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SELF-REALIZING INVENTIONS AND THE UTILITARIAN FOUNDATION OF PATENT LAW

ALAN DEVLIN* & NEEL SUKHATME**

ABSTRACT

Unlike other forms of intellectual property, patents are universally justified on utilitarian grounds alone. Valuable inventions and discoveries, bearing the characteristics of public goods, are easily appropriated by third parties. Because much technological innovation occurs pursuant to significant expenditures—both in terms of upfront research and subsequent commercialization costs—inventors must be permitted to extract at least part of the social gain associated with their technological contributions. Absent some form of proprietary control or alternative reward system, economics predicts that suboptimal capital will be devoted to the innovative process.

This widely accepted principle comes with an important corollary: namely, that canons of patent law should accurately reflect the

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subject's utilitarian foundation. The most important principle under this rubric is denying proprietary rights in "self-realizing" inventions—those for which sufficient incentives to invent and commercialize exist independent of the patent system.

The law's principal means of excluding such inevitable discoveries is through the nonobviousness doctrine. Yet that doctrine fails to achieve this task. Two classes of invention may be deemed "self-realizing"—inventions that are axiomatic (and useful) to those skilled in the art and innovations that provide utility to the relevant inventors because they consume the inventions themselves. While the nonobviousness doctrine excludes the former class of innovative activity, it utterly fails to eliminate the latter. This regrettable phenomenon results in social welfare losses and belies the policy foundation of the patent system.

This particularly startling disconnect between theory and practice begs the question of whether we can do better. We conclude that the courts should turn to an often neglected but fundamental tenet of patent law: the patentable subject matter inquiry. In doing so, we identify a variety of "self-realizing" innovative activity but find that a well-crafted patent system must tolerate the inclusion of certain "inevitable" inventions. We conclude, however, that one sphere of innovation that can reliably be regarded as inevitable by a priori assumption involves nonpublic, or "internal," business methods. Given free market competition, companies have ample incentives to develop internal business processes that reduce costs and/or increase consumer demand, even if these processes cannot be patented. And because these inventions are suitable for trade secret protection, inventors who seek patents on internal business methods presumably do so to raise rivals' costs.

*Unfortunately, the patentable subject matter inquiry thus far has been wholly unsatisfactory in denying patent protection to undeserving processes. In late 2008, the Federal Circuit's deficient "useful, concrete and tangible result" test in *State Street Bank v. Signature Financial Group, Inc.* was jettisoned in favor of a "machine-or-transformation" test in *In re Bilski*. Although this new standard may limit the patentability of certain undeserving processes, it rests on a strained interpretation of Supreme Court precedent. More fundamentally, the logic employed bears scant relation to the utilitarian*

underpinning of the patent system, as enshrined in the Patent Act and the U.S. Constitution.

This Article urges the Supreme Court to reconcile the patentable subject matter inquiry with its utilitarian roots, particularly in the context of business method patents.

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INTRODUCTION

A remarkable asymmetry exists between the economic foundation of patent law and the doctrine that animates this theoretical underpinning. Almost all commentators and judges agree that utilitarian considerations enjoy hegemonic status in patent jurisprudence, such that the purpose of the patent system is to induce the creation and commercialization of technology that otherwise could be easily appropriated.¹ So defined, only those inventions that would otherwise not materialize, or would be discovered only after a longer passage of time, should receive the benefits of patent protection.² As a patent monopoly carries with it potentially large social welfare costs, it can be condoned only when necessary to incentivize the creation and dissemination of disproportionately valuable information.³

