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Defining the Proper Scope of Internet Patents: If We Don't Know Where We Want to go, We're Unlikely to get There

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DEFINING THE PROPER SCOPE OF INTERNET PATENTS: IF WE DON'T KNOW WHERE WE WANT TO GO, WE'RE UNLIKELY TO GET THERE

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INTRODUCTION

Internet patents¹ are unquestionably a hot topic. The United States Patent and Trademark Office ("USPTO") is awash in applications.² No

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1. For purposes of this article "Internet patents" include patents protecting methods of doing business on the Internet, standing alone or as computing implementations. Patents covering the basic equipment and telecommunications routing, switching and other related technologies vital to the operation of the Internet's infrastructure are excluded.

2. See, e.g., John T. Aquino, *Patently Permissive*, A.B.A. J., May 1999, at 30; Saul Hansell, *As Patents Multiply, Web Sites find Lawsuits are a Click Away*, N.Y. TIMES, Dec. 11, 1999, at A1; Josh Lerner, *Where Does State Street Lead? A First Look at Finance Patents, 1971-2000 I* (Sept. 2000) (unpublished manuscript, on file with the National Bureau of Economic Research), available at <http://www.nber.org/papers/w7918>; Richard Maulsby, *Under Secretary Dickinson Initiates Action Plan for Business Method Patents*, USPTO TODAY, Spring 2000, at 8 (noting e-commerce related patent applications have doubled between 1998 and 1999); John R. Thomas, *The Post-Industrial Patent System*, 10 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 3, 4 (1999)(citing numerous sources).

sooner did the first patents issue than a wave of litigation broke over the marketplace.³ Commentators of all types, business,⁴ academic⁵ and even the regular press (electronic and otherwise)⁶ which normally avoids the esoteric and boring issues of intellectual property law, have weighed in on the issue. Something interesting, and maybe even important, must be happening; something which deserves a closer look.

Most of the excitement can be traced back to the Court of Appeals for the Federal Circuit ("CAFC") decision in *State Street Bank & Trust v. Signature Financial Group*.⁷ The opinion in that case triggered profound changes in the role of patent law in Internet commerce. First, it consolidated the CAFC's strong support for the patentability of software inventions.⁸ Second, and more importantly, it has been widely inter-

3. See, e.g., *Fantasy Sports Props., Inc. v. CBS Sportsline, et al.*, 103 F. Supp. 2d 886 (E.D. Va. 2000); *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 73 F. Supp. 2d 1228 (W.D. Wash. 1999), *vacated by* 239 F.3d 1343 (Fed. Cir. 2001); *DoubleClick, Inc. v. L90 Inc.*, No. 2:99-1914 (E.D. Va. filed Nov. 12 1999); *Priceline.com, Inc. v. Microsoft*, No. 3:99 CV 1991 (D. Conn. filed Oct. 13, 1999); Hansell, *supra* note 2.

4. See, e.g., Victoria Slind-Flor, *Gold Diggers*, CORPORATE COUNSEL (Dec. 20, 1999) available at <http://www.lawnewsnetwork.com/stories/A11873-1999Dec17.html> (on file with Michigan Telecommunications and Technology Law Review ("MTTLR")); Letter to the Editor: Re: "Gold Diggers" (Dec. 29, 1999) at <http://www.lawnewsnetwork.com/stories/A12441-1999Dec29.html> (on file with MTTLR); Dugie Standeford, *Book Publisher Launches Cybercampaign Against Amazon.com*, E-COMMERCE LAW WEEKLY (Mar. 8, 2000) available at <http://www.lawnewsnetwork.com/stories/A18094-2000Mar7.html> (on file with MTTLR).

5. See, e.g., Rochelle Cooper Dreyfuss, *Are Business Method Patents Bad for Business?*, 16 SANTA CLARA COMPUTER & HIGH TECH. L. J. 263 (2000); 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 (1999); Leo J. Raskind, *The State Street Bank Decision: the Bad Business Of Unlimited Patent Protection for Methods of Doing Business*, 10 FORDHAM INTELL. PROP. MEDIA & ENT. L. J. 61 (1999); Richard H. Stern, *Scope-of-Protection Problems with Patents and Copyrights on Methods of Doing Business*, 10 FORDHAM INTELL. PROP. MEDIA & ENT. L. J. 105; Thomas, *supra* note 2.

6. See, e.g., James Gleick, *Patently Absurd*, NEW YORK TIMES MAGAZINE, March 12, 2000, at 44; Hansell, *supra* note 2.

7. 149 F.3d 1368 (Fed. Cir. 1998).

8. In particular, that such inventions fit within the statutory classes of patentable subject matter under 35 U.S.C. § 101 (1994). See *id.* at 1375. The CAFC, which possesses exclusive jurisdiction over appeals in patent application and infringement cases, had been gradually moving toward this position. See Vincent Chiappetta, *Patentability of Computer Software Instruction as an "Article of Manufacture:" Software as Such as the Right Stuff*, 17 J. MARSHALL J. COMPUTER & INFO. L. 89, 106-113 (1998) [hereinafter Chiappetta, *Article of Manufacture*]. To obtain a patent the additional requirements of usefulness, novelty, non-obviousness and description/enablement must be satisfied. *Id.* at 99-106. The CAFC expressly acknowledged the point in both *State Street Bank*, 149 F.3d at 1375, and in *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1361 (Fed. Cir. 1999), *cert. denied*, 528 U.S. 946 (1999) (following *State Street Bank* regarding § 101 statutory subject matter issue).

preted⁹ as disposing of the venerable, if questioned,¹⁰ doctrine that patents could not be obtained on methods of doing business. These two obstacles cleared, the rush to patent Internet business related innovations began in earnest.

This symposium's topic, the proper scope for this burgeoning crop of Internet patents, requires a two step analysis. First, we must determine how we should feel about such patents—are they a good or bad thing within the patent law and Internet business contexts? That response, in turn, dictates the appropriate approach to the second order determination of how we should deal with the granting and enforcement of such patents. If we are favorably disposed, then the patent system can get on with implementing what *State Street Bank* started, focusing on issues of prior art identification, examiner expertise and perhaps a few specific, but relatively minor, variations necessary to accommodate this new field of invention. However, if the mere granting of such patents raises concerns, then much greater adjustments aimed at reining them in, or even eliminating them, are required.

The “how we should feel” question is best answered by bifurcating the issue. Patent protection for novel and non-obvious advances in computing (software or hardware) is normatively non-problematic.¹¹ In

9. Not surprisingly, as that is precisely what the court said it was doing. See *State Street Bank*, 149 F.3d at 1375. But see Thomas, *supra* note 2, at 27 (arguing, convincingly, that the purported holding is actually primarily dicta on the facts before the court); see also Chiappetta, *Article of Manufacture*, *supra* note 8, at 133 n.229, 161 n.297. The USPTO certainly is standing by its Guidelines and continues to issue patents on methods of doing business. See Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. 7478, 7479 (Feb. 28, 1996)(instructing examiners not to categorize claims as methods of doing business, cited with approval in *State Street Bank*, 149 F.3d at 1377); Thomas, *supra* note 2, at 30–31.

10. See Rinaldo Del Gallo, III, *Are “Methods of Doing Business” Finally Out of Business as a Statutory Rejection?*, 38 IDEA: J. L. & Tech. 403, 411–12 (arguing against the exception, noting prior commentators had found it “ghostlike” in nature and referencing Judge Newman’s well-known dissent from *In re Schrader*, 22 F.3d 290, 296–99 (Fed. Cir. 1994)).

11. See generally Chiappetta, *Article of Manufacture*, *supra* note 8; *infra* notes 21–30 and accompanying text. Or at least no more so than any other advance which lies within the appropriate reach of the patent incentive. The analysis in this Article proceeds on the assumption that the patent system works properly and the only question is whether Internet innovations properly fit within its ambit. Cf. Vincent Chiappetta, *Myth, Chameleon or Intellectual Property Olympian? A Normative Framework Supporting Trade Secret Law*, 8 GEO. MASON L. REV. 69, 90 n. 133 (1999) [hereinafter Chiappetta, *Myth*]. It is hardly a forgone conclusion that this assumption is correct. Mark A. Lemley, *Reconceiving Patents in the Age of Venture Capital*, 4 J. SMALL & EMERGING BUS. L. 137, 139 (2000) (noting Fritz Machlup’s conclusion in a 1958 study that “if we didn’t have a patent system it would irresponsible to create one”); *infra* note 112. Although this issue does not raise any particularly unique concerns for software patenting, it does influence the competitive arts analysis by making an already strong case against traditional patenting that much more convincing. See *infra* notes 150–74 and accompanying text.

contrast, protecting even novel and non-obvious methods of doing business, and specifically the means of competing (the “competitive arts”),¹² fits poorly within the doctrinal, historical and policy foundations of traditional patent law and should be avoided.¹³

The Electronic Age’s disruption of the market’s normal “first-to-move lead-time” incentive (through the ease and speed of recognizing, identifying and replicating advances in competitive means) justifies, however, some more modest intellectual property protection.¹⁴ Addressing this particular market failure would require extensive and risky modification of either the existing patent or copyright laws. A better solution lies in melding aspects of both systems to create an independent “competitive arts regime” designed expressly, and exclusively, to supplement the reduced lead-time incentive while minimizing interference with desirable market forces.¹⁵

Achieving this objective calls for combining the demanding and precise qualification structure of patent law with the nuanced rights and remedial approach of copyright law. Patent law’s novelty, claiming and independent examination requirements provide the threshold, specificity and vigilance against over-reaching essential to appropriately limiting the regime’s reach. Infringement should, similarly, adopt patent law’s constrained, claims-based literal and equivalents approach. Proper functioning of the new regime, however, will require significant adjustments to traditional implementation of these requirements. In particular, examiner training and search tools must be tailored, a burden of coming forward with prior art must be imposed on the applicant, and a pre-issuance publication and post-grant opposition procedure must be instituted, in order to properly reflect the business context, the long

12. There are a wide variety of innovations that might fall under the general heading of “methods of doing business.” See *infra* notes 31–38 and accompanying text. This Article only deals with the subclass involving the way businesses compete and not those processes for creating the services (or products) actually sold.

13. See *infra* notes 41–174 and accompanying text.

14. See *infra* Part II (discussing the justifications for protection). As the discussion notes, this lead-time problem derives from and shares much in common with the quick and cheap copying problem first recognized in the computer software debate. See, e.g., Dennis S. Karjala, *A Coherent Theory for the Copyright Protection of Computer Software and Recent Judicial Interpretations*, 66 U. CIN. L. REV. 53, 53–55 (1997) [hereinafter Karjala, *A Coherent Theory*]; Jerome H. Reichman, *Charting the Collapse of the Patent-Copyright Dichotomy: Premises for a Restructured International Intellectual Property System*, 13 CARDOZO ARTS & ENT. L. J. 475, 517–20 (1995) [hereinafter Reichman, *Charting*]; Jerome H. Reichman, *Legal Hybrids Between the Patent and Copyright Paradigms*, 94 COLUM. L. REV. 2432, 2504–19 (1994) [hereinafter Reichman, *Legal Hybrids*]; Pamela Samuelson, Randall Davis, Mitchell D. Kapor & Jerome H. Reichman, *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308 (1994) [hereinafter *Manifesto*].

15. See *infra* Part III (describing the new regime).

history and the less frequently documented environment in which competitive arts innovation occurs. Additionally, a more demanding standard of obviousness should be applied, limiting the regime's incentives to paradigm-shifting pioneering innovations and leaving the primary form of competitive arts advance (emulative adoption coupled with modest differentiation) to market forces.

Regarding rights and remedies, the new regime must part company with patent law. Supplementing the weakened first-to-move lead-time market incentive requires only a gentle nudge to competitive arts innovation. Applying a patent holder's "one size fits all" virtually absolute right to exclude provides excessive incentive, leaving the related social costs of lost competition and foregone follow-on improvements unjustified. Copyright law's greater willingness to tailor rights and remedies to the particular need provides a much better approach. Specifically, a set of rights tracking the basic balance reflected in the "cover" concept of § 115 of the Copyright Act¹⁶ (appropriately adjusted to reflect the competitive arts context), can more appropriately bolster the weakened first-to-move lead-time incentives. Granting a right to first implementation preserves any market advantages associated with recognition as the innovator. A modified compulsory licensing scheme requiring royalty payments (designed, however, solely to provide modest cost-differentiation rather than compensation) mimics a lead-time advantage over competitors. Others remain free, as in the marketplace, to compete by adopting and improving upon the technique. The royalty, however, provides the innovator with a cost advantage over subsequent adopters. While they attempt to close this gap, the innovator can pursue advantage consolidating activities similar to those used in the normal competitive marketplace.

Two refinements round out the regime. First, in order to more closely parallel the commercial realities of the market's incentives, the innovator's rights should be limited to a relatively short term (perhaps as little as one year) and recognize independent creation as a complete defense. Second, in order to avoid increased possibilities for jurisdictional gamesmanship afforded by the Internet environment, the rights should extend to any implementation of the technique, independent of its geographic locus, whenever the effects are felt within the United States market.

If we cannot find the fortitude to promptly pursue a new more appropriate form of competitive arts protection, a number of

16. 17 U.S.C. § 115 (1994). Although the "cover" concept provides the basis for an appropriate remedy in the new regime, the actual remedy differs in a number of important respects. *See infra* Part III.

administrative and judicial adjustments to the post-*State Street Bank* patenting *status quo* should be instituted immediately. Changes in rights creation, enforcement and remedies, better aligning them with the approaches of the proposed regime, can significantly reduce the consequences of over-protection under traditional patent law.¹⁷

Because the new regime relies heavily on the patent framework regarding qualification, adjusting current examination procedures can substantially minimize the number of “bad” competitive arts patents (as defined by current patent law objectives) and properly restrict the scope of the rights under “good” ones.¹⁸ As an initial step, claims to competitive arts innovation must always be carefully separated from advances in computing (including the mere fact of Internet implementation). This will ensure appropriate examination for novelty and non-obviousness exclusively within each distinct field of endeavor. Then appropriate substantive examiner expertise, prior art search tools and techniques and non-obviousness standards (mirroring those of the proposed regime) can, and should, be applied. Additionally, examiner evaluation criteria and compensation should specifically encourage investing sufficient time and effort to build the precise and complete examination record necessary to generate well-defined and properly limited claims. Finally, these restricted rights should be fully incorporated into enforcement actions through explicit judicial reference to, and reliance on, the examination record when assessing claims (in particular, those in means plus function format) and applying the doctrine of equivalents.

Remedial adjustments present greater challenges under the current patent statute. A good argument can be made, however, that the courts have the authority to make the basic, but crucial, shift from the present property rules to a liability rules approach. This change would permit the standard infringement remedy to more closely parallel the proposed regime’s compulsory licensing strategy, generally replacing injunctive prohibition with a commercially reasonable (and, to the extent statutorily possible, only a modest cost-differentiating) royalty payment. At a minimum, the increasingly routine grant of preliminary prohibitive injunctions should disappear. The courts should insist, even in the face of strong likelihood of success, on truly exceptional circumstances clearly demonstrating the inadequacy of an interim royalty-based cost advantage.

Combining these adjustments with a revitalized application of the judicially created and controlled patent misuse doctrine can substan-

17. See *infra* Part IV (discussing the appropriate adjustments).

18. Including those suggestions discussed by Professor Merges. See Merges, *supra* note 5, at 607–09; *infra* notes 223–40 and accompanying text.

tially reduce the unjustified social costs of even “good” competitive arts patents. The courts should continue to recognize traditional antitrust-based misuse, such as tying and monopolization, in the competitive arts context. However, the misuse doctrine should be expanded to complement the compulsory licensing remedy focus on greater access by fostering voluntary licensing. Specifically, the patent holder should carry the burden of demonstrating a commercially reasonable basis for refusing to grant a requested license. Failure to justify would result in unenforceability of the patent against the party requesting the license. Similarly, if an infringement defendant fails to request a license, then the compulsory licensing remedy could either be replaced with a traditional prohibitory injunction or accompanied by supplemental deterrence based damages.

Finally, and in all instances, any additional harm to competition should be avoided. Building on the learning from the software debates, protection of competitive arts functional innovation must be limited to patent law.¹⁹ The courts should, therefore, consistently reject all attempts to obtain any over-lapping copyright protection of the non-expressive aspects of the innovation.

Part I of this Article addresses the appropriateness of protecting Internet innovations under the current patent regime. It concludes that the doctrinal, historical and policy arguments require different outcomes regarding computing (patentable subject matter) and competitive arts (at best a difficult fit) innovation. Part II argues that the new electronic economy has given rise to a particular kind of competitive arts “market failure” (interference with first-to-move lead-time incentives) which must be addressed. It concludes, however, that tinkering with the existing patent or copyright regimes is not only complex, but poses significant risks, and should be avoided. Part III sketches the outlines of a proposed competitive arts regime, combining the qualification features of patent law with the more nuanced approach to rights and remedies of copyright law. Part IV concludes by outlining a number of interim measures necessary to mitigate the effects of protecting the competitive arts under traditional patent law while awaiting the arrival of the new regime.

19. See *infra* notes 195-96 and accompanying text (discussing Professor Dennis Karjala’s approach to the similar issue raised in the software context).

I. SHOULD INTERNET PATENTS EXIST?

The answer to this question depends on what the Internet patent claims.²⁰ If the “invention” involves a novel, non-obvious computing implementation, then the assessment does not depend on anything unique to the Internet business environment. Its patentability stands or falls on the more general question of the legitimacy of computing patents (more specifically software patents) as a class. I have argued elsewhere that properly limited claims to innovative computing implementations (hardware or software) do not raise patentable subject matter concerns.²¹ If anything, the software patentability portion of the *State Street Bank* decision does not go far enough in this respect. Both the residual reliance on physical structure²² and the emphasis on the nature of the output of the computer system²³ provide inadequate protection to software innovations “as such.”²⁴ A variety of important implementation questions, such as the USPTO’s practical ability to perform the necessary prior art searches²⁵ and the proper scope of

20. Patents are defined by their claims, which form an important part of the specification required under § 112. See 35 U.S.C. § 112; Chiappetta, *Article of Manufacture*, *supra* note 8, at 104. It is not always apparent what the claims cover, but for purposes of this discussion, it is enough to draw the broad division between computing technologies and the underlying processes indicated in the text. See Chiappetta, *Article of Manufacture*, *supra* note 8, at 141–43, 155–59, 176 n.340.

21. The key lies in separating true software claims from claims, which although couched in software terms actually cover the underlying non-computing process. Chiappetta, *Article of Manufacture*, *supra* note 8. The former are machines (components) and per se patentable subject matter. They must, however, also find their novelty and non-obviousness in the computing arts. *Id.* at 168–76. The latter must satisfy the patentability requirements, including subject matter, independently of the software articulation. *Id.*

22. See *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1371–72 (Fed. Cir. 1998) (reconstructing the means for claims from the specification to demonstrate the existence of a machine); see also Chiappetta, *Article of Manufacture*, *supra* note 8, at 133 n.229 (discussing the machine aspects of the holding).

23. See Chiappetta, *Article of Manufacture*, *supra* note 8, at 133 n.229 (discussing the utility aspects of the holding); cf. Thomas, *supra* note 2, at 26–27 (noting the unjustified combination of the statutory subject matter and utility tests).

24. See Chiappetta, *Article of Manufacture*, *supra* note 8, at 154–59 (arguing we should go further and permit direct claiming of software inventions). Others have noted more pragmatically, that despite these shortcomings, the CAFC and USPTO seem to have settled into a comfort zone concerning software patentability and, given Congresses’ apparent lack of interest, it is time to move on to the important questions regarding implementation. See, e.g., Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CAL. L. REV. 1 (2001) (noting patentable subject matter questions “are for the history books”). Certainly, the CAFC decision in *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999), and the USPTO continued issuance of a wide-range of software patents, confirm this view.

25. See Chiappetta, *Article of Manufacture*, *supra* note 8, at 101. These practical issues apply with even more force to the issue of business method patentability. The same approach

enforcement²⁶ do remain. Although these concerns argue for some circumspection, they do not lead to the conclusion that computing innovations (including those related to the Internet) fall outside the proper scope of patent law protection.²⁷

The real computing (software or otherwise) issue, therefore, is not about patentability, but avoiding inadvertent and improper entanglement with any underlying activity being implemented.²⁸ Computing patents should only cover novel and non-obvious computing innovations. Claims which go further and implicate the non-computing activity itself should be dealt with separately, with each type of claim independently standing or falling on its own merits. Separation is not a particularly difficult task, requiring only appropriate limitations in the claims and that the assessment of novelty and non-obviousness focuses on the appropriate art.²⁹ There is, therefore, no need for anxiety that granting patents for computing innovations must unavoidably spill over to disrupt the competitive balance in non-computing fields.³⁰ If properly crafted and examined they are computing patents and nothing more.

to resolving them in that context are equally workable in the software context. *See infra* notes 223-26 and accompanying text (discussing the necessary actions).

26. *See* Cohen & Lemley, *supra* note 24 (discussing the need for a reverse engineering exception and an appropriately narrow application of the doctrine of equivalents).

27. *See supra* notes 23-24 (noting the available solutions).

28. *See generally* Chiappetta, *Article of Manufacture*, *supra* note 8.

29. *See* Chiappetta, *Article of Manufacture*, *supra* note 8, at 154-59, 168-76.

30. The concern that this would result in over-protection of the underlying process was, appropriately, extremely prevalent in the earlier days of the software patentability debate. *See, e.g.,* Pamela Samuelson, *Benson Revisited: The Case Against Patent Protection for Algorithms and Other Computer Program-Related Inventions*, 39 EMORY L. J. 1025, 1126-27 (1990) (a good example of the kind of concern routinely raised concerning the algorithm analysis of software inventions). The concern affects the Internet patent debate because of the frequent computer implementation of business methods, particularly in the Internet environment. *See, e.g.,* Merges, *supra* note 5, at 586 (embedding business concepts in software permits characterization as novel computer programs); Stern, *supra* note 5, at 129 (noting that computer implementation makes the business method part of the technological arts). Distinguishing between software as machine component and software as language eliminates this concern. *See* Chiappetta, *Article of Manufacture*, *supra* note 8, at 154-59. Additionally, it is important not to confuse the field of application with the nature of the innovation. Merely because a computing innovation implements a method of doing business does not make the invention a business method patent. *Id.* at 131, 160. Although exclusive patent rights to the novel and non-obvious computing implementation may afford practical control over the underlying methodology, that is the point of the patent laws. The inventor is rewarded for the technological advance and others are left to attempt to develop alternative competitive implementations. *Id.* at 163. Except for the explicit reference in *State Street Bank* to the "method of doing business doctrine," this distinction between where the invention is used (business) and the invention itself (computing) would have been a nice way to finesse the reach of that case on its facts. In other words, the fact that it was used to implement a mutual fund system did not make the computing invention unpatentable subject matter. *See infra* note 56.

In contrast, Internet patents laying claim to underlying non-computing innovations are far more problematic.³¹ Stripping away the computing implementation leaves a broad range of activities which raise “business method” patentability concerns. The system might satisfy a regulatory requirement (as in *State Street Bank*),³² provide a service (for example, a computer-generated diagnosis or legal advice) or financial product,³³ record a specific transaction (like a stock trade or the purchase of a book or compact-disk) or implement a sales technique,³⁴ marketing program,³⁵ or special internal business organizational structure.³⁶ The sub-class of sales, marketing and internal organization techniques has stirred the greatest controversy in the current Internet patenting debate.³⁷ Permitting patents on activities such as prospect identification, lead follow-up, or transactions facilitation (in the Internet environment, customer profiling, triggers for displaying particular banner advertisements, affiliate referral systems and one-click checkouts) would grant exclusive control over the general competitive means for delivery of any product or service. Therefore, the following discussion focuses primarily on the question of whether this sub-class of business methods, the competitive arts, is properly patentable subject matter.³⁸

31. There is a third category in which the applicant acknowledges that neither the computing implementation nor the underlying methodology is novel (or more likely non-obvious), but the mere fact of using the existing Internet computing tools to implement the known method is innovative. As with any automation as innovation claim, the relevant non-obviousness inquiry is whether a person of ordinary skill in Internet computing would find the mere fact of moving an already “known” business methodology to the Internet obvious. Consequently, it is highly unlikely such “inventions” can survive a proper § 103 review. See Chiappetta, *Article of Manufacture*, *supra* note 8, at 170 n.324; *infra* note 301 (discussing the relationship between nonobviousness in computing techniques and novelty in the competitive arts).

