988) (same).

A related concern from the law and economic literature on patents is the importance of being able to know ex ante or at least early in the life of a patent the whether the patent will be valid. *See supra* notes 52-54, and accompany text (discussing the importance of *ex ante* approaches). *But compare supra* note 58 (discussing the importance of *ex post* approaches in Abramowicz's work on retrospective spending).

[82] *See*, Kieff, *supra* note 11, at 714, n. 77 and accompany text (citing LEO KATZ, ILL-GOTTEN GAINS: EVASION, BLACKMAIL, AND KINDRED PUZZLES OF THE LAW 200 (1996) and discussing the problems with allocating cash rewards, tax credits, or any other kind of kudos in comparison to those with allocating patents and showing why systems of cash rewards or tax credits would be poor substitutes for a patent system).

[83] While the Lemley insight looks to the aggregate cost across all patents, and points out that most patents turn out not to matter. *See* Lemley, *supra*, note 6, at 1497. The insight provided in this paper looks at the cost for each patent that turns out to matter. For a discussion of the law and economics of the patent-obtaining rules when applied to any one patent see infra Part IV. These two insights may be combined to reveal the benefits of many of the proposed reforms discussed *infra* Parts V.C- V.E.

[84] *Id*. at 712-714 (discussing the role of a patentee's competitors in policing the patent system by searching out and bringing to bear the best information regarding a patent's validity).

A somewhat similar tool for bringing to bear this information is the bounty system proposed in John R. Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties*, 2001 UNIV. ILLINOIS L. REV. 305. (2001). But such bounty systems may not be net improvements. They may provide some help in cases where the validity-destroying information is in the hands of someone other than the party seeking to invalidate the patent. But they may not be needed and raise further problems. To the extent the person having the information is subject to the jurisdiction of the courts, then that person is subject to the courts' subpoena power and can be compelled to produce documents, testimony, or other evidence once uncovered by the party seeking to invalidate the patent. The creation of a side market for these people to "sell" their information will frustrate the operation of the present systems that courts have developed for obtaining such information through third-party discovery. To the extent third-party witness compensation practices are considered so stingy that they provide a disincentive to these people, they can be made more flush through modest amendment to the rules of procedure in such cases.

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discussed more fully below, this information is more cheaply obtained, provided, and evaluated by private parties, including the patentee and competitors of the patentee, than by the government.[85]

IV. THE LAW & ECONOMICS OF PATENT-OBTAINING RULES

The benefits of soft-look patent systems, like either the present system or the proposed registration model, can be seen through the below law and economic analysis of present patent-obtaining rules. Each major statutory requirement for patentability is studied, and its social cost-minimizing qualities elucidated.[86] Seen through this lens, otherwise puzzling aspects of the patent system appear for the first time to fit within a

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An alternative approach is the effort to create higher incentives for the patent applicant to bring this information to bear during the patent examination process in the first instance as suggested in Jay P. Kesan, *Carrots and Sticks to Create a Better Patent System*, 17 Berkeley T. L. J., 763, 767, n.12 (2002) (building upon and citing the fee shifting techniques presented in the early working paper version of this paper, *see infra* in the text accompany notes 261-262, and *see* F. Scott Kieff, Comments Regarding Competition & Intellectual Property, Summary of Proposed Testimony, at 12-13, *available at* http://www.ftc.gov/os/comments/intelpropertycomments/harvardlaw.pdf (2001) (last visited Dec. 10, 2002), but arguing that they should be used to provide an incentive for the patent applicant to better inform the patent examination process, which differs from the argument presented here in that it adheres to the orthodoxy of advocating methods for improving "hard look" examination systems and eschews "soft look" approaches like those explored in this work); *see also* Shubha Ghosh & Jay Kesan, *What Do Patents Purchase? In Search of Optimal Ignorance in The Patent Office*, (2002) (manuscript on file with author) (arguing that Patent Office examination of patent applications, especially better informed examination, is important in making issued patents more valuable as the objects of licensing deals). But, as discussed *infra* Part IV.A, the rules relating to patent validity are, and should be, responsive to information that happens to be not known or easily knowable by the patent applicant. As a result, heaping added incentives to find this information on the back of the patent applicant is not likely to be an efficient tool for bringing this information to the attention of decision makers.

Yet another approach is to alter the framework for appellate review of patent cases, as explored in the recent important work by Rai. ARTI K. RAI, FACT, LAW, AND POLICY: AN ALLOCATION-OF-POWERS APPROACH TO PATENT SYSTEM REFORM, UNIVERSITY OF PENNSYLVANIA LAW SCHOOL INSTITUTE FOR LAW AND ECONOMICS RESEARCH PAPER NO. 02-20 (2003) (advocating change in the appellate review process).

[85] *See infra* part IV.A (reviewing patent-obtaining rules relating to the prior art, which turn out to be triggered by information that is in the hands of the specific parties the rules are designed to protect, not in the hands of the government). Merges makes a somewhat related point about the advantages private parties have over courts in evaluating information in patent cases in Robert P. Merges, *Of Property Rules, Coase, and Intellectual Property*, 94 COLUM. L. REV. 2655, 2664 (1994) (discussing private parties informational advantage in negotiating over an intellectual property right, which will be based at least in part on the subsidiary question of that right's validity).

[86] The rules are shown to practicably protect investment-backed expectations and facilitate ordering around protected territories. See infra Parts IV.A-IV.A.3.

coherent normative framework, under which the positive law rules for obtaining patents operate primarily to minimize social cost.[87]

Not only does the registration theory depart from existing literature by accounting for the patent-obtaining rules, it also focuses on the verifiable claims of both a patent applicant and the applicant's competitors, instead of primarily on those of the applicant.[88] That is, rather than first asking what scope of protection a patent applicant "deserves,"[89] the registration theory begins with the presumption that the patentee is entitled to the largest scope of protection that does not actually infringe that freedom from patent protection some competitor of the patentee can claim legitimately to "deserve," and provides a framework for judging this type of desert.[90] In putting the burden on the competitor to justify freedom from the patent, this approach potentially leaves a patentee with what might be viewed as overly broad protection.[91] But the theory also saddles the patentee with a strong incentive not to seek "too broad" protection and instead to get the scope "just right."[92]

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[87] The registration theory has explanatory power for the intricacies of these rules, which are not well explained by other law and economic theories of the patent system, like the prospect and rent-dissipation theories. Those theories merely point out rent seeking concerns that are implicated by patents and at best suggest that *ex ante* determinations be made about which patents turn out to be better at decreasing the rent-seeking type of social cost. *See supra* notes 31-51.

[88] In contradistinction, the claims of the patentee are the focus of so-called "reward" theories discussed *infra* notes 105-108.

[89] Other law and economics theorists have tried to align the benefit a patent confers on the patentee on the one hand with the benefit an invention confers on society on the other hand. *See*, *e.g.*, STEVEN SHAVELL & TANGUY VAN YPERSELE, REWARDS VERSUS INTELLECTUAL PROPERTY RIGHTS, NATIONAL BUREAU OF ECON. RESEARCH WORKING PAPER NO. 6956 (1999) (discussing ways to improve the match between social surplus of the invention and the amount an inventor will recoup); MICHAEL KREMER, PATENT BUY-OUTS: A MECHANISM FOR ENCOURAGING INNOVATION, NATIONAL BUREAU OF ECON. RESEARCH WORKING PAPER NO. 6304 (1997) (same).

[90] The registration theory focuses on those claims that are verifiable, which turns out to also have strong explanatory power for the intricacies of the patent-obtaining rules relating to the prior art. *See infra* Part IV.A.

[91] *See supra* note 6 (providing sources of criticism).

[92] The problem of getting patent scope "just right" has long dominated the literature. *See*, *e.g.*, Kitch, *supra* note 31 (offering prospect theory to show how broad scope controls rent dissipation in downstream research efforts); Grady and Alexander, *supra* note 32 (offering rent dissipation theory to show how scope can be adjusted to control rent dissipation in both upstream and downstream research efforts); Eisenberg, *Experimental Use*, *supra* note 6 (arguing for limited scope to protect competition rather than facilitate coordination; Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989 (1997) (exploring economic impacts of scope); Robert P. Merges, *Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents*, 62 TENN. L. REV. 75 (1994) (same);

(Footnote Continued)

A. THE PRIOR ART RULES INEXPENSIVELY PROTECT INVESTMENT

Patent law's rules regarding the prior art – the Section 102[93] and Section 103[94] requirements that a patentable invention be novel and nonobvious – protect investment-backed expectations of both the patentee and its competitors, and they do so in ways that involve remarkably few administrative costs.[95] As discussed more fully below, the novelty and nonobviousness requirements protect the investment-backed expectations of those other than the patentee by ensuring that a patent right to exclude will not extend to anything those in the art are doing or are about to do.[96] As also discussed more fully below, the one-year grace period of the statutory bar protects the investment-backed expectations of the patentee.[97]

As Nozick recognized in his watershed libertarian work on the minimalist state, it is because of patent law's prior art rules that the patent system does not run afoul of the Lockean proviso that property rights should leave enough in society's commons for those other than the property holder.[98] Patent law achieves this effect by making sure that valid patents leave others free to do whatever they otherwise were doing.[99]

Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839 (1990) (same). For a discussion of the patentee's incentives to get scope "just right" see *infra* Part IV.C.

[93] 35 U.S.C. § 102 (novelty and statutory bars). *See also infra* Part IV.A.1.

[94] 35 U.S.C. § 103 (nonobviousness). *See also infra* Part IV.A.2.

[95] *See infra* Parts IV.A.1-IV.A.2 (discussing how these rules account for verifiable investments).

[96] For a discussion of how the rules on novelty and nonobviousness protect these investments see *infra* notes 126-133, 153-181 and accompanying text.

[97] For a discussion of the grace period see *infra* notes 132-139 and accompanying text.

[98] ROBERT NOZICK, ANARCHY STATE AND UTOPIA 182 (1974) (noting that a patent does not deprive others of an object that would exist if not for the inventor). *See also* John Locke, *Second Treatise on Civil Government*, in TWO TREATISES OF GOVERNMENT (Prometheus Books 1986) Chapter V, ¶ 26 (property rights are only justified "where there is enough, and as good left in the common for others"). The philosophy of intellectual property is broad topic with its own literature having recent representative works such as Jeremy Waldron, *From Authors to Copiers: Individual Rights and Social Values in Intellectual Property*, 68 CHI.-KENT L. REV. 841 (1993) (exploring potential liberty restraints associated with intellectual property rights); Justin Hughes, *The Philosophy of Intellectual Property*, 77 GEO. L.J. 287 (1988) (exploring the case for property rights in intellectual property using the Lockean labor approach); and Wendy Gordon, *A Property Right in Self-Expression: Equality and Individualism in the Natural Law of Intellectual Property*, 102 YALE L.J. 1533 (1993) (exploring the case for the public's property interest in being free from intellectual property rights).

[99] NOZICK, *supra* note 98.

The registration theory goes further than the Libertarian realization that patent law can have this minimal effect on the freedom of those other than the patentee by suggesting that this effect should not be merely a consequence of the patent system, but a goal.[100] The registration theory also adds the goal of achieving this effect with the lowest administrative cost possible.[101] Once these two relatively modest goals are envisioned, substantial light is shed on the justification and operation of the many otherwise complex positive law rules patent law has evolved for determining what counts as being in the prior art and what preclusive effects it will have on a patent claim.[102] Other patent theories fail to provide any explanation for core patent-obtaining rules about the prior art, fail to offer their own workable rules, or yield perverse results.[103]

Many patent theories try to answer the skeptical question raised about patents by one of the country's first luminaries to write about patents, Thomas Jefferson, who as Secretary of State oversaw the administration of the country's first patent system.[104] Jefferson felt it important to ask whether each invention was in the first instance "worth to the public the embarrassment of an exclusive patent."[105] But any such theory that tries

[100] This goal is different from the goals of preventing rent seeking or giving a reward, which are the goals of the prospect, rent-dissipation, and reward theories offered by others. *Compare supra* notes 31-51 (discussing prospect and rent-dissipation theories) *with infra* notes 105-108 (discussing reward theories).

[101] The prospect, rent-dissipation, and reward theories fail to offer any easy way to implement their goals. *Compare supra* notes 31-51 (discussing prospect and rent-dissipation theories) *with infra* notes 105-108 (discussing reward theories).

[102] *See infra* Parts IV.A.1-IV.A.4 (discussing operation of these rules).

[103] *See supra* notes 48-51 (prospect and rent dissipation theories do not offer workable rules); *infra* notes 82, 106-108 (reward theories do not offer workable rules either).

[104] President George Washington signed the Patent Act of 1790 into law on April 10, 1790. Act of Apr. 10, 1790, ch. 7, 1 Stat. 109. *See*, KENNETH W. DOBYNS, THE PATENT OFFICE PONY – A HISTORY OF THE EARLY PATENT OFFICE 22 (1994) (reviewing history of the Patent Office and collecting sources).

[105] Letter from Thomas Jefferson to Isaac McPherson (Aug. 13, 1813), *reprinted in* JEFFERSON WRITINGS 1291-92 (M. Peterson ed., 1894). Interestingly, Jefferson's views on patent issues may have been taken substantially out of context by many, including the Supreme Court:

> [T]here is nothing whatever to indicate that the views held by Jefferson were those of the Framers themselves or those of either the first federal Congresses or the early federal judiciary, or, for that matter, the general populace. In this regard, the *Graham* Court completely ignored the rejection by the second federal Congress of Jefferson's proposal that a good defense to infringement should be that the invention "is so unimportant and obvious that it ought not to be the basis of an exclusive right."