1. See, e.g., *Aronson v. Quick Point Pencil Co.*, 440 U.S. 257, 262 (1979) (citing *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 480-81 (1974)) (stating the purposes of the federal patent system are (1) to foster and reward invention; (2) to promote invention disclosure, which stimulates further innovation and allows the public to practice the invention once the patent expires; and (3) to assure that the public can freely use ideas in the public domain); Michael A. Carrier, *Cabining Intellectual Property Through a Property Paradigm*, 54 DUKE L.J. 1, 32 (2004); see also Natasha N. Aljalian, *The Role of Patent Scope in Biopharmaceutical Patents*, 11 B.U. J. SCI. & TECH. L. 1, 3-4 (2005); Daniel J. Gifford, *Antitrust's Troubled Relations with Intellectual Property*, 87 MINN. L. REV. 1695, 1697 (2003); Peter Lee, *The Evolution of Intellectual Infrastructure*, 83 WASH. L. REV. 39, 44, 51 (2008); Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 993-94 (1997) [hereinafter Lemley, *Economics of Improvement*]; Michael J. Meurer & Craig Allen Nard, *Invention, Refinement and Patent Claim Scope: A New Perspective on the Doctrine of Equivalents*, 93 GEO. L.J. 1947, 1950 (2005); Joseph Scott Miller, *Building a Better Bounty: Litigation-Stage Rewards for Defeating Patents*, 19 BERKELEY TECH. L.J. 667, 683 (2004); Viva R. Moffat, *Mutant Copyrights and Backdoor Patents: The Problem of Overlapping Intellectual Property Protection*, 19 BERKELEY TECH. L.J. 1473, 1481-82 (2004); Ned Snow, *A Copyright Conundrum: Protecting Email Privacy*, 55 U. KAN. L. REV. 501, 560 (2007); Ryan K. Dickey, Note, *The First-to-Invent Patent Priority System: An Embarrassment to the International Community*, 24 B.U. INT'L L.J. 283, 300-01 (2006); Stephen Lindholm, Note, *Marking the Software Patent Beast*, 10 STAN. J.L. BUS. & FIN. 82, 83-85 (2005); Daniel J. McFeely, Comment, *An Argument for Restricting the Patent Rights of Those Who Misuse the U.S. Patent System To Earn Money Through Litigation*, 40 ARIZ. ST. L.J. 289, 290, 300 (2008); David S. Olson, *Taking the Utilitarian Basis for Patent Law Seriously: The Case for Restricting Patentable Subject Matter* 11-26 (Boston College Law Sch., Research Paper No. 163, 2008).

2. Carrier, *supra* note 1, at 31-33.

3. Patent law therefore bears witness to a systemic tension between prospective long-run gains in the form of innovation and undeniable short-run costs created by deadweight loss.

Nevertheless, it is not at all clear that the actual laws developed by Congress and the courts accurately reflect the patent system's utilitarian underpinning. From an economic perspective, inventions and other valuable discoveries possess the characteristics of public goods; their consumption is nonexcludable (an inventor cannot stop someone else who knows of the invention from using it) and nonrival (another person's use of the invention does not prevent the inventor from using the invention).⁴ Absent proprietary ownership of such information, inventors will devote suboptimal resources to the innovative process.⁵ But what form should such ownership take? Optimally, property rights should be awarded in a parsimonious manner, awarding deserving inventors just enough proprietary control over their discoveries to compensate them for the risk, capital, and opportunity cost expended *ex ante*.⁶

Yet patent rules have not been so applied. Most obviously, the law largely adopts a "one-size-fits-all" approach, purporting to apply identical rules to vastly disparate industries and contexts, for which different incentive structures apply.⁷ The result has been that sometimes an inventor is overcompensated for her discovery, and other times she is undercompensated, depending on the relevant context.⁸ This phenomenon is to some extent unavoidable, for a perfect alignment of incentives via the patent system likely cannot

Optimal rules, from a utilitarian perspective, seek to maximize the spread between these two factors. *See infra* Part I.B.

4. *See, e.g.*, Carrier, *supra* note 1, at 32; Michael W. Carroll, *One for All: The Problem of Uniformity Cost in Intellectual Property Law*, 55 AM. U. L. REV. 845, 850-51 (2006); Julian David Forman, Comment, *A Timing Perspective on the Utility Requirement in Biotechnology Patent Applications*, 12 ALB. L.J. SCI. & TECH. 647, 663 (2002).