32. A number of commentators have pointed out that the State Street Bank system did not merely automate profit and loss allocations, but also necessary compliance with the Treasury regulations applicable to pooled fund partnership operations. See Dreyfuss, *supra* note 5, at 265; Raskind, *supra* note 5, at 86; Stern, *supra* note 5, at 131.

33. See *Paine, Webber, Jackson & Curtis v. Merrill Lynch*, 564 F.Supp. 1358 (D. Del. 1983) (involving a cash management account).

34. Such as the Amazon “one-click” checkout patent asserted against Barnesandnoble.com. See *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 73 F. Supp. 2d 1228, 1231 (W.D. Wash. 1999), *vacated by*, 239 F.3d 1343 (Fed. Cir. 2001).

35. Such as the DoubleClick targeted banner advertisement patent or the Amazon affiliate referral patents.

36. See *In re Maucorps*, 609 F.2d 481 (C.C.P.A. 1979).

37. This area is driving the current wave of litigation and commentary. See *supra* note 3 and accompanying text.

38. The following discussion, therefore, assumes that the product or service involved is equally available to all competitors and that relevant point of differentiation is the methods used to operate the business and, particularly, how the product or service is marketed, sold and delivered to the buyer. For example, it is assumed that the books or CDs available on an Internet site are undifferentiated and that innovations take place regarding the specifics of

The answer to this question has two related effects on business method patenting. It dictates whether patents can issue based on claims reaching beyond computer implementations to all uses of the underlying activity, *i.e.*, pure competitive arts patents. In the current environment, however, this outcome may be of limited practical concern. An Internet business normally will find it entirely satisfactory to limit the claims to the computing implementation of the method, thus avoiding the pure form of business method subject matter challenge.³⁹ This restricted claiming technique makes the second effect, whether such patents should issue based exclusively on innovation in the underlying business method, critical. Only if the pure competitive arts are proper subject matter, do those advances represent the type of “progress” targeted by the patent law incentive. If they are not, such novelty should not, regardless of the form of the claims, support issuance of a patent.⁴⁰

Business method patentability is hardly a new question.⁴¹ Therefore, the most direct approach to resolving the competitive arts sub-question involves assessing the rationales developed in the cases considering the more general issue. Unfortunately, these materials fail to provide a convincing basis for a decision either way. The “business method exception” opinions offer no logical argument for treating business

how the site is marketed and operates. The line, of course, is hardly crisp. For example, does the system at issue in *State Street Bank*, *supra* note 22, involve a computing implementation, a financial product (the participation in the aggregate fund), a service (the financial reporting) or a marketing tool (the rapid and efficient provision of the product or the service)? Only the latter would involve the competitive arts. Although insights gained from close scrutiny of this particular subclass can usefully inform decisions regarding other subclasses, a distinction nonetheless must be made. The conclusions reached only apply to competitive means. In particular, financial products and methods make even analogies suspect in light of the tricky definitional and analytical issues they raise. Are they things (the money they produce), services (managing or investing money to best advantage) or methods (ways of making money)? Are the appropriate analogs to tangible products, methods of competition or is entirely independent assessment required? Resolution of this extremely complex set of issues is well beyond the scope of this discussion and must await another day.

39. As the Internet continues to evolve, however, escaping such limitations may become important to avoid technological “lock-out.” See Chiappetta, *Article of Manufacture*, *supra* note 8, at 153–54 (noting the same evolution problem in the software context raised by the tangible medium restriction under the USPTO Examination Guidelines).

40. The same argument applies to claims to software “as such” when the only novelty lies in the underlying activity. See Chiappetta, *Article of Manufacture*, *supra* note 8, at 171–73 (explaining this § 102 “point of novelty” analysis and the related example that discovery of a law of nature ($F=ma$, $E=mc^2$) would not provide patentable novelty in a claim to the implementing software). See *infra* notes 300–02 and accompanying text (discussing the relationship between novelty in computing techniques and the competitive arts).

41. See, *e.g.*, Del Gallo, *supra* note 10, at 405–11 (outlining the history of the business method exception and related judicial decisions and tracing the origins back to *Hotel Security Checking Co. v. Lorraine Co.*, 160 F. 467 (2nd Cir. 1908)).

methods⁴² as improper subject matter.⁴³ In fact, the actual holdings do precisely the opposite, basing their decisions on alternative, case-specific grounds, primarily obviousness considerations.⁴⁴ At best, therefore, the exception rests on an ill-defined intuitive sense that patent protection is generally inappropriate.⁴⁵ At worst, it improperly over-extrapolates from the series of particular offerings to conclude that every claim to a business method must lack sufficient innovation.⁴⁶

Unfortunately, the dramatic jettisoning of the exception in *State Street Bank*⁴⁷ appears equally devoid of satisfactory explanation.⁴⁸ The opinion boldly states that “[s]ince the 1952 Patent Act, business methods have been, and should have been, subject to the same legal requirements for patentability as applied to any other process or

42. It is worth noting that the cases do not themselves differentiate between the various possible kinds of business methods. See *supra* note 3, 31–37 and accompanying text. For example, *Hotel Security Checking Co. v. Lorraine Co.*, 160 F. 467 (2nd Cir. 1908) involves a method for reducing internal theft, a competitive arts internal business organization strategy. In contrast, the *Loew's Drive-In Theatres Inc. v. Park-In theatres, Inc.*, 174 F.2d 547 (1st Cir. 1949) drive-in movie method seems more properly classified as a service. Calling both “methods of doing business” and creating a blanket exception, completely ignores the possibility that the two types of inventions may require substantially different analysis to determine whether they are appropriate subject matter. See *supra* note 38.

43. See *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1375–76 (Fed. Cir. 1998); Del Gallo, *supra* note 10, at 435–36.

44. See *State Street Bank*, 149 F.3d at 1375–76; Del Gallo, *supra* note 10, at 435–36. But see, Stern, *supra* note 5, at 124–25; Thomas, *supra* note 2, at 26 (both noting that the CAFC all but ignores the statement in *In re Alappat*, 33 F.3d 1526, 1541 (Fed. Cir. 1994), that appears to confirm the business method exception). *In re Alappat*, 33 F.3d at 1541, notes with apparent approval that another case (*In re Maucorps*, 609 F.2d 481 (C.C.P.A. 1979)) had “dealt with a business methodology” which did not fall within § 101. The *Maucorps* panel had, however, actually decided the issue on mathematical algorithm grounds without reference to the business method exception. *Maucorps*, 609 F.2d at 486. Therefore, *State Street Bank* is correct that there is no actual holding supporting the business method exception. In all events, neither *Maucorps* nor *Alappat* offer any rationale for the exception’s existence.

45. Not without justification, however, as the policy analysis below demonstrates in reaching the same conclusion, at least regarding the competitive arts. See *infra* notes 88–174 and accompanying text.

46. The concern, however, is not without some merit. Given the long history of commerce and the related methods, one does have to question whether anything truly new remains to be developed. Cf. Merges, *supra* note 5; Thomas, *supra* note 2, at 31–32 (both noting that most business methods have a long and venerable heritage). But the entirely correct observation that the vast majority of competitive arts ideas are unlikely to be new does not preclude the possibility of any innovation. In fact, in such circumstances, the creation of something new may be particularly valuable. The appropriate way to deal with the concern is, therefore, to ensure the novelty and non-obviousness gatekeepers properly function. See *infra* notes 127–40 and accompanying text (discussing the importance of this implementation).

47. 149 F.3d 1368 (Fed. Cir. 1998).

48. See Stern, *supra* note 5, at 123–26, 154; Thomas, *supra* note 2, at 26–27.

method.”⁴⁹ However, the sole support for this conclusion appears to be the lack of actual precedent for a business method exception.⁵⁰ It seems logically insufficient, even if technically correct, to abandon a generally accepted limitation merely because it rests on a long line of dicta. Some explanation of why such a long-held view failed to conform to patent law policies was in order. Perhaps the court intended the analytical loop to be closed by the earlier, but not directly connected, reference⁵¹ to the Supreme Court’s much cited opinion in *Diamond v. Chakrabarty*⁵² stating the Patent Act⁵³ was meant to include “anything under the sun that is made by man.”⁵⁴ Because the Patent Act does not itself exclude business method innovations (circularly defining the applicable § 101 category of “processes” merely as “a process, art or method”),⁵⁵ no room exists for a judicially created exception which conflicts with the expansive scope intended by Congress.⁵⁶

Arguing that the courts should interpret the Patent Act based exclusively on Congressional intent⁵⁷ does not hold up under scrutiny, particularly in the statutory subject matter context. The Patent Act does not stand in isolation. Congress’s ability to give § 101 statutory subject

49. 149 F.3d at 1375.

50. *Id.* at 1375–77; see also *supra* notes 41, 44.

51. See *State Street Bank*, 149 F.3d at 1373.

52. 447 U.S. 303 (1980).

53. 35 U.S.C. §§ 1–376 (1994).

54. *State Street Bank*, 149 F.3d at 1373 (quoting *Chakrabarty*, 447 U.S. at 309 (quoting the language of the Senate Report 1979, S. REP. No. 1979, at 5 (1952), accompanying the 1952 Patent Act)).

55. 35 U.S.C. § 100 (1994).

56. See *State Street Bank*, 149 F.3d at 1373 (“Thus, it is improper to read limitations into § 101 on the subject matter that may be patented where the legislative history indicates that Congress clearly did not intend such limitations.” (citing to *Chakrabarty*, 447 U.S. at 308)). Another possibility is that the decision has been over-read regarding the business method exception. For example, the concluding line of *State Street Bank* states: “[w]hether the claims are directed to subject matter within § 101 should not turn on whether the claimed subject matter does ‘business’ instead of something else.” 149 F.3d at 1377. A much narrower and less controversial reading therefore might be that *State Street Bank* merely reinforces the point made in *In re Johnston* that because the invention applies to business activity does not render an otherwise patentable invention non-statutory subject matter. See *In re Johnston*, 502 F.2d 765, 771, *rev’d on other grounds, sub nom.* *Dann v. Johnston*, 425 U.S. 219 (1976). The court, however, only cites to *Johnston* in *State Street Bank* to note the Court’s refusal to address “the section 101 argument” (149 F.3d at 1375 n. 12) and such a reading would be consistent with the frontal assault on the doctrine found at the outset of the *State Street* opinion’s discussion of the business method exception. See 149 F.3d at 1375 (“We take this opportunity to lay this ill-conceived exception to rest”).

57. There is, of course, arguably a difference between interpreting the words in the statute as they are found and overlaying Congressional intent in performing that exercise. But as the broadest reading is all that need concern us for this purpose, and it is consistent with both approaches, the debate over the appropriate method of judicial interpretation can be left for another day.

matter the scope articulated in the much quoted legislative history is constrained by the Constitutional limitations on Congressional power.⁵⁸ As it turns out, the source of that power, the Patent Clause, expressly restricts legislative action to “promot[ing] the Progress of [the] . . . useful Arts.”⁵⁹ Consequently, despite the justifiable conclusion that Congress acted with expansive intent,⁶⁰ the language of § 101 of the Patent Act, and specifically the reach of the word “process,” must be interpreted by the courts as “terms of art”⁶¹ constrained by the “useful Arts” Constitutional focus.⁶²

Determining the scope of the useful arts, and specifically whether it includes the competitive arts, is hardly a straight-forward task. The words “useful arts” are simultaneously limiting and expansive. They are not only indeterminate, but also undefined in the Constitution. Many commentators have, therefore, despaired of finding any meaningful content.⁶³ However, difficulty does not, at least as a Constitutional matter, permit us to simply ignore the line-drawing exercise. To read out any limitation means virtually all human activities, if properly claimed, become patentable subject matter.⁶⁴ This clearly cannot be the case. The Framers deliberately put the words into the Constitution. The thoughtful debate between Thomas Jefferson and James Madison over the need to limit monopolies gave rise to the compromise reflected in the Intellectual Property Clause.⁶⁵ Moreover, that general desire for circumspection

58. See, e.g., *Graham v. John Deere Co.*, 383 U.S. 1, 5 (1966); Chiappetta, *Article of Manufacture*, *supra* note 8, at 127–9; Robert A. Kreiss, *Patent Protection for Computer Programs and Mathematical Algorithms: The Constitutional Limitations on Patentable Subject Matter*, 29 N.M. L. REV. 31, 58–59 (1999); Merges, *supra* note 5, at 587; Samuelson, *supra* note 30, at 1033 n.24; Thomas, *supra* note 2, at 33–34.

59. U.S. CONST. art I, § 8, cl. 8. The position that the preamble to the Intellectual Property Clause limits Congressional power is not, however, undisputed. See, e.g., *Eldred v. Reno*, 239 F.3d 372, 377–78 (D.C. Cir. 2001) (holding the preamble language does not limit Congressional power to enact the copyright laws). In all events, even if Congressional power is not so limited, it still merits policy inquiry to determine whether or not business methods should be covered by the patent laws. See *infra* notes 86–87 and accompanying text.

60. See *supra* notes 51–54 and accompanying text; see also Chiappetta, *Article of Manufacture*, *supra* note 8, at 135–37.

61. See Kreiss, *supra* note 58, at 56–57 (pointing out that the words of the Patent Statute must be read in their specific context as “terms of art”).

62. See *supra* note 58.

63. Professor Merges captures the problem well noting that the clause “provides no built-in limits.” Merges, *supra* note 5, at 584; see also Dreyfuss, *supra* note 5, at 276, Stern, *supra* note 5, at 128–29.

64. See, e.g., Merges, *supra* note 5, at 587; Thomas, *supra* note 2, at 32–34 (providing a number of interesting examples of recent patents).

65. Jefferson argued against any exclusivity, reflecting the English experience leading to the Statute of Monopolies. Madison eventually convinced him of the appropriateness of limited exclusive rights to promote desirable social progress. See *Graham v. John Deere Co.*, 383 U.S. 1, 5–10 (1966); Chiappetta, *Article of Manufacture*, *supra* note 8, at 97–99;

is further emphasized by the provision's own juxtaposition of the "useful Arts" and "Science."⁶⁶ The words clearly were intended to create some restrictions. *Inclusio unis, exclusio altris* leaves us with no alternative but to search for a rational basis on which to distinguish between the patentable and unpatentable across the wide range of human created processes, including manufacturing methods, ways of doing business, sports moves, formulas for creating literary, musical or other artistic works, legal systems for resolving our differences, political systems for managing our affairs and how to live our lives to increase our happiness and, perhaps, to save our souls.

The courts have struggled to identify appropriate limits. The early decisions, including the Supreme Court's seminal attempt to deal with process patenting in *Cochrane v. Deener*,⁶⁷ focused on the need for some form of physical structure, transformation or effects which characterized early technological advance.⁶⁸ This approach, however, ran into (and caused) substantial difficulties with the arrival of the Information Age. As electronics (particularly computing) made human innovation increasingly intangible,⁶⁹ the physicality hook became highly problematic.⁷⁰ After a long and difficult struggle,⁷¹ it has been largely

Merges, *supra* note 5, at 585–586; Robert P. Merges & Glenn Harlan Reynolds, *The Proper Scope of the Copyright and Patent Power*, 37 HARV. J. ON LEGIS. 45, 46–48, 57–58 (2000); Thomas, *supra* note 2, at 33–34.

66. The preamble to the Intellectual Property Clause reads "[t]o promote the Progress of Science and useful Arts." U.S. CONST. art I, § 8, cl. 8. This language has been consistently read in the parallel 18th Century style to separately justify the copyright laws (science, authors and writings) and the patent laws (useful arts, inventors and discoveries). Unless this structure is meant to imply some relevant difference exists between the two targeted subject matters it would make much more sense to simply list all activities under a single inclusive label and let Congress decide if differences might exist. See Chiappetta, *Article of Manufacture*, *supra* note 8, at 129–30.

67. 94 U.S. 780 (1876); Del Gallo, *supra* note 10, at 409 n.29.

68. See Del Gallo, *supra* note 10, at 408–411; Thomas, *supra* note 2, at 12–14.

69. Intangibility is very different from abstraction. The former simply means the invention cannot be touched (or at the extreme, physically perceived) by human beings. The latter, embodied in the abstract idea exception, addresses the level of generality at which the idea is expressed. It is important not to confuse the two as they have very different ramifications in patent law. Intangibility creates problems of objective verification. Is something really there? Abstraction raises concerns about premature and extensive exclusivity interfering with the very innovation the patent laws are designed to promote. See *infra* notes 127–40 (discussing the need for objective verification), 144–47 and accompanying text (discussing the abstract idea exception).

70. See Merges, *supra* note 5, at 586; Thomas, *supra* note 2, at 13–15.

71. See Chiappetta, *Article of Manufacture*, *supra* note 8, at 106–20 (reviewing the history of software patentability, including the Freeman-Walter-Abele "physicality" test).

jettisoned.⁷² This evolution has, however, left behind a general sense of congruence between the “useful arts” and the “technological arts.”⁷³

Although there is doctrinal legitimacy in such an approach,⁷⁴ replacing the “useful Arts” with the “technological arts” merely shifts the inquiry from one indeterminate phrase to another.⁷⁵ Professor John Thomas has offered an interesting resolution using “philosophical” thinking regarding the nature of technology to help draw the relevant limitations.⁷⁶ He concludes that technology is bounded by “production or transformation of artifacts through the systematic manipulation of physical forces,”⁷⁷ and its conception as “a form of rational and systematic knowledge, oriented towards efficiency and capable of being assessed through objective criteria.”⁷⁸ He argues that these attributes are properly captured, and the scope of the patent laws effectively and appropriately limited, by equating the technological arts with the “industrial arts,” a term with a long history in other patent regimes.⁷⁹

There are a number of satisfactory arguments for adopting such an approach to defining proper patent law scope. First, this interpretation is consistent with the Framers’ historical and philosophical context, and, therefore, likely bears a relationship to what they had in mind when creating the Congressional authority. Such a reading of the useful Arts reduces the threat that the patent power could be used to create naked

72. *State Street Bank* started the move by expressly rejecting application of the Freeman-Walter-Abele test to questions of statutory subject matter. *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1373–74 (Fed. Cir. 1998). The decision in *AT&T Corp. v. Excel Communications*, 172 F.3d 1352 (Fed. Cir. 1999), finished the job, finding that physical transformation “is not an invariable requirement” and that “physical limitations analysis seems of little value” in light of the “useful, concrete and tangible result” test. *Id.* at 1358–60; see also Thomas, *supra* note 2, at 29 (noting the “abrupt end to the physical transformation standard”).

73. See Chiappetta, *Article of Manufacture*, *supra* note 8, at 129–30. Cf. Kreiss, *supra* note 58, at 62 and n.230 (citing other authorities but not expressly adopting the position).

74. A variety of CAFC judges have expressly articulated the position. See *Application of Musgrave*, 431 F.2d 882, 893 (C.C.P.A. 1970); *Application of Waldbaum*, 457 F.2d 997, 1003–04 (C.C.P.A. 1972) (Rich, J., concurring); *In re Alappat*, 33 F.3d 1526, 1552–53 (Fed. Cir. 1994) (Archer, C.J., concurring in part and dissenting in part). Professor Chisum and others support the view. See DONALD S. CHISUM, 1 CHISUM ON PATENTS: A TREATISE ON THE LAW OF PATENTABILITY § 1.01, Glossary at 23 (Supp. 2000); Chiappetta, *Article of Manufacture*, *supra* note 8, at 129–30; Samuelson, *supra* note 30, at ¶1033 n.24; Thomas, *supra* note 2, at 4, 32–37 (noting the definitional problem and going the further step of attempting to define the technological arts).

75. See Stern, *supra* note 5, at 128.

76. See Thomas, *supra* note 2, at 36–37.

77. *Id.* at 7. This description, however, retains too much connection to the “physical” to be fully workable in the Information Age. See *supra* notes 67–73 and accompanying text; *infra* note 136.

78. Thomas, *supra* note 2, at 7.

79. *Id.* at 50–57. He notes, however, that such an approach may not solve all the problems. *Id.* at 57.

privilege monopolies, the undesirability of which was made vivid by the English experience.⁸⁰ Rather, as appropriate to the historical context of the rising Industrial Revolution, it limits application to fostering investment in, and importation of, the new tools and products which drive economic prosperity.⁸¹ Second, this approach provides the clear division between the “useful Arts” and “Science” necessary to keep the differing patent and copyright regimes from encroaching upon one another.⁸² The industrial arts offers a clear distinction between functional activities capable of objective assessment (the “useful Arts” interpreted as the “technological arts”) and those which inform or entertain and may involve more subjective judgments of value (“Science” read as knowledge transmitted through the “expressive arts”).⁸³ Additionally, the refinements of the industrial arts concept generated by its long history of application in other jurisdictions may reduce administrative costs.⁸⁴ Although disputes will continue over specifics, the array of precedent provides firmer guidance in their resolution than a general admonition that the activity be “useful” or “technological.” Finally, the industrial arts limitations generally fall in line with our intuitive sense of patentable innovation.⁸⁵ This is not particularly surprising given that those intuitions rest on the same history which supports the industrial arts approach. Nonetheless, it does mean outcomes will generally conform to expectations, avoiding the dislocations of what appears to be unpredictable application.

As important as doctrine, Founders’ intent, history, administration and intuition may be (especially when they point in the same direction), they do not speak to the normative validity of the conclusions they generate. No absolute mandate exists that the Founders’ context or even their intent should dictate our current view of the proper reach of patent law. As intelligent and forward-looking as Jefferson and Madison were, they could hardly have envisioned claims to intangible technologies like

80. *See supra* note 65.

81. *Id.* Professor Merges wonderfully captures the spirit of that time: “Everyone knew that manufactures and machines were at the core of the patent system At the very least, for Jefferson, if you put technology in a bag and shook it, it would make some noise.” Merges, *supra* note 5, at 585.

82. *See supra* note 66; *infra* notes 100–07.

83. The division reflects the line drawn by the Supreme Court in *Baker v. Selden*, 101 U.S. 99 (1879). This same line has been more precisely formulated by Professor Dennis Karjala in his writings concerning the appropriate division between patent and copyright protection of software. *See infra* notes 100–107 and accompanying text.

84. *See* Thomas, *supra* note 2, at 50–54.

85. *Id.* at 58.

software,⁸⁶ to say nothing of the Internet's global virtual marketplace.⁸⁷ Similarly our doctrinal efforts to draw limitations and our intuitions, as products of this same history and context, may rest on flawed assumptions which have failed to keep pace with changes in society. Therefore, even though the convincing case for the industrial arts approach to patent law makes competitive arts innovation appear an unlikely candidate for coverage, the important question remains whether support can be found in the policy objectives driving United States patent law. If so, it is well within our power to ignore the Framers' context and intent, modernize our intuitions, update our doctrine and, if necessary, amend the Constitution.