Edward C. Walterscheid, *"Within the Limits of the Constitutional Grant:" Constitutional Limitations on the Patent Power*, 9 J. INTELL. PROP. L. 291, 325 (2002) (footnotes omitted) (collecting sources) (citing Graham v. John Deere Co., 383 U.S. 1 (1966) (consolidated with Calmar, Inc. v. Cook Chem. Co., and

(Footnote Continued)

to tie the legitimacy of a patent to the nature of the invention faces a number of remarkably difficult problems.[106] Theories tied to the merit of the invention face the conceptual problems of requiring some preliminary determination of how to judge merit in any practicable fashion.[107] They also turn out to have faced serious practical problems concerning their application, as courts applying these approaches tended to avoid finding that any invention met the standard.[108]

Some other patent theories suggest the patent-obtaining rules should be adjusted to be sensitive to complex economic factors, like coordination and rent dissipation.[109]

Colgate-Palmolive Co. v. Cook Chem. Co.) and companion to United States v. Adams, 383 U.S. 39 (1966)).

[106] Theories like this are generally referred to as "incentive to invent" or "reward" theories. *See generally*, *supra* notes 28, 82 (collecting sources that review these theories and their pitfalls).

[107] The conceptual problems generally involve a mismatch between any particular metric of merit and our impressionistic view of the "right" result. For example, if the metric were hard work then accidental inventions would not be patentable. If the metric were value of the invention to society then determinations cannot be made *ex ante*. The many conceptual problems associated with measuring rewards are discussed in the sources cited *supra* note 82.

[108] By the late 1940's courts would only allow a patent on an invention that they determined met the self-referential standard of "invention," a test that had become so overly robust that Justice Jackson criticized it's application in a 1949 dissent: "the only patent that is valid is one which this court has not been able to get its hands on." Jurgensen v. Ostby & Barton Co., 335 U.S. 560, 572 (1949) (Jackson, J., dissenting). *See also* Giles S. Rich, *Congressional Intent – or, Who Wrote the Patent Act of 1952*, (*reprinted in* WITHERSPOON *supra* note 40, at 1:1, 1:3 (1979) (discussing history of the nonobviousness requirement, and its use as a replacement for the requirement of invention); George M. Sirilla, *35 U.S.C. § 103: From Hotchkiss to Hand to Rich, the Obvious Patent Law Hall-of-Famers*, 32 J. MARSHALL L. REV. 437 (1999) (same). Even after the requirement for "invention" was statutorily replaced by the 1952 Patent Act's requirement for nonobviousness in Section 103, some courts continued to apply a standard remarkably similar to the one criticized by Justice Jackson. Gerald J. Mossinghoff, *Side Bar: The Creation of the Federal Circuit*, in CHISUM ET AL., *supra* note 6, at 30-31 (former Patent Office Commissioner Mossinghoff explaining importance of creating the Federal Circuit in 1982 to bring uniformity to the application of patent law and avoid the results in some Circuits, as discussed during the confirmation hearings for then-Second Circuit Judge Thurgood Marshall's nomination to the Supreme Court when he responded to a question about patents by saying "I haven't given patents much thought, Senator, because I'm from the Second Circuit and as you know we don't uphold patents in the Second Circuit"). Patent theories like these are more about the absence of patents than about how or why we want patents to operate.

[109] The prospect and rent-dissipation theories discussed earlier are two prime examples. *See supra* Part II. The commercialization theory also discussed earlier differs from these two theories in viewing the coordination effects of the patent not as a way to prevent rent seeking or rent dissipating behavior but only as a way to facilitate the industrial organization activities necessary to get the public to enjoy some benefit from a nascent invention. *See supra* notes 54-57, and accompanying text. The modest roles for the positive law prior art rules that are contemplated in the registration theory discussed here are entirely compatible with the commercialization theory and its views on the screening function played by competitors of the patentee. *Id*.

But some of these, like the prospect theory, fail to offer concrete rules usable *ex ante* to make determinations of patentability and instead just offer general guidelines, such as that patent claims can be better if broader.[110] Others, like the rent dissipation theory, offer the perverse recommendation that an invention that is so far beyond the prior art that it is optimal should not be patentable under the prior art rules because a patent on it would both cause too much rent dissipation among those seeking the patent and not be needed to prevent rent dissipation among those who otherwise would race to improve upon it.[111]

In contradistinction, the registration theory views the prior art rules as designed to achieve the more modest goals of protecting investment-backed expectations based on objective verifiable evidence, which is an approach that is both workable and has explanatory power for the present system.[112] The registration theory begins from a presumption in favor of not holding an invention to be unpatentable over the prior art unless some verifiable evidence of sufficient reliance is shown.[113] Under this view, the system should have a novelty requirement to protect those investments that have matured into actual technical activities.[114] Similarly, the system should have something like a nonobviousness requirement to protect those investments that are about to mature into actual technical activities.[115] For both requirements, the system should consider only those investments that verifiably existed before those of the one claiming a patent right.[116]

The registration theory has great explanatory power for the prior art rules.[117] The theory's presumption in favor of not holding an invention to be unpatentable over the

[110] *See generally supra* Part II. *See also* Kitch, *supra* note 31 at 267-271 (discussing importance of broad claims early after initial discovery).

[111] Grady and Alexander, *supra* note 32 at 346 ("By definition, an optimal proportion cannot be improved upon; rent dissipation theory, therefore, predicts patent nonenforcement"). In part, the rent dissipation theory seems to be assuming that something may actually be "optimal" or "good" in a way that assumes a great deal. Most importantly, it seems to implicitly subscribe to some type of nirvana thesis, which is generally shunned in the literature because no example has been offered of any human endeavor that is in all respects "optimal." *See supra* note 8 (critiquing nirvana approaches).

[112] *Compare supra* notes 48-51 (prospect and rent dissipation theories do not offer workable rules); and *infra* notes 82, 106-108 (reward theories do not offer workable rules either).

[113] Unlike the theories that focus on determining which claims to a patent are worth protecting, the registration theory focuses on determining which claims to freedom from patent are worth protecting.

[114] *See infra* Part IV.A.1.

[115] *See infra* Part IV.A.2.

[116] *See infra* notes 140-142 (discussing how dates are compared).

[117] *See infra* Parts IV.A.1-IV.A.4 (discussing the rules).

prior art explains the often-overlooked introductory language to the statutory prior art provisions, which sets forth that "A person shall be entitled to a patent unless" any of the conditions subsequently provided in the statute is triggered.[118] Indeed, the registration theory also explains the otherwise controversial statutory language that provides such a minimal role for the Patent Office.[119] In addition, present patent-obtaining prior art rules have been considered by many, including me, to be "a statutory mine field through which patent applicants must navigate."[120] With the benefit of the registration theory, they can be seen as the expected intricacies of a system rationally designed to consider all verifiable investments.[121]

[118] 35 U.S.C. § 102. The many subsections of Section 102, subsections (a) through (g), then set forth the categories of things that can count as prior art. Any single piece of prior art, sometimes also called a "reference," will count as prior art for purposes of both the novelty and statutory bar analyses of Section 102 and the nonobviousness analysis of Section 103 if it is determined to trigger any one, or more than one, of the subsections of Section 102. CHISUM ET AL., *supra* note 6, at 554. *See also*, In re Foster, 343 F.2d 980 (CCPA 1965) (*reversing* In re Palmquist 319 F.2d 549 (CCPA 1963) to hold that despite plain meaning of the statute, art qualifying only under §102(b) may support an analysis under § 103). For the reasons discussed more thoroughly by Parchomovsky and Lichtman *et al*., the result in *Foster* is important to mitigate the costs associated with strategic disclosure. Douglas Lichtman et al., *Strategic Disclosure in the Patent System*, 53 VAND. L. REV. 2175 (2000); Gideon Parchomovsky, *Publish or Perish*, 98 MICH. L. REV. 926 (2000).

[119] *See supra* note 70 (citing Merck & Co. v. Kessler, 80 F.3d 1543, 1549-50 (Fed.Cir., 1996) (holding that because "the broadest of the [Patent Office]'s rulemaking powers – 35 U.S.C. § 6(a) – authorizes the Commissioner to promulgate regulations directed only to 'the conduct of proceedings in the [Patent Office];' it does NOT grant the Commissioner the authority" needed to in turn entitle the Patent Office to deference due to other administrative agencies, which are vested with sufficient power by Congress, under the Supreme Court's decision in Chevron, USA., Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837, 842-45 (1984))

[120] *See*, *e.g.*, CHISUM ET AL., *supra* note 6, at 323.

[121] *See infra* Parts IV.A.1-IV.A.4. What is more, in accordance with the registration theory's goal of improving efforts to protect investments, many of these rules worked their way into our regime over time even though they were not all present at the outset. *See* Walterscheid, *supra* note 60 (reviewing the first roughly 100 years of the prior art provisions with particular focus on the rules relating to derivation and foreign use); P.J. Federico, *Commentary on the New Patent Act*, TITLE 35, UNITED STATES CODE ANNOTATED (West 1954 ed.), reprinted in 75 J. PAT. & TRADEMARK OFF. SOC'Y 161, (1993) (reviewing history and operation of our present patent system, which is largely based on the 1952 Patent Act); Edward C. Walterscheid, *The Ever Evolving Meaning of Prior Art*, (pts. 1-3) 64 J. PAT. & TRADEMARK OFF. SOC'Y. 457, 571, 632 (1982), (pts. 4-6) 65 J. PAT. & TRADEMARK OFF. SOC'Y. 3, 477, 658 (1983), (pts. 7-8) 66 J. PAT. & TRADEMARK OFF. SOC'Y. 479, 573 (1984), (pt. 9) 67 J. PAT. & TRADEMARK OFF. SOC'Y. 33 (1985) (reviewing in detail the evolution of many of the prior art provisions that exist since the 1952 Act and collecting sources).

1. NOVELTY AND BAR

The Patent System's patent-obtaining rules relating to the prior art begin with those in Section 102 of the statute, which relate to novelty and bar.[122] "Anticipation by the prior art" is the phrase in patent law used to describe the case where a patent claim is directed to subject matter that is not new.[123] "Statutorily barred" is the phrase in patent law used to describe the case where a patent claim is directed to subject matter that, even if new at the time of invention, was exposed to the public more than a year before the application was filed.[124] The registration view elucidates why it makes sense for the patent system to have evolved these doctrines in all their detail.[125]

In accordance with the registration view, printed publications describing a technology count as prior art under the novelty provisions because publicly available documents are good evidence of investment by their authors and of something on which others could rely.[126] Any printed publication will count, even if in a foreign country, as long as it is verifiably the type of publication on which a member of the public could rely.[127] Indeed, even pending patent applications that later issue as patents but that are

[122] 35 U.S.C. § 102 ("Conditions for patentability; novelty and loss of right to patent"). The mention in Section 101 of the word "new" has not been read to provide any separate novelty requirement. *See* Federico *supra* note 121, at 178 ("The general part of the Committee Report states that section 102 'may be said to describe the statutory novelty required for patentability, and includes, in effect, an amplification and definition of "new" in section 101'"). *See also* In re Bergy, 596 F.2d 952, 960 (1979) (Rich, J.) dismissed as moot 444 U.S. 1028 (1980) ("Notwithstanding the words 'new and useful' in § 101, the invention is not examined under that statute for novelty because that is not the statutory scheme of things or the long-established administrative practice.").

[123] The maxim setting forth the so-called "classic infringement test for anticipation," which also applies to analysis under the statutory bar, is "That which will infringe if later, will anticipate, if earlier." *See* CHISUM ET AL. *supra* note 6 at 414 (citing Knapp v. Morss, 150 US 221 (1893)). For more on how this is applied in practice see *infra* notes 140-149 and accompanying text.

[124] For a discussion of the bar, which also operates as a one-year grace period for filing see *infra* notes136-139.

[125] *Compare supra* note 50 (rent dissipation theory does not explain case law); and *infra* note 108 (reward theories do not explain case law).

[126] *See* 35 U.S.C. § 102(a) and (b) (referring to printed publications).

[127] *See*, In re Hall, 781 F.2d 897 (Fed. Cir. 1986) (holding a single cataloged student thesis at Frieburg University in Germany to count as prior art because it was physically available to the public); In re Cronyn, 890 F.2d 1158 (Fed. Cir. 1989) (holding three student theses at an American University would have counted as prior art, even though they were physically accessible to the public, because there was no evidence they were logically accessible to the interested public by, for example, being indexed in the library's subject catalog). Under the registration theory these publications should count as prior art because they might lead to third party reliance not because they might somehow be fairly said to have been available to the patentee.

not yet published count as prior art as of their filing date because their inventors have invested in the verifiable contents of these government-stored documents, and those in confidential relationships with their inventors could rely on them.[128]

Similarly, uses of a technology only count as prior art if corroborated by someone other than the one claiming prior invention because verifiable public may induce investment in the technology by observers of this use.[129] Although Section 102(a) only expressly provides in pertinent part that the invention must not have been "known or used by others," the word "public" has been read into that statutory language through case law.[130] Use that is not public, yet also is not abandoned suppressed or concealed, may also count as prior art under Sections 102 (f) and (g), but only if corroborated by evidence other than inventor testimony.[131]

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[128] *See* Alexander Milburn Co. v. Davis-Bournonville Co., 270 U.S. 390 (1926) (Holmes, J.) (holding so-called secret prior art to count as prior art as of the application's filing date). The present version of this rule is codified in Section 102(e)(2). For the same reasons, an application filed in foreign patent offices will also count as prior art as of its filing date with one of the international Patent Cooperation Treaty-designated patent offices, if filed according the procedural rules of the treaty, and as long as the application is eventually published in English and designates that it should be sent to the United States Patent Office. 35 U.S.C. § 102(e)(1). Also for the same reasons, under Section 102(e)(1), prior art effect is extended to pending applications that do not issue as a patent but do get published under the rule of publishing 18 months after filing, which was part of the 1999 American Inventors Protection Act and is codified in Section 122(b). However, applications that are not published pursuant to Section 122(b), such as those that are abandoned, do not count as prior art. The authors of these documents are able to maintain their information as a trade secret but the documents themselves will not preclude patentability for others. To be sure, the use by these authors may preclude patentability under Section 102(a) or (g), as discussed *infra* at note 129.