5. Carrier, *supra* note 1, at 32, 33 & n.123; Ramsey Hanna, Note, *Misusing Antitrust: The Search for Functional Copyright Misuse Standards*, 46 STAN. L. REV. 401, 425-26 (1994) (discussing "systematic underinvestment" in the context of copyrighted materials).

6. *See, e.g.*, Samson Vermont, *Independent Invention as a Defense to Patent Infringement*, 105 MICH. L. REV. 475, 479, 498 & n.65 (2006); *cf.* Mark F. Grady & Jay I. Alexander, *Patent Law and Rent Dissipation*, 78 VA. L. REV. 305, 308, 310 (1992); Hanna, *supra* note 5, at 425-27 (discussing the need to compensate risk in incremental and discontinuous innovation processes).

7. *See* Rebecca S. Eisenberg, *Patents, Product Exclusivity, and Information Dissemination: How Law Directs Biopharmaceutical Research and Development*, 72 FORDHAM L. REV. 477, 486 (2003).

8. *See* James Bradshaw, Comment, *Gene Patent Policy: Does Issuing Gene Patents Accord with the Purposes of the U.S. Patent System?*, 37 WILLAMETTE L. REV. 637, 653-54 (2001).

be attained.⁹ Society has limited empirical ability to compare specific rules, applied in practice, to the optimal ones that would be mandated by theory.¹⁰ In general, then, some uncertainty inevitably exists about the rules properly brought to bear on innovations in the useful arts and sciences.¹¹

This Article concerns a major issue that is at the cusp of this broader tension and that relates to the differing incentive structures for various inventions. It considers how intellectual property (IP) law does and ought to treat processes that, though immensely valuable, entirely novel, and far from obvious, are undeserving of patent protection from a utilitarian perspective. More specifically, the Article considers what might be termed “self-realizing” inventions—ones for which adequate incentives to invent and commercialize exist entirely independent of the patent system. The normative case for patenting such innovations is weak, because society unnecessarily pays for the deadweight loss of inventions that were, in a sense, “inevitable.”

The question therefore arises: is there a reliable way to disqualify novel, highly valuable, and nonobvious inventions that would be invented even if they were not to receive patent protection? In answering this question, a crucial predicate issue is whether the kinds of innovations that fit this profile can be categorically identified *ex ante*. If so, courts should define those categories of inventions as nonpatentable subject matter and deny protection accordingly. If the purpose of the patent system is to provide otherwise absent incentives to invent and commercialize, then swathes of inventive activity that do not need these incentives should fall outside the purview of patent protection. In short,

9. See, e.g., Frank H. Easterbrook, *The Court and the Economic System*, 98 HARV. L. REV. 4, 11 (1984).

10. See David McGowan, *Copyright Nonconsequentialism*, 69 MO. L. REV. 1, 67-68 (2004) (summarizing the argument, in the context of copyright law, that scholars do not have the data necessary to empirically measure the marginal effects of different policies).

11. See, e.g., Matthew Sag & Kurt Rohde, *Patent Reform and Differential Impact*, 8 MINN. J. L. SCI. & TECH. 1, 50 (2007) (noting the “empirical uncertainty surrounding optimal patent scope”); Alan O. Sykes, *TRIPS, Pharmaceuticals, Developing Countries, and the Doha “Solution,”* 3 CHI. J. INT’L L. 47, 58 (2002) (noting that “modern patent systems provide a crude way of rewarding inventors in the face of great uncertainty about the optimal rewards in each case”).

nonobvious, useful, but “self-realizing” processes belong in the public domain if they are not protected as trade secrets.