The policy approach requires descending the analytical tree to first principles. Specifically, we must start with a clear articulation of the normative justifications for the United States patent system⁸⁸—unless we know where we are trying to go, it is unlikely we will get there.⁸⁹ The justifications can be briefly summarized as follows: A competitive market is the preferred economic engine.⁹⁰ When properly operating, such a market generates a steady stream of aggregate social wealth-enhancing innovation as the participants seek to maximize their personal return by gaining competitive advantage.⁹¹ Such advantage can be obtained through identification and control of physical resources and by

86. Which, absent a carrying medium, cannot even be put in a paper bag and shaken, much less make any noise. *See supra* note 81.

87. Like ourselves, the Founders were products of their own environment and their decisions reflect the world they knew and the choices they were required to make. *See* LAWRENCE LESSIG, *CODE AND OTHER LAWS OF CYBERSPACE* 149–50 (1999).

88. As Godel pointed out, there really are no first principles in analysis, just first assumptions. As discussed in the text, United States patent law assumes a social organization that starts from a free-market economy baseline and adjusts from there. If that assumption fails, then we need to re-enter the discussion from the analytical starting point provided by the new social model. *See* Vincent Chiappetta, *The Desirability of Agreeing to Disagree: The WTO, TRIPS, International IPR Exhaustion and a Few Other Things*, 21 *MICH. J. INT'L L.* 333, 375–81 (2000) (discussing alternative views of the social compact and the effects on intellectual property rights) [hereinafter Chiappetta, *Agreeing to Disagree*].

89. *See* Chiappetta, *Myth, supra* note 11, at 73.

90. *See, e.g.,* Raskind, *supra* note 5, at 71. For doubters that United States law starts from this point, the passage of the antitrust laws in 1890 and 1914 provide strong empirical evidence of the desire to let Adam Smith's invisible hand free to work its magic. *See, e.g.,* PHILLIP AREEDA & LOUIS KAPLOW, *ANTITRUST ANALYSIS* 8, 45–47 (Aspen 5th ed. 1997). This is not to say that we do not make incursions to interject other values through, for example, redistributive taxes, regulatory regimes and even government ownership. *Cf. id.* at 8–9, 25.

91. Specifically, productive efficiency rewards the most innovative producers and allocative efficiency directs innovation toward consumer preferences. *See* AREEDA, *supra* note 90, at 17. Adam Smith made this self-interest acceptable by arguing that such otherwise "greedy" instincts would be properly channeled by the invisible hand of the competitive marketplace to benefit society as a whole. *See generally*, ADAM SMITH, *WEALTH OF NATIONS* (Edwin Cannan ed., 6th ed., Methuen & Co. LTD, 1950).

developing and implementing ideas for new products, services and the means for manufacturing and delivering them (“intellectual products”).

Valuable physical resources can be controlled, and related advantage obtained, through possession, thus generating incentives to invest in their rapid identification and acquisition. Taking from competitors offers one particularly efficient means for accomplishing this task. However, the related deleterious effects on social order and incentives to investment in original resource identification and improvement required legal intervention through real and personal property laws.⁹²

The intangible nature of intellectual products eliminates the disruptive “taking” rivalry by making mutual, simultaneous possession possible.⁹³ However, non-rivalrous possession generates its own special set of problems.⁹⁴ Unlike physical resources, mere continued possession does not ensure competitive advantage. A competitor might independently create the same idea. Or the idea might be duplicated by observing its use, thereby reducing, or entirely avoiding, the associated development costs and time delays. The likelihood that innovation might quickly spawn disastrous lower-cost competition causes the basic market incentives for idea innovation to fail. The result is under-investment in social wealth-enhancing intellectual product innovation. The solution to this “public goods” problem again lies in legal intervention. Specifically, a patent creates artificial scarcity through the legal right to prevent any use, including by competitors, of an innovation,⁹⁵ and thus permits the innovator to profit from the invention’s value in the market for a period of time sufficient to restore appropriate incentives to invest.⁹⁶ At the end of that period, the innovation becomes available for use by others under the normal rules of the competitive marketplace.

92. RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 36–39 (5th ed. 1998).

93. Thomas Jefferson’s eloquent observation sums it up: “He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me.” VI Writings of Thomas Jefferson 180–181 (H.A. Washington ed., 1814).

94. For additional elaboration of the discussion following in the text, see Chiappetta, *Myth*, *supra* note 11, at 86–87; Chiappetta, *Article of Manufacture*, *supra* note 8, at 98.

95. 35 U.S.C. § 271 (1994). United States patent law, unlike copyright law, provides virtually no exceptions to the patent holder’s right to prevent use by others. *See Stern*, *supra* note 5, at 138; Thomas, *supra* note 2, at 5.

96. Precisely as contemplated in the Intellectual Property Clause of the Constitution. *See* U.S. CONST. art I, § 8, cl. 8. Although the Framers did not perform any cost-benefit analysis, Jefferson and Madison clearly understood the market incentive failure and the need for intervention. *See* Chiappetta, *Myth*, *supra* note 11, at 86 n.112. There is no convincing evidence that any deliberate determination has been made that the current 20 year patent term actually corresponds to the level of incentive necessary to produce maximally efficient levels of investment. *See supra* note 11; *infra* note 112 and accompanying text.

This policy framework provides important guidance regarding the appropriate reach of the patent laws.⁹⁷ Patent law replaces the self-interested competitive motivations to innovate in a properly functioning market with the self-interested inducements of legal control. However, despite the appeal in both cases to self-interest, the objective remains increased aggregate wealth for the benefit of the society as a whole.⁹⁸ Consequently, advocating an extension of the scope of patent protection to the competitive arts based on claims of inventors' natural rights (whether based on just rewards for labor, personal stake or otherwise) is misplaced.⁹⁹

Additionally, patent law reflects no more than a grudging exception to the preferred competitive market model. Therefore, it should be carefully limited to resolving only the identified market failure and the resulting distortion of incentives to desirable innovation which justifies its existence. Going further risks insulating competitors from the desirable rigors of market competition, limits alternative uses and causes interference with efficient aggregate wealth maximization. Reflecting this important constraint, patent law incorporates a number of requirements intended to ensure actual benefits and avoid unjustified costs, including the twin tests of innovation, novelty and non-obviousness (which ensure "progress"); utility (which, among other things, requires the invention actually produces the claimed result); and the obligation of description and enablement (which facilitates improvements as well as post-term entry of the invention into the competitive market).

Similarly, the primary (if not exclusive) role of the subject matter requirement is to ensure proper targeting and application of the patent incentive. Professor Dennis Karjala's excellent discussion of the appropriate application of patent and copyright law in the software context

97. Whether the economic market theory supporting the patent system actually works is another question. Even if it does, there is no guarantee that it works in the same fashion in every instance, a key point in this analysis. *See supra* note 11 (noting the conclusions reached regarding competitive arts patenting are actually reinforced by the uncertainty); *infra* Parts II, III. *Cf.* *Merges, supra* note 5, at 584-85 (noting early Congressional "blind technological optimism" and the resulting "one size fits all" patent law).

98. The courts have consistently noted this important aspect of United States patent and copyright law. *See, e.g., Mazer v. Stein*, 347 U.S. 201 (1954) (making the point in the copyright law context).

99. *See, e.g., Graham v. John Deere Co.*, 383 U.S. 1 (1966) (noting Jefferson's rejection of natural rights theories); DONALD S. CHISUM, ET AL., *PRINCIPLES OF PATENT LAW* 46-47 (1998). Nothing prevents recognizing these arguments as a normative matter, in fact many nations do so. *See Chiappetta, Agreeing to Disagree, supra* note 88, at 376-81. To do so in this context, however, conflicts with the basic assumption that utility based patent law is a given and the question is whether coverage should be extended to the competitive arts, not whether to reassess our society's value structure. Although the latter objective merits serious consideration it is well beyond the scope of this much more modest inquiry.

clearly demonstrates this vital function of each regime's subject matter requirements.¹⁰⁰ As he points out, these two regimes offer very different incentives reflecting substantially different policy objectives and balances. Patent law predominately reflects a market focus, granting powerful, but carefully circumscribed, protection, providing essentially absolute exclusivity regarding the core innovation while avoiding substantial barriers to incremental innovation.¹⁰¹ In contrast, copyright law "originality" requires less innovation, provides deliberately broader protection against derivative works, but offers only significantly more nuanced rights and remedies reflecting, in part, its additional non-market free-speech concerns and, in part, a desire to avoid significant impediments to subsequent functional innovation.¹⁰²

Subject matter limitations provide the vehicle for avoiding inappropriate application of each regime's incentives.¹⁰³ Specifically, copyright law expressly channels functional processes to patent law, statutorily and through the idea-expression and useful article doctrines,¹⁰⁴ subjecting them to that regime's rigorous, but primarily market economic, policy balances.¹⁰⁵ Those which "inform, entertain or portray appearances,"¹⁰⁶ remain subject to the more complex trade-offs between market economics and other countervailing policy considerations drawn under copyright law.¹⁰⁷ Within this inter-regime "channeling" structure, there

100. See Karjala, *A Coherent Theory*, *supra* note 14, at 56–57, 60–62; Dennis S. Karjala, *The Relative Roles of Patent and Copyright in the Protection of Computer Programs*, 17 J. MARSHALL J. COMPUTER & INFO. L. 41, 44–50 (1998) [hereinafter Karjala, *The Relative Roles*].

101. See Karjala, *The Relative Roles*, *supra* note 100, at 44–50; see also Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 1000–13 (1997) (providing a detailed description of patent law's approach to improvements).

102. See Karjala, *The Relative Roles*, *supra* note 100, at 44–50; see also Lemley, *supra* note 101, at 1013–29 (describing copyright law's approach to improvements, including the special role of fair use).

103. See *id.* Professor Reichman notes that this historical separation (in his taxonomy between the "general product markets" protected by patent law and "cultural products" protected by copyright law) has been broken down by the technological changes of the Information Age. His conclusion that a new hybrid regime is required, however, remains consistent with the need for continued separation of patent and copyright law. See Reichman, *Charting*, *supra* note 14, at 480–485, 512–520.

104. See 17 U.S.C. § 102(b) (1994) (precluding protection for processes and methods); 17 U.S.C. § 101 (1994) (precluding protection for useful articles); see also Stern, *supra* note 5, at 112–14 (discussing the idea-expression channeling approach taken in *Baker v. Selden*, 101 U.S. 99 (1879), as adopted by § 102(b) of the Copyright Act, 17 U.S.C. § 102(b) (1994)).

105. See Karjala, *The Relative Roles*, *supra* note 100, at 45–47 (further defining the content of "functional" innovations).

106. *Id.* at 46.

107. See *id.* The division between functional and "expressive" (my word, not Professor Karjala's) works mirrors the division drawn by Professor Reichman between general prod-

is little problem identifying patent law as an appropriate regime for competitive arts functional innovation.

Channeling, however, only partially reflects the role of the subject matter requirements. Proper assignment of an innovation to patent or copyright law does not automatically demonstrate that it deserves protection. Before the appropriate regime's additional requirements are applied, the subject matter limitations provide one final, but critical, basis for disqualification.¹⁰⁸ Given the general policy bias in favor of an unfettered competitive market, the proponent of protection bears the burden of demonstrating that for the particular class of innovation applying the incentive will spur supplemental innovation¹⁰⁹ and that overall the resulting benefits likely will outweigh the costs of granting protection.¹¹⁰

Therefore, the final subject matter policy decision concerning the patentability of the competitive arts inexorably calls for actual empirical testing.¹¹¹ Unfortunately, although the number of studies continues to grow, to date they fail to resolve even the general case for the patent incentive either way.¹¹² Not surprisingly, the relative newness of com-

ucts market goods and cultural goods. See Reichman, *Charting*, *supra* note 14, at 483–84, 489, 513. The latter approach, however, does not offer nearly as clear a distinction. Quite clearly copyright law envisions that cultural innovations will also be commercially exploited, otherwise the market incentive would have no value. Trying to draw a line between cultural “art” and commercial “art” is equally problematic. Better to look at the primary objective of the innovation: functionality or expression. It is worth noting that this dividing line may preclude patenting of certain commercial commodities (for example when their only purpose is to entertain) and permit patenting of methods used in the cultural arts (like a method of painting—by numbers for example) as the purpose is functional. The inability to objectively verify the educational, entertainment or edifying results of non-functional innovations further supports the “functional—expression” channeling approach. See *infra* notes 136, 140 and accompanying text.

108. There is no requirement that every innovation be protected in some fashion. See Stern, *supra* note 5, at 153.

109. See Raskind, *supra* note 5, at 77 (noting the need to demonstrate that the incentive is necessary).

110. See *id.* at 73–74 (noting the problems of deadweight loss resulting from freeing a competitor from normal market forces). Cf. Merges, *supra* note 5, at 584 (noting the need to address the related costs).

111. See Raskind, *supra* note 5, at 77–78 (also noting potential difficulties with “pure” utility theory itself); Thomas, *supra* note 2, at 35–36 (noting the paucity of data).

112. The theory remains a powerful anecdotal force but there is at least growing suspicion regarding its operation in practice. In all events, after over 200 years of looking at the issue, no firm conclusions can be reached. See Comments of Josh Lerner, PTO Panel Discusses Incentives Driving E-Commerce and Business Method Patents, Computer & Internet LawCast available at <http://www.lawcast.com> (Aug. 14, 2000); *supra* note 11. Professor Raskind discusses one interesting study, which appears to demonstrate that broad patent protection can substantially impede technological progress. See Raskind, *supra* note 5, at 73–77. This does not, however, indicate that all patenting has this effect, merely that a more

petitive arts patenting means an even greater paucity of data and indeterminacy.¹¹³ In this environment, theoretical modeling provides an important tool for understanding the direction the empirical work should take. In particular, any empirical study must carefully define and articulate the hypotheses being tested, an undertaking which serves as the focus of the remainder of this section and the entirety of the next.¹¹⁴

Examining the latest judicial word on statutory subject matter, the CAFC's "useful, tangible and concrete result" test,¹¹⁵ provides an excellent starting point for framing an appropriate hypothesis concerning competitive arts patents as the right stuff. Professor Thomas' analysis of the CAFC's application of that test in *State Street Bank* reveals a serious problem and points towards its resolution.¹¹⁶ The flaw lies in the opinion's apparent insouciant conflation of the patentable subject matter limitation with the historically separate (and minimal) utility requirement.¹¹⁷ Although a semantically tidy fit, such a test offers a virtually unconstrained reach of the patent incentive.¹¹⁸ Almost any process can be described in a way which demonstrates that it confers an articulable specific utility.¹¹⁹ An industrial process produces a particular product. The *State Street Bank* system produces profit and loss allocations. A high-jumping technique produces superior height. A political process generates appropriate resolution of social issues. A process for living one's life provides a clear conscience, greater happiness or salvation. Under such an approach, as the decision implies, only laws of nature, natural phenomena and abstract ideas¹²⁰ are likely to be

refined approach than the current one size fits all regime is required. This Article comes to exactly that conclusion regarding the appropriate hypothesis regarding the competitive arts.

113. See Thomas, *supra* note 2, at 35-36 and Raskind, *supra* note 5, at 78, noting the absence of empirical work regarding business patents; *see also* Lerner, *supra* note 2, at 34-36 (noting the increase in filings and grants but no evidence regarding the incentive effect itself).

114. The working hypothesis generated by theoretical analysis is especially important when the empirical work either is a long time in coming or never occurs, as it provides the only basis for action. *Cf.* Thomas, *supra* note 2, at 35-36 (noting the apparent disinclination to research the topic). *See infra* Part IV (setting out a number interim actions deemed appropriate even absent empirical verification to ensure patenting does not over-protect the competitive arts).

115. *See* AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 1359-60 (Fed. Cir. 1999); *State Street Bank & Trust Co. v. Signature Fin. Group Inc.*, 149 F.3d 1368, 1375 (Fed. Cir. 1998); *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994)(en banc).

116. *See* Thomas, *supra* note 2, at 22-27.

117. *Id.* at 26-27.

118. *See id.* at 33; *Merges, supra* note 5, at 588.

119. *See* Thomas, *supra* note 2, at 33 ("almost any sort of communicable practice seems easily attainable.").

120. Abstract ideas overlap to some extent with the problem of inadequate description/enablement under § 112. 35 U.S.C. § 112 (1994). *See infra* notes 144-47. In both cases,

excluded.¹²¹ And even these exclusions rest on specific antecedent Supreme Court interpretations, not a restriction imposed by the specific utility test.¹²²

This difficulty can be avoided by focusing on the additional requirements of the CAFC's test. It is not sufficient that the result be "useful." It must also be "tangible and concrete." The court's own attempts to further clarify in *State Street Bank*, however, are constrained by the fact that the specific words were not well chosen. Clearly, the court did not mean that the financial allocations were literally tangible and concrete. Moreover, the court certainly recognized, particularly in a software case, that the tangible/intangible line had long ago lost its power to draw the necessary distinctions regarding patentable subject matter.¹²³ The opinion expressly recognizes the problem, avoiding the specific meaning of the words inherited from *Alappat*¹²⁴ and opting instead to focus more generally on "the essential characteristics of the subject matter, in particular, its *practical utility*" (emphasis added).¹²⁵ Although this effort indicates an intention to require more than a specific utility (or at least permits that inference), it does not provide adequate guidance as to precisely what that something more might be.¹²⁶

Supplementing the CAFC's notion of practical utility with Professor Thomas' recognition of the importance of objective assessment in the

the fundamental problem is the same: giving too much exclusionary power to the patentee compared to the scope of the actual invention.

121. See *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998).

122. These exceptions exist doctrinally because the Supreme Court has said so. See Chiappetta, *Article of Manufacture*, *supra* note 8, at 130–33 (discussing the exceptions). An appropriate definition of the useful arts should, however, explain why the exclusions are good policy. The "usefulness" as "specific benefit" test cannot do so. A law of nature is just as beneficial as any other process. For example, $F=ma$ and $E=mc^2$ not only do what they claim but the result of the computation is extremely useful to know. Natural phenomena and abstract ideas are similarly "useful" as there is clear benefit in knowing that things like hydrogen or magnetism exist and have certain properties or in being pointed in the proper direction by an idea such as placing an eraser on the end of a pencil. In each case, the actual concern is not lack of value (or usefulness), but too little value compared to the costs. See *id.*; *infra* notes 144–47 and accompanying text.

123. See *supra* notes 67–73 and accompanying text.

124. The court picks up, and is therefore constrained by, the phrasing of the test from the earlier *Alappat* en banc decision which it, quite properly, used as guiding precedent. *State Street Bank*, 149 F.3d at 1373.

125. *Id.* at 1375. The *State Street Bank* court makes a similar explanatory effort when first introducing the test. See *id.* at 1373.

126. The court's own unconvincing attempts to apply the test to the facts in *State Street Bank* and to its earlier decisions demonstrates the difficulty. See Chiappetta, *Article of Manufacture*, *supra* note 8, at 133 n.229. Cf. Thomas, *supra* note 2, at 26 (noting the conflation of useful arts with utility).

patenting process provides the answer.¹²⁷ The CAFC has expressly recognized that actual patentability rests on additional constraints contained in § 102, § 103 and § 112.¹²⁸ It failed, however, to note that the policy gate-keeping function of the subject matter requirement includes ensuring proper application of these other limitations.¹²⁹ As Professor Thomas notes,¹³⁰ for the patent system to work properly, whatever comes through the patentable subject matter filter needs to exhibit the characteristics which actually permit us to determine if claims “satisf[y] the other requirements for patentability.”¹³¹ Only then can we be comfortable that the innovation merits the “embarrassment to the public of granting a patent.”¹³²

Armed with this understanding, the CAFC’s “useful, tangible and concrete results” and “practical utility” patentable subject matter tests can now be properly interpreted and applied. The requirement goes beyond the isolated, but essential, § 101 need to distinguish inchoate abstract ideas from actual applications.¹³³ It also demands the ability to objectively determine three things: (1) that the invention has been implemented as specified, (2) that the specified result is actually present after implementation, and (3) that the result was caused by that implementation. Only innovations with these characteristics permit the necessary confirmation that specific utility¹³⁴ and description/

127. See Thomas, *supra* note 2, at 54 (noting the issue in connection with innovations involving aesthetics and personal skill).

128. *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1361 (Fed. Cir. 1999); *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998).

129. The approach helps mitigate valid concerns expressed by other commentators that the patent system is simply not up to the task of applying the § 102 and § 103 requirements to new forms of innovation. See, e.g., Dreyfuss, *supra* note 5, at 268–69. Although objective verification helps, other actions must still be taken to ensure proper operation regarding the competitive arts. See *id.*; *infra* notes 223–56 and accompanying text.

130. See Thomas, *supra* note 2, at 54 (discussing problems with patenting matters involving aesthetics or personal skill, stating that “We also appear to lack objective mechanisms for evaluating this subject matter in light of the requisites of patentability.”).

131. *AT&T v. Excel*, 172 F.3d at 1361.

132. See Jefferson, *supra* note 93.

133. See *AT&T v. Excel*, 172 F.3d at 1357; *State Street Bank*, 149 F.3d at 1373.

134. The CAFC’s “practical utility” test for patentable subject matter, therefore, does closely relate to traditional specific utility. However, they remain a distinct requirement. The practical utility requirement of objective verification permits the necessary testing for specific utility (most particularly in the sense the invention produces what it claims to). Together, not individually, these requirements make an invention “useful” in the sense meant by the patent laws. Cf. Karjala, *The Relative Roles*, *supra* note 100, at 45–46 (noting that patent law usefulness (functionality in his taxonomy) should not be confused with the general term “useful” because to do so would incorporate a wide range of extremely expressive works which more properly belong under the copyright regime); Stern, *supra* note 5, at 127 (noting such an equivalence leads to a search for a division between the useful and the “not useful” arts).

enablement¹³⁵ are present.¹³⁶ And only if these requirements are satisfied can we have any confidence that there are actual benefits to offset the costs of applying the patent incentive to the class of invention.¹³⁷

135. The objective verification requirement ensures proper application of the description/enablement requirement. If a sufficient description/enablement required aesthetic or other subjective judgments or application of personal skill, there can be no assurance that the invention contributed any advance in market performance. For example, telling people to think like Albert Einstein, paint like Leonardo Da Vinci, or to play golf like Tiger Woods adds nothing to the market's performance. Although these claims certainly would be attacked as "abstract ideas," the subject matter problem (whether labeled "abstract idea" or something else) is that without any means to objectively verify, it is impossible to determine if the desired result was produced, and if so, whether it resulted from proper implementation of the invention or something else.

136. The objective verification requirement, not surprisingly, aligns nicely with Professor Thomas' focus on the characteristics of technology. It is, after all, his observation concerning the importance of objective verification which supports the approach. However, his references to the physical aspects of technology should have a much more limited role in the subject matter inquiry. See Thomas, *supra* note 2, at 7, 53. Specifically, the CAFC's observation in *AT&T v. Excel* that "[physical transformation] is not an invariable requirement, but merely one example of how a mathematical algorithm may bring about a useful application" provides the appropriate guidance. *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1358 (Fed. Cir. 1999). The "tangibility" requirement of the *Alappat* "useful, concrete and tangible" test should be similarly interpreted. Tangibility, including physical transformation, when it ensures objective verification is a sufficient condition, but that does not make it necessary. Although "concrete" can be more comfortably read as "objectively verifiable," potentially confusing semantic associations with physicality remain. Far better to abandon a forced reading of the conjunctive requirements of "useful, tangible and concrete" and to interpret them as terms of art and focus directly on objective verification. Thus interpreted, the patent laws can, and should, comfortably extend to a variety of activities which do not fit either our historical or intuitive sense of technology, things which in Professor Merges' apt description make noise if put in a bag and shaken. Merges, *supra* note 5, at 585. See *supra* notes 67-73 and accompanying text (discussing the need to abandon the physical transformation approach).