[129] The registration protects against the risk of these investments being later subject to a patent right to exclude by enforcing the rule that they destroy patentability.

[130] Gayler v. Wilder, 51 U.S. (10 How.) 477 (1850) (holding the use of a technology relating to a safe to not count as prior art unless it is accessible to the public).

[131] *See*, *e.g.*, CHISUM ET AL., *supra* note 6, at 441-451 (describing evolution of case law treating 35 U.S.C. § 102(g) as a provision under which prior use may count as prior art even if not public, as long as it is not abandoned suppressed or concealed, and the amount of evidence needed to satisfy that provision). *See also* Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573 (Fed. Cir. 1997) (holding that Section 102(f) prevents patentability if there can be shown to be both prior, corroborated, conception of the claimed invention, and its communication to the one claiming to be the first inventor).

Where the prior inventor turns out to have sought its own patent, the Patent Office conducts something called an interference proceeding, which is the quasi-litigation process initiated when a patent application claims the same subject matter as another application or an issued patent to determine who is the first inventor. For more on the rules governing priority disputes see infra Part IV.A.3.

Where the prior inventor turns out to have been outside the United States, the rules become more complicated, as discussed infra Part IV.A.4.

Verifiable public use or sale sufficiently in advance of patent application filing even if by the one seeking a patent can count as prior art against that application under certain circumstances because it may induce investment in the technology by observers of this use.[132] For this reason, the statutory bar provisions treat sale or use in public by either the inventor or a third party as prior art against the inventor's claim to a patent.[133]

The patent system even protects the inventor's own investments to some extent through allowance of a one-year grace period in which to file a patent application before the on-sale and public use bars are triggered. This is important because a patent system in which there is no grace period may provide incentives for decreased rate of disclosure of new technologies, and a decrease in the over-all value of patents. The decreased rate of disclosure under a system lacking a grace period would be due to the need to keep potentially patentable information unpublished before filing the patent application.[134] The decrease in over-all value of patents would be due to the fear of unknown but unavoidable pre-filing disclosures lurking in the history of every patent.[135]

But the inventor's own investments have to be balanced against the reasonable reliance interests of others. For this reason, the grace period is limited to one year, which allows others to rely on essentially any public evidence of a technology that is more than the time of the grace period.[136] As soon as an inventor's use of the technology becomes

[132] 35 U.S.C. § 102(b). The policy goal of protecting investment has been recognized in the case law associated with this prior art provision. *See* General Electric Co. v. United States, 654 F.2d 55, 61 (Ct. Cl. 1981) ("First, there is a policy against removing inventions from the public [that] the public has justifiably come to believe are freely available to all as a consequence of prolonged sales activity.").

Often described as a statutory bar to the patenting of inventions publicized for more than a year, this provision operates to provide a one-year grace period for publicity that will not bar patentability. The grace period entered the U.S. patent system in 1839 as a period of "grace" lasting two years. 5. Stat. 353. The period was shortened to one year in 1939, 53 Stat. 1212, and remains so in present 35 U.S.C. § 102(b).

Not all patent systems in the world provide a statutory grace period, although it is not exactly clear whether most systems end up providing one through case law. *See* JOSEPH STRAUS, GRACE PERIODS AND THE EUROPEAN AND INTERNATIONAL PATENT LAW: ANALYSIS OF KEY LEGAL AND SOCIO-ECONOMIC ASPECTS (2001) (study commissioned by the European Patent Organization to examine whether European patent law should provide a pre-filing grace period) (collecting sources).

[133] *See* Baxter Int'l, Inc. v. COBE Labs., 88 F.3d 1054 (Fed. Cir. 1996) (third party use may raise statutory bar).

[134] *See* STRAUS, *supra* note 132 (discussing incentives to suppress publication under a regime of no grace period).

[135] *Id*. (discussing decrease in value of patents under absolute novelty regimes, which do not have a grace period).

[136] Under the registration theory, the specific amount of time is arbitrary as long as it is fixed and knowable ex ante and as long as it is both long enough to allow some grace period effect and not long

(Footnote Continued)

available to the public,[137] or is on sale at any stage past when it is "ready for patenting," the clock on the one-year window begins.[138] The subsequent one year provides time for the inventor to decide whether to prepare and file a patent application, and then to take these steps if elected.[139]

Taken together, these rules about what counts as prior art allow every patent claim to be judged as of its "critical date" against a piece of prior art's "effective date."[140] The critical date is either the verifiable date of invention, or one year before the application's filing date, depending upon whether the invention is being analyzed for anticipation or bar.[141] The effective date is the date the piece of prior art is allowed to count as prior art, as discussed above.[142]

Under the law of Section 102, patentability is precluded if any single item that is determined to count as prior art under any single subsection of the statute is found to fully disclose the claimed invention.[143] Importantly, case law has provided a remarkably easy test for determining whether an invention is fully disclosed for purposes of this analysis, which can be seen through the use of the schematic claim chart in Table 1, below.[144]

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enough to unduly frustrate investment in recently public technologies. For some history of the various grace periods see *supra* note 132.

[137] *See*, Egbert v. Lippmann, 104 U.S. 333 (1882) (holding use even in a private undergarment, here corset steels, can count as prior art). *Also compare* Metallizing Engineering Co. v. Kenyon Bearing & Auto Parts Co., 153 F.2d 516 (2nd Cir. 1946) (Hand, J.) (use will count if it is commercial); *with* City of Elizabeth v. American Nicholson Pavement Co., 97 U.S. (7 Otto.) 126 (1878) (use will not count if merely experimental). To whatever extent potential third-party reliance is a serious theoretical matter, actual third party public use as in Baxter Int'l v. COBE Labs., 88 F.3d 1054 (1996) counts as prior art because it shows actual reliance.

[138] Pfaff v. Wells Electronics 525 U.S. 55 (1998) (holding the year begins when the technology is "subject to a commercial offer for sale" and "ready for patenting").

[139] The importance of taking the time to prepare a good application are discussed *infra* Part IV.A.3.

[140] CHISUM ET AL., *supra* note 6, at 326 (providing sample analysis using these terms).

[141] Anticipation occurs when the claimed invention is found to have been in the art that existed prior to the putative inventor. *See supra* notes 118-131, and accompanying text. A statutory bar occurs when the application is not filed within one year of a bar triggering event. *See supra* notes 132-138, and accompanying text.

[142] This is either the date of use, publication, or filing, depending upon which part of Section 102 is triggered. *See supra* notes 118-131, and accompanying text.

[143] *See supra* note 123 (discussing basic statement of test for anticipation).

[144] *See infra* notes 145-149 (discussing application of this test).

Table 1: Analysis Under § 102[145]	
	PAR_1
E_1	✓
E_2	✓
$E_{...}$	✓
E_n	✓
E_*	✓

Table 1 compares the elements of a stylized claim against the prior art for a determination of potential unpatentability or invalidity under Section 102.[146] The substantive requirement for determining no valid patent claim under Section 102 is triggered only if a single prior art reference discloses, either expressly or under principles of inherency, each and every element of the claim, plus enablement.[147] When mapped

[145] E_1 through E_n represent the elements of the claim arbitrarily assigned numbers 1 through n. E_* represents enablement of the entire claim. PAR_1 represents any single prior art reference, such as a journal article, sample product, student thesis, etc.

[146] The term invalidity refers to the failure of a claim in an issued and successfully examined patent to satisfy one of the substantive patent-obtaining rules. The term unpatentability refers to the failure of a claim in a patent application to satisfy one of the substantive patent-obtaining rules. These terms are interchangeable if operating under a soft look system like the registration model, which does not involve any examination.

The representation of a claim as a listing of its several elements in claim charts like Table 1 has become so common in patent cases that the local rules of some courts that hear many patent cases, like the Northern District of California, have for some time required their use. CHISUM ET AL., *supra* note 6, at 848-849 (discussing local rules for claim charts). The identification of these elements turns largely on the interpretation, or construction, of a patent claim, which is treated as a matter of law for decision by the court, and which is the first step in any analysis of either validity or infringement because the claim must be construed the same for both purposes. *See generally*, *id*. at 829-73 (discussing the substantive and procedural law of claim interpretation after the Supreme Court decision in Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996)). The great degree of debate over the law of claim construction itself injects a degree of uncertainty into this otherwise relatively crisp analysis. Recent empirical work by Wagner suggests that this uncertainty may lessen over time as the court develops predictable trends in its case law. *See* www.claimconstruction.com (web page discussing empirical work relating to trends in the court's law of claim construction) (last visited Mar. 15, 2003).

[147] *See* Minnesota Mining and Mfg. v. Johnson & Johnson, 976 F.2d 1559 (Fed. Cir. 1992) (Rich, J.) (invalidity under Section 102 is "a question of fact, and one who seeks such a finding must show that each element of the claim in issue is found, either expressly or under principles of inherency, in a single prior art reference"); In re Paulson, 20 F.3d 1475 (Fed. Cir. 1994) ("In addition, the reference must be enabling and describe the applicant's claimed invention sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention"). *See also* In re Robertson, 169 F.3d 743, 745 (Fed.Cir.1999) ("To establish inherency, the extrinsic evidence 'must make clear that the missing

(Footnote Continued)

onto this table, this means that a proper holding of invalidity will only lie if a check mark can be found as a matter of fact for every row.[148] And to achieve a check mark there must be admissible evidence that as a matter of fact the pertinent content is present in the piece of prior art.[149]

Although this determination of novelty is relatively easy, the registration theory recognizes that it may not go far enough in that parties may invest in a technology before it fully exists.[150] As a result, the patent system may have to go farther than merely requiring inventions be new, or not fully disclosed in a single prior art reference; it may also have to prevent valid patents from covering what anyone is investing towards, if such a determination can be made inexpensively.[151] Under the registration theory, this is the role played by the nonobviousness requirement, discussed below.[152]

2. NONOBVIOUSNESS

The patent system has long demanded something more than mere novelty when determining patentability over the prior art; and nonobviousness is the present system's iteration of this additional requirement.[153] The various forms of this additional

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descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.' Continental Can Co. v. Monsanto Co., 948 F.2d 1264, 1268 (Fed.Cir.1991). 'Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' Id. at 1269.").

[148] This represents the presence of each element in the claim, plus enablement, which as discussed in the case law *supra* note 147, is required for a finding of invalidity under section 102.

[149] As discussed in the case law *supra* note 147, invalidity under Section 102 requires the prior art disclosure to be in a single reference.

[150] Indeed, the likelihood of these investments is logically closely tied to the presence in the art of a specific teaching, suggestion, or motivation to combine elements in the prior art to work towards the claimed invention. The registration view thereby provides a justification for the case law that requires these elements as part of a nonobviousness analysis. For more on the law of nonobviousness see *infra* Part IV.A.2

[151] The ultimate question of whether it goes far enough will turn on whether these investments can be efficiently identified and protected. As discussed infra Part IV.A.2, while it is clear that the nonobviousness test does a better job on this score than the former "requirement for invention," it is not entirely clear whether the case law relating to the test of nonobviousness has implemented the test optimally.

[152] *See supra* note 87 (the registration theory has explanatory power for the intricacies of the patent-obtaining rules while the other theories do not).