This Article identifies various categories of “self-realizing” innovative activity that fit these criteria and hence might be excluded from patent protection. One such category involves “eureka” inventions—those that are discovered in a flash of brilliance rather than preceded by capital-intensive endeavors. There is some reason to believe that such ad hoc discoveries, immensely valuable to society as they might be, would be invented anyway even if they did not receive patent protection. Another category of self-realizing discovery involves discoveries that are spurred primarily by social, rather than pecuniary, incentives. Such inventions are often discovered in academic circles, where the lure of reputational gain might obviate the need for patent protection.

Although eureka inventions and innovations pursuant to social incentives are two prominent categories of self-realizing discoveries, this Article concludes, for a variety of reasons, that it would be very difficult as a practical matter to categorically deny patent protection to such inventions. Instead, this Article targets a more promising category of self-realizing discovery: inventions that are consumed by the inventors themselves. Most “self-consumed” inventions would be crafted regardless of whether the patent system existed. That is because the innate utility of these inventions drives inventors to create them in the first place.

To illustrate, the paradigmatic contemporary example of a nonobvious, self-consumed invention is the business method. A new and useful method of conducting business, whether patentable or not, will improve the bottom line of a profit-maximizing company by decreasing operating and other commercial costs and/or increasing consumer demand. Even absent the opportunity to patent or license a novel business method to others, an innovator reaps the benefits of her achievement through internal consumption. She has a reason to invent even if she cannot patent her invention. As a result, granting property rights to the inventor of a self-consumed business method creates limited benefits in the form of future incentives but entails unquestionable social losses caused by the inability of others to practice that business method. This problem has only grown more

acute as business method patents have proliferated at prodigious rates in recent years.¹²

Of course, the law is not entirely blind to the costs of patenting self-realizing inventions, including business methods. The patent laws, both as written and as interpreted by the U.S. Patent and Trademark Office (PTO) and the federal courts, require that a patentable technological advancement be one that would not have been obvious to one skilled in the relevant art.¹³ This nonobviousness requirement—which has been deemed by some as the “ultimate condition of patentability”¹⁴—indirectly excludes many discoveries that would likely be inevitable, as they would be “obvious” in light of contemporary technology.

The gatekeeper function performed by the nonobviousness requirement is both substantive and beneficial.¹⁵ But it is also incomplete. In particular, the nonobviousness doctrine fails to disqualify a large swath of inventions that, although nonobvious, would be discovered anyway because of overriding incentives outside of the patent system.

Moreover, the other typical prerequisites of patentability—novelty, utility, enablement, and best mode—are likely of limited use in excluding such self-realizing inventions. Utility is typically an edentulous requirement, met with ease in most situations not

12. See *eBay, Inc. v. MercExchange, LLC*, 547 U.S. 388, 397 (2006) (Kennedy, J., concurring); see also John W. Bagby, *Business Method Patent Proliferation: Convergence of Transactional Analytics and Technical Scientifics*, 56 *BUS. LAW.* 423, 445 (2000); Michael Moulton, Note, *Effecting the Impossible: An Argument Against Tax Strategy Patents*, 81 *S. CAL. L. REV.* 631, 633 (2008) (noting the “surge” in business method patent applications in recent years); Gerald H. Kiel & Harry K. Ahn, “*Business Methods*” are Broadly Defined: Patent Protection Is Available in Variety of Areas Including Marketing, Sales and Finance, *N.Y.L.J.*, Feb. 3, 2003, at S9 (opining that two recent Federal Circuit decisions, *State Street Bank* and *AT&T*, discussed *infra*, “opened a floodgate for companies to seek patent protection for new business methods”).

13. 35 U.S.C. § 103 (2006).

14. Jeanne C. Fromer, *The Layers of Obviousness in Patent Law*, 22 *HARV. J.L. & TECH.* 75, 75 (2008) (quoting NONOBVIOUSNESS—THE ULTIMATE CONDITION OF PATENTABILITY (John F. Witherspoon ed., 1980) (internal quotation marks omitted)).