The objective verification approach to statutory subject matter does, however, raise serious questions regarding whether "entertainment" outputs from traditional technological apparatus or composition of matter claims are sufficiently objectively verifiable to make them patentable subject matter. See, e.g., *Levi Strauss & Co. v. Golden Trade*, No. 92 Civ. 1667 (RPP), 1995 U.S. Dist. LEXIS 4899 (S.D.N.Y. 1995) (struggling with the issue of protecting a fashion statement under the patent laws). A similar issue arises regarding business method outputs. See *infra* notes 150-53 and accompanying text.

137. As an alternative we could eliminate all constraints other than novelty and non-obviousness, leaving it to the market to determine whether the claimed invention produced valuable output. Eliminating the need to objectively demonstrate utility or provide workable description/enablement would take Professor Edmund Kitch's prospect theory to a land-rush extreme, permitting prospectors to stake out exclusive claims to all related future activities based merely on a showing of first to arrive in the territory. Cf. Edmund Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265 (1977). Just as we discovered when the examination requirement was eliminated, the resulting cloud of patents would have a significant adverse effect on the market. See Merges, *supra* note 5, at 594-96. More critically, rather than generate substantial additional innovation such a system would actually deter subsequent innovation. See, e.g., *Brenner v. Manson*, 383 U.S. 519 (1966) (discussing the problems if utility requirements are entirely abandoned). This problem is clearly visible in the current struggle over patenting of c-DNA sequences. Granting a patent to the first to

The general operation of this approach to the patentable subject matter inquiry can be demonstrated quickly. An industrial process for curing rubber clearly qualifies. So does the software implementation of that process. In each case, we can objectively determine that when the specifically identified implementation occurs it results in the expected outcome (we do or do not have properly cured rubber or a properly operational computer system).¹³⁸ The profit and cost allocations generated through the process at issue in *State Street Bank* can similarly be objectively confirmed. In contrast, whether a political process generates proper resolution of social issues or whether a method for living produces salvation, are substantially more problematic. Although the specific implementation may be objectively confirmed, the output from the first is largely subjective¹³⁹ while the second, sadly, remains indeterminate. Because we cannot objectively determine whether these latter processes actually produce the identified result, there is no way to tell whether they work as claimed. Without this minimal assurance there is no reasonable basis to believe that applying the patent incentive has any chance of increasing social wealth by providing benefits in excess of the costs.¹⁴⁰

find (create) the sequence substantially reduces the value of, and hence incentives to, additional investment in determining specific uses. See “*Riding the DNA Railroad*,” *Interview with Eric Lander*, *TECH. REV.* July–Aug. 2000, at 98.

138. The software assessment, not to be confused with the underlying process being implemented, however, should not rest on tangibility. Although one is tempted to rely on physical manifestations (the impulses on a recording medium or in computer memory), for reasons I explain elsewhere, this approach is improperly limiting. See Chiappetta, *Article of Manufacture*, *supra* note 8, at 150–54. Because software “as such” can be objectively verified, both as to existence and the special purpose output it generates, it meets the patentable subject matter requirements.

139. *Cf.* Thomas, *supra* note 2, at 54 (noting the similar subjectivity problem regarding aesthetics and personal skill).

140. It is not coincidental that the clearest exclusions under current law (the “arts”) involve outputs which require taking into account non-market-economic considerations. These situations raise special objective verification concerns. Like the aesthetic, informative, educational, entertainment or edifying value of paintings, plays, music or literature, proper social decisions and salvation are very difficult to evaluate in traditional market terms. *Cf.* Reichman, *Charting*, *supra* note 14, at 483–484, 489, 513 (discussing the “general products” versus “cultural” line of demarcation between patent and copyright law). Some other means must, therefore, be found to translate those considerations into not only measurable but comparable terms. Even if this might be accomplished using economic conceptions such as “utility,” it is far from certain that agreement could (or should) be reached that economics represents a proper approach to resolving these “ultimate value” trade-offs. See, e.g., Chiappetta, *Agreeing to Disagree*, *supra* note 88, at 369 n.187, 385 n.272; Chiappetta, *Myth*, *supra* note 11, at 93 n.154. In such cases, the better approach (reflected in current law) is to channel those innovations toward copyright law, limiting protection to the expressive elements and leaving the ultimate value decisions to other than intellectual property law. The effect is to limit patent law’s reach to addressing the incentive to innovation problem regarding goods and services sold in, and the means of operation of, the competitive, commercial products

Although necessary, the objective verification requirement is not technically sufficient to qualify a class of inventions as patentable subject matter “useful Arts” for policy purposes.¹⁴¹ It merely draws the line between the classes of inventions which merit further consideration and those which do not. Theoretically at least, a more precise empirical assessment should still be made to confirm that the actual value of the supplemental innovation generated exceeds the costs of obtaining it. Although possible, the lack of necessary data,¹⁴² the limited confidence in the accuracy of the results and the administrative costs, to say nothing of the need to agree on valuations, makes actually performing such an exercise impractical. In most cases, therefore, the requirement permits the subject matter gate-keeper only to turn-away those classes of inventions which offer no possibility of confirming they make a contribution of any kind.

In some situations, however, further theoretical modeling can help develop appropriate interim working hypotheses regarding likely benefit-cost outcomes. For example, consider the firmly entrenched law of nature exception. Most such “laws,” when articulated as a process, produce outputs with the necessary characteristics for objective verification. For example, the process for determining acceleration, $F/m = a$, or for determining the energy released from a certain quantum of mass, $E=mc^2$, both have eminently verifiable implementations and outputs. Nonetheless, it seems likely, given the nature of scientific inquiry, that applying the patent incentive will produce relatively little incremental innovation compared with the dramatic costs¹⁴³ of a twenty-year

market. *See supra* note 107 (discussing the views of Professors Karjala and Reichman concerning the proper reach of patent law); *supra* notes 76–79, 136 (discussing the congruence with Professor Thomas’ argument in favor of the industrial arts); *infra* note 141 (discussing the limitations on the appropriateness of its application).

141. Although the objective verification test appropriately defines the “useful arts” given the objectives and related structure of current patent law, its legitimacy only rests on alignment with those existing goals. If those goals were to change then so, perhaps, should the definition of the useful arts. *See supra* note 88. Additionally, the test may not fully comport with current Constitutional interpretation of the “useful Arts” limitation and may, therefore, require some adjustments. *See supra* notes 57–85 and accompanying text (discussing the definitional quandary); *infra* note 216 and accompanying text (noting similar possible ramifications for a new competitive arts regime).

142. *See supra* notes 112–13 and accompanying text.

143. *See Chiappetta, Article of Manufacture, supra* note 8, at 131–32 (discussing the far ranging preclusive effect of granting patents on such fundamental discoveries). On the other hand, certain types of scientific endeavor may require such enormous investments of resources and time, or the benefits of earlier identification may be so great, that some form of additional incentive is appropriate (for example, the recent mapping of the human genome). In all events, on policy grounds the distinction between invention and discovery relied on in a number of natural phenomena, law of nature cases is irrelevant. *See, e.g., Parker v. Flook*, 437 U.S. 584, 591–92 (1978); *Funk Bros. Seed Co. v. Kalo Inoculant Co.*,

period of exclusivity. Therefore, until empirical testing demonstrates otherwise, the appropriate hypothesis appears to be that these types of discoveries should not be covered by the patent incentive.

Similarly, one could argue that certain abstract ideas, such as Morse's claim to using "electro-magnetism, however developed for marking or printing intelligible characters, signs, or letters, at any distance,"¹⁴⁴ meet the basic objective verification requirement; that force can clearly be used to accomplish that purpose.¹⁴⁵ However, protecting generalized articulations of a principle, even when objective confirmation is possible, also substantially impedes investment in developing alternative implementations.¹⁴⁶ Consequently, it seems appropriate to hypothesize that empirical studies will reveal too little benefit for the costs incurred in such cases and such broad patent protection should, therefore, be denied.¹⁴⁷

333 U.S. 127, 130 (1948); Chiappetta, *Article of Manufacture*, *supra* note 8, at 131 n.219 (discussing the Constitutional use of "discoveries"). In fact, one could argue that a law of nature is not really a discovery at all, but rather just another human invention which works in an objectively verifiable manner like any other technology. There is no evidence that laws of nature represent an underlying Platonic truth, just that it will accurately predict the way we see the shadows on the wall. In all events, the same empirical question applies equally to inventions and discoveries: will the patent incentive provide sufficiently increased "innovation" (discovery) to offset the costs? Cf. Karjala, *The Relative Roles*, *supra* note 100, at 60-61

144. *O'Reilly v. Morse*, 56 U.S. 62, 112 (1853).

145. At least in those cases in which some implementation is objectively enabled (as was the case in Morse's patent which included a number of specific applications). If no objective verification can be made, then the claim does not meet the patentable subject matter requirement in the first instance. *See infra* note 147.

146. *See Morse*, 56 U.S. at 113.

147. The objective verification requirement for patentable subject matter helps clarify the relationship between a § 112 enablement rejection and a § 101 abstract idea subject matter rejection. Both address the problem of excessive costs, but do so in different ways. The former turns on the actual objective confirmation that the described method fails to permit implementation by one of ordinary skill in the art. The latter addresses claims which provide no means to perform the necessary objective verification. In cases like *Morse*, where one or more objectively verifiable enablements exist, one could view a § 101 "abstract idea" rejection as tantamount to a § 112 over-breadth rejection. *See* ROBERT P. MERGES ET AL., *INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE* 152 (1997). The better view, however, is that the inability to objectively verify the full operation of the "over-broad" claim makes it unpatentable subject matter as a whole, not merely indefinite under § 112. To illustrate, a § 112 indefiniteness rejection was appropriate in *The Incandescent Lamp Patent*, 159 U.S. 465 (1895), because it could be objectively confirmed that the asserted enablement failed by inserting any of a wide variety of carbonized fibrous or textile filaments which do not work as claimed. In contrast, a § 101 abstract idea rejection more properly applies to Morse's claim 8, which could be neither objectively confirmed or rejected as a whole. In abstract idea cases, although the broad form of the claim is properly treated as unpatentable subject matter, narrower objectively verifiable claims might still be presented as proper subject matter (as they were in *Morse*) for testing under § 112. *See Stern*, *supra* note 5, at 117 (discussing the famous Claim 8 in *O'Reilly v. Morse*, 56 U.S. 62 (1853)).

In other cases, the administrative costs of making necessary distinctions among sub-classes may be sufficiently large to tip the balance. For example, some political process outputs may be difficult to objectively detect (increased social harmony, better decisions) while others permit express measurement (enhancing citizen participation by providing the right to vote). Distinguishing between these subclasses in practice is likely to involve substantial effort. Because the general need for additional economic incentives to drive political system innovation of either kind seems slight,¹⁴⁸ these administrative costs will likely offset what may, at best, be very modest increases in innovation. Consequently, a hypothesis which excludes the entire class from patent coverage seems appropriate.¹⁴⁹

This approach to patentable subject matter determinations provides useful policy guidance in developing an appropriate hypothesis regarding the patentability of the competitive arts. The gating objective verification requirement raises significant concerns with any hypothesis favoring coverage. The issues can best be demonstrated by an example. Consider claims to a “one-click” on-line checkout method.¹⁵⁰ Objective testing of claims to an over-laid computer implementation is non-problematic. However, this only confirms the equally non-problematic patentability of any incorporated computing innovations. It does not help us determine whether a separate competitive arts patent should issue on the underlying one-click process itself.¹⁵¹ That inquiry requires independent assessment of the one-click method as a distinct patentable process.

Although implementation of the specific one-click process steps may be highly susceptible to objective confirmation, the difficulty lies in defining and verifying the output. Is it direct operational cost savings, indirect increases in overall efficiency, greater sales, customer convenience and good-will, improved market image as an innovator, all of

148. Some would argue we have too much political innovation as it stands. More importantly, patenting of political processes implicates a variety of non-market values such as free speech, freedom of association and the basic franchise. In such cases, the importance of non-market economic variables makes patent coverage inappropriate. *See supra* note 140 (discussing the problem of dealing with such considerations within the patent incentive model).

149. In other situations the converse may apply, with significant risks of under investment in innovation justifying avoiding the administrative costs of making fine-grained distinctions within the class of activity despite over-protection of the less objectively verifiable subclasses within a category of innovation.

150. Like those in the patent at issue in *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 73 F. Supp. 2d 1228 (W.D. Wash. 1999), *vacated by* 239 F.3d 1343 (Fed. Cir. 2001).

151. Or whether novelty and non-obviousness in that process can provide the necessary innovation to permit patenting of what would otherwise be an obvious computing implementation. *See supra* notes 39–40 and accompanying text.

these, or something else? Similar definitional issues arise in other competitive arts situations such as customer profiling, stimulus triggered banner advertising or affiliate referral processes.

Different identified outputs offer varying levels of confidence as to whether we have an innovation subject to objective verification. Direct cost savings can be readily measured. Using the one-click process either reduces operation costs or it does not. A reduction in indirect or overhead costs or an increase in sales are, however, more difficult to isolate. Increased customer goodwill or market image are even more problematic. Moreover, in the business environment, the question of causation becomes more complicated. Even if an increase in sales or enhanced goodwill can be demonstrated, the question remains whether it arose from the one-click process or from another, unrelated, aspect of the overall transaction or context.¹⁵²

Despite these concerns, the competitive arts are not isolated from the mathematics of the Information Age. It will frequently be possible to generate evidence which supports, with a high degree of statistical confidence, the conclusion that implementing the one-click checkout method actually yields the indicated specific result (whatever it might be). Specific utility and description/enablement can, therefore, be confirmed and some assurance had that benefits are at least present. Therefore, the objective verification requirement should not stand as an absolute barrier to patentability. Rather, the increased risk that such forms of objective verification may erroneously permit competitive arts patents (thus freeing market participants from socially desirable competition and deterring additional investment in further exploration with no offsetting gains in actual innovation)¹⁵³ should weigh modestly in favor of a working hypothesis against patentability of the competitive arts.

The next step in the analysis, however, significantly increases the concern. Absent empirical data,¹⁵⁴ we are left to develop an appropriate working hypothesis concerning the likely balance between the benefits and the costs of a pro-patenting position. There are convincing

152. It might also be questioned whether even demonstrably increased sales or goodwill arising solely from the consuming public's interest in novelty for its own sake rather than any actual cost savings is sufficient to justify a patent. If consumers flock to the site because it is "cool," it has utility to them for which they are willing to pay a premium. However, that utility may also have been generated by inappropriate differentiation causing an irrational response in economic terms. Cf. MERGES ET AL., *supra* note 147, at 527–29 (discussing the similar problem of trademark based differentiation).

153. In effect, generating the same harm as permitting patents on laws of nature or abstract ideas, see *supra* notes 143–47 and accompanying text; or "unjustified" trademark differentiation, see *supra* note 152 and accompanying text.

154. See *supra* note 113 and accompanying text (noting the newness of business method patents).

arguments indicating that the incentive is largely unnecessary and, consequently, the costs will likely substantially exceed value of what little incremental innovation may be produced.¹⁵⁵

Although the “public goods” problem associated with intellectual products applies to both industrial and competitive arts innovation, it operates very differently in each context. In the industrial arts, it causes redirection of resources to goods or services less amenable to replication by observation.¹⁵⁶ These include goods, services and processes which can be protected through self-help or under trade secret law. Additionally, investment will be drawn to innovations which have built-in barriers to entry or, at a minimum, offer significant lead-time advantages, even if observed. These include inventions which rely on scarce resources, such as personal talents, or require resource and time intensive ramp-ups, such as building factories, implementing complex fulfillment infra-structures or developing special expertise. As a consequence, investment in innovation is driven by the efficacy of protecting the related competitive advantage rather than the invisible allocative hand of the competitive market. Patent law seems a reasonable way to address these distortions.¹⁵⁷

In the competitive arts, the ability to redirect investment is substantially more limited. Some of the same distortions found in the industrial arts will be present, with competitors pursuing those opportunities which offer the greatest degree of confidentiality and the highest barriers to replication. However, the very nature of marketing and selling activity means most competitive arts innovations must be made visible to the consumers and, ultimately, to competitors.¹⁵⁸ Additionally, fewer marketing and sales techniques depend on complex enablers¹⁵⁹ and will, therefore, be relatively easy to duplicate once observed. Consequently,

155. See Dreyfuss, *supra* note 5, at 274–76; Raskind, *supra* note 5, at 77–78, 92–93.

156. See Chiappetta, *Myth*, *supra* note 11, at 136–38 (discussing the related preemption argument).

157. The system, however, is not without critics. See *supra* note 11.

158. Although some innovations will apply to “back room” and internal processes, most sales and marketing techniques must be shown to potential customers in the market to be effective. Cf. Reichman, *Legal Hybrids*, *supra* note 14, at 2511–18 (discussing “innovation bearing know-how on its face”).

159. To the extent they do, the investment is in developing the enabler not the method itself. Provided the patent law requirements are satisfied, a patent will issue on the enabler, protecting the investment. See *supra* note 30 (explaining that the fact that an innovation is used to “do business” should not affect its patentability). Although the enabler patent may give *de facto* control over the method, it should not be confused with a right to a patent on the method itself. A proper enabler patent does not prohibit others from using the method itself, thus permitting others to work around the patent constraint and find improved implementations. See *supra* notes 28–30 (discussing the need to separate computing innovation from competitive arts innovation).

the majority of competitive arts innovations will be readily amenable to lower-cost emulation, making investment in such innovations self-defeating. Rather than redirection of resources, the primary consequence of the “public goods” problem in the competitive arts should be *stasis*, with every competitor eventually becoming frozen into a fixed set of undifferentiated and unchanging sales and marketing activities.

Although patent law would again seem to provide the solution, the value of a pro-patenting hypothesis is brought into question by the anecdotal evidence concerning actual market conditions. Unlike the industrial arts, which have been subject to patent protection throughout the history of the United States, the competitive arts are recent newcomers to the regime.¹⁶⁰ One would expect, therefore, that the absence of the patent incentive would have generated substantial indications of the expected *stasis*. This does not, however, seem to be the case. Market participants continue to generate a constant stream of sales and marketing innovation,¹⁶¹ including the development of Internet commerce itself.¹⁶² Consequently, before incurring the costs of the patent incentive, the reasons for this apparent anomaly should be explored.

A likely explanation is that, the theoretical market failure arguments notwithstanding, in practice the market actually continues to provide strong incentives to competitive arts innovation.¹⁶³ To the extent *stasis* starts to set in, competitors on the lookout for even small opportunities to obtain advantage may be motivated to act.¹⁶⁴ Insiders may believe that others, set in their ways, will be unable or unwilling to respond effectively to innovation. Similarly, outsiders may seek to steal the march on the complacent incumbents.

160. See *supra* notes 41-46 and accompanying text (noting that until *State Street Bank* it was generally assumed business methods, including the competitive arts, could not be patented).

161. See Lerner, *supra* note 112 (noting the frequency of innovation in the financial products market); Raskind, *supra* note 5, at 92-93. Although it may be anecdotally observed that competitors tend to use very similar sales and marketing techniques, that says nothing about the rate of innovation. So long as the sales and marketing techniques continue to change, as appears to be the case, “sameness” is not equivalent to *stasis*. Rather the similarity among competitors merely confirms the normal pattern of rapid emulation in the competitive arts. See Raskind, *supra* note 5, at 81.

162. There was no concern about Internet patents 10 years ago, because there was no e-commerce.

163. See Dreyfuss, *supra* note 5, at 275; Raskind, *supra* note 5, at 92-93.

164. The market drive to obtain competitive advantage, even temporarily, should not be underestimated. Cf. Raskind, *supra* note 5, at 85-86. Even with oligopoly and express mutually beneficial (if illegal) collusion the pressure to cheat is intense, leading to frequent self-destruction of cartel activities. See AREEDA, *supra* note 90, at 167-68.

More generally, however, merely moving first provides competitive advantage, even if others eventually adopt the new technique.¹⁶⁵ The key lies in the time it takes competitors to identify, internalize and implement the innovation. During that period, the innovator, of course, gains the incremental returns. More importantly, this built-in lead-time provides the opportunity to lock-in additional advantage further increasing the return.¹⁶⁶ The lock-in may arise simply from first use.¹⁶⁷ Consumers who develop a pattern of going to the innovator/first user will have incentives (familiarity, at a minimum) to maintain the existing relationship rather than shift to a later emulative adopter. Additionally, the market will normally strongly identify the innovator/first user with the technique, pointing new consumers to the innovator rather than subsequent implementors. Affirmative actions by the innovator can enhance the lock-in effect. For example, advertising may expressly condition the market to identify the innovator as the “best” source of the technique. Follow-on incremental improvements, from additional investments or greater experience, may continue to extend the initial lead-time advantage by providing consistently “new and improved” implementations.

Moreover, because the required research and development investment frequently will be low relative to the potential gain, even a modest incentive can generate significant on-going innovation.¹⁶⁸ Industrial arts innovation, even when spawned by a “eureka” insight, normally requires substantial empirical follow-up investment to move from abstraction to implementation. In contrast, competitive arts innovation often only requires a substantially more modest investment. For example, an affiliate referral process rests exclusively on the insight of providing the customer with readily available information about, and

165. See Glynn S. Lunney, Jr., *E-Obviousness*, 7 MICH. TELECOMM. & TECH. L. REV. 363 (2001), available at <http://www.mttlr.org/volseven/lunney.html>. The argument developed in the following text might logically be applied with equal force to product and service innovation. The differences in development costs, discussed *infra*, may provide a partial explanation for why patent coverage remains appropriate in products and services situations. To the extent it does not, the arguments applicability raises doubts about the efficacy of the patent system itself. See *supra* note 11 (noting that the proper operation of the patent system is hardly a foregone conclusion). It certainly does not argue for extending an improperly functioning system yet further to cover the competitive arts.

166. See Dreyfuss, *supra* note 5, at 270–71, 275; Jared Earl Grusd, *Internet Business Methods: What Role Does and Should Patent Law Play?*, 4 VA. J. L. & TECH. 9, ¶¶ 43–48 (1999); Lunney, *supra* note 165; Reichman, *Charting*, *supra* note 14, at 518; Reichman, *Legal Hybrids*, *supra* note 14, at 2506–15 (noting the breakdown of this normal lead-time in the Information Age).

167. See, e.g., Dreyfuss, *supra* note 5, at 270–71; Grusd, *supra* note 166, at ¶¶ 48.

168. Cf. Raskind, *supra* note 5, at 81–82, 102 (“most business methods are developed in the arena of competition, rather than in a laboratory environment”).

access to, the affiliate's goods or services. Implementation may only involve a strategically positioned link on the original merchant's webpage to the affiliate's e-commerce site.¹⁶⁹

The better hypothesis, therefore, appears to be that the increase in innovation cannot justify the costs of applying the patent incentive to the competitive arts.¹⁷⁰ On the benefit side of the balance, although there remains a possibility that the patent incentive might release a large pent up wave of additional innovation, the chances appear remote.¹⁷¹ That market failure *stasis* is holding back innovation seems extremely unlikely. The competitive advantage in moving first not only gives incentive, but requires constant investment in innovation. On the other side of the balance, substituting patent law's twenty-year, virtually absolute, right to exclude all use in place of the market's far subtler first-to-move lead-time advantage will generate substantial costs. The effect would be to eliminate not only the reinstatement of competitive discipline through relatively rapid emulative adoption, but also the loss of broader access, the routine leap-frogging advances of adoption with minor differentiation that provide a constant cycle of small incremental improvements, and additional applications of the new techniques.¹⁷²

These arguments combined with the concerns regarding objective verification¹⁷³ and a strong bias in favor of non-interference with the normal operation of the market absent a convincing demonstration of

169. In those instances where substantial investment in infrastructure innovation is required traditional patenting will independently provide the necessary incentive to investment in the implementation technology. *See supra* note 159 and accompanying text.

170. *See Dreyfuss, supra* note 5, at 276-77; Raskind, *supra* note 5, at 102 (reaching the same conclusion).