[153] For history of the nonobviousness requirement in patent law see WITHERSPOON *infra* note 40; Sirilla *infra* note 108.

requirement have generated great difficulty for the courts for over a century.[154] They also raise significant problems for the patent theories in the literature.[155]

The version of this requirement called nonobviousness was written into the patent system through the 1952 Act to statutorily jettison the prior case law associated with the former, vague and anti-patent, requirement called "the requirement for invention."[156] Even the drafters of this new standard recognized that it did not on its face appear to be

[154] During the first half of the 1900's when called the requirement for invention, before the 1952 Patent Act, it had become known as "the plaything of the judiciary." Giles S. Rich, *Why and How Section 103 Came to Be*, in WITHERSPOON, *supra* note 40, at 1:208. Even after Congress wrote the Section 103 nonobviousness into the statute in the 1952 Act another 10 years passed before the Supreme Court applied the new standard of nonobviousness in *Graham* and its companion cases. Graham v. John Deere Co., 383 U.S. 1 (1966) (consolidated with Calmar, Inc. v. Cook Chem. Co., and Colgate-Palmolive Co. v. Cook Chem. Co.); and United States v. Adams, 383 U.S. 39 (1966). For an inside look at the *Graham* decision see Tom Arnold, *Side Bar: the Way the Law of section 103 Was Made*, in CHISUM *supra* note 6, at 549-554. Soon afterwards, The Court re-injected confusion by writing about synergism and combinations. *See* Anderson's-Black Rock, Inc., v. Pavement Salvage Co., 396 U.S. 57, 61 (1969) (holding patent invalid because "No such synergistic result is argued here"); Sakraida v. Ag Pro, Inc., 425 U.S. 273, 282 (1976) (holding patent invalid because it was a mere combination of old elements and had no "synergistic effect"). These terms were not weeded back out of the law until the creation of the Federal Circuit in 1982. *See* Sirilla *supra* note 108 at 543. As the Federal Circuit has reminded:

> A requirement for "synergism" or a "synergistic effect" is nowhere found in the statute, 35 U.S.C. When present, for example in a chemical case, synergism may point toward nonobviousness, but its absence has no place in evaluating the evidence on obviousness.
>
> The reference to a "combination patent" is equally without support in the statute. There is no warrant for judicial classification of patents, whether into "combination" patents and some other unnamed and undefined class or otherwise. Nor is there warrant for differing treatment or consideration of patents based on a judicially devised label. Reference to "combination" patents is, moreover, meaningless. Virtually all patents are "combination patents," if by that label one intends to describe patents having claims to inventions formed of a combination of elements. It is difficult to visualize, at least in the mechanical-structural arts, a "non-combination" invention, *i.e.*, an invention consisting of a single element. Such inventions, if they exist, are rare indeed.

Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1540 (Fed.Cir.1983).

[155] *See supra* notes 31-51 (other theories merely point out rent seeking concerns that are implicated by patents and at best suggest that *ex ante* determinations be made about which patents turn out to be better at decreasing the rent-seeking type of social cost).

[156] *See* Giles S. Rich, *The Vague Concept of "Invention" as Replaced by Section 103 of the 1952 Patent Act*, in WITHERSPOON, *supra* note 40, at 1:401, reprinted from 46 J. PAT. OFF. SOC'Y. 855 (1964) (Judge Rich's speech upon receipt of the Kettering Award in which he discusses the role of nonobviousness in Section 103 as the replacement for the so-called requirement for invention); Giles S. Rich, *Laying the Ghost of the "Invention" Requirement*, in WITHERSPOON, *supra* note 40, at 1:501, reprinted from 1 AM. PAT. L. ASS'N. Q.J. 26, 26 (1972) (discussing the great lag between the arrival of the new standard in the statute and its adoption by the courts).

any more precise in application than the former requirement.[157] Nevertheless, as the registration theory would predict, the case law interpreting this new standard correctly has provided an objective and practicable framework that is tied to third-party investments.[158]

The analysis for a nonobviousness determination under Section 103 begins with the entire body of prior art determined to be available under Section 102.[159] But important areas of the prior art are then carved out so they can be excluded from the nonobviousness analysis.[160] First, only art considered to be analogous may be considered under the nonobviousness analysis.[161] Under the registration theory, which looks to

[157] *Compare* Federico, *supra* note 121, at 183 (the requirement for invention "is an unmeasurable quantity having different meanings for different persons") *with* Federico, *supra* note 121, at 184 ("The problem of what is obvious and hence unpatentable is still of necessity one of judgment.").

[158] *See supra* notes 150-152 (discussing role of nonobviousness analysis according to registration theory).

[159] *See* Federico *supra* note 121, at 180:

> In form this section is a limitation on section 102 and it should more logically have been made part of section 102, but it was made a separate section to prevent 102 from becoming too long and involved and because of its importance. The antecedent of the words "the prior art," which here appear in a statute for the first time, lies in the phrase "disclosed or described as set forth in section 102" and hence these words refer to the material specified in section 102 as the basic for comparison.

[160] Although all of the Section 102 art is initially available for analysis under Section 103, certain types of prior art are excluded. According to the registration theory, these carve outs exist to remove from consideration the prior art for which the inference of possible innocent third party reliance is not reasonable. *See infra* notes 161-165 (discussing carve outs).

[161] The statute provides that the analysis should look to a hypothetical "person having ordinary skill in the art to which [the claimed] subject matter pertains" and ask whether to that person "the invention as a whole would have been obvious" given the "differences between the subject matter sought to be patented and the prior art." 35 U.S.C. § 103. This in turn requires that several factual inquiries be made: "the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved." Graham v. John Deehr Co, 383 U.S. 1, 17 (1966). A person having ordinary skill in the art according to this framework is sometimes called a PHOSITA, thanks to the coining of that term by Soans. Cyril A. Soans, *Some Absurd Presumptions in Patent Cases*, 10 IDEA 433, 436 (1966). The "pertinent art" is selected from among the entire set of prior art identified by Section 102 depending upon whether it is analogous or non-analogous. According to the Federal Circuit:

> Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.

(Footnote Continued)

protect the reasonable investment-backed expectations of third parties, non-analogous art is properly discarded because it is not likely to be the basis for any such reliance.[162] Importantly, as would be predicted by the registration theory, the distinction between analogous and non analogous art is viewed as important not as evidence of what the inventor himself or herself could have known about the art but rather what was knowable to a hypothetical third party person having ordinary skill in the art ("PHOSITA").[163] Second, secret prior art that would count only under Sections 102 (e, f, and g) has been statutorily excluded from the nonobviousness analysis if it is owned by the same entity whose patent claim is in issue.[164] The exclusion of this art also makes sense under the

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In re Clay, 966 F.2d 656, 658 (Fed.Cir.1992) (citations omitted). *See also*, In re Paulson, 30 F.3d 1475 (Fed. Cit. 1994) (affirming Patent Office rejection under Section 103 because references from the fields of cabinetry and desktop accessories are properly considered to be analogous art to a patent claim directed to a clamshell case for a laptop computer under the second of these two alternative criteria).

[162] *See supra* notes 95-96 (discussing purpose of the prior art rules under the registration theory).

[163] *See* Soans *supra* note 161 (coining the term PHOSITA). Indeed, Judge Rich, who co-authored Section 103, has portrayed this PHOSITA "as working in his shop with the prior art references – which he is presumed to know – hanging on the walls around him." In re Winslow, 365 F.2d 1017, 1020 (CCPA 1966) (Rich, J.) (this metaphor is referred to as the "*Winslow* Tableau"). *See also* International Cellucotton Prod. Co. v. Sterilek Co., 94 F.2d 10, 13 (2d Cir.1938) (Hand, J.) ("[w]e must suppose the inventor to be endowed, as in fact no inventor is endowed; we are to impute to him knowledge of all that is not only in his immediate field, but in all fields nearly akin to that field."); Custom Accessories, Inc. v. Jeffrey-Allan Industries, Inc., 807 F.2d 955, 962 (Fed.Cir.1986) ("The person of ordinary skill is a hypothetical person who is presumed to be aware of all the pertinent prior art."). Judge Rich improved upon the *Winslow* Tableau in In re Antle, 444 F.2d at 1171-72:

> In Winslow we said that the principal secondary reference was "in the very same art" as appellant's invention and characterized all the references as "very pertinent art." The language relied on by the solicitor, quoted above, therefore, does not apply in cases where the very point in issue is whether one of ordinary skill in the art would have selected, without the advantage of hindsight and knowledge of the applicant's disclosure, the particular references which the examiner applied. As we also said in Winslow, "Section 103 requires us to presume full knowledge by the inventor of the prior art in the field of his endeavor", but it does not require us to presume full knowledge by the inventor of prior art outside the field of his endeavor, i.e., of "non analogous" art. In that respect, it only requires us to presume that the inventor would have that ability to select and utilize knowledge from other arts reasonably pertinent to his particular problem which would be expected of a man of ordinary skill in the art to which the subject matter pertains

[164] See 35 U.S.C. § 103(c) (providing carve outs). The carve outs for 102(f and g) were added in 1984 to reverse the holding in In re Bass, 474 F.2d 1276 (Fed. Cir. 1973). 98 Stat. 3384. The carve outs for 102(e) was added in 1999 through Section 4807 of the American Inventors Protection Act of 1999. 113 Stat. 1501. For a discussion of the history of these carve outs see CHISUM ET AL. *supra* note 6, at 575-578.

registration theory because no third-party investments will have been made in art that is commonly owned and kept secret.[165]

The content of the remaining prior art as a whole must then be surveyed to determine whether it may have reasonably triggered investment-backed expectations in achieving the subject matter of the patent claim in issue.[166] Such investments are most likely to have existed only when there can be found among these many remaining pieces of art each and every element of the claimed subject matter along with sufficient teaching, motivation or suggestion ("TMS") for the pieces that contain those elements to be combined such that there would be a reasonable expectation of success ("RES") in establishing the claimed subject matter when they are combined.[167] The practical operation of this analysis can be seen through the use of the schematic claim chart in Table 2, below.

[165] No carve out is needed for the novelty analysis because the co-onwer can keep the information sufficiently secret before the later claim that the refrence will not trigger any of the subsections of Section 102, except perhaps 102(f). For this subsection, derivation, the co-owner can seek a claim by naming the first inventor, who's activity is co-owned. If the earlier reference does not disclose enough to invalidate under a novelty analysis then it would not have been possible for the subject matter to have been claimed at the time of the earlier reference and the only opportunity to claim the subject matter is at the later time. The exclusion of the prior art from a nonobviousness analysis at that later time helps ensure leaves open the possibility of it being covered by a claim. Since the subject matter is co-owned with the prior art and is not otherwise available under any of the other subsections of 102, it also is not the target of third-party investment.

[166] *See supra* note 115 (discussing the goal of the nonobviousness requirement according to the registration theory).

[167] According to the Federal Circuit:

> The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art. Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure.

In re Dow Chem. Co., 837 F.2d 469, 473 (Fed. Cir. 1988) (citations omitted). *See also* CHISUM ET AL. *supra* note 6, at 584-597 (discussing contours of this analysis in practice and collecting sources).

Table 2: Analysis Under § 103[168]		
	PAR_1	PAR_2
E_1		✓
E_2	✓	
$E_{...}$		✓
E_n	✓	
E_*		✓
TMS	✓	
RES		✓

Like Table 1, Table 2 compares the elements of a stylized claim against the prior art, but this time for a determination of nonobviousness under Section 103.[169] Invalidity under this rule of nonobviousness also requires the presence in the prior art reference either expressly or under principles of inherency of each and every element of the claim, plus enablement; but unlike the analysis under Section 102, the analysis under Section 103 allows the elements to be spread among two or more individual pieces of prior art, as long as there is also present in those pieces of prior are some additional facts: teaching

[168] As in Table 1, E_1 through E_n represent the elements of the claim arbitrarily assigned numbers 1 through n; and E_* represents enablement of the entire claim. In this table, PAR_1 and PAR_2 each represent any single prior art reference, such as a journal article, sample product, student thesis, etc. The key to the analysis under Section 103 is that it permits the looking to more than one reference in the prior art to find all the elements of the claim plus enablement but only if in those references there can also be found (1) a teaching, motivation, or suggestion (TMS in the table) for those references to be combined to form the claimed subject matter as well as (2) a reasonable expectation of success (RES in the Table) that the claimed subject matter will result when the references are so combined.

The apparent crispness of this framework may be somewhat illusory for several reasons. First, as with Table 1, there is some uncertainty regarding claim construction. *See supra* note 168 (discussing uncertainty about the law of claim construction and its application in any given case). Second, as discussed *supra* note 161, the determination of obviousness is to be done from the perspective of a PHOSITA, and the case law leaves some substantial uncertainty as to how this hypothetical person is to be conceptualized. The Federal Circuit has provided a number of factors to consider when determining the characteristics of the PHOSITA:

> Factors that may be considered in determining level of ordinary skill in the art include: (1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of the workers in the field.

Environmental Designs, Ltd. v. Union Oil Co., 713 F.2d 693, 696 (Fed.Cir.1983). *See also* CHISUM ET AL. *supra* note 6 at 597-600 (discussing the case law relating to the determination of the PHOSITA).

[169] *See supra* note 146 (discussing the validity and patentability analyses).

motivation or suggestion to combine those references to obtain the subject matter of the claim as a whole ("TMS"), plus a reasonable expectation of success in achieving the claimed subject matter upon the combination ("RES").[170] When mapped onto this table, this means that a proper holding of invalidity or unpatentability under Section 103 will only lie if a check mark can be found as a matter of fact for every row and at least some tie can be made across all columns using the TMS and RES that must be found in at least one of the rows.[171]

Unfortunately, the appropriateness of the nonobviousness requirement is not entirely clear under the registration theory. To the extent that the analysis operates essentially as crisply as suggested by Table 2, it makes sense as a reasonably inexpensive way to protect against verifiable investments that may have been made towards a technology.[172] However, the practice may deviate some from this framework when requiring in every case some weight be attributed to the so-called secondary considerations of nonobviousness: chiefly, commercial success and long felt need and failure of others.[173] Long felt need and failure by others may not represent a deviation

[170] For a discussion of the case law leading up to this composite test see *supra* notes 159-167.

[171] The nonobviousness analysis is presently pertinent when determining patentability before the Patent Office and when determining validity in litigation but under a soft-look system would only be relevant in litigation. *See supra* note 146.

[172] *See supra* notes 150-152 (discussing role of nonobviousness under registration theory).