15. See Philippe Ducor, *Recombinant Products and Nonobviousness: A Typology*, 13 *SANTA CLARA COMPUTER & HIGH TECH. L.J.* 1, 11 (1997) (explaining that the nonobviousness condition is the most difficult requirement of patentability); John K. Flanagan, *Gene Therapy and Patents*, 80 *J. PAT. & TRADEMARK OFF. SOC'Y* 739, 750 (1998) (same). For an account of the social good served by the nonobviousness condition, see STEVEN SHAVELL, *FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW* 152 (2004).

involving pharmacological and other biotechnological compounds.¹⁶ To be useful, an invention need only have some minimally operable use toward a specific purpose.¹⁷ Novelty will pose no bar to a theretofore unanticipated discovery. And for any kind of valuable discovery, the enablement and best mode requirements are easily met.¹⁸

This Article proposes a new approach. In particular, this Article suggests that the patentable subject matter inquiry should be reformed to reflect patent law's utilitarian underpinning and thereby exclude from patentability certain self-realizing inventions. Until very recently, courts worked in diametric opposition to this goal.¹⁹ Although the law historically excluded myriad types of inventions from the sphere of patentability,²⁰ this broad exclusion proved far from durable.²¹ Over the past several decades, courts have radically expanded the field of patentable subject matter.²² In particular, computer software was rendered generally patentable following a sequence of facilitative cases.²³ In 1999, the Federal

16. See 1 DONALD S. CHISUM, CHISUM ON PATENTS § 4.01 (2009); see also Lucas Osborn, *Tax Strategy Patents: Why the Tax Community Should Not Exclude the Patent System*, 18 ALB. L.J. SCI. & TECH. 325, 336 (2008).

17. See Judith B. Jennison, *Introduction to Intellectual Property for the Licensing Practitioner*, 763 PLI/PAT 353, 358 (2003).

18. See 35 U.S.C. § 112 (2006); see also Joseph E. Root, *Ducking the Asteroid: Practical Steps Toward Best Mode Compliance*, 36 AIPLA Q.J. 455, 462 (2008) (noting that only eleven patents have ever been invalidated by the Federal Circuit for best mode violations).

19. See, e.g., *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (quoting S. REP. NO. 1979, at 5 (1952)) (holding that "anything under the sun that is made by man" falls within the Patent Act).

20. See, e.g., *Lowell v. Lewis*, 15 F. Cas. 1018, 1019 (C.C.D. Mass. 1817) (No. 8568) (noting that "mischievous or immoral" inventions did not meet patent law's utility requirement).

21. See, e.g., Dana Remus Irwin, *Paradise Lost in the Patent Law? Changing Visions of Technology in the Subject Matter Inquiry*, 60 FLA. L. REV. 775, 802-03, 807-10 (2008); Lee, *supra* note 1, at 89; Anu R. Sawkar, Note, *Are Storylines Patentable? Testing the Boundaries of Patentable Subject Matter*, 76 FORDHAM L. REV. 3001, 3044 (2008).

22. See James Boyle, *The Second Enclosure Movement and the Construction of the Public Domain*, 66 LAW & CONTEMP. PROBS. 33, 40 (2003); David W. Opperbeck, *Patent Damages Reform and the Shape of Patent Law*, 89 B.U. L. REV. 127, 128 (2009); Peter M. Kohlhepp, Note, *When the Invention is an Inventor: Revitalizing Patentable Subject Matter To Exclude Unpredictable Processes*, 93 MINN. L. REV. 779, 787-91 (2008).

23. The most important case in this sequence was decided by the Supreme Court in 1981. See *Diamond v. Diehr*, 450 U.S. 175, 191-93 (1981) (holding that computer programs are patentable subject matter); see also Robert E. Thomas, *Debugging Software Patents: Increasing Innovation and Reducing Uncertainty in the Judicial Reform of Software Patent Law*, 25 SANTA CLARA COMPUTER & HIGH TECH. L.J. 191, 237 (2009).