171. *See Merges, supra* note 5, at 582-83.

172. *See Dreyfuss, supra* note 5, at 275-76; Raskind, *supra* note 5, at 81-82. Imagine, for example, a world in which the inventor of credit sales was able to preclude its use by others. *See JOHN TAURANAC, THE EMPIRE STATE BUILDING 87* (1995) (attributing this innovation to John J. Raskob of the General Motors Acceptance Corporation in 1919). On the other hand, it could be argued that although the patent incentive might not produce substantially more innovation than normal market forces, it accelerates the inventive process. Although others might have to pay GMAC to use the credit sale competitive method (a transfer of wealth), it would have been made beneficially available to the consuming public earlier thus generating increased aggregate wealth (it was clearly at least a popular idea with around 60% of all automobile sales being made on credit within eight years of its introduction by GMAC). *Id.* However, given the market's first-to-move lead-time drivers, it might be reasonably assumed that competitors already have substantial motivation to act quickly in the competitive arts and not much timing advantage would be generated. Moreover, any advantage from earlier introduction might well be offset (or overwhelmed) by the patent holder's refusal to license (generally or specifically) during the twenty year patent term thus limiting public access to the innovation.

173. *See supra* notes 150-53 and accompanying text.

the need to intervene,¹⁷⁴ make the overall case for competitive arts patenting appear extremely weak. Therefore, unless and until empirical evidence demonstrates otherwise, the working hypothesis must be against applying traditional patent law to the competitive arts.

II. SOMETHING SHORT OF BUSINESS METHOD PATENTS?

Based on the analysis in the preceding section, the answer to the symposium's scope question appears straight-forward enough. If the innovation lies in the computing implementation, traditional patent scope limitations apply. If the innovation lies in the underlying competitive arts, no patent should issue at all. Therefore, to the extent such patents do issue, every available opportunity to limit their scope should be aggressively pursued. Before dropping the inquiry, however, we should further examine the forces behind the persistent drive for protection.¹⁷⁵ Innovation in the competitive arts provides important value, not only directly increasing efficiency in the delivery of goods and services, but, more generally, optimizing the internal organization and operation of businesses. Although patents, as we know them, may be an inappropriate spur to advance in such activities, the relentlessness of the advocates' desire to obtain protection may indicate some alternative accommodation is not only reasonable, but necessary.

The desire to escape the rent-eliminating disciplines of the market provides one logical explanation.¹⁷⁶ Although understandable and extremely desirable from the individual competitor's standpoint, if the

174. See *supra* notes 109–10 and accompanying text. The possibility that the patent system even when properly applied, may not be cost justified hardly inspires additional confidence. See *supra* note 11.

175. The pursuit of business method patents is part of a general trend to extend the scope of all forms of intellectual property protection, evident in recent legislative actions. See, e.g., Federal Trademark Dilution Act of 1995, 15 U.S.C. § 1125(c) (1994) (protecting against tarnishment and blurring of trademarks without confusion); Anti-Cybersquatting Consumer Protection Act, 15 U.S.C. § 1125 (d) (1994) (protecting against use of trademarks as domain names based on bad faith rather than confusion); The Digital Millennium Copyright Act, 17 U.S.C. § 1202 (1999) (prohibiting circumvention of technological protections for copyrighted material); the Sonny Bono Copyright Term Extension Act, 17 U.S.C. § 302 (1999) (extending the copyright term by 20 years); see also, Dreyfuss, *supra* note 5, at 263–64 (pointing out the trend). Whether this is a good thing is the subject of substantial debate. See, e.g., Dennis Karjala, *Opposing Copyright Extension*, at <http://www.public.su.edu/~dkarjala/>; Mark A. Lemley, *The Modern Lanham Act and the Death of Common Sense*, 108 YALE L. J. 1687 (1999). Some, but not all, of the following discussion has application to these issues as well.

176. Certainly the experience when the examination requirement was eliminated demonstrates the eagerness for this type of “competitive advantage.” See Merges, *supra* note 5, at 594–95.

sole motivation is to lock-in competitive advantage to obtain supra-competitive returns, we need look no further. Such protection of the competitive arts stands in dramatic opposition to our fundamental belief in the efficiency of the market's invisible hand and should be avoided.¹⁷⁷

The long and painful debate over the proper protection for computer software¹⁷⁸ reveals, however, that more is at stake. It was quickly recognized that electronic duplication made investing in such innovations especially problematic.¹⁷⁹ Not only could competitors avoid the innovator's development costs, they could immediately recreate the entire innovation with a few clicks of a mouse. There was no need to build elaborate factories or train people in manufacturing processes; no need for any substantial capital investment, ramp-up time or special skills. In this new context, the "public goods" market failure appeared to threaten destruction of the emerging industry.

Recently the computing industry's e-commerce offspring has caused similar problems to arise in the competitive arts. The accelerating transition of the market from the physical world into the Internet arena is undermining the market's traditional first-to-move lead-time incentives to competitive means innovation.¹⁸⁰ A first-to-move lead-time strategy made perfectly good sense in the original bricks and mortar marketplace. Until competitors physically came to the store, or it was raised by one of their customers, they had no way of knowing about the new technique, much less recognize it as the source of competitive advantage. Even once they recognized the problem, time and resources were required to investigate, identify the method's salient features (by reverse engineering or otherwise), and develop and then execute a competing implementation (including not just the technique, but the related marketing efforts to overcome the innovator's first to market advantages).¹⁸¹ In this environment, the relatively modest investment required for competitive arts innovation appeared a good risk.¹⁸²

177. See *supra* notes 90–92 and accompanying text.

178. See Chiappetta, *Article of Manufacture*, *supra* note 8, at 106–20 (examining the development of the case law); Kreiss, *supra* note 58, at 33 n.11 (citing a long list of articles on the subject).

179. See Karjala, *The Relative Roles*, *supra* note 100, at 50–52; MERGES ET AL., *supra* note 147, at 845.

180. See Reichman, *Legal Hybrids*, *supra* note 14, at 2438–41, 2510–18 (Professor Reichman's work focuses largely on technologies and the related possibility of trade secret protection. His points apply equally, however, to the competitive arts).

181. See *id.*; Dreyfuss, *supra* note 5, at 270–72 (discussing "lock in" effects).

182. See Dreyfuss, *supra* note 5, at 270–72. In fact, pre-computing, natural lead-time seemed such a powerful argument that some commentators questioned whether even traditional intellectual property protection was required. See, e.g., Stephen Breyer, *The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs*, 84 HARV. L. REV. 281 (1970).

Advancing communications technologies consistently ate away at this incentive. Air-mail, telephone and television offered fertile fields for new marketing and sales techniques. However, they also made it progressively easier for competitors to recognize, identify and implement those innovations. Market intelligence evolved away from expensive and time-consuming reconnaissance trips and direct inquiries of consumers. Instead, a competitor's marketing and sales innovations increasingly could be brought directly to you, requiring only a subscription to a catalog, reading print media advertising and, eventually, just watching television.

The Internet has taken this assault on first-to-move lead-time a significant additional step. In this environment, the only lag in recognizing changes in a competitor's activities is the time it takes to locate the competitor's webpage. More importantly, because the implementation occurs in the computing context, quick and cheap electronic copying dramatically reduces replication time and costs. A direct cut and paste of the innovator's code offers an extremely rapid and efficient catch-up strategy.¹⁸³ Better understanding and enhancement can come later, using reverse-engineering and re-programming as required.

E-commerce, therefore, dramatically alters the first-to-move lead-time incentive calculation.¹⁸⁴ The shortened time for identification and replication eliminates virtually all short-term returns on the investment and severely undermines the ability to generate any lock-in effects. Differences among competitors' market positions make these effects even more problematic. For example, such quick follow-on adoption by competitors with greater name recognition or large, established customer bases may not only destroy the innovator's lead-time advantage, but, through a reverse "lock-in," transfer that advantage to themselves.¹⁸⁵ Thus, innovation by new entrants or smaller, less-well known competitors, precisely those which normally have the greatest incentive to innovate, may accelerate their own destruction. Similarly, the risk of immediate appropriation of competitive advantage by others will make it extremely difficult for such new entrants and less financially robust

183. Arguing for copyright protection in the expression. *See infra* note 197 and accompanying text. But such protection provides no right to prevent use of the underlying method. *See supra* notes 100–107 and accompanying text.

184. *But see*, Grusd, *supra* note 166, at ¶ 48 (noting anecdotal evidence that being first to market may be a significant advantage on the Internet). It is different, however, to be *first in a market* and the first to implement a particular means of competition.

185. This effect would be very similar to the problems faced by a smaller, senior trademark holder in "reverse confusion" cases. *See, e.g.*, *Big O Tire Dealers, Inc. v. The Goodyear Tire & Rubber Company*, 561 F.2d 1365 (10th Cir. 1977).

competitors to raise the investment capital necessary to launch or build their businesses.¹⁸⁶

The adverse effects on traditional market incentives provide an alternative, and likely, explanation for the increased interest in intellectual property protection for business methods. Although some energy has no doubt been redirected toward competitive arts innovations which can be better protected (legally or practically) from copying,¹⁸⁷ other alternatives are being sought to protect investment in the vast range of other highly advantageous innovations which historically relied on first-to-move lead-time strategies.¹⁸⁸ The virtually absolute exclusionary rights under patent law offer a particularly attractive solution, generating the widely recognized boom in business related applications, software and otherwise.

This shift in the market's basic ground rules caused by quick and cheap electronic copying justifies another look at intellectual property law incentives.¹⁸⁹ In the software market, after some exploration of third paradigms,¹⁹⁰ the problem has been quite properly resolved (or at least is in the process of being resolved) by appropriate application of patent and copyright law. The CAFC's decisions in *Alappat*,¹⁹¹ *State Street Bank*¹⁹² and *AT&T*¹⁹³ have finally provided the necessary patent law

186. See Lemley, *supra* note 11, at 143-44 (noting the important role of patents in venture capital financing).

187. Cf. Raskind, *supra* note 5, at 93-95 (noting the presence of other remedies); Reichman, *Legal Hybrids*, *supra* note 14, at 2436-39 (noting the important role of trade secret law in protecting unpatentable and uncopyrightable inventions).

188. See Reichman, *Legal Hybrids*, *supra* note 14, at 2442-45.

189. The primary focus is on patent and copyright law. Trademark law although providing a means for locking-in differentiation, does not prevent adoption of the method itself. See, Grusd, *supra* note 166, at ¶¶ 44-47. Trade secret law poses the insurmountable difficulty of satisfying the secrecy requirement. See Chiappetta, *Myth*, *supra* note 11, at 77. Professor Reichman argues for "portable secrecy" to overcome this problem. See Reichman, *Charting*, *supra* note 14, at 519 (eliminating the "often socially irrelevant condition of actual secrecy"). The policy objectives of trade secret law, which are dependant on "secrecy" (properly defined), have nothing to do, however, with lead-time advantage and very little to do with incentives to innovation. See Chiappetta, *Myth*, *supra* note 11, at 149-50. Therefore, although Professor Reichman's proposed solution points in the right direction, the emphasis and continued connection to trade secret law is misplaced. The new regime should be articulated as what it is, a solution to the effects of quick and cheap copying on the market's natural lead-time incentives, not as a necessary modification of the trade secret law regime.

190. This was the basic thrust of the *Manifesto*, see *supra* note 14, which argued that neither patent or copyright law were appropriate and, therefore a new *sui generis* form of protection was required. See MERGES ET AL., *supra* note 147, at 1028-36.

191. *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994)(en banc).

192. *State Street Bank & Trust v. Signature Fin. Group*, 149 F.3d 1368 (Fed. Cir. 1998).

193. *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999).

complement to copyright protection.¹⁹⁴ With that protection now available, Professor Karjala's distinction between functional innovations and works which "inform, entertain or portray an appearance to human beings,"¹⁹⁵ can direct the proper application of the two regimes.¹⁹⁶ Copyright law (easy to obtain, jealous of derivative works, but unhelpful regarding incorporated ideas and suspicious of intrusions on free-speech and transformative use) protects any original expression, whether found in specific coding, interfaces or otherwise, from quick and cheap replication. Patent law (much more circumspectly granted, but far more protective of the novel and non-obvious ideas it does cover) protects the investment in any incorporated computing innovations, whether presented as hardware, software or "as such" (provided they are limited to a computing application), against all use, whether copied, reverse engineered or independently created.

Unfortunately, this same approach does not provide a satisfactory solution to the very different effects of quick and cheap copying in the competitive arts first-to-move lead-time context. The copyright prong of the solution continues to fit comfortably. As with software implementations, protecting the investment in specific original expression of the process against quick and cheap "cut and paste" copying provides adequate supplemental incentive while raising little risk of substantial costs.¹⁹⁷ Later adopters are only prohibited from direct copying. They, therefore, remain free to pursue independent creation or alternative expressive implementations of the underlying technique.

The problem lies in using patent law to provide the complementary protection of the underlying methodology. The twenty-year patent exclusion provides an excessive response. On the incentive side, much less powerful rights would provide sufficient encouragement for the more limited investment required to generate competitive arts innovation. Before the current difficulties first-to-move lead-time managed to provide strong incentives through only a modest advantage.¹⁹⁸ Even in normal operation, it carries a significant element of risk. A competitor might make an early identification, might quickly recognize its impor-

194. As Professor Karjala has noted, this solution first required that patent law backup the denial of protection for methodology under copyright law. See Karjala, *The Relative Roles*, *supra* note 100, at 56; see also, *supra* notes 21–24 (discussing the appropriateness of patenting computer software as such).

195. Karjala, *The Relative Roles*, *supra* note 100, at 46.

196. See *id.* at 44–50 (explaining the different policies supporting each regime dictate their application to different aspects (functional and expressive) of computer software, as described below in the text).

197. Cf. Stern, *supra* note 5, at 112–16 (noting the courts are drawing precisely this line).

198. See *supra* notes 163–69 and accompanying text.

tance, and might have the resources to implement rapidly. Or, the same forces driving the innovator might lead competitors independently to develop similar solutions virtually simultaneously.¹⁹⁹ Moreover, even if greatly reduced in the electronic environment, the market still provides some incentive to competitive arts innovation. Despite the availability of tools permitting quick and cheap replication, competitors may fail to make full or effective use of them. And even if “Internet time” offers only shortened time lags in competitive implementation, those delays still exist and offer some possibility of associated competitive advantage of innovator/first user lock-in.

The cost side is even less reassuring. As discussed above,²⁰⁰ patent law’s exclusive long-term control substantially interferes with the competitive discipline, broad access, and incremental innovation which characterizes the operation of normal first-to-move lead-time incentives. Additionally, objective verification concerns leave serious questions as to whether patent protection drives actual innovation. Granting patents in such circumstances may have the effect of permitting first comers to an idea to block or collect rents²⁰¹ from those willing and able to make the necessary refinements to make it work. These costs, combined with the excessive nature of the incentive, make the patent prong of the software solution seem unpromising at best and, more likely, dangerously unjustified.

The existing regimes appear unable to provide appropriate relief. To assume that means no solution is possible, however, reflects too limited a view of the available alternatives. The existing intellectual property paradigms are not cast in stone. Copyright law provides substantial evidence of previous adjustments made in response to new market forces. Section 106²⁰² expressly contemplates incursions into the copyright holder’s rights, subjecting them to a long (and constantly evolving) list of exceptions.²⁰³ These exceptions range from complete defenses, such as fair use,²⁰⁴ to extremely specific and detailed adjustments applicable to particular situations, such as educational use²⁰⁵ or operation of the music industry.²⁰⁶ Not even patent law has been consistently applied in

199. Similar to the “ripeness of time” argument used against finding patent preemption of trade secret law. See Chiappetta, *Myth*, *supra* note 11, at 143.

200. See *supra* notes 171–72 and accompanying text.

201. Cf. Raskind, *supra* note 5, at 82 (noting the possibility of innovators becoming merely licensing and litigation entrepreneurs).

202. 15 U.S.C. § 106 (1994).

203. The current exceptions are found in 15 U.S.C. §§ 107–120 (1994).

204. 15 U.S.C. § 107 (1994).

205. See, e.g., 15 U.S.C. § 110(1)–(2) (1994); Thomas, *supra* note 2, at 47–50 (discussing the exception).

206. See, e.g., 15 U.S.C. §§ 114–116 (1994).

its traditional “all or nothing” formulation. The regime has been cautiously modified on a number of occasions when it appeared necessary to achieve an appropriate balance. For example, adjustments were made to permit competitive application of medical procedures in patient care²⁰⁷ and the patentee’s exclusive rights were cut back to permit pre-expiration use to obtain Federal Food and Drug Administration approval for recombinant-DNA pharmaceuticals.²⁰⁸

The possibility of specific modifications has not been lost on those addressing the competitive arts problem. In response to *State Street Bank*, Congress quickly amended the patent statute to include a “first user” defense, mitigating the effect of business method patents on prior implementors of a competitive arts technique.²⁰⁹ The commentators have gone even further. One particularly interesting approach suggests incorporating the copyright “scenes a faire” doctrine into business method patenting.²¹⁰ Such a modification would prevent patenting “when those wishing to engage in the affected business cannot, as a practical matter, engage in the business without infringing the patent.”²¹¹

Unfortunately, on closer analysis the “modest proposal” of making adjustments to either patent or copyright law faces serious difficulties. In the past the modifications to the existing regimes have primarily involved specific adjustments to the standard holder rights. The competitive arts lead-time market failure, however, requires a fundamentally different solution than the basic approach of either regime. Protecting the functional methodologies forming the core of competitive arts innovation requires a substantial adjustment to copyright law’s “original expression” focus.²¹² Similarly, reducing the too powerful incentives under current patent law requires a significant redesign of the rights granted.²¹³ Changing either regime will require more than limited tinkering.

207. See 35 U.S.C. § 287(c) (1994); Thomas, *supra* note 2, at 47–50.

208. See 35 U.S.C. § 271(3) (1994).

209. See 35 U.S.C. § 273 (1999); James R. Barney, *The Prior User Defense: A Reprise for Trade Secret Owners or a Disaster for the Patent Law*, 82 J. PAT. & TRADEMARK OFF. SOC’Y 261 (2000) (discussing the adoption and possible effects of the defense).

210. See Stern, *supra* note 5, at 132–53.

211. *Id.* at 150. In many cases the doctrine would effectively prevent patenting competitive arts methods, but that is precisely the intent. See *id.* at 153.

212. Competitive arts innovation is functional in nature and, therefore, granting copyright protection would conflict with the deliberate channeling of methodologies and processes to patent law to avoid copyright law’s more permissive approach to granting protection. See *supra* note 100–07 and accompanying text.

213. As opposed to merely limiting or eliminating their enforcement. See *supra* notes 207–08 and accompanying text. This over-incentive problem with standard patent rights has been observed in other contexts, notably regarding the bio-technology industry, generating similar efforts to make appropriate adjustments. See, e.g., Rebecca Eisenberg, *Patents and*

The major concern, however, does not lie in having to make the necessary adjustments, which will be required in any event. The more serious problem is ensuring proper integration of dramatically different protection into the existing regime. The new form of protection must be clearly and completely disentangled from all inapplicable rights and obligations of the original regime. Similarly, the myriad competitive arts refinements must avoid unanticipated and undesirable effects on the regular application of the existing regime.²¹⁴ Ensuring that all of these issues are properly identified and fully resolved is an extremely difficult and complex task. Consequently, there is a significant risk that the modification process will produce both an ineffective solution to the competitive arts problem and substantial damage to the host regime.

III. A NEW "COMPETITIVE ARTS" REGIME

Fortunately there is a less risky approach: creating an independent regime expressly tailored to resolving the special competitive arts innovation problem.²¹⁵ Designing an entirely new intellectual property

the Progress of Science: Exclusive Rights and Experimental Use, 56 U. CHI. L. REV. 1017 (1989) (arguing for an expanded application of experimental use); Maureen A. O'Rourke, 100 COLUM. L. REV. 1177, 1236-38 (2000) (proposing an analog to the fair use exception in bio-technology patenting).

214. See, e.g., Barney, *supra* note 209, at 273 (noting the possible unintended problems arising from the prior user defense).

215. The *sui generis* proposal of the Manifesto has, finally, come of age. See *supra* note 190. However, the struggle over software patenting has finally revealed that the real problem did not lie in software "as such." Rather, it was the use of software as a vehicle for smuggling a wide variety of non-computing process claims (including those in the competitive arts) into the patent regime without independent review. See *supra* notes 28-30 and accompanying text. As Professor Reichman has pointed out, the key inquiry is actually whether quick and cheap copying has led to a collapse of the traditional compartmentalization presupposed by the "bipolar model" of patent and copyright law. See Reichman, *Legal Hybrids*, *supra* note 14, at 2500-04; Reichman, *Charting*, *supra* note 14, at 478-79. When it does, then the software patent/copyright solution (*supra* notes 190-201) will likely overprotect, and an alternative must be found. Professor Reichman suggests that the resulting proliferation of *sui generis* regimes, each attacking a specific aspect of the same problem, should perhaps be replaced by a more unitary regime which directly addresses the common root cause. Specifically, his proposal follows the lead of a variety of existing laws which eschew exclusivity in favor of providing artificial legal lead-time substitutes through liability rules "prefabricated licensing provisions." Reichman, *Legal Hybrids*, *supra* note 14, at 2443-47, 2472-78 (noting in particular the Italian approach to protection of engineering projects). Although the regime proposed in this Section continues to rely on patent law qualification techniques to maintain the proper "front-end" balance between incentives and costs, the remedial approach can be properly viewed as just such a set of prefabricated licensing provisions tailored to the particular needs of the competitive arts. I am not convinced that all of the examples raised by Professor Reichman actually require a *sui generis* solution or that the problem, at least in the competitive arts context, stems from the inadequacy of trade secret law to perform its historical function. Regarding the former, more study is required to

regime is an enormous undertaking well beyond the scope of this Article. The following discussion, however, offers sufficient directional observations regarding the basic structure to permit critical assessment of the workability of the proposed solution.

The logical starting point is to identify the policy drivers: if we don't know where we want to go, we are unlikely to get there.²¹⁶ The key concern is the potential under-production of desirable competitive arts innovations. By definition, the competitive arts operate and have value exclusively in the marketplace. Therefore, the same market economics approach guiding patent law provides an appropriate framework for articulating the objectives of the new regime.²¹⁷ Stating the regime's goal in these terms is relatively straight-forward: it seeks to provide incentives countering the adverse effects on the market's first-to-move lead-time driver of competitive arts innovation caused by quick and cheap copying, at levels which make it likely that the benefits of supplemental creation outweigh the social cost of lost access by potential users, including competitors, consumers and improvers. The complexity, as always, lies in the details.

As discussed above, traditional copyright law properly and adequately addresses protecting the original expression of competitive arts innovations.²¹⁸ The problem (and the new regime's focus) lies in adjusting patent law's overly strong complementary protection for the functionality. A variety of analogs to the patent system's approach are, therefore, an appropriate starting point. First, the regime's incentive, like patent law, should target only actual innovation. Subsequent, independent duplicative invention adds nothing new to the body of competitive arts techniques. Motivating discovery and emulative implementation of techniques already developed by others is best left to normal market forces. The copyright threshold of mere originality is,

determine whether such a regime has broad application or whether a variety of specially tailored regimes will be required. Reichman, *Legal Hybrids*, *supra* note 14, at 2447-48 (Professor Reichman himself states that his proposal may be more appropriately viewed as a way of thinking about the problem raised by quick and cheap copying). Regarding the latter, to view the solution as replacing trade secret law (which never applied to any appreciable extent to the competitive arts) rather than shoring up market driven first-to-move lead-time incentives, risks damage to the trade secret law regime (adding further confusion to its policy justifications) and requires substantial efforts to disentangle the new regime from its requirements (including its inapplicable focus on secrecy). *See supra* note 189.