[173] As The Court in *Graham* stated when describing these secondary considerations and their purpose:

> Such secondary considerations as commercial success, long felt but unresolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy . . .

These legal inferences or subtests do focus attention on economic and motivational rather than technical issues and are, therefore, more susceptible of judicial treatment than are the highly technical facts often present in patent litigation.... Such inquires may lend a helping hand to the judiciary which, as Mr. Justice Frankfurter observed, is most ill fitted to discharge the technological duties cast upon it by patent litigation. They may also serve to "guard against slipping into use of hindsight," and to resist the temptation to read into the prior art the teachings of the invention in issue.

Graham v. John Deere Co., 383 U.S. 1, 17-18, 35-36 (1966). It is important to realize that even this initial Supreme Court statement of the secondary considerations raises the specter of endeavoring to judge the technological merit of the record rather than its factual content, as the registration theory would require. That is, under the registration theory the framework is a factual one that anyone well skilled in trial and appellate practice can use while The Court seems to be suggesting a deeper foray into the technological merit by speaking of "technological duties."

The Federal Circuit has gone further than the Supreme Court in *Graham* by requiring: "evidence rising out of the so called 'secondary considerations' must always when present be considered en route to a

(Footnote Continued)

and may instead fit well within the registration theory's framework as outlined in Table 2 because they may be evidence that is probative of a lack of TMS and RES, in which case the art may fairly be said to "teach away" from the failed approaches.[174]

In contrast, commercial success may deviate materially from the framework of the registration theory, although for reasons different than identified in the literature.[175] Exemplifying the literature critical of the commercial success factor Merges urges that the system will operate better when "focus returns to the invention's technical merits" because we should question "the spurious inferential connection between success and significant technical advance."[176] In his work on the prospect theory Kitch takes a different view of commercial success arguing that this factor matters under the prospect theory because it shows that the patent has become "the foundation for a series of now valuable contract rights.[177] On first blush it may appear that the commercialization theory would view commercial success the same way, for similar reasons. That is, commercial success might be seen as relevant not because it says something about how hard it was to make the invention but only because it says something about how commercially relevant the subject matter has become.[178]

While the commercial success consideration may seem to map on to the incentive to commercialize discussed earlier, it is not clear that this factor should be considered if

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determination of obviousness." Stratoflex, Inc. v. Aeroquip Corporation, 713 F.2d 1530, 1538-39 (Fed.Cir.1983). *See also* CHISUM ET AL. *supra* note 6, at 601-612 (discussing the case law and commentary on the secondary considerations and collecting sources).

[174] *See supra* note 167 (discussing TMS and RES). *See also* In re Gurley, 27 F.3d 551, 553 (Fed.Cir.1994):

> A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant.

[175] In his work pre-dating the prospect theory Kitch pointed out that commercial success may be a poor indicator of the nonobviousness of an invention because it relies upon too long of a chain of doubtful inferences between the eventual success and the original state of the art. Edmund Kitch, *Graham v. John Deere Co.: New Standards for Patents*, 1966 SUP. CT. REV. 293, 332-33 (1966).

[176] Robert P. Merges, *Commercial Success and Patent Standards: Economic Perspectives on Innovation*, 76 CALIF. L. REV. 803, 838-39 (1988) (citing Kitch *supra* note 174).

[177] Kitch *supra* note 31, at 283.

[178] *See* Kieff *supra* note 11 at 707-10 (discussing the commercialization theory's focus on providing incentives for commercialization).

minimizing social cost is the goal.[179] With the benefit of the registration and commercialization theories combined, commercial success may turn out to be properly ignored as a potential factor of nonobviousness because the factor places too much focus on the merits of the invention, which leads to it not being workable, and not enough focus on the investment-backed expectations by third parties, which is what matters under these theories.[180] Therefore, in the final analysis, it may not be advisable to abandon the Section 103 requirement of nonobviousness in its entirety because most of the nonobviousness framework is shown to both work well according to the registration theory and be well explained by the registration theory.[181]

3. FIRST-TO-INVENT

The patent system's rules governing priority contests between two or more claimants to a patent right protect investment by awarding the patent to the one who was first to invent, not first to file.[182] As recognized by the commercialization theory, a shift to a first-to-file system may lead to an increased likelihood that neither party in a priority dispute will remain with a valid patent because the increased incentive to file early that

[179] *See supra* notes 86-87 and accompanying text (discussing registration theory's goals of minimizing social cost).

[180] *See supra* notes 28, 82, 106-107 and accompanying text (discussing problems with focus on the merits of the inventions). *See also supra* notes 93-103 and accompanying text (discussing importance of investment-backed expectations by third parties). In cases where enough time has gone by for there to be evidence of commercial success there is usually an infringer or two and then the court is left trying to decide whether to decide in favor of the coordination benefits of patents or in favor of protecting the investments of the infringers. In a single-cycle game it may be easy to decide in favor of protecting the infringer's investment. But in a multi-cycle game such a rule would provide incentives to infringe too much and in an uncoordinated fashion and so instead the coordination benefits dominate and evidence of commercial success or lack thereof should be ignored not required.

[181] To the extent the secondary factors so soften the crispness of the framework modeled in Table 2, the net benefits of the entire nonobviousness standard may fade and it should then be abandoned in its entirety. *See supra* note 48 (suggesting that the registration theory may not require the nonobviousness standard and noting that Kitch *supra* note 31 may not be to the contrary). This conclusion, although admittedly not this reasoning, accords with the views of at least one framer of the 1952 Act who described nonobviousness as "the heart of the patent system and the justification of patent grants." Giles S. Rich, *Laying the Ghost of the Invention Requirement*, 1 AM. PAT. L. ASS'N. Q.J. 26, 26 (1972).

[182] While priority under a first-to-file system is awarded to the application that is filed first regardless of priority of invention, under a first-to-invent system like the present patent system, priority is awarded to the to the first inventor. *See* Kieff *supra* note 11, at 749-50 (discussing differences between these two types of priority regimes and collecting sources).

may operate to make one party a winner on priority might also have caused that party to file an application with a disclosure that is inadequate to make the patent valid.[183]

In contrast, under a first-to-invent system there is less of an incentive to rush to file because priority is not determined by filing and as a result there is a lower likelihood that the winner on priority will be left with a patent that fails the disclosure requirements.[184] The fist-to-invent system thereby at least protects the investments of one of the claimants.[185] In addition, first-to-file may lead to a winner-take-all mind set for those seeking patents, which in turn may cause a reduction in the beneficial inducing power of the reward because each potential claimant may find the possibility of winning the race to be too low; or alternatively it may cause the harmful, rent-dissipating power to increase as the increase in uncertainty causes even more individuals to gamble on winning the race.[186]

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[183] As explained by the commercialization theory when discussing incentive to file early and its interaction with the disclosure requirements:

A hastily filed application is more likely to be found invalid for nonenablement or lack of written description under recent Federal Circuit case law. *See* Amgen Inc. v. Chugai Pharm. Co. 927 F.2d 1200, 1213-18 (Fed. Cir. 1991) (applying the statutory requirement that the text of the patent application as filed contain sufficient disclosure to enable one in the art to make and use whatever is covered by patent claims as eventually issued and applying separate written description requirement to claims in the field of biotechnology); Vas-Cath Inc. v. Mahurkur, 935 F.2d 1555, 1563-67 (Fed. Cir. 1991) (holding that the statute also requires the text of the patent application as filed to satisfy the separate and distinct written description requirement so as to reasonably convey to those in the art exactly what is covered by the patent claims as eventually issued); Amgen v. Chugai, 927 F.2d 1200, 1213-18 (applying separate written description requirement to claims in the field of biotechnology); Fiers v. Revel, 984 F.2d 1164, 1170-71 (Fed. Cir. 1993) (solidifying the court's position on a separate written description requirement); Regents of the Univ. of Cal. v. Eli Lilly & Co., 119 F.3d 1559, 1566-69 (Fed. Cir. 1997) (further solidifying the court's position on a separate written description requirement); Lockwood v. Am. Airlines, Inc., 107 F.3d 1565, 1572 (Fed. Cir. 1997) (applying the same written description requirement to the field of computer software); Gentry Gallery, Inc. v. Berkline Corp., 134 F.3d 1437, 1479-80 (Fed. Cir. 1998) (indicating that the written description requirement is not limited to complex technologies but applies equally to simple technologies, like sofa recliners).

Kieff *supra* note 11, at 750, n. 239.

[184] The reasoning here is similar to that for the one year grace period. *See supra* note 139 and accompanying text (discussing the importance of the grace period to allow time to file a properly drafted application when measured under the disclosure requirements of Section 112). For more on the disclosure requirements see *infra* Part IV.B.

[185] The investments of the one who wins the priority dispute are protected.

[186] *See* Kieff *supra* note 11, at 711 (discussing Grady & Alexander *supra* note 32 and the problem of rent seeking and rent dissipating effects in patent law)).

A first-to-invent regime does increase litigation frequency by bringing priority disputes to available contests, but this is beneficial because such disputes can also reach issues of validity.[187] The costs of determining validity in such a proceeding are likely to be less than in a hard-look examination because the opponent in such a priority dispute is like the alleged infringer in litigation in its ability to more cheaply obtain and evaluate the information needed to determine validity.[188] The registration theory thereby explains the persistence of the first-to-invent aspect of the present patent system despite harmonization efforts to have the United States match the rest of the world, which uses first-to-file.[189]

4. PRIOR FOREIGN USE

Like the rules governing novelty, generally, the rules about prior foreign use make sense under the registration theory as tools for protecting those verifiable investment backed expectations.[190] For most of the past century, prior use that was outside of this country would not count for purposes of either staking a claim to priority for purposes of obtaining patent rights in a priority contest or defeating patent rights in a challenge to validity.[191] But since about the beginning of 1994 uses that occur in countries that are members of the North American Free Trade Agreement ("NAFTA") and the World Trade Organization "(WTO") will be available when seeking to obtain a patent in a priority dispute against another claimant – as a sword – but not when seeking to defeat a patent owned by another – as a shield.[192]

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[187] *See* Charles L. Gholz, *Interferences*, in CHISUM ET AL., *supra* note 6, at 511-513 (describing the interference process and its ability to reach issues of validity).

[188] The parties to the priority dispute either have the information relating to the prior art themselves because their own work is being used as prior art against each other or they at least have the same if not greater incentives to find that information as does an ordinary defendant in a litigation who is serving the screening function identified by the commercialization theory. *See supra* notes 61-66 (discussing the screening function).

[189] *See* Kieff *supra* note 11, at 748-50 (discussing harmonization efforts in relation to first-to-file and first-to-invent).

[190] *See supra* note 112 (registration theory on prior art rules and the goal of protecting investment-backed expectations based on objective verifiable evidence).

[191] This is in contrast with the impact of prior use as discussed *supra* notes 129-131 and accompanying text (discussing rules relating to prior use).

[192] *See* 35 U.S.C §§ 102(g) and 104 (as amended by P.L. 103-182, Dec. 8, 1993,. 331, 107 Stat. 2113; P.L. 103-465, Dec. 8, 1994,. 531(a), 108 Stat. 4982). For more on the operation of these new provisions see CHISUM ET AL. *supra* note 6, at 489-491 (discussing legislative changes and explaining their practical impact).

By making prior foreign use that occurs within a country with whom we are a trading partner under either of these treaties available to support a claim to a patent these revisions protect those investment-backed expectations made abroad that are sufficiently serious to have lead to the filing of a patent application.[193] By leaving all other foreign prior use unavailable to defeat a patent, these revisions protect the investments of the one who filed the patent application and disregard those of others whose use is not corroborated by a printed publication.[194] The registration theory's focus on verifiable evidence of potential investment-backed expectations thereby explains what may otherwise appear to be an intricate effort to favor domestic interests.

B. THE DISCLOSURE RULES HELP COORDINATE

Under the registration theory, the Section 112[195] disclosure requirements decrease social costs by serving to give clear notice about the property right, and to decrease the chance of duplicative efforts towards the same invention.[196] The Federal Circuit's strong reading of the written description requirement to put the public on clear notice of what will infringe and what will not makes sense because the patentee as the drafter is the least cost avoider of such ambiguities.[197] This legal development was controversial to be sure;

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[193] *See supra* note 112 (registration theory on prior art rules and the goal of protecting investment-backed expectations based on objective verifiable evidence).

[194] As discussed *supra* notes 126-127 (printed publications anywhere in the world may be available as prior art because they are verifiable).

[195] 35 U.S.C. § 112 ¶¶ 1-2 (setting forth the disclosure requirements of patent law: (1) written description; (2) enablement; (3) best mode; and (4) definiteness, which is also stated as the requirement that the claims "particularly point out and distinctly claim"). The requirements of enablement, written description, and best mode are each judged by comparing the claims as issued to the application as filed. *See* 35 U.S.C. § 112 ¶ 1 (requirements of the specification as filed); 35 U.S.C. § 132 (prohibition against adding new matter). For a discussion of the operation of the disclosure requirements see CHISUM ET AL. *supra* note 6, at 161-322.

[196] This signaling function is recognized by Kitch in his discussion of the prospect theory. Kitch, *supra* note 31, at 287 ("The purpose of the description in the patent is not to disclose commercially relevant technology, but to provide context in which the legal limits of the claim acquire meaning.").

[197] *See* Amgen, Inc. v. Chugai Pharm. Co., 927 F.2d 1200, 1212-13 (Fed. Cir. 1991) (applying the statutory requirement of 35 U.S.C. § 112 that the text of the patent application as filed contain sufficient disclosure to enable one in the art to make and use whatever is covered by patent claims as eventually issued); Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991) (holding that 35 U.S.C. § 112 requires the text of the patent application as filed to satisfy the separate and distinct written description requirement so as to reasonably convey to those in the art exactly what is covered by the patent claims as eventually issued); Amgen v. Chugai, 927 F.2d 1200 (applying a separate written description requirement to claims in the field of biotechnology); Fiers v. Revel, 984 F.2d 1164, 1169-71 (Fed. Cir. 1993) (solidifying the court's position on a separate written description requirement); Regents of the Univ. of Cal. v. Eli Lilly & Co., 119 F.3d 1559, 1566 (Fed. Cir. 1997) (solidifying further the court's position on a

(Footnote Continued)

yet it marks an important weapon in the system's arsenal for fighting social cost. Pro-patent arguments that are against this development because it leads to the invalidation of particular patents should be ignored because this requirement helps to minimize the social cost of the system.[198] Anti-patent arguments that particular patents – such as those on gene fragments, for example – should also be ignored because such patents are much less likely to cause the pernicious clogging of downstream innovation than feared[199] since under this case law many such downstream activities would not infringe most such valid claims.[200]

Although not strictly-speaking a requirement about the content of a patent application, the new statutory requirement for publication of applications eighteen months after filing[201] is properly considered here because it can operate similarly to the disclosure requirements in improving the important signaling function patents play in controlling the potential rent-seeking, and therefore rent-dissipating, behavior of those

separate written description requirement); Lockwood v. Am. Airlines, Inc., 107 F.3d 1565, 1571-72 (Fed. Cir. 1997) (applying the same written description requirement to the field of computer software); Gentry Gallery, Inc. v. Berkline Corp., 134 F.3d 1473, 1478-80 (Fed. Cir. 1998) (holding that the written description requirement is not limited to complex technologies and applies equally to simple technologies, like sofa recliners). *See also* S. Leslie Misrock & Stephen S. Rabinowitz, *Side Bar: The Inventor's Gamble:Written Description and Prophetic Claiming of Biotechnology Inventions*, *in* CHISUM ET AL., *supra* note 2, at 319.

[198] Because the applicant's patent attorney drafts the disclosure for the patent application before filing, she is the least cost avoider of litigation on compliance with the disclosure requirements as long as the legal standards for these requirements are clear and attainable.

[199] *See*, *e.g.*, Rai, *supra* note 6; Heller & Eisenberg, *supra* note 6; Eisenberg, *Norms of Science*, *supra* note 6; Eisenberg, *Experimental Use*, *supra* note 6; Eisenberg, *Public Research*, *supra* note 6.

[200] F. Scott Kieff, *Facilitating Scientific Research: Intellectual Property Rights and the Norms of Science - A Response to Rai & Eisenberg*, 95 NW. U. L. REV. 691, 699-700 (2000) (showing why a patent claim directed to a gene fragment like an EST cannot be construed to cover a larger DNA sequence, such as a substantial portion of an entire gene, and citing Kieff, *supra* note 11 at 721-22 (noting that if the patentee attempts to argue that the claim to the smaller fragment covers the fragment within the environment of the larger DNA, then the claim is likely to be held invalid over the prior art or for lack of adequate disclosure because to be valid, the claimed subject matter must be new and nonobvious, and the patent application must disclose the metes and bounds of the claimed subject matter with physical and chemical detail as well as how to make and use it; and alternatively pointing out that since ESTs exist in nature in the company of the other DNA of the genome, a typical EST claim must be limited in order to overcome this prior art to a version of the EST in some specific environment other than its natural one, such as isolated from all other DNA or inserted into an artificially engineered piece of DNA, and the details of the degree of isolation or of the engineered piece of DNA must also be provided so as to satisfy the disclosure requirements)).

[201] Pub L. No. 106-113, 113 Stat. 1501 (1999) (eighteen month publication of applications).

others who also might be working towards the same invention as claimed in the patent.[202] Indeed, the registration model explored in this paper would go a great deal further towards disseminating information about patent applications by posting them on the world-wide-web for free as soon after filing as administratively practicable.[203]

C. SUMMARY: THE NAME OF THE GAME IS THE CLAIM

The registration theory's view that the patent system can and should operate to minimize social costs is confirmed by recent and important empirical work including by Allison and Lemley, which shows that by almost any measure patents are becoming what they call "more complex" over time.[204] The increase in the number of prior art references cited and the length of prosecution before the Patent Office, which Alison and Lemley identify and then use as proxies for complexity, can be seen as evidence that issued patents are getting better scrutiny without moving towards a hard-look system.[205] Furthermore, the increase in variation among patents identified by the Allison and Lemley paper and can be seen as evidence of increased selectivity in deciding which patents get the increased scrutiny.[206]

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[202] Thus, the 18-month publication provision of patent law is one for which the prospect and rent-dissipating theories discussed *supra* Part II also have good explanatory power.

[203] For a discussion of the registration model see *supra* Part IIIB. Although the registration theory suggests adoption of the registration model and immediate publication, the registration theory may not be quite as supportive of such pre-issuance publication under an examination system like the present one because it will have to reach compromises that are undoubtedly fair from a systemic perspective but that will yield a variety of incentives for strategic behavior, such as the incentive by competitors to before grant of the patent use the publication to teach them how to engage in as much otherwise infringing activity as possible, and the incentives to achieve a stronger bargaining position against a competitor using the leverage of its investments based on a public use up to just under 36 months before publication of the application (based on the combined one-year grace period and the 18 month publication windows). For a discussion of the legislative compromises reached under the 18-month publication provisions of the current system see CHISUM ET AL. *supra* note 6 at 116-122.

[204] JOHN R. ALLISON & MARK A. LEMLEY, THE GROWING COMPLEXITY OF THE UNITED STATES PATENT SYSTEM, U.C. BERKELEY SCHOOL OF LAW PUBLIC LAW AND LEGAL THEORY WORKING PAPER NO. 66 (2001), available online at http://papers.ssrn.com/abstract=281395 (providing empirical evidence on complexity of patents).

[205] *Compare*, *e.g.*, JOSH LERNER, WHERE DOES STATE STREET LEAD? A FIRST LOOK AT FINANCE PATENTS, 1971-2000, NAT'L BUREAU OF ECON. RESEARCH WORKING PAPER NO. 7918, 29 (2000), available at http://www.nber.org/papers/w7918 (suggesting that poor patent quality of some early business method patents may be due to their relatively anemic citation of prior art, which is one of the complexity parameters explored by Allison and Lemley *supra*, note 204).

[206] Patent applicants and their patent attorneys draft the patent disclosure and claims. The Patent Office can reject or allow the claims but otherwise has only limited input to the content. For an overview

(Footnote Continued)

The combination of these two effects provides some evidence that it is patentees themselves who are acting to rationally choose to increase scrutiny on only those patents they believe to be most important.[207] If so, then they are acting in a way that both internalizes and mitigates social cost.[208]

Patentees are motivated to rationally choose to behave this way because they face a complex gamble when selecting claim scope.[209] The several requirements for patentability discussed above operate in concert to force a form of self-discipline on patent scope that mitigates the complex economic concerns explored by Merges and Nelson.[210] As Judge Rich often said about patents, "*the name of the game is the claim* ... [and] the function of claims is to enable everyone to know, without going through a lawsuit, what infringes the patent and what does not."[211] According to Judge Rich, claims present a fundamental dilemma for every patentee because "the stronger a patent

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of the process of arguing to the Patent Office for the right to a patent, which is called "patent prosecution" see CHISUM ET AL. *supra* note 6, at 91-128. The increase in variation seen by Allison and Lemley is therefore evidence that some patentees are choosing to seek patents that are less likely to withstand challenge in court and others are seeking patents that are more likely to withstand challenge.

[207] That is, this may be evidence of a type of self-screening by the patentees themselves based on what challenges to validity they anticipate their competitors might mount. *See supra* notes 61-66 (discussing the screening function).

[208] Those patents that are getting better treatment up front by the applicants are less likely to cause the pernicious impact associated with the one-click patent discussed *supra* notes 1-4 and accompanying text, which is caused by any issued patent that is legally presumed valid because it issued yet nevertheless quite likely to be help invalid in court in practice. *See supra* Part III (comparing the advantages of the registration model over the present examination practice).

[209] Many of the important decisions facing a patentee must be made ex ante before filing the application for several reasons. First, the disclosure requirements compare the claims as issued against the application as filed. *See supra* Part IV.B. Second, the statutory bar aspects of the prior art requirements measure the claims as issued against the state of the art at filing. *See supra* Part IV.A.1. Therefore, patentees must always balance the time needed to write a sufficient disclosure against the chance this time will allow for the creation of so-called "intervening art," because it came into existence between the date of invention and the date of filing.

[210] Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 845 (1990) (exploring economic implications of varying patent scope).

[211] *See*, *e.g*. Giles S. Rich, *The Extent of the Protection and Interpretation of Claims — American Perspectives*, 21 INT'L REV. INDUS. PROP. & COPYRIGHT L. 497, 499, 501 (1990) as quoted in Hilton Davis Chem. Co. v. Warner-Jenkinson Co., 62 F.3d 1512, 1539 (Plager, Circuit Judge, with whom Chief Judge Archer and Circuit Judges Rich and Lourie join, dissenting) (emphasis in original). While Judge Rich made these remarks in a discussion about the benefits of the present examination system, they are even more germane to the model registration system.

the weaker it is and the weaker a patent the stronger it is."[212] By this he meant that a broad patent claim is strong on offense because it covers more and therefore is more likely to be infringed, but it also is weak on defense because it may cover something in the prior art or fail to contain a sufficiently detailed disclosure, and therefore is more likely to be invalid; while a narrow claim is weak on offense, because it covers less and therefore is less likely to be infringed, but it also is strong on defense because it may not cover something in the prior art or fail to contain a sufficiently detailed disclosure, and therefore also is less likely to be invalid.[213]

To be sure, a patentee's offensive drive is strong, but it is also strongly undercut by the defensive drive via the linkage through claim breadth.[214] This is because the costs of preparing a patent with claims of meaningful scope are substantial while an adjudication of invalidity destroys all private value of the patent.[215] The patentee's drafting decisions before filing must take into consideration several factors. Compliance with the disclosure requirements when tested in litigation looks to the disclosure made at filing.[216] In addition, because the best information about validity is most likely to be held

[212] *See*, *e.g.*, Giles S. Rich, *The Proposed Patent Legislation: Some Comments*, 35 GEO. WASH. L. REV. 641, 644 (1967) (responding to proposed legislation S. 1042 and H.R. 5924, 90th Cong., 1st Sess. (1967) and Report of the President's Commission on the Patent System (1966)).

[213] *Id*. (explaining patentee's dilemma, or "puzzle").

[214] *See supra* notes 211-213 (discussing the linkage).

[215] Although the filing fees paid to the Patent Office are relatively modest, the costs of attorney and client time to draft a disclosure that will comply with the patent-obtaining requirements can be well over 10 times that amount. As of January 1, 2003, under 37 C.F.R. § 1.16(a) the basic filing fee is $750, or $375 for what the Patent Office views as a "small entity." The attorney fees for preparing and prosecuting the application, are described by Lemley as follows:

> Prosecuting patents is expensive. There is some disagreement on precisely how expensive it is, but the general range of costs for prosecuting a patent from start to finish (including application and various filing fees paid to the PTO, and attorney's fees not only to prepare and file the application, but to respond to office actions and continue prosecution through to issuance or abandonment) appears to be $10,000 to $30,000 per patent. I have chosen a conservative average estimate of $20,000 per initial application taken through prosecution. Much of this cost is front-loaded: it covers an attorney's time in meeting with the inventor, writing the application, and writing patent claims, as well as a substantial filing fee to the PTO. Other costs are incurred on a piecemeal basis as prosecution progresses, and include both attorney's fees and PTO fees to file each new piece of paper, up to and including the issuance of the patent itself. These cost averages include both patents that are ultimately issued and patent applications that are ultimately rejected by the PTO without being revived.

Lemley, *supra* note 6, at 1498-9. (footnotes omitted) (collecting sources).

[216] *See supra* note 195 (discussing the disclosure rules).

by parties other than the patentee,[217] the patentee experiences substantial incentive either to err on the side of narrowness or to obtain that information so the patent can be drafted around it.[218] It is this incentive for the patentee to make its own correct determination of validity and scope before filing that helps explain the evidence discussed above from Allison and Lemley that patentees themselves are making decisions that tend to keep their own patent scope "just right" from a social perspective.[219] Therefore, as suggested by the registration theory, there are a number of essential registration aspects inherent in the present examination system and they help it minimize social costs.

V. LESSONS FROM THE MODEL FOR THE PRESENT PATENT SYSTEM

The registration model and its accompanying registration theory show that the present patent system, which is based on examination, in fact operates with many registration aspects.[220] Nevertheless, the registration theory shows how the system could be improved by a number of reforms of varying severity. More specifically, the registration theory elucidates the benefits of a number of reforms relating to statutory subject matter and utility, the Doctrine of Equivalents ("DOE"), deference to the Patent Office, and post issuance procedures, which could all be adopted without switching to a fully soft-look system like the registration model.[221] The registration theory also elucidates the benefits of reforms relating to litigation of patents and the presumption of validity that essentially would have the effect of switching to a soft-look system like the registration model.[222]

A. REFORMS FOR SUBJECT MATTER AND UTILITY

The Section 101[223] requirements of utility and statutory subject matter should be amended to avoid the public choice and administrative costs they have inflicted over the

[217] *See supra* Part IV.A.1 (discussing the many types of prior art that are in the hands of those other than the patentee).