216. Proposing a new form of protection also may raise Constitutional and treaty obligation questions. *See infra* note 292-96 and accompanying text.

217. It could, of course, be argued that the assumed "given" of using a market economy approach is inappropriate. If so, then the entire goal structure changes and so must the analysis. *See supra* note 88.

218. *See supra* note 197 and accompanying text.

therefore, too low²¹⁹ and must cede to the more demanding patent law requirements of novelty/non-obviousness (invention) and utility/description/enablement (providing objective means to ensure presence of benefits).²²⁰ Second, although personal return may provide the mechanism, the incentive is provided to increase competitive efficiency and maximize aggregate social wealth, not reward the innovator.²²¹ This focus confirms the need for description/enablement as well as publication and calls for limiting the term of protection, in order that the public might benefit from its investment. Finally, the need to limit disruptive and inefficient over-reaching and *in terrorem* assertions supports some form of prior examination to ensure that these requirements are met.²²²

Adopting the basic patent model for obtaining protection carries over the concerns bedeviling current business method patenting into the new regime. As Professor Merges has quite properly pointed out, for any regime to operate effectively, improper issuances must be minimized.²²³ This can be accomplished in part by improvements in the examination process, such as ensuring that examiners have the requisite training and expertise, and maximizing identification of relevant prior art. The training and expertise requirements can be satisfied by hiring competitive arts examiners with educational and professional backgrounds in the competitive arts; marketing, sales and finance, in particular.²²⁴ As commentators have noted, the relevant prior art will be both more current and far more ancient than existing patent records will reveal.²²⁵ Additionally, by its nature, much of the prior art will not be documented in the manner of traditional industrial and scientific

219. See, e.g., MERGES ET AL., *supra* note 147, at 329–32 (noting that originality means to the author, not novelty in the absolute sense).

220. 35 U.S.C. §§ 102–103, 112 (1994); Chiappetta, *Article of Manufacture*, *supra* note 8, at 100–05 (discussing the requirements).

221. See *supra* notes 98–99 and accompanying text.

222. See *supra* notes 137, 176 (discussing the problems encountered when the patent examination requirement was dropped). The examination requirement is also supported by the *in terrorem* effects of unjustified litigation as a means for impeding competitors. See Dreyfuss, *supra* note 5, at 270; Merges, *supra* note 5, at 600; Raskind, *supra* note 5, at 82.

223. See Merges, *supra* note 5, at 588. Professor Merges correctly notes that the minimization process itself requires a cost-benefit balancing exercise. *Id.* at 592–93.

224. The USPTO Business Method Patent Initiative moves in this direction. See Mulsby, *supra* note 2, at 9 (setting out the Initiative's call for enhanced training and availability of business specialists to act as a resource for the examiners). To implement the new regime, however, actual business professionals will be required, meaning a change should be made in the traditional technical background prerequisite for taking the Patent Bar. See Grusd, *supra* note 166, at ¶ 71; John Kasdan, *Obviousness and New Technologies*, 10 FORDHAM INTELL. PROP. MEDIA & ENT. L. J. 159, 180–81 (1999) (discussing the problem).

225. See Dreyfuss, *supra* note 5, at 270; Merges, *supra* note 5, at 589–90; see also, Lemer, *supra* note 2, at 2; Thomas, *supra* note 2, at 31–32.

research. Its identification will, therefore, require inquiry into actual activities in the market itself. These special characteristics will necessitate development of new databases and new search techniques (such as on-line inquiry by examiners).²²⁶

They also make exploring more significant departures from traditional patent examination appropriate. Serious consideration should be given to increasing the applicant's participation in the identification process.²²⁷ The focus should shift from punishing an applicant's intentional misconduct (inequitable conduct)²²⁸ to affirmatively bringing the applicant's business expertise and resources to bear.²²⁹ Requiring more active involvement in the prior art collection process not only improves review of the specific application, but helps build and update the necessary prior art database. Significant value could be added, without significant cost or risk to the applicant,²³⁰ by requiring a modest, well-defined, pre-filing search designed to capture the most accessible information. For example, an appropriate search might be limited to inquiring of those formally associated with the inventor (employees and contractors within the same group of affiliated business organizations) and a review of the applicant's own internal records at the time of application. Additionally, intent to deceive should be abandoned in favor of a disclosure standard requiring the applicant to produce any information a reasonable examiner making a novelty or non-obviousness decision would deem material. Failure to provide such information, either actually known or which "should have been known" based on the required search, would render the related claims invalid.²³¹

226. As there would be pre-issuance publication (*see infra* notes 232–34 and accompanying text) an examiner could even send out a general request for prior art. *See, e.g.* LawCast Roundtable, *supra* note 112 (noting use of a similar technique to support a validity challenge in a lawsuit); Maulsby, *supra* note 2, at 9 (Business Method Patent Initiative calls for extended non-patent literature searches).

227. Although an applicant must come forward with material information of which it is aware, *see* 37 C.F.R. § 1.56 (1999), under current patent law there is no affirmative obligation to perform a search. *See, e.g.*, American Hoist & Derrick Company v. Sowa & Sons, Inc., 725 F.2d 1350, 1362 (Fed. Cir. 1984).

228. *See* MERGES ET AL., *supra* note 147, at 271–77.

229. *Cf.* Merges, *supra* note 5, at 601 (noting that private parties will hold much of the relevant information, leading him to recommend a patent opposition system). This same consideration would also lend support for involving the applicant directly in the prior art identification system.

230. *Cf. id.* at 600 (noting the desirability of avoiding excessive costs on the applicant, particularly small inventors).

231. As the commentators have noted, one consequence of eliminating the intent to deceive standard (and increasing the applicant's duty to search) will be to create a flood of document submissions. *See, e.g.*, LawCast Report, *supra* note 112 (the comments of Professor Thomas). Particularly if Rule 56 continues in its present form, making the lawyer potentially liable as well, the standard advice will be to submit everything in hand. *Cf. id.*

The quest for comprehensive “up front” prior art identification also argues strongly in favor of incorporating a pre-issuance publication and a post-issuance opposition procedure.²³² Publication and solicitation of submissions from those in the potentially affected markets substantially expands the scope of prior art considered, while making the rights which do issue more reliable and, therefore, more valuable to the holder.²³³ Additionally, these gains can be obtained without the substantial traditional patent law concern over pre-issuance secrecy. In most competitive arts cases publication does not force the innovator to forgo a long-term trade secret alternative, as the method will become visible immediately on use. Although some conflicts do remain, these can be largely mitigated by withholding publication until late in the review process and by ensuring that the rights granted preserve the potentially important first to market advantage.²³⁴ A post-issuance opposition procedure avoids undue delay in obtaining rights (including dilatory tactics by well-financed competitors) while providing a number of benefits.²³⁵

(comments of PTO Commissioner Q. Todd Dickenson). One answer, of course, is that this is the price of reducing costs otherwise borne by competitors in the marketplace by ensuring only appropriate patents issue. Cf. *Merges*, *supra* note 5, at 596. Additionally, the process of collecting available competitive arts prior art benefits the system overall. However, simply placing the entire cost of handling voluminous submissions on the USPTO ignores some relatively simple adjustments. The applicant could be required to explain why a reference has been submitted and its view of the effect. Extreme cases of over-submission could be subject to some form of financial penalty to both offset the costs and provide deterrence. Finally, holding the attorney responsible only in intentional or grossly negligent cases, and using a reasonableness standard to measure applicant compliance, would mitigate the risks and related conservatism of professional advice. See *infra* note 255 and accompanying text.

232. See *Merges*, *supra* note 5, at 610-15; Craig Allen Nard, *Certainty, Fence Building, and the Useful Arts*, 74 *IND. L.J.* 759, 776-85 (1999). These arguments, among others (including pressure to conform United States law to that in many other jurisdictions), have led to the adoption of a pre-issuance publication requirement for all utility patent applications which are also filed overseas (35 U.S.C. § 122(b)) as well as the introduction of similar proposed legislation regarding all competitive arts patents. See Business Method Patent Improvement Act of 2000, H.R. 5364, 106th Cong. (2000) (introduced by Representatives Boucher and Berman proposing, among other things, a pre-grant publication requirement and a post-grant opposition procedure) [hereinafter *Boucher Proposal*].

233. See *Merges*, *supra* note 5, at 615; Nard, *supra* note 232, at 759.

234. This may require some form of pre-issuance, post-publication provisional rights similar to those found in 35 U.S.C. § 154(d) (addressing a similar problem regarding mandated pre-issuance publication under the Patent Act); see also *infra* notes 263-64 and 271-72 and accompanying text (discussing the first to market right).

235. Professor *Merges* notes that although current patent law provides for third party reexamination, the evidence indicates it has not proven a useful tool. Professor *Merges* argues that a true opposition procedure “better taps into patent validity information, much of which is in private hands,” than reexamination, and notes that until the procedure is implemented “the quality of patents will not improve.” *Id.* at 614-15; see also John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 *AIPLA Q. J.* 185 (1998) (noting that most invalidated patents involve prior art not considered at examination); Nard, *supra* note 232, at 764-65.

The administrative opposition review is cheaper than litigation for all involved²³⁶ and reduces the *in-terrorem* and wasteful effects of invalid assertions via litigation.²³⁷

These special concerns should also be expressly reflected in the nature of the examiner's review. A detailed and complete record should be developed during prosecution. It should precisely indicate what has been invented (carefully defining terms and identifying the specific novelty supporting the claims) and document what output it produces, how it does so and how we know. The record should also clearly explain how the particular innovation relates to, and has been distinguished from, the prior art. If prior art is found irrelevant, the record should say so. If amendments are required, the record should explain their objective and scope. Such a record will help guide subsequent judicial interpretation. It reduces ambiguity in terminology and confusion over the scope, novelty and purpose of the invention. It also provides a predicable and justifiable basis for invoking *Warner-Jenkinson*²³⁸ prosecution history estoppel and its limiting effect on the doctrine of equivalents (especially important in a post-*Festo* world).²³⁹ To ensure adequate time and energy is applied to the examination process, examiner review criteria and compensation should explicitly incorporate considerations relating to the quality of the examination records produced.²⁴⁰

The final "procedural" adjustment related to these prior art concerns involves a change to the presumption of validity normally accorded a granted patent.²⁴¹ All evidence should be considered *de novo* by the factfinder under a preponderance of the evidence burden imposed on the defendant to demonstrate invalidity.²⁴² The existing doctrine that when previously unconsidered prior art is raised in litigation no special deference is owed to PTO review, would continue to apply.²⁴³ Regarding previously considered art, however, there would be no specific instruc-

236. Cf. *Merges*, *supra* note 5, at 610 (making the argument regarding examinations).

237. See *supra* note 222 and accompanying text.

238. See *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17 (1997).

239. See MARTIN J. ADELMAN ET AL., *CASES AND MATERIALS ON PATENT LAW* 918-34 (1998) (discussing *Warner-Jenkinson*, the presumption and its effect on the doctrine of equivalents). A focused prosecution discussion regarding amendments also provides greater confidence regarding the reasonableness of the broader inapplicability of the doctrine of equivalents called for in *Festo*. See *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558 (Fed. Cir. 2000).

240. See *Merges*, *supra* note 5, at 606-09.

241. See 35 U.S.C. §282 (1994) ("A patent shall be presumed valid.").

242. See, e.g., *Boucher Proposal*, *supra* note 232; James Pooley, *The Trouble with Patents: What's Wrong with the Current System and How to Fix It*, CAL. LAW. October 2000, at 42, 81-82.

243. See, e.g., *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1359-60 (Fed. Cir. 1984)

tion that special evidentiary weight should be accorded to the issuance of the patent. However, nothing would preclude the finder of fact from giving facts whatever it considered appropriate weight (including taking into account the examiner's expertise) in making its determination. Consequently, the presumption of validity would be limited to whatever special weight the fact-finder wished to accord issuance or examiner expertise under the specific circumstances and to tipping the balance in favor of validity when the fact-finder could not decide based on the evidence before it.²⁴⁴

In addition to these procedural modifications, the application of the substantive patent law "innovation" standards requires some refinement to reflect the new context. In every review, a clear separation between a computing implementation and the underlying competitive arts process must be carefully maintained. The former adds nothing to the latter and vice-versa.²⁴⁵ Substantively, the § 102 and related judicial articulation of novelty (as it may need to continue to evolve to reflect global and technological considerations²⁴⁶) properly reflect the similar "progress" (versus copyright "originality") objectives of the proposed regime. Non-obviousness, however, needs re-calibration to reflect the patterns of innovation in the competitive arts environment.²⁴⁷ Much competitive arts innovation consists of a pattern of catch-up, "me too" adoptions of an existing implementation with minor (but featured) adjustments to provide marketing differentiation.²⁴⁸ Such activity is primarily motivated by a competitive need to keep current. It neither requires substantial investment nor adds much to the competitive arts. Moreover, many of these substantively meaningless differentiating changes may actually cause more harm than good.²⁴⁹ Intellectual property intervention, therefore, seems not only unnecessary but inappropriate. The typical

244. The result would not be as strong as a "rule of doubt" as the patentee would still benefit from the "tie-breaking" effect of the presumption. Cf. John Kasdan, *supra* note 224, at 182–84 (discussing the rule of doubt).

245. See *supra* note 28–30 and accompanying text.

246. For example, increased internationalization of intellectual property law may eventually require further elimination of existing geographic limitations in United States patent law. Cf., 35 U.S.C. § 104; MERGES ET AL., *supra* note 147, at 296 (discussing the expansion of the inventorship inquiry). Similarly, the "printed publication" limitations in § 102 will become, if they are not already, increasingly problematic in the intangible electronic Internet environment. See 35 U.S.C. § 102(a) and (b) (1994).

247. See Kasdan, *supra* note 224, at 163–79; Grusd, *supra* note 166, at ¶¶ 32–72 (both discussing the need for a better tailored standard of non-obviousness for business method patents).

248. See Raskind, *supra* note 5, at 65–67, 81–82.

249. To the extent it is based on differentiation without any actual benefit in terms of efficiency. See *supra* note 152 and accompanying text.

emulation and incremental “leap-frogging” can, and should, be left to the marketplace.

In contrast, competitive art techniques which involve either entirely new paradigms, or significant discontinuities from what has been done previously (“pioneering innovations”), are more likely to produce actual changes in efficient delivery of goods and services or business operations.²⁵⁰ More critically, investment in, and implementation of, such techniques are much less likely to be motivated by merely keeping up, requiring the ability to lock-in the advantage provided by traditional first-to-move lead-time incentives. These innovations are precisely those targeted by the new regime and deserve protection. Therefore, although it might be argued that traditional notions of obviousness can properly differentiate between unprotected incremental change and paradigm shifting,²⁵¹ the ambiguous nature of the exercise can, and should, be substantially clarified in the case of the competitive arts.²⁵² The new regime’s non-obviousness test should crisply generate the separation by explicitly raising the standard to cover only pioneering change from the prior art. In many cases, this means it will not be sufficient to demonstrate lack of suggestion, long felt need, or commercial success.²⁵³ The regime requires the clear demonstration of a paradigm shift, not merely an accomplishment beyond the reach of one of ordinary skill in the competitive arts.²⁵⁴

These increased requirements and standards will undermine the regime’s incentives to some extent. Supplemental investigation, dealing

250. The concept of pioneering innovations is not new to patent law. *See, e.g.*, *Boyden Power-Brake Co. v. Westinghouse*, 170 U.S. 537, 569 (1898); *MERGES ET AL.*, *supra* note 147, at 250. In this respect the competitive arts may differ from the software industry. *See Cohen & Lemley*, *supra* note 24, at 53 (noting the potentially harmful effects of protecting only pioneering innovations).

251. *See AT&T Corp. v. Excel Communications, Inc.*, No. Civ. A. 96-434-SLR, 1999 WL 1050064, *21–23 (D. Del. 1999) (having no trouble finding the invention obvious on remand from the CAFC); *Dreyfuss*, *supra* note 5, at 10 (noting the case).

252. *See Dreyfuss*, *supra* note 5, at 267–69; *Grusd*, *supra* note 166, at para. 70; *Kasdan*, *supra* note 224, at 174 (all noting that the current standard may be permitting issuance of too many obvious patents).

253. These are common considerations in current non-obviousness determinations. *See MERGES ET AL.*, *supra* note 147, at 207–16.

254. The “gee wiz” factor which Professor Dreyfuss identifies as a problem in many Internet patents can actually help direct the inquiry. *Cf. Dreyfuss*, *supra* note 5, at 270. Once the confusion of the computing aspects of the implementation are eliminated, as they should be, most competitive arts techniques will appear painfully straight-forward especially when combined with an aggressive view of analogous art. *See Margo A. Bagley*, 7 *MICH. TELECOMM. & TECH. L. REV.* 253 (2001) *available at*, <http://www.mttl.org/volseven/bagley.html>. Consequently, they will rarely provide the “paradigm shift” necessary to support non-obviousness. Additionally, the more objective approach to obviousness proposed by Professor Lunney, specifically the focus on the amount of creative investment, may also help distinguish the routine from the pioneering inventions. *See Lunney*, *supra* note 165.

with detailed examination and fending off opposition challenges, take time and money. The higher bar for non-obviousness will exclude a substantial amount of competitive arts activity. The requirements that the applicant “should have known” and must disclose any material information introduce enforcement uncertainty. Some of these effects can be mitigated by circumspect judicial review, applying similar standards already used in other areas of the law. For example, the disclosure burden could be tied to the familiar “material to an investment decision” standard in securities law.²⁵⁵ Similarly, the search requirement and related “should have known” obligation can be tied to specific requirements set using an economic reasonableness gloss similar to the already well-elaborated limitation on “reasonable efforts” found in trade secret law.²⁵⁶

More importantly, however, the regime’s goal is to supplement the first-to-move lead-time incentive of the marketplace, not provide a safe-haven from competition. The particular costs and risks in the proposed regime appropriately reflect concerns that less demanding qualification standards may result in unmerited social costs attendant to over-protection and unjustified limitations on access by other users.

Turning to rights and remedies under the proposed regime brings the earlier discussed concerns with the patent model back into play. Although the focus on functional innovation and potential over-reaching justify application of its qualification framework, the long-term, quasi-absolute right to exclude provides far too powerful and costly an incentive.²⁵⁷ Responding to the adverse effects of quick and cheap copying on traditional first-to-move lead-time market drivers requires only a much subtler nudge to bring innovative activities back into proper alignment.²⁵⁸

Instead copyright law’s more flexible approach of specially tailored rights and remedies, eschewing “one size fits all” exclusions in favor of expressly building in specific limitations reflecting competing policy objectives, provides a far more appropriate framework. For example, § 115 of the Copyright Act²⁵⁹ was designed to address a similar tension between incenting innovation while avoiding broad foreclosure of

255. This would parallel the previous version and interpretation of Rule 56. Cf. ADELMAN ET AL., *supra* note 239, at 735–37.

256. See, e.g., *Rockwell Graphic Systems, Inc. v. DEV Industries, Inc.*, 925 F.2d 174 (7th Cir. 1991) (limiting efforts to those economically reasonable under the circumstances); see also, Chiappetta, *Myth*, *supra* note 11, at 125, 149 (describing the use of a similar “reasonableness” test to define the search necessary to establish holder *bona fides* in a trade secret leveraging transaction)

257. See *supra* notes 198–201 and accompanying text.

258. See Reichman, *Charting*, *supra* note 14, at 516–20.

259. 17 U.S.C. § 115 (1994).

subsequent use. Under its provisions the author retains the timing and recognition advantages inherent in being the first to market.²⁶⁰ However, after such first use, the work must be licensed to third parties (including competitors) for a reasonable (statutorily established) royalty.²⁶¹ The resulting incentives and costs are, therefore, both substantially lower than under the patent regime. The compulsory licensing requirement eliminates the powerful motivation of long-term supra-competitive returns potentially available under a pure 20-year right to exclude. On the other hand, the lost social wealth is limited by permitting others to use the technique whenever justified in light of the royalty obligation.

The same basic balance drawn under the “cover” concept matches up well with the proposed competitive arts regime’s objective of supplementing the impaired first-to-move lead-time advantage, and provides an appropriate remedial framework.²⁶² The innovator receives the important right to control first introduction in the market. This right not only preserves the first-to-move advantages associated with initial entry as well as recognition as the source of the new technique,²⁶³ but guarantees that third parties informed of the technique through pre-issuance publication²⁶⁴ cannot steal the march on the innovator. A compulsory licensing requirement can substantially mitigate the quick and cheap damage to lead-time advantage,²⁶⁵ while preserving access by others. As under normal market conditions, once an innovation has been introduced, others are free to adopt the technique. Although the regime permits competitive entry, it also imposes a royalty payable to the inno-

260. 17 U.S.C. § 115(a) requires that to trigger third party access the musical work first must be “distributed to the public in the United States under the authority of the copyright owner.”

261. See 17 U.S.C. § 115(c) (1994).

262. The argument is not that the copyright provision be directly imported into the new regime, just that the more nuanced methodology provides important guidance. A number of significant changes in the specifics are required to match the competitive arts environment. For example, § 115 prevents any use which impairs the “integrity” of the original work, specifically prohibiting changes to the “basic melody or fundamental character of the work.” 17 U.S.C. § 115(a)(2) (1994). This reflects more concern for the author’s personhood than is appropriate to the competitive arts environment, and, therefore, should be omitted. The § 115 rights also limit access to those making new sound recordings, requiring a separate performance license which can be withheld. Again, this is inappropriate to the lead-time objectives of the competitive arts regime which permits all use by the competitor against payment of royalties. Additionally, the compensatory approach of § 115 is replaced by a cost-differentiation objective more suitable to the competitive arts lead-time concern.

263. See *supra* note 167 and accompanying text.

264. See *supra* note 232–34 and accompanying text (arguing for pre-issuance publication to facilitate prior art identification).

265. The following analysis closely parallels the logic offered by Professor Reichman in support of his “prefabricated licensing provisions” remedies. See *supra* note 215 (discussing the proposal); Reichman, *Charting*, *supra* note 14, at 518–20; Reichman, *Legal Hybrids*, *supra* note 14, at 2444–48.

vator. Unlike § 115, however, the objective is not to compensate the inventor. The royalty, therefore, need not reflect market value or amortize the inventor's development costs.²⁶⁶ Rather, because it exists exclusively to provide the innovator a supplemental short-term advantage over competitors, it only need provide a modest cost differential.²⁶⁷ As with market lead-time, such a royalty provides a limited window of competitive opportunity which closes as rivals identify and develop cost-saving improvements. During this period, however, the innovator can attempt to consolidate its advantage through lock-in techniques similar to those employed under normal first-to-move lead-time conditions.²⁶⁸

Some additional refinements to this rights/remedial structure are required to obtain an appropriate benefit-cost balance. The first relates to the term of protection. The new regime's objective is to supplement the damaged market lead-time incentive. That incentive does not normally endure for long periods, even under optimum market conditions. Coupling this need for a relatively weak right with the desire to avoid the costs of unnecessary exclusion points to a much shorter term of protection than copyright's life of the author plus seventy-years.²⁶⁹ Although empirical study is required, it is not unreasonable to hypothesize that a period as short as one year, but certainly no longer than two or three, after issuance should be more than sufficient.²⁷⁰

266. Unlike the § 115 "cover" approach, which seeks to provide a reasonable return on the author's investment in the work and is informed by, among other things, voluntary market rate agreements as a guide. *See* 17 U.S.C. §§ 115(c)(3)(E), 801(b)(1)(B). The proposed regime thus avoids the common argument that compulsory licensing systems are unworkable because they cannot produce proper valuations. *Cf.* Lemley, *supra* note 101, at 1071 (indicating the preference for market driven solutions); Robert P. Merges, *Are You Making Fun of Me? Notes on Market Failure and the Parody Defense in Copyright*, 21 AIPLA Q. J. 305, 310 (1993) (noting the normal objective in compulsory licensing as "supply(ing) a mutually beneficial exchange where the market will not").