[218] A patent claim that end up covering any part of the prior art is invalid. *See supra* note 123. Under the registration theory, post issuance procedures that are available to amend the claims under the present examination system should be avoided to ensure that the patent applicant has the strongest incentive possible to get right the document that is registered and published and on which everyone will rely.

[219] *See supra* notes 204-206 and accompany text.

[220] *See supra* Part IV.

[221] *See infra* Parts V.A-V.D (discussing reforms relating to statutory subject matter and utility, DOE, deference to the Patent Office, and post issuance procedures).

[222] *See infra* Part V.E (discussing reforms relating to litigation of patents and the presumption of validity).

[223] 35 U.S.C. § 101 (statutory subject matter and utility).

years.[224] Both of these requirements have been used to invalidate patents or deny patents based on arguments that make no sense when mapped onto the patent system.[225]

Although Section 101 of the statute is generally viewed as setting forth two requirements for patentability – utility and subject matter – the case law provides some authority for the proposition that this section is either merely prefatory, or designed to rule in what years of case law had tried to rule out. Section 101 provides in its entirety:

§ 101. Inventions patentable

[224] A variety of per se exclusions in patent law have been perceived. *See*, *e.g*, Diamond v. Chakrabarty, 447 U.S. 303 (1980) (holding living organisms not per se unpatentable); Diamond v. Diehr, 450 U.S. 175, 187 (1981) ("A claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer."); *In re* Alappat, 33 F.3d 1526 (Fed. Cir. 1994) (in banc) (computer system for producing a smooth waveform on a raster display is patentable subject matter); State Street Bank & Trust Co. v. Signature Fin. Group Inc., 149 F.3d 1368 (Fed. Cir. 1998), *cert. denied*, 119 S. Ct. 851 (1999) (hub and spoke mutual fund accounting system is patentable subject matter).

The central problem with these perceived exclusions is that they did not provide workable distinctions *ex ante* between what would prospectively be considered the line between the patentable and the unpatentable, leaving decision-makers to entertain arguments about a special exception in any case from anyone able to fund the attack. *See supra* note 81 (discussing some public choice problems associated with this type of decision making). These ever-shifting sands prevented some industries like the computer software business from gaining sufficient traction to organize itself into anything but an industry characterized by a single large player – Microsoft. *See* Kieff supra *note* 11, at 744 (the inability to obtain meaningful "patent protection for software for such a large and important portion of the industry's life may have contributed to the continued unchallenged dominance of a huge entity like Microsoft."). The result was bleak and remarkably reminiscent of the one described by Dickens:

> At the Patent Office in London's Inn, they made 'a draft of the Queens bill', of my invention, and a 'docket of the bill'. I paid five pound, ten, and six, for this. They 'engrossed two copies of the bill; one for the Signet Office, and one for the Privy-Seal Office'. I paid one pound, seven, and six, for this. Stamp duty over and above, three pound. The Engrossing Clerk of the same office engrossed the Queen's bill for signature. I paid him one pound, one. Stamp-duty again, one pound, ten. I was next to take the Queen's bill to the Attorney-General again, and get it signed again. I took it, and paid five pound more. I fetched it away, and took it to the Home Secretary again. He sent it to the Queen again. She signed it again. I paid five pound thirteen, and six, more, for this. I had been over a month at Thomas Joy's. I was quite wore out, patience and pocket.

CHARLES DICKENS, A POOR MAN'S TALE OF A PATENT, 18-19 (Jeremy Phillips, ed. ESC Publishing Ltd. 1984) (including Appendices about the "circumlocution office" described to be "(as everybody knows without being told) the most important Department under Government").

[225] *See*, *e.g*., the discussion *infra* note 235 and accompanying text.

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

During a surprisingly active exchange of cases between the Supreme Court and the Court of Customs and Patent Appeals (predecessor court to the Federal Circuit), involving the famous cases of *Bergy* and *Chakrabarty*, the anatomy of this statute was carefully dissected.[226] The court decided that "in 1952 Congress voiced its intent to consider the novelty of an invention under § 102 where it is first made clear what the statute means by "new", notwithstanding the fact that this requirement is first Named in § 101."[227] The same reasoning would support the view that the word "utility" should be considered under the disclosure requirements of Section 112, such as "enablement," despite the fact that it is first named in Section 101 as well.

If statutory construction approach is unconvincing, a review of theory may be. The utility requirement should be low because the requirement itself serves no economic purpose. A useless patent will not be infringed.[228] Moreover, for a patent that lacks utility because of a lack of practical application, at least the information published in the patent teaches something good (and again no one will infringe). If there is lack of utility that is due to the inventor getting wrong the science or engineering underlying the alleged invention, then the information published is valuable in teaching others what not to do. Finally, a patent of uncertain commercial utility provides incentives for the patentee to license broadly.[229]

The case law controlled by *Brana* has largely adopted this view and today, as a matter of positive law, courts give a great deal of deference to a patent applicant's assertion of utility.[230] To some extent this case law may be inconsistent with outstanding

[226] In re Bergy, 596 F.2d 952, 959-964 (CCPA 1979) (Rich, J.) dismissed as moot, 444 U.S. 1028 (1980) (companion case to Diamond v. Chakrabarty, 447 U.S. 303 (1980))

[227] *Id*. at 961.

[228] Kieff, *supra* note 11 at 721-22 (showing why the utility requirement is itself useless and why lack of utility arguments are most generously viewed as non-infringement of a properly construed claim so as to avoid the apparently inconsistent position of a defendant showing the activity to be of sufficient use to have prompted the infringement lawsuit while arguing that they are of no use).

[229] *Id*. at 712-714 (discussing the powerful incentive to license broadly that is caused by risks of commercialization, such as those that would obtain where commercial utility is uncertain).

[230] According to the Federal Circuit, a two-step analysis is required:

> [First, the Patent Office or alleged infringer] has the initial burden of challenging a presumptively correct assertion of utility in the disclosure. [Second] [o]nly after the [challenger] provides evidence showing that one of ordinary skill in the art would

(Footnote Continued)

Supreme Court precedent in *Manson*.[231] Because a utility requirement would not protect any investment-backed expectations, the registration theory suggests the requirement should be simply abandoned.[232]

The statutory subject matter requirement should also be low – fixed at "anything under the sun made by man"[233] – to avoid both the problems of setting categories of subject matter and the inevitable wasteful costs that would be spent by parties near the margins between categories.[234] The charge that the law must change to accommodate the new subject matters for which patents are being sought makes little sense. Among the many legal regimes that might possibly face a charge of not being designed to deal with new technologies, the patent system must have the best defense precisely because it is the one system expressly designed with such unforeseen technologies in mind.[235] Indeed, technologies that are so foreseeable as to be obvious are not patentable in view of the system's most basic patentability requirement: that the claimed invention not be in the prior art. As a result, we should at a minimum avoid adopting the suggestion by some critics that we develop special rules to accommodate particular areas of patentable subject matter where protection is only recently being sought, such as biotechnology, computer software, and finance; and perhaps should be more clear in holding that the law is firmly

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> reasonably doubt the asserted utility does the burden shift to the applicant" to prove utility.

In re Brana, 51 F.3d 1560, at 1566 (Fed. Cir. 1995).

[231] Brenner v. Manson 383 U.S. 519 (1966) (holding patent invalid for lack of utility, perhaps because no specific commercial use of the products produced by the claimed process, stating "a patent is not a hunting license"). *See* CHISUM ET AL. *supra* note 6, at 707-727 (recognizing the inconsistency and discussing modern treatment).

[232] The prospect, rent-dissipation, commercialization, and registration theories would each see the granting of a hunting license to be entirely appropriate either as an effort to coordinate the hunt to avoid the risk of accidental shootings, to avoid racing, or because there are no investment-backed expectations to protect.

[233] Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980).

[234] For example, consider that during the prior case law when software was perceived to be unpatentable, applicants would simply claim it "in a box" or "on a disk" by drafting claims to a general purpose computer (a thing) programmed a certain way or a magnetically recordable medium (again a thing) on which a certain message had been recorded. For a detailed discussion of the evolution in this area see CHISUM ET AL. *supra* note 6 at 728-828.

[235] The majority opinion of the sharply divided Supreme Court embraced this view in Diamond v. Chakrabarty, 447 U.S. 303 (1980):

> This is especially true in the field of patent law. A rule that unanticipated inventions are without protection would conflict with the core concept of the patent law that anticipation undermines patentability.

settled on this issue by expressly stating that statutory subject matter raises no distinct hurdle to patentability.[236]

B. REFORMS FOR THE DOCTRINE OF EQUIVALENTS

An understanding of incentive for individual patentee's to get patent scope "just right"[237] provides some guidance on the ongoing battle over DOE, which allows a patentee to win an infringement suit against something that is not literally covered by the claims.[238] Allowing the patentee recourse to this doctrine is bad in that it weakens the important self-disciplining effect described above; and eliminating the doctrine would be good in accentuating this incentive.[239]

C. REFORMS FOR DEFERENCE TO THE PATENT OFFICE

The patentees' incentive to make their own correct determination of validity also raises serious issues for some of the present administrative law doctrines relating to the Patent Office.[240] Because the Patent Office Regulations governing a patentee's duty to disclose information material to validity provides no added incentive for the patentee to seek out such information,[241] they may be unnecessary under either a hard-look or a soft-look system. Because the Patent Office is not the lower cost provider of information relating to validity, deference to its decisions on validity as being well informed is

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[236] As the Federal Circuit recognized in State Street Bank & Trust Co. v. Signature Fin. Group Inc., 149 F.3d 1368, 1375 (Fed. Cir. 1998), *cert. denied*, 119 S. Ct. 851 (1999):

> The question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to process, machine, manufacture, or composition of matter – but rather on the essential characteristics of the subject matter, in particular, its practical utility. Section 101 specifies that statutory subject matter must also satisfy the other "conditions and requirements" of Title 35, including novelty, nonobviousness, and adequacy of disclosure and notice.

[237] *See supra* notes 209-219.

[238] *See*, *e.g.*, Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17 (1997) (discussing the doctrine of equivalents and its limits).

[239] Recent work by Wagner, makes a similar argument to justify cabining the reach of DOE. *See* Wagner, *supra* note 52. Under the registration theory's focus on protecting investment-backed expectations with clear rules it is hard to see a justification for any scope of DOE at all.

[240] These include deference on questions of law and on issues of fact. *See supra* note 70 (discussing Administrative Law aspects of the Patent System).

[241] *See* American Hoist & Derrick Co. v. Sowa & Sons, 725 F.2d 1350, 1362 (Fed. Cir. 1984) (holding that patentee has no duty to search).

questionable on its facts.[242] Moreover, to the extent decisions on validity can be made for so-called legal reasons that are based on facts, there is real potential for social costs relating to public choice and administrative problems in shaping those reasons and how they are applied.[243]

The costs of a hard-look system are therefore made worse by the rule of deference. As a result, many of the proposed shifts towards a hard look system should be avoided in part because they have a greater potential for public choice and administrative problems, especially under the present regime of heightened deference to the Patent Office.[244]

D. REFORMS FOR POST ISSUANCE PROCEDURES

Although the registration theory elucidates advantages of soft-look registration systems over hard look examination systems, a number of middle-ground approaches might also be considered. These may offer the informational advantages of registration while trying to mitigate the high costs of full civil litigation through various post-issuance procedures to challenge an issued patent but conducted before the Patent Office. Approaches that have been tried include those called *ex parte* reexamination, *inter partes* reexamination, and *inter partes* opposition.[245]

Although *ex parte* reexamination was introduced into the Patent System in 1980 to help address the concerns about the pernicious impact of issued patent claims whose validity is questionable,[246] it turns out to not work as a cost-effective means for removing

[242] *See*, Orrin S. Kerr, *Rethinking Patent Law in the Administrative State*, 42 WM. & MARY L. REV. 127 (2000) (criticizing arguments for deference to the Patent Office). *See also*, In re Lueders, 111 F.3d 1569, 1574-79 (Fed. Cir. 1997) (reviewing reasons for not applying enhanced deference to the Patent Office).

[243] Where the statute has provided the standards against which all claims are to be measured a shifting in the standards on a case-by-case basis will return us to the bleak result discussed *supra* note 224.

[244] *See* Dickinson v. Zurko, 527 U.S. 150 (1999) (Administrative Procedures Act requires deference to fact-finding by the Patent Office). *But compare*, Merk & Co. v. Kessler, 80 F.3d 1543, 1549-50 (Fed. Cir. 1996) (holding that the Patent Office should not receive *Chevron* deference on legal questions because "Congress has not vested the Commissioner with any general substantive rulemaking power") *with*, Dethmers Mfg. Co. v. Automatic Equipment Mfg. Co., 293 F.3d 1364, 1366-67 (Fed. Cir., 2001) (dissenting opinion of Judge Dyk questioning court's decision to not give the Patent Office deference on the interpretation of its own regulations).

[245] For a discussion of these various procedures see CHISUM ET AL. *supra* note 6 at 128-160.

[246] H.R. REP. 96-1307, pt. 1, 3-4 (1980), reprinted in 1980 U.S.C.C.A.N. 6460, 6462-63 ("Reexamination will permit efficient resolution of questions about the validity of issued patents without recourse to expensive and lengthy infringement litigation.").

such a claim because it only involves the same parties responsible for allowing the claim in the first instance: the applicant and the Patent Office.[247] In 1999, *inter-partes* reexamination was introduced to allow for more meaningful participation by third parties.[248] However, in order to prevent patentee's from having their patents held up in perpetual reexamination, this new procedure bars the third party from appealing the results of the reexamination,[249] and estops the third party, including the real party in interest, from re-litigating anything that was or could have been decided during the reexamination.[250] As a result, third parties who are not yet sure they have the best

[247] The *ex parte* nature of the process essentially means that a third-party's involvement is limited to the initial request for reexamination. Absent meaningful involvement this party is not able to effectively present to the decision-maker the very information relating to validity that the registration theory shows is most likely to be in the hands of some third party. Whatever patent claims emerge from the reexamination will again be presumed valid. Therefore, most third parties have rationally elected to hold any pertinent information relating to validity for later use at trial to undermine the presumption of validity that issued with the patent. Indeed, *ex parte* reexamination has become a strategic tool for patentees to use as a way to effectively strengthen their presumption of validity against arguments they suspect may be raised by competitors in litigation. If necessary, the patentee may narrow the claim during reexamination to avoid the newly discovered art, whereas during litigation the court must either hold the claim valid or invalid as written. *See* 2001 Unted States Patent and Trademark Office Performance and Accountability Report, at 106 T.1, 119 T.13A-T.13B, (available at http://www.uspto.gov/web/offices/com/annual/2001/) (For the year 2001, 150 of the 296 *ex parte* reexaminations were requested by third parties and only 1 was and *inter partes* reexamination).

[248] PL 106-113,. 4601-4608, 113 Stat. 1501 (Nov. 29, 1999) (adding new sections, 35 U.S.C. § 311-18). For an excellent review of the strategic concerns raised by this new procedure see Robert T. Pous and Charles L. Gholz, *Will Inter Partes Reexamination be Embraced By Third Parties As An Alternative to Litigation?*, 7 INTELL. PROP. TODAY, 37 (2000).

[249] *See* 35 U.S.C. § 315(b)(1); 35 U.S.C. § 134(c) ("A third party requester in an *inter partes* proceeding may appeal to the Board of Patent Appeals and Interferences from the final decision of the administrative patent judge favorable to the patentability of any original or proposed amended or new claim of a patent, having once paid the fee for such appeal. The third party requester may not appeal the decision of the Board of Patent Appeals and Interferences.")

[250] *See* 35 U.S.C. § 315(c):

> [Third party] is estopped from asserting at a later time, in any civil action arising in whole or in part under section 1338 of title 28, United States Code, the invalidity of any claim finally determined to be valid and patentable on any ground which the third party requester raised or could have raised during the *inter partes* reexamination proceedings. . . . [Estoppel] "does not prevent the assertion of invalidity based on newly discovered prior art unavailable to the third party requester and the Patent and Trademark Office at the time of the *inter partes* reexamination proceedings."

See also PL 106-113, 4607, 113 Stat. 1501 (Nov. 29, 1999):

Any party who requests an *inter partes* reexamination under section 311 of title 35, United States Code, is estopped from challenging at a later time, in any civil action, any fact determined during the process of

(Footnote Continued)

argument may rationally elect to save it for use in later litigation rather than use it and loose it through the more sterile process of administrative adjudication, which does not allow for non documentary forms of evidence to be considered.[251] *Inter partes* opposition proceedings are used in Europe and allow more types of evidence than the administrative procedures available for reexamination in the United States, but these must be filed within a short time after the patent has issued.[252]

An alternative approach might be to include a special provision for declaratory judgment jurisdiction to allow any one who has sufficient interest but not necessarily reasonable apprehension of suit to bring an action in court challenging the validity of the patent.[253] This would give access to better procedures and would not have the time restrictions of the opposition proceedings, but would then subject patentees to more potential challenges.[254] In the final analysis, this approach begins to look most like the registration model, which in turn raises a number of litigation conduct issues that are discussed below.

E. REFORMS FOR LITIGATION

To be sure, the balancing effect on claim scope that draws the attention of most patent critics is imperfect, and must be further explored. These critics are correct that many issued patents are held invalid through federal court litigation.[255] But the number

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such reexamination, except with respect to a fact determination later proved to be erroneous based on information unavailable at the time of the *inter partes* reexamination decision.

[251] Unlike litigation, reexamination does not allow for subpoenas, interrogatories, depositions, live testimony, and cross-examination.

[252] *See* European Patent Convention, Oct. 5, 1973, [hereinafter EPC] art. 99(1) (opposition must be filed "[w]ithin nine months from the publication of mention of the grant of the European Patent") (available at http://www.european-patent-office.org/legal/epc/index.html) (last visited Dec. 10, 2002). *See also* European Patent Office Guidelines for Examination: Part D Guidelines for Opposition Procedure, ch. I, p.1 (available at http://www.european-patent-office.org/legal/gui_lines/index.htm) (setting for procedural guidelines for opposition proceedings).

[253] *See* Thomas G. Pasternak and Karen J. Nelson, *Declaratory Judgment Jurisdiction: A Dance on the Razor's Edge*, in CHISUM ET AL., *supra* note 6, at 1043-49 (reviewing the standard for obtaining declaratory judgment jurisdiction in patent cases under present system).

[254] As elucidated by Lemley, one advantage in allowing more time to pass is that it allows more information about society's interest in the patent to accrue, thereby decreasing the likelihood of error associated with *ex ante* efforts to predict which patents should receive close attention. S*ee supra* note 80 and accompanying text (citing Lemley, *supra*, note 6, at 1497).

[255] *See* John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 205-07 (1998) (reporting that about 46% of all patents litigated to a final judgment on validity issues are held invalid, including decisions on appeal and at summary judgment);

(Footnote Continued)

of patents held invalid has decreased over time.[256] Critics are also correct that while many issued patents may be invalid but also irrelevant to the market,[257] some may be invalid and relevant in a bad way through their *in terrorem* effect without ever reaching litigation.[258] This leaves alleged infringers to decide among several options: federal court litigation to get the patent adjudicated invalid; obtaining permission from the patentee; or not operating in a way that allegedly infringes. The question raised by such patents is how best to decrease the social costs of allowing the alleged infringer to make and implement the socially optimal decision.

According to the registration theory, these social costs may be decreased by use of tools in the proposed registration model that are slightly modified versions of two recent legal trends in the case law of the present system.[259] These tools operate to decrease incentives for strategic behavior and increase incentives for sharing information, thereby

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Kimberly Moore, *Judges, Juries and Patent Cases – Empirical Evidence to Peek Inside the Black Box*, 99 MICH. L. REV. 365, 390 tbl.4 (2000) (reporting that 33% of patents are held invalid at trial).

[256] *See* Gloria K. Koenig, PATENT INVALIDITY: A STATISTICAL AND SUBSTANTIVE ANALYSIS 4-19 to 4-23 (rev. ed. 1980) (reporting invalidity numbers about 25 years ago at 65%). *See also* Allison & Lemley, *supra* note 255, at 206 n.53.

[257] This is the important insight explored by Lemley, *supra* note 76.

[258] Not all potential defendants will elect to spend the money it took to withstand the preliminary injunction in the one-click shopping case discussed *supra* notes 1-4 and accompanying text.

[259] These tools come from the general debate over the so-called "American Rule" and the so-called "British Rule" of litigation. As Abramowicz aptly explains, *supra* note 30, at 111, n. 464:

> Loser pays is often called the British rule, though variants of the British rule exist. On the economic choice among the various alternatives, *see* Richard D. Cooter & Daniel L. Rubinfeld, *Economic Analysis of Legal Disputes and Their Resolution*, 27 J. ECON. LIT. 1067 (1989); John J. Donohue III, *Opting for the British Rule, or If Posner and Shavell Can't Remember the Coase Theorem, Who Will?*, 104 HARV. L. REV. 1093 (1991); John P. Gould, *The Economics of Legal Conflicts*, 2 J. LEGAL STUD. 279 (1973); William M. Landes, *An Economic Analysis of the Courts*, 14 J.L. & ECON. 61 (1971); A. Mitchell Polinsky & Daniel L. Rubinfeld, *Does the English Rule Discourage Low-Probability-of-Prevailing Plaintiffs?*, 27 J. LEGAL STUD. 519 (1998); Richard A. Posner, *An Economic Approach to Legal Procedure and Judicial Administration*, 2 J. LEGAL STUD. 399 (1973); I.P.L. P'ng, *Strategic Behavior in Suit, Settlement, and Trial*, 14 BELL J. ECON. 539 (1983); Steven Shavell, *Suit, Settlement, and Trial: A Theoretical Analysis Under Alternative Methods for the Allocation of Legal Costs*, 11 J. LEGAL STUD. 55 (1982); Edward A. Snyder & James W. Hughes, *The English Rule for Allocating Legal Costs: Evidence Confronts Theory*, 6 J.L. ECON. & ORG. 345 (1990); Mark S. Stein, *The English Rule with Client-to-Lawyer Risk Shifting: A Speculative Appraisal*, 71 CHI.-KENT L. REV. 603 (1995); and Bradley L. Smith, Note, *Three Attorney Fee-Shifting Rules and Contingency Fees: Their Impact on Settlement Incentives*, 90 MICH. L. REV. 2154 (1992).

helping ensure that the alleged infringer is able to make and implement the socially optimal decision on the choice discussed above.[260]

The first tool arises from an important innovation in Federal Circuit case law that can be used to decrease incentives for strategic behavior by patentees. Despite to the critics' view of the Federal Circuit as a court that is unduly pro-patentee, the Federal Circuit has led the charge in the area of Rule 11 sanctions in cases such as *Judin* where a discretionary ruling of no sanctions was vacated with instructions to award appropriate sanctions *against a patentee, and its trial and appellate counsel*.[261] Such disciplining of errant patentees also may be achieved with other similar legal devices including 28 USC § 1927 (counsel's liability for vexatious litigation), and 35 USC § 285 (attorney fees for exceptional cases). Importantly, *Judin* involved the patentee's failure to conduct a pre-filing investigation on infringement. Under a system like the proposed registration model, such a disciplining device might also be extended to curb patentees' failure to conduct pre-filing investigations on validity.

The second tool arises from a highly evolved body of law in the patent area that can operate to punish clients and their lawyers for reliance on unsatisfactory opinions of counsel.[262] The standards for opinions of counsel used by alleged infringers to insulate them from liability could be applied to potential plaintiff patentees before they are allowed to bring an action claiming liability. This would improve a system like the proposed registration model by spreading the costs of validity determinations among patentees and alleged infringers. The cost shifting effects discussed above will provide incentives for patentees and likely infringers to exchange information about the strength of their respective cases, thereby somewhat mitigating the risk of duplicative expenditures. This effect is enhanced by the patentee's interest in communicating with alleged infringers so as to make the alleged infringement appear willful and thereby win treble damages.[263] Therefore, according to the registration theory, we should move to a

[260] Neither of these tools was present during the brief window in our history during which a true registration system was in use. The registration system lasted for 43 years from 1793 to 1836. Indeed, it was not until the 1870 Act that emphasis was placed on the claim. *See* CHISUM ET AL. *supra*, note 6, at 19-21.

[261] *See* Judin v. U.S. 110 F.3d 780 (Fed. Cir. 1997) (reversing for abuse of discretion a judgment of no sanctions under Rule 11 against patentee and its counsel).

[262] *See*, *e.g.*, Johns Hopkins Univ. v. CellPro, Inc., 978 F.Supp. 184 (D. Del. 1997) *aff'd* 152 F.3d 1342 (Fed. Cir. 1998) (chastising authoring counsel by name while affirming award of treble damages for willful infringement because opinion of counsel was so plainly deficient).

[263] *See* Pasternak and Nelson, *supra* note 253 (showing how such communications can be conducted without creating declaratory judgment jurisdiction).

soft look system like the registration model accompanied by fee-shifting reforms to cabin the very pernicious effects explored by advocates of hard look approaches.

VI. CONCLUSION

Patent law can operate to minimize social costs, including those typically associated with information, administration, public choice, races for a common prize, and bargaining. The case for an alternative model registration system helps reveal for the first time a normative theory of the law and economics of the positive law patent-obtaining rules called the registration theory. The case for an alternative model registration system also is helpful in showing why increased scrutiny of patent applications would worsen, not improve, the present system's performance.

Some may argue that a full blown shift to registration may not be optimal because the formality of Patent Office examination may have a positive effect in screening out some truly non-serious filings. But it is not clear that the costs of litigating under the proposed registration model would not serve the same screening function. The present patent system has already evolved some powerful disciplining tools that restrict patents' ability to cause many of the social costs that prompted the critics. To the extent this effect should be increased, it may be beneficial to dial back somewhat the presumption of validity and increase the patentee's burdens of conducting pre-filing investigations on both infringement and validity before bringing suit to enforce a patent.

Finally, even if the decision is made to ignore the prescriptive aspects of this paper, the new normative registration theory for the patent-obtaining rules offered herein turns out to have more explanatory power than the prospect and rent-dissipation theories in the literature and thereby contributes to the literature by both elucidating how and why these rules operate and by serving as a new lens through which subsequent reforms can be judged.

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