267. The remedy in an infringement lawsuit should, however, take into account both the costs to the rights holder and the need to deter infringers from not voluntarily coming forward to obtain a license in the hope they will not be detected and thereby avoid the lead-time cost advantage of the regime. *See infra* text following note 354; *cf.* Chiappetta, *Myth*, *supra* note 11, at 156, 161.

268. *See supra* note 167 and accompanying text (describing the normal lock-in steps which may be taken). In order to preserve initial advantage, particularly regarding larger, well-financed competitors, it may also be necessary to delay competitive entry for a short period following introduction by the innovator.

269. 17 U.S.C. § 302 (1994). There are those that argue, convincingly, that the term of copyright protection does not even match with the objectives of copyright law; but that is a separate debate. *See supra* note 175 (referencing Professor Karjala's extensive Website on the subject).

270. The term could be tied to an empirical economic analysis of ramp-up times for competitors under normal market conditions. An approach reflecting greater optimism in

For similar reasons, the innovator's exclusive right to first implementation should also be time constrained. An inventor controls, and is free to withhold or limit, use of any innovation which can be kept confidential. The competitive arts innovations targeted by the new regime, however, are those disclosed by use and, consequently, motivated by, and depend on, the first-to-move lead-time incentive.²⁷¹ Therefore, they will generally provide maximum advantage through quick action. Although market conditions or implementation requirements may affect the precise timing of an introduction, there will normally be a relatively short time period between innovation and market launch. Additionally, society stands to gain from rapid introduction into the marketplace. There is, therefore, little reason, nor much value, in permitting innovators to delay introduction by sitting on their first to introduce rights for extended periods of time.²⁷² On the other hand, if the system is to encourage early filings, the problem presented by equally early publication must also be taken into account. Consequently, the right to first introduction should extend sufficiently beyond actual issuance to ensure a reasonable period for pre-launch preparations. In all events, the failure to exercise the first introduction right during the reserved window should not effect the compulsory licensing portion of the regime which would go into effect immediately upon expiration of that right.

Careful attention must also be paid to the effect of enforcement actions on competitors' investment in innovation. Despite the adoption of a more flexible "copyright-like" approach to remedies, that regime's

empirical and economic methods might even seek to tie the term to that which yielded the optimum generation of competitive arts innovation benefits for the costs incurred.

271. To the extent practical control through confidentiality is possible, innovators will likely seek the more generous protection under trade secret law. It is precisely the recognition of this practical reality that justifies trade secret law. *See generally*, Chiappetta, *Myth*, *supra* note 11. In contrast, the new regime targets only methods which cannot be practically controlled, and therefore, cannot (and never could) benefit from trade secret protection. Consequently, there is no overlap and no practical or policy conflict, between the two regimes.

272. *Cf.* Martin J. Adelman, *Property Rights Theory and Patent-Antitrust: The Role of Compulsory Licensing*, 52 N.Y.U. L. REV. 977, 1002 (1977) (arguing against the right of a patentee to suppress a patent and the use of compulsory licensing); *see also, infra* notes 352-54 and accompanying text (discussing the right under current patent law not to license or use a patent during its term and its inappropriateness in the competitive arts context). For similar reasons a first to file system may be more appropriate than the first to invent and statutory bar approach under patent law. The change would reduce uncertainty and avoid substantial administrative complexity. Although the approach does disadvantage innovators with fewer available resources to apply to implementation, this group faces the same problem in a properly operating first-to-move lead-time market environment. Moreover, making a commercial arts innovation ready for patenting will in many cases require relatively little time and capital. Consequently, a commercial arts innovator who failed to quickly file would likely face substantial § 102(g) lack of diligence, suppression or concealment risks under the existing system

“substantial similarity” standard for determining infringement not only covers a lot of ground, but its inherent ambiguity casts an extremely broad shadow.²⁷³ The need for a more limited incentive, and the concerns regarding over-protection, dictate greater attention to the costs generated by ambiguity and over-reaching under the competitive arts regime. The reach of the holder’s rights should, therefore, be defined and limited consistent with the manner of their creation, by applying the greater precision and predictability of claims-based infringement used in patent law.²⁷⁴

If the objective is precision and predictability, improper or uncertain application of patent law’s doctrine of equivalents may still result in over-protection within the context of the competitive arts regime.²⁷⁵ Recent work by Professors Cohen and Lemley concerning software patents²⁷⁶ provides a straight-forward approach for determining whether a real problem exists. The appropriateness of the doctrine of equivalents in a particular context lies in the answer to the following question: “[w]hat is to be gained by making infringers out of . . . routine innovators?”²⁷⁷

Regarding competitive arts innovation, the answer is “not much, but just enough to merit an expansive view of equivalents.” In the competitive arts regime, only paradigm shifting inventions receive protection under the enhanced non-obviousness standard. Thus, the doctrine of equivalents raises a stark conflict. A narrow reading of the claims is inconsistent with the “pioneering” character of the invention and, thus, threatens to undermine the incentive when it is most appropriate.²⁷⁸ Conversely, an expansive reading makes investment in incremental improvements extremely problematic. Such an innovator will both infringe and be unable to obtain an improvement “blocking patent” with which to negotiate.²⁷⁹ Consequently, broad protection under

273. See Karjala, *The Relative Roles*, *supra* note 100, at 44–45.

274. See *id.*; see also Lemley, *supra* note 101, at 1068–84 (arguing that patent law type limitations generally provide better incentives to improvement innovations).

275. This concern has been brought to forefront of patenting discussions by the CAFC’s decision in *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558 (Fed. Cir. 2000), which focused on the notice function of the claims as the justification for significantly curtailing the reach of the doctrine of equivalents whenever an amendment related to patentability occurred during prosecution. See *supra* notes 238–39 and accompanying text (discussing prosecution history estoppel).

276. See Cohen & Lemley, *supra* note 24.

277. *Id.* at 51.

278. See *supra* notes 247–54 and accompanying text.

279. As Professors Cohen & Lemley point out, many improving innovators in the software arena are partially protected against the consequences of infringement through their blocking patents. Cohen & Lemley, *supra* note 24. In the competitive arts the significant

equivalents threatens to inhibit the normal emulation—minor differentiation incremental innovation which currently characterizes most competitive arts activity.²⁸⁰

Although intractable in the traditional exclusive rights context of patent law, this conflict proves far less problematic in the competitive arts regime. The rights holder has only the privilege of first introduction and thereafter an entitlement to the short-term royalty due under the compulsory licensing system. Even an infringing incremental innovator has the absolute right to make any improvements provided that the royalty is paid. Market incentives will, therefore, continue to drive any improvements whose value at least offsets the royalty. Other improvements only need await the expiration of the short-term of protection. A broad application of the doctrine of equivalents, therefore, permits the regime's incentive to emerge intact, while the limited nature of the rights causes relatively little long-term disincentive to subsequent improvements.

Equivalents problems, therefore, are primarily limited to ensuring that the original claims are appropriately drawn and interpreted in light of the prior art. The fully documented prosecution history, coupled with aggressive application of the *Warner-Jenkinson* presumption (as further interpreted in *Festo*),²⁸¹ and the modifications suggested by Professors Cohen and Lemley to the “known interchangeability” and “reverse equivalents” doctrines, can mitigate many of these concerns.²⁸² Regarding “known interchangeability,” Cohen and Lemley convincingly argue that when there are problems with ensuring pre-issuance identification of all relevant prior art (as is the case with the competitive arts), a proper result can be reached under the doctrine of equivalents by deciding if the subsequently cited prior art had been before the examiner, that the “patent would have been narrowed in a way that would save the accused improvement.”²⁸³ Their expanded view of reverse equivalents similarly reflects the need to properly limit the original claims, but in this instance to ensure that equally pioneering subsequent advances are not inappropriately absorbed.²⁸⁴ In the competitive arts regime, their approach permits application of the same heightened standard of obviousness to the equivalents question, directing the enforcing court to

barrier posed by the heightened standard of non-obviousness denies this potentially off-setting right.

280. See *supra* notes 172 and 248.

281. See *supra* note 238–39 and accompanying text.

282. See Cohen & Lemley, *supra* note 24, at 53–55.

283. *Id.* at 54.

284. *Id.* at 54–55.

look out for and protect subsequent dramatic changes of direction and discontinuities.

Although a patent infringement approach provides an appropriately limited scope of rights under the new regime, it does raise one additional significant over-protection concern. Traditional patent infringement inquiries offer virtually no defenses.²⁸⁵ The market based first-to-move lead-time incentive, however, includes the significant risk that other market participants, driven by the same context and competitive forces, might independently come to the same innovation. Therefore, failure to incorporate an independent creation defense into the supplemental incentive structure simultaneously over-protects the inventor and discourages competitive parallel independent development by others.

The easy solution of directly importing the “independent creation” copyright defense²⁸⁶ into the new regime, however, would ignore critical differences in the latter’s operation. Unlike copyright law, the competitive arts regime requires a substantial investment in obtaining protection which could be destroyed by an independent creation exception. More importantly, the description and enablement requirements, coupled with publication, will raise strong suspicions that most subsequent adoption will actually occur by copying. To accommodate these differences, the proposed regime’s independent creation defense should shift the burden of proof. The plaintiff could still demonstrate the likelihood of “copying” through access and substantial similarity (including the related possibility of innocent copying).²⁸⁷ However, it would remain the defendant’s burden in each case, whether the plaintiff produced evidence or not, to demonstrate by a preponderance of the evidence that the innovation was actually internally developed by the defendant or another party from whom it was received.²⁸⁸

Some attention should also be paid to non-market uses of protected innovations. The description/enablement and publication requirements eliminate much of the need for a reverse engineering exception.²⁸⁹ Nor

285. See Stern, *supra* note 5, at 138; Thomas, *supra* note 2, at 5–6.

286. The copyright holder is only protected against copying. See MERGES ET AL., *supra* note 147, at 408–16, 506.

287. See *id.*

288. Although subsequent independent creation would provide a defense, such creation would not, however, be protectable under the regime. See *supra* note 219–20 (discussing the need for a novelty standard), note 272 (discussing the preference for a first to file system).

289. This exception mitigates the costs of trade secret protection. See Chiappetta, *Myth*, *supra* note 11, at 129–32. Similar cost mitigation arguments have been urged by Professors Cohen and Lemley regarding software patenting. See Cohen and Lemley, *supra* note 24, at 21–28. In the proposed competitive arts regime all of the necessary information would be provided by the applicant’s description/enablement.

does the compulsory licensing system categorically prevent experimental use. Nonetheless, it might be argued that a potential subsequent adopter should be permitted to better understand the technique or experiment with modifications before incurring the royalty obligation. The primary focus of the compulsory licensing requirement, however, is on providing the holder with an opportunity to “lock-in” advantage in the marketplace, not compensation. It, therefore, seems most consistent with this objective to avoid any “free” competitor ramp-up opportunities by requiring payment for any use.

Additionally, the regime should expressly internalize the territoriality issues raised by the Internet. As with other intellectual property regimes, United States competitive arts protection will only have effect within its domestic jurisdiction. This raises issues concerning computer implementation residing “off-shore.”²⁹⁰ To avoid this type of gamesmanship, the regime should avoid predicating liability on the geographic location of the computing activity. The right of first implementation and compulsory licensing provisions should, therefore, apply to any use of protected competitive means which affects competition within the United States market.²⁹¹

Finally, the question of authority to create the proposed regime should be briefly addressed. The action should be well within Congressional power. If the competitive arts are part of the useful arts, then the Intellectual Property Clause expressly permits such limited time protection for the purpose of advancing progress in this particular sub-field. If the competitive arts are not within the useful arts, certainly a plausible argument,²⁹² then the Commerce Clause should provide ample authority.²⁹³ Regarding the United States’

290. See Timothy F. Myers, *Foreign Infringement of Business Method Patents*, 7 WIL-
LAMETTE J. INT’L L. & DISPUTE RESOLUTION 101 (2000) (discussing the problems of
determining where activity related to Internet transactions is taking place).

291. The approach is similar to the effort under § 271(g) of the Patent Act to protect
United States patent holders against “off-shore” infringement of process patents. 35 U.S.C.
§ 271(g) (1994). That section focuses on the product output from the process, raising a num-
ber of attendant definitional difficulties. In the case of a competitive means, the “product” is
much harder to define, exacerbating the problems. See Myers, *supra* note 290. The suggested
“effects” test avoids these difficulties. The approach finds support and guidance in the anti-
trust arena. Cf. AREEDA, *supra* note 90, at 146–47.

292. See *supra* notes 57–87 and accompanying text.

293. There is the possibility that the Intellectual Property Clause, specifically the
“useful arts” and “science” limitations, circumscribe Congressional power to provide incen-
tives to innovation under the Commerce Clause. See, e.g., Chiappetta, *Myth*, *supra* note 11,
at 138–39 (noting the argument). The direct relevance of the competitive arts to commerce
may somewhat lessen the concern, but does not eliminate it. Although an important and
difficult technical question worthy of independent review, under the current policy analysis,
concerned only with the normative justifications for such a regime, the problem can be swept

TRIPS²⁹⁴ treaty obligations, that agreement states that its patent requirements apply only to “all fields of technology . . . capable of industrial application.”²⁹⁵ Because TRIPS expressly adopts the “industrial arts” limitation,²⁹⁶ it is highly unlikely that a WTO panel would, nor should it, find that the United States’ lesser protection of competitive arts (as distinguished from computing) innovations violated these provisions.

The above regime addresses the special first-to-move lead-time market failure arising between Internet competitors. The question remains whether it should be extended to non-Internet implementations. Although without empirical testing we cannot be sure, strong arguments support adopting a hypothesis favoring general application to all innovations in the competitive arts, Internet or otherwise.

First, the Internet-triggered market failure spills over to non-Internet implementations. The Internet harms first-to-move lead-time, whether or not the subsequent competing implementation takes place on or off of the Internet. Similarly, if a competitor is permitted to implement the inventor’s non-Internet innovation on the Internet, all further adoptions by the inventor’s competitors will at least reflect some lead-time compression.

Second, drawing the necessary distinction between Internet and non-Internet implementations in a world of digital convergence is hardly a straight-forward or cost-free exercise. Should protection attach whenever any Internet use is demonstrated, even if the bulk of the application occurs in the world of bricks and mortar? Does an Internet implementation mean only use on a traditional website, or is any readily visible supplier-buyer connection sufficient? And because the Internet is hardly static, how does the dividing line get updated to ensure its continued applicability in the face of technological advance? These ambiguities will generate substantial costs for the regulatory agency charged with administration, the courts, and private parties.

Finally, because competitive arts implementations increasingly involve computing implementations, the underlying quick and cheap copying problem is likely affecting all competitive arts innovation, Internet and otherwise. General application of the new regime would not only mitigate this general distortion, but its public disclosure and

away by the possibility of an appropriate Constitutional amendment. *See supra* notes 86–88 and accompanying text.

294. Agreement on Trade-Related Aspects of Intellectual Property, Apr. 15, 1994, 108 Stat. 4809, 33 I.L.M. 81 [hereinafter *TRIPS*].

295. *Id.* at ¶ 27.

296. *See supra* note 79 and accompanying text (discussing Professor Thomas’ advocacy of the “industrial arts” as a definition for the useful arts).

post-term dedication structure would provide the same social benefits of the comparable patent law requirements.²⁹⁷

IV. WHAT DO WE DO IN THE MEANTIME (OR WHILE WAITING FOR GODOT)?

The concerns addressed in this symposium are not restricted to musings regarding what an appropriate future regime could look like. The CAFC has pronounced that business methods are patentable subject matter. The USPTO has received a flood of actual applications and is issuing increasing numbers of patents. These patents are generating very real infringement lawsuits. The above arguments make it appear extremely likely that this application of traditional patent law to the competitive arts is a very poor idea. The resulting over-protection distorts competition, reduces market efficiency and, if economic theory holds, adversely affects aggregate social wealth. Therefore, even if we are not (yet) prepared to take the dramatic step of implementing an entirely new regime, some significant alterations should be made immediately.

The earlier policy arguments, and the resulting outline of a new competitive arts regime, provide substantial guidance for this effort. The application of the existing intellectual property laws should target, to the maximum extent possible, the same policy objective justifying the proposed regime: remedying the effects of quick and cheap copying on the normal first-to-move lead-time market incentive to competitive arts innovation while minimizing related social costs. This results in two fundamental guiding principles. First, the damage caused by applying existing intellectual property laws must not be increased. The primary regimes applying incentives to innovation are patent and copyright law.²⁹⁸ The functional nature of competitive arts method inventions makes them far better suited to protection under the former rather than under the latter. *State Street Bank*, as presently interpreted and applied, effectively performs the necessary channeling function by offering strong traditional patent protection. However, making the adjustments suggested below will substantially reduce the scope of those rights and the related competitive advantage, increasing the motivation to look

297. The public disclosure objectives of patent law created substantial concern over the overlap with trade secret law. See Chiappetta, *Myth*, *supra* note 11, at 136–39. Because the purpose of the new regime is not to drive public disclosure but only to limit its adverse effects on innovation in the context of quick and cheap copying, the trade secret alternative does not interfere with the new regime's objectives. See *supra* notes 189, 215.

298. See *supra* note 189 and accompanying text.

elsewhere.²⁹⁹ Any resulting attempts to obtain copyright protection for more than specific expression risks serious additional distortions and should be consistently and forcefully rejected.

Second, the adverse effects of applying patent law can be substantially reduced by aligning the qualification requirements, rights, and remedies as closely as possible with the characteristics of the proposed competitive arts regime. Because the proposed regime generally parallels the patent approach to qualification, a variety of ready adjustments to traditional patent law can substantially reduce the number of "bad" competitive arts patents (those which are unjustified even under the terms of traditional patent law) and appropriately limit the reach of "good" ones (those that, although technically justified, offer excess incentive and generate excess costs in the case of the competitive arts).

The necessary adjustments to examination procedures are well within the USPTO's discretion. The number of inappropriate competitive arts patents can be substantially reduced by carefully distinguishing between computing and competitive means innovations. Applicants should be routinely challenged concerning the precise point of innovation as a method for separating the two categories.³⁰⁰ Not only will this better define the appropriate claims, but it will clearly focus the investigation for relevant prior art. Claims supported only by innovation in computing (increased speed of calculation, efficiency in resource use and the like) should be clearly and expressly limited to cover only the specific computing advance. Any attempt to extend such claims to preempt alternative implementations or general use of the competitive arts technique itself should be routinely treated as over-broad and appropriately restricted.³⁰¹ Similarly, claims which do preempt all use of a

299. As was the case in the software industry when it appeared that patent protection was not available. *See generally* Karjala, *A Coherent Theory*, *supra* note 14.

300. *See* Chiappetta, *Article of Manufacture*, *supra* note 8, at 174-75.

301. This does not mean that novel and non-obvious software solutions are unpatentable merely because they are used to implement competitive arts methods. *See supra* note 56. For example, computing techniques used to implement competitive arts methods on the Internet, such as cookies (for targeted advertising programs) or hyper-linking (for affiliate referrals), certainly would qualify on their own for patent protection if novel and non-obvious. Additionally, those novel techniques would support a patent claim covering their use in a specific implementation of the competitive arts method. Such computing novelty cannot, however, support a general patent claim covering all implementations of the competitive arts method. That broad claim must rest instead on the demonstrable novelty of the competitive art method itself (collecting and processing customer information for targeted advertising or providing appropriate referrals); provided, of course, my view is rejected and such methods are patentable subject matter. A likely effect will be that computing innovation patents will contain at least one broad independent claim which is not application-specific, as well as a series of dependent claims covering use in particular implementations.

A related, but more difficult issue, is whether novelty in the competitive arts method can support, directly or indirectly, claims to a computing implementation which does not present

competitive arts technique must be supported by demonstrated innovation in that technique, independent of the computing implementation.³⁰²

Nor should there be hesitation in ensuring that the examiners have appropriate training and experience in the competitive arts, or that the necessary tools and techniques are available and applied to locate relevant prior art.³⁰³ Moreover, examiner incentives can easily be adjusted to drive the creation of the complete and precise record necessary to ensure well-defined and appropriately limited claims.³⁰⁴

Making substantive legal changes in the qualification process, requires dealing with the constraints of existing law. Many mitigating changes are, however, possible with only minor cooperation from the

any specific independent advance in computing techniques (faster processing, less resources, special data structures). This is a complex and lengthy discussion, leading beyond the time constraints imposed on completing the present endeavor, but does deserve at least a few words. In support of patentability it can be argued that the requisite novelty can be found in either: (1) the application of the pre-existing computing techniques to the new competitive art method (I am indebted to Professor Takenaka who pointed out this apt analog to patentable new uses of a known product) or (2) in the special application or combination of the pre-existing computing solutions required to implement the new competitive art method. My earlier statements on the matter can be unfelicitously interpreted as overly dogmatic, indicating an inappropriateness of placing *any* reliance on the new non-computing method in such cases. See Alan L. Durham, "Useful Arts" in the Information Age, 1999 BYU L. REV. 1419, 1526–27 (1999); Chiappetta, *Article of Manufacture*, *supra* note 8, at 171 (in fairness the "taken as prior art" references were limited, or at least intended to be limited, to avoiding claims to novelty based on ignorance of another art). The proper analysis is that, although competitive arts novelty cannot provide direct support for the computing implementation, the development of a related computing implementation does raise the perfectly appropriate question of whether the new application of the pre-existing computing techniques is new and non-obvious. If each computing element is doing precisely what it did before and all the elements operate in undifferentiated combinations or relationships to one another, all performing in the same way and to the same computing purpose, the computing arts application is obvious (the application of the existing product to its existing use). In such a case, the only novelty comes from the new competitive arts method and no patent on the computing implementation should issue. *Id.* at 172 (no patent should issue if the "only novelty" resides in the non-patentable subject matter). If, however, it requires insight beyond that possessed by one of ordinary skill in the computing arts to recognize that the particular pre-existing technique, a special combination of such techniques, or an adjustment in its or their use, operation or relationship, is needed to accomplish the implementation, then the requisite computing novelty/non-obviousness ("insight in that field") would be present (analogous to the patentable application of an existing product to a new use). This non-obviousness, however, still only justifies a claim to the particular computing implementation, not a claim to the competitive arts technique itself.

302. See *supra* note 301; Chiappetta, *Article of Manufacture*, *supra* note 8, at 170–71.

303. See *supra* notes 223–26 and accompanying text. The USPTO "second look" at business methods patents is a positive step in this direction. See, e.g., Q. Todd Dickinson, Former PTO Director Q. Todd Dickinson Discusses Business Method Patents, Computer & Internet LawCast available at <http://www.lawcast.com> (Mar. 5, 2001) (noting the reduction in issuances as a result). Any such actions should, of course, be made subject to resource constraints as well as appropriate cost-benefit decisions. Cf. *Merges*, *supra* note 5, at 596–606.

304. See *supra* note 238–40 and accompanying text.

judiciary. Regarding identification of prior art, although legislative action is required to institute a third party opposition procedure,³⁰⁵ courts can help increase the pressure on applicants to come forward with prior art during examination. Even a modest adjustment in the application of the inequitable conduct doctrine could place an appropriately greater burden on the applicant to identify reasonably accessible information.³⁰⁶ Many applicants will have wide ranging knowledge of actual market activity. The critical inequitable conduct question when assessing applicant knowledge, therefore, should be whether the applicant was aware of relevant prior activity, not merely whether they knew of specific published references. Similarly, inventorship should be read expansively to draw in additional knowledge of the prior art.³⁰⁷ Many competitive arts advances will involve collaboration among a number of people in a particular business organization and the information available to each of the inventors should be tested.

Additionally, the *State Street Bank* admonition that “business methods [are] subject to the same legal requirements for patentability as applied to any other process or method,”³⁰⁸ echoed in *AT&T* with “ultimate validity . . . depends on . . . satisfying the other requirements for patentability such as those set forth in 35 U.S.C. §§ 102, 103, and 112,”³⁰⁹ make it clear that the traditional requirements of novelty, non-obviousness and description—enablement continue to apply. Nonetheless, the current judicial interpretations of those requirements provide significant opportunity for damage control.

The existing rules governing obviousness and utility can be easily adapted to specifically reflect the competitive arts context.³¹⁰ For example, the three-step obviousness analysis set out in *Graham v. John*

305. Such legislative action has been, and continues to be, considered. See *Boucher Proposal*, *supra* note 232. Additionally, the existing pre-issuance publication requirements and re-examination procedures in the Patent Act, of course, apply to competitive arts applications in accordance with their terms.

306. Although the USPTO can amend Rule 56 or promulgate appropriate new rules, the doctrine of inequitable conduct is of judicial origin and will require judicial modification to reach beyond its current requirements. See *supra* note 228 and accompanying text. Of course, if Congress acts on the matter, the difficulty evaporates. See, e.g., *Boucher Proposal*, *supra* note 232.

307. See ADELMAN ET AL., *supra* note 239, at 720–26 (discussing joint inventorship).

308. *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1375 (Fed. Cir. 1998).

309. *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1361 (Fed. Cir. 1999).

310. See *supra* notes 247–54 and accompanying text (discussing changes to the non-obviousness standard in the new regime). Although a reasonable case is made by these authors and in the following text for USPTO flexibility in this area, it would provide firmer footing and clarity if the judiciary would quickly offer confirmation.

*Deere Co.*³¹¹ provides ample room for appropriate calibration. Examination should proceed on the assumption that a person of ordinary skill in the less technically intricate competitive arts requires far less in the way of suggestion or motivation to make connections among references.³¹² Similarly, because the competitive arts possess far greater inherent interconnectivity, someone of ordinary skill in one of these arts (marketing, for example) should normally be credited with a working familiarity of a substantial range of other business practices (sales, order processing and fulfillment, etc).³¹³ Finally, the examiner should be especially suspicious of non-obviousness assertions predicated solely on having implemented a pre-existing business technique on the Internet,³¹⁴ or relying on secondary considerations because objective verification difficulties³¹⁵ make the necessary chain of inferences even more problematic than normal.³¹⁶

Nor does existing judicial precedent preclude requiring a demonstration of actual utility. Alleging that a process increases the efficient operation, sales or goodwill of a business does not make it so. To support the issuance of a patent, the applicant may be required to provide credible supporting empirical evidence, demonstrating not only the expected output occurred, but the causal connection with the claimed innovation.³¹⁷

Finally, the courts should not only permit, but also employ these same damage mitigating approaches when making their validity and scope of claims determinations. The examination record should be carefully scrutinized to ensure compliance with the above described requirements, including the heightened requirements of non-obviousness and utility. The rule that no particular deference is owed

311. See 383 U.S. 1 (1966).

312. This may require some change in the current CAFC directions. See Lunney, *supra* note 165 (discussing the CAFC's drift away from the more liberal view of the Supreme Court concerning obviousness); *supra* note 253 and accompanying text.

313. The effect is to expand the range of analogous prior art substantially. See Bagley, *supra* note 254. Cf. CHISUM ET AL., *supra* note 99, at 574-75 (discussing the concept of analogous prior art).

314. The mere fact of Internet automation will rarely, if ever, be non-obvious to someone of ordinary skill in the computing arts. See *Boucher Proposal*, *supra* note 232 (creating a presumption of obviousness in such cases); Chiappetta, *Article of Manufacture*, *supra* note 8, at 169-70; *supra* note 31 and notes 300-02 and accompanying text (discussing the relationship between the computing and competitive arts aspects of a claimed invention).

315. See *supra* notes 150-53 and accompanying text (discussing the objective verification problems in the competitive arts).

316. See MERGES ET AL., *supra* note 147, at 214-15.

317. This test could be comparable to the utility demonstration required for pharmaceutical products, see *id.* at 162-63, or might mirror the new USPTO regulations concerning the patenting of genetic material. See Revised Interim Utility Examination Guidelines, 66 Fed. Reg. 1092-02 (Jan. 5, 2001).

(despite the presumption of validity) regarding prior art not considered by the PTO on examination,³¹⁸ should be readily invoked whenever applicable. Additionally, judicial infringement determinations should reflect the carefully circumscribed rights, relying heavily on the examination record for definitions of terms as well as the appropriate scope of the claims (including those in means plus function form). In particular, the record should be routinely used to apply the *Warner-Jenkinson—Festo* narrowing presumptions regarding equivalents³¹⁹ and, in conjunction with the heightened non-obviousness standard, for invoking the doctrines of known-interchangeability and reverse equivalents.³²⁰ The courts should also generously read the ambiguities in the statutory “prior user” defense,³²¹ particularly regarding the scope of coverage,³²² resolving them in favor of an expansive application of the provision to all forms of competitive arts patents.³²³

The most difficult adjustments involve remedies. Mirroring the proposed regime requires a fundamental shift from a “property rules” to a “liability rules” approach.³²⁴ The judiciary has, under CAFC guidance, traditionally (and arguably, increasingly) applied a property rules standard in patent infringement cases. This has led to a substantial increase in preliminary injunctions, and virtually routine permanent injunctive relief, prohibiting any continued use of the patented invention by the defendant.³²⁵ The appropriateness of the property rules approach has been supported by a number of arguments which must be overcome for the necessary shift to take place. Particularly appealing to the courts in recent years has been to view the statutory right to prevent use by others as giving the holder a virtually Blackstonian property right, thus justifying equivalent remedial treatment.³²⁶ Additionally, the novel and

318. See *supra* note 243 and accompanying text.

319. See *supra* notes 238–39 and accompanying text.

320. See *supra* notes 282–84 and accompanying text.

321. See *supra* note 209 and accompanying text.

322. See Barney, *supra* note 209, at 262–64 (noting the ambiguous reach of the phrase “method of doing or conducting business”).

323. The defense does pose a quandary of sorts, as broad application will exacerbate other possible problems. See *supra* note 209.

324. See Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972) (discussing the concepts of property and liability rules approaches to remedies).

325. See, e.g., Jan Ayres & Paul Klemperer, *Limiting Patentees’ Market Power without Reducing Innovation Incentives: The Perverse Benefits of Uncertainty and Non-Injunctive Remedies*, 97 MICH. L. REV. 985, 988 and 1020 (1999); CHISUM ET AL., *supra* note 99, at 1341–42, 1355. *But see*, ADELMAN ET AL., *supra* note 239, at 1080–81 (noting a recent trend to cut back on preliminary injunctive relief).

326. See, e.g., Schneider (Europe) AG v. SciMed Life Sys., Inc. 852 F. Supp. 813, 861 (D. Minn. 1994) (conclusion of law #328, “A patent is a property right to which the patent

non-obvious nature of a patented invention may be said to make it unique, triggering the traditional related presumption that compensatory damages are inadequate. Finally, the uncertainty caused by the difficulty of properly determining damages makes it very difficult to provide “fair compensation” under a “take and pay” liability rule remedy. This failure may, in turn, substantially undermine the incentives to innovation at the heart of the patent system.

Scrutiny of these arguments reveals that none of them supports the routine granting of prohibitory injunctions, permanent or preliminary, for infringement of competitive arts patents. The analogy to Blackstonian property rights rests on seriously flawed logic. Merely because patent rights include some (or even many) of the same characteristics as tangible forms of property ownership does not automatically make property rules remedial treatment appropriate.³²⁷ The remedies must be more carefully tailored to best accomplish the regime’s specific policy objectives.³²⁸ Patent rights exist as incentives to innovation for the good of society. Although that incentive is generally articulated in the form of the patent holder’s right to exclude others, the precise nature of the right (absolute or conditioned) should be defined and limited by the related desire to avoid unjustified social costs (particularly in terms of denied access). For the reasons discussed earlier,³²⁹ the incentive for competitive arts innovation requires only a brief initial right to prohibit any use (first-to-move) followed by a short-term conditional exclusivity released on payment of a modest royalty (mimicking the lead-time advantage). Twenty-year, property rule full prohibitory exclusivity, therefore, substantially over-protects, generating social costs well in excess of the benefits, and must cede in competitive arts cases to a remedy reflecting this more qualified “right to exclude.”

“Uniqueness” is equally unconvincing. Although unique in the technical sense, competitive arts inventions do not raise the traditional need to ensure the inventor’s possession of the single available exemplar of a specific item. The uniqueness interest patent law instead involves preserving artificial scarcity by prohibiting the entirely possible non-rivalrous possession by others. Policy does not support protecting the innovator’s mere subjective desire to prohibit this possession by others, having expressly rejected the natural rights or

owner is entitled exclusivity.”); Ayres & Klemperer, *supra* note 325, at 988; Lunney, *supra* note 165 (discussing the “simply property” view of the CAFC.)

327. See Chiappetta, *Myth*, *supra* note 11, at 152–53 (discussing the similar problem in trade secret law).

328. See *id.* at 155–57.

329. See *supra* notes 198–201, 257–68 and accompanying text.

personhood interests of the inventor.³³⁰ This scarcity form of uniqueness must therefore find support in the incentive-cost balancing, which as noted immediately above, it cannot provide.

Nor are competitive arts inventions unique in the sense that the total absence of a relevant market makes valuation impossible.³³¹ In fact, the innovation's value comes exclusively from its ability to provide commercial advantage in the marketplace. Valuation difficulties nonetheless offer the best argument for prohibitory injunctions in patent infringement cases. Although the presence of the market makes calculating damages caused by patent infringement theoretically possible, in practice accurate determinations based on predictions of market conditions and reactions over an extended future time horizon are extremely problematic. The related risk of consistent under-valuations (even if merely as subjectively viewed by the inventor) can, therefore, have a significant adverse effect on the ability of the patent incentive to drive investment.³³² In traditional "industrial arts" patent law, the problem is avoided through prohibitory injunctions which leave it to the discretion of the patentee to decide how to best maximize the value of the patent. The characteristics of competitive arts innovation and the reduced need for incentives, however, make these under-valuation risks relatively inconsequential and property rules inappropriately over-protective.³³³ These innovators do not require assurance of a fair return on the related investment, only that the damage done to normal market first-to-move lead-time advantage by quick and cheap emulation can be avoided. Because this assurance can be adequately provided through the first-to-market right and a royalty based cost advantage,³³⁴ the valuation difficulty justification for denying others access through a prohibitory injunction is eliminated.

For these reasons, prohibitory preliminary and permanent injunctions in the competitive arts generally should be abandoned and replaced by compulsory licensing injunctions mirroring the remedy offered under the proposed new regime. A strong argument can be made that this shift to compulsory licensing injunctions is within the discretion of the courts. Section 281 of the Patent Act does not mandate any

330. See *supra* notes 97-99 and accompanying text.

331. See Jeffery Standen, *The Fallacy of Full Compensation*, 73 WASH. U. L.Q. 145, 222-24 (1995) (noting this aspect of uniqueness in remedies law).

332. Cf. Chiappetta, *Myth*, *supra* note 11, at 157-58 (discussing a similar issue in the trade secret context).

333. See Ayres & Klemperer, *supra* note 325, at 988 (arguing that denying routine prohibitory injunctive relief will not substantially harm incentives to innovate even in traditional fields of patenting).

334. See *supra* notes 257-68 and accompanying text.

injunctive relief, much less injunctions prohibiting all use by the infringer.³³⁵ Traditional equitable principles, including adequacy of money damages (sufficient to compensate for interfering with normal first-to-move lead-time competitive advantage), balancing of the hardships and, particularly, harm to the public (the serious costs of over-protection on the operation of the market), all justify this more appropriate tailoring of the remedy to the specific circumstances of competitive arts innovation.³³⁶

Permanent remedies present a relatively straightforward case. Upon a finding of infringement, the court should permit continued use of the invention against payment of an appropriate royalty.³³⁷ The infringer retains the right to compete by using the invention, along with the right to invest in improvements or employ other efficiencies to overcome the holder's cost advantage. A complete implementation of the proposed regime's cost-differentiating compulsory licensing system, however, faces two serious technical difficulties under the current Patent Act. First, § 284³³⁸ has historically been read to require a "fair market value" royalty, rather than merely the cost-differentiating royalty called for under the proposed regime. Using a fair market value royalty would over-compensate the patent holder. However, unless the courts are willing to specially interpret § 284's requirement of "adequate to compensate" in the competitive arts context, legislative adjustment will be required. Nonetheless, even an overly compensatory compulsory licensing approach is preferable to the prohibition of all competitive use under the current permanent prohibitory injunction approach.

Second, the duration of the injunction will undoubtedly raise significant issues in face of the statutory twenty-year term for patent protection.³³⁹ The most appropriate solution would be to limit compulsory licensing injunctions to a period of time comparable to that proposed in the new regime.³⁴⁰ An alternative more consistent with the statutory language, might read the patent term as a moving window of

335. 35 U.S.C. § 283 (1994) (courts "may grant injunctions in accordance with the principles of equity . . . on such terms as the court deems reasonable") (emphasis added).

336. Cf. *MERGES ET AL.*, *supra* note 147, at 300-03 (discussing the equitable nature of injunctive relief); *id.* at 302 n.2 (noting a few cases which even under traditional patent law have granted a compulsory license). The factors suggested in the text would replace the more "holder friendly" standards now generally applied. See, e.g., *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1350-51 (Fed. Cir. 2001) (noting the assumption of irreparable harm when a clear showing of validity and infringement is made).

337. The plaintiff should also receive costs and attorneys' fees to ensure that the cost differential is not destroyed by the investment in obtaining it.

338. 35 U.S.C. § 284 (1994).

339. See 35 U.S.C. § 154(a)(2).

340. See *supra* notes 269-70 and accompanying text.

protection against infringements. Under this view, injunctions would issue at any time during the term, but would each last for only a limited period of time. Despite the policy justifications, however, given the language of the statute it is unlikely that courts would be willing to place time limits on the royalty obligations shorter than the remainder of the applicable patent's term. Some over-compensation of holders will, therefore, likely be unavoidable. Once again, the mitigating effects of a change to compulsory licensing remains preferable to the more serious effects of routine grants of prohibitory injunctions.

Preliminary relief raises substantially more serious balancing concerns. Granting a prohibitory preliminary injunction frequently has the practical effect of deciding the dispute between the parties. Once ordered to stop use, the defendant must immediately find alternatives. Additionally, during the pendency of the trial (and appeals), the plaintiff can take steps to establish substantial lock-in advantages over the defendant. Even if the preliminary injunction is subsequently reversed, the defendant's commitment to the alternatives and the locked-in advantages of the plaintiff may make the defendant's ultimate victory of little consequence. As a result, improperly granted prohibitory preliminary injunctions on competitive arts patents can seriously disrupt the normal operation of the market. Therefore, the courts should abandon the ready granting of such relief, insisting on a clear demonstration of non-compensable harm even when the plaintiff shows a strong likelihood of success.³⁴¹ The situation most likely to justify preliminary prohibitory relief would be when the patent-holder has not yet had a reasonable time to introduce the innovation itself. In such circumstances, failure to promptly stop the competitor's use would deprive the holder of the distinctive benefits associated with first introduction.

The virtually complete elimination of preliminary relief in most cases would, however, ignore the equally serious adverse effect on the competitive arts inventor. Even if the innovator ultimately prevails, obtaining the post-judgment compulsory licensing royalty cost advantage may come too late to be of significant value. The competitor's ability to use the innovation during the extended course of the litigation will have already undermined or destroyed any possible lead-time advantages.

Ready granting of compulsory licensing preliminary relief upon a strong showing of likelihood of success on the merits cannot resolve these conflicting interests entirely, but does provide a better balance.

341. See *supra* note 336 (discussing the assumption of irreparable harm in the *Amazon.com* case).

After circumspect judicial vetting beyond the USPTO examination,³⁴² the system should favor protecting the lead-time advantage vital to a meaningful incentive. Unlike prohibitory injunctions, the compulsory licensing remedy provides some lead-time protection while giving the competitor who believes ultimate success on the merits is probable, if not inevitable, the option of continuing use. If the defendant believes there is a strong likelihood of eventually prevailing, steps might even be taken to mitigate the adverse effects of the unjustified cost-differentiation. For example, interim financing may be available for all or part of the differential using the anticipated recovery from the plaintiff's bond posted as security.

It is preferable that such preliminary relief require only payment of the modest royalty proposed under the new regime. The interim nature of the remedy provides a much stronger argument that even a fully "compensatory" interpretation of the language of § 284 should yield to general equitable principles in these cases, permitting a more appropriately balanced outcome. In all events, regarding competitive arts patents, even a fully compensatory compulsory license remains superior to a prohibitory preliminary injunction or, in proper circumstances, no preliminary relief at all.

The courts can further mitigate the effects of over-protection of competitive arts innovation under traditional patent law by revitalizing the doctrine of patent misuse.³⁴³ The courts should not hesitate to apply traditional antitrust-based misuse and treat unjustified³⁴⁴ price-fixing, tying or exclusive dealing activities³⁴⁵ as falling outside the protective umbrella of the patent grant. Similarly, when a patent provides sufficient market power, monopoly entrenchment doctrines should be brought to bear.³⁴⁶ These antitrust concerns, however, will likely have, at

342. It is worth recalling that the patent has undergone extensive USPTO review prior to issuance. Both this examination and judicial review will help prevent over-reaching.

343. See *MERGES ET AL.*, *supra* note 147, at 278–90 (discussing patent misuse).

344. The justifications should be limited to those available under traditional antitrust law for these violations.

345. See *Raskind*, *supra* note 5, at 97–98 (discussing the reach of traditional patent misuse). The reach of the doctrine is also subject 35 U.S.C. § 271(d) (1994).

346. Most particularly those related to refusals to deal/essential facilities. See, e.g., *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585 (1985). The patent itself does not, however, automatically trigger application of monopolization concerns, which requires an assessment of the power the holder may have in the relevant market. See, e.g., Frank H. Easterbrook, *Intellectual Property is Still Property*, 13 HARV. J. L. & PUB. POL'Y 108–09 (1990). *But see*, *In re Indep. Service Orgs. Antitrust Litigation*, 203 F.3d 1322, 1325–28 (Fed. Cir. 2000) (concurring that a patent does not automatically demonstrate market power, but noting the inapplicability of refusal to deal monopolization doctrines in the patent context even if market power exists, except in very limited circumstances. For the reasons

most, limited application to competitive arts patents.³⁴⁷

To effect the appropriate balance the courts should break away from the limited view of patent misuse as merely an extension of antitrust law³⁴⁸ and apply the doctrine to promote greater access (as would be available under the proposed regime) through encouragement of voluntary licensing. This could be accomplished by returning to the basic conception of misuse articulated by the Supreme Court in *Motion Picture Patents Company v. Universal Film Manufacturing Company*³⁴⁹ as the attempt to obtain advantage beyond the rights granted under the patent laws.³⁵⁰ Specifically, the appropriate scope of a competitive arts patent is not properly defined by an absolute right to exclude, but rather by the more restricted compulsory licensing remedy. Consequently, at worst an infringing defendant is entitled to a license on reasonable terms. Viewed in this light, a holder's refusal to enter into a commercially reasonable license on request constitutes an impermissible extension of the patent right. By forcing the competitor/defendant into litigation, the patent holder is unjustifiably prolonging the exclusion. In such circumstances the patent should be unenforceable against the party/infringer that requested the license.³⁵¹

Because the abuse concerns only unjustifiably forcing the infringer into litigation, the existence of a reasonable basis for refusing to deal should be a complete defense. Acceptable reasons might include factors specific to the requestor, such as a history of breach in other dealings, uncreditworthiness or a failure to agree to clearly reasonable licensing terms (as measured by the terms that would be set under a judicially mandated compulsory license).

discussed below in the text this position should be reevaluated in the competitive arts context).

347. See Raskind, *supra* note 5, at 98.

348. See Raskind, *supra* note 5, at 98–101 (noting that this view, expressed by Judge Posner, would all but eliminate an independent claim of patent misuse, and the CAFC's apparent tendencies in that direction).

349. 243 U.S. 502 (1917).

350. See also, *B. Braun Medical, Inc. v. Abbott Labs., Inc.*, 124 F.3d 1419 (Fed. Cir. 1997) (noting that “the patent misuse doctrine, born from the equitable doctrine of unclean hands, is a method of limiting abuse of patent rights *separate from* the antitrust laws” (italics added)); cf. Robert P. Merges, *Who Owns the Charles River Bridge? Intellectual Property and Competition in the Software Industry* 28 (UC Berkeley Public Law and Legal Theory Working Paper No. 15) available at <http://papers.ssrn.com> (on file with MTTLR) (noting the possibility of policy based extensions based on the “impermissible broadening” foundations of the misuse doctrine).

351. Because the objective is merely to encourage voluntary transactions, the penalty should be substantially less draconian than the general non-enforceability under the misuse doctrine.

The primary obstacle to such an approach is § 271(d) of the Patent Act; in particular, the express statement that no patent owner should be “deemed guilty of misuse . . . by reason of . . . refus[al] to license . . . any rights under the patent”³⁵² Properly interpreted, however, this provision should be limited to its original policy context of traditional utility patenting and arguments over patent suppression.³⁵³ Therefore, when other factors are present, such as an unjustified refusal to license a competitive arts patent, the courts should have free rein to invoke the misuse doctrine. However, to more fully align the expanded misuse doctrine with the statute, as well as to avoid defendant’s routinely asserting misuse to harass or threaten patent holders, the courts might limit competitive arts refusal to license misuse to cases where the infringer can demonstrate that the particular innovation provides a substantial competitive advantage. For example, an infringer might be required to demonstrate that control over the technique at issue provides sufficient market power to support a traditional tying violation.³⁵⁴

Finally, the move away from generally available prohibitory relief means that infringers must also be encouraged to seek a voluntary license. Absent a counter-incentive, in such circumstances the rational infringer should simply adopt the innovation (made readily available through description in the patent) and await the holder’s response. At best, the use will not be detected and no sanction will be imposed. At worst detection will result in the payment of commercially reasonable royalties. To avoid such strategic behavior by potential infringers, the system should augment the sanctions in infringement actions whenever the infringer has failed to request or accept a commercially reasonable license. Such additional relief might include deterrence based punitive damages or, at the extreme, the issuance of a prohibitory injunction for some period of time.

352. 35 U.S.C. § 271(d)(4) (1994).

353. Cf. *MERGES ET AL.*, *supra* note 147, at 286–88 (discussing patent suppression).

354. This level of power is less than that required for monopolization “refusals to deal.” See *supra* note 346. All that would be required is the holder have sufficient power to coerce a licensee to accept other conditions as part of a voluntary transaction regarding the competitive arts technique. Whenever there are adequate practical alternatives to the technique to preclude this power, there is arguably much less harm to the market from a refusal to license and the related lack of access. This approach is consistent (if not identical) to that taken by Congress, regarding “imposition of additional terms” patent misuse. 35 U.S.C. § 271(d)(5) (1994).

CONCLUSION

The special circumstances of competitive arts innovation require substantial adjustments to the intellectual property pantheon. An appropriate set of regimes would clearly channel the “industrial arts” in the direction of traditional patent law, the “expressive arts” into existing copyright law, and the “competitive arts” into a new regime reflecting the far more limited need to supplement the normal market first-to-move lead-time incentives to account for the quick and cheap copying possible in the Electronic Age. As an interim (hopefully) measure, the damage wrought by *State Street Bank* should be addressed by administrative and judicial adjustments more closely aligning the application of patent law with the policy objectives of the proposed new regime.