Circuit held that illegal or immoral inventions could be patented.²⁴ And although the prohibition on the patenting of abstract ideas, rules of nature, and mathematical algorithms remains intact,²⁵ the ever-expanding field of patentable invention is perhaps best summed up by the Supreme Court's pronouncement that the Patent Act encompasses "anything under the sun that is made by man."²⁶

A particularly controversial issue has centered on the patentability of business methods. The Federal Circuit dramatically expanded the scope of patentable business methods in its seminal *State Street Bank* decision, finding that a process that yields a "useful, concrete and tangible result" satisfies § 101 of the Patent Act.²⁷ After *State Street Bank*, only those methods that were intrinsically and inescapably abstract became unpatentable.²⁸ Thus, a patent agent suitably skilled in crafting claims could draft an otherwise unpatentable process in a way that gave it patent protection. Not surprisingly, the consequence was an influx of patent applications for business methods and computer software²⁹—a phenomenon that has been immensely controversial.³⁰

24. *Juicy Whip, Inc. v. Orange Bang, Inc.*, 185 F.3d 1364, 1368 (Fed. Cir. 1999).

25. See *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972) ("Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work."); *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948) ("The qualities of these bacteria, like the heat of the sun, electricity, or the qualities of metals, are part of the storehouse of knowledge of all men. They are manifestations of laws of nature, free to all men and reserved exclusively to none.");

26. *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).

27. *State St. Bank & Trust Co. v. Signature Fin. Group Inc.*, 149 F.3d 1368, 1374 (Fed. Cir. 1998) (quoting *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (internal quotation marks omitted)).

28. *Id.* at 1373 (quoting *Diamond*, 450 U.S. at 185).

29. See, e.g., Bradford L. Smith & Susan O. Mann, *Innovation and Intellectual Property Protection in the Software Industry: An Emerging Role for Patent?*, 71 U. CHI. L. REV. 241, 258 n.72 (2004); Stephanie L. Varela, *Damned If You Do, Doomed If You Don't: Patenting Legal Methods and Its Effect on Lawyers' Professional Responsibilities*, 60 FLA. L. REV. 1145, 1152 n.37 (2008).

30. See, e.g., DONALD S. CHISUM ET AL., *PRINCIPLES OF PATENT LAW* 775 (3d ed. 2004); Carlos M. Correa, *Internationalization of the Patent System and New Technologies*, 20 WIS. INT'L L.J. 523, 533 (2002); Stefania Fusco, *Is the Use of Patents Promoting the Creation of New Types of Securities?*, 25 SANTA CLARA COMPUTER & HIGH TECH. L.J. 243, 268 (2009); Andrew A. Schwartz, *The Patent Office Meets the Poison Pill: Why Legal Methods Cannot Be Patented*, 20 HARV. J.L. & TECH. 333, 334-35 (2007); Tim Wu, *Intellectual Property, Innovation, and Decentralized Decisions*, 92 VA. L. REV. 123, 141 (2006).

In late 2008, the Federal Circuit enunciated a new standard for the patentability of business methods in *In re Bilski*.³¹ *Bilski* reversed *State Street Bank* and allowed the patenting of methods that are tied to a particular machine or apparatus, or that transform an article into a different state or thing.³² As this Article explores, the newly enunciated *Bilski* test, although excluding certain undeserving processes, rests on a highly suspect jurisprudential foundation. Moreover, *Bilski*, like the patentable subject matter cases that precede it,³³ regrettably falls prey to a judicial aversion to abstraction and ignores the incentive to invent and commercialize principles that motivate patent law.³⁴

This Article seeks to shift the patentable subject matter inquiry back toward its utilitarian roots. This is not a trivial task, as a workable doctrine must enable courts to engage in some meaningful categorical analysis. Indeed, questions abound. For example, how does one define a broad class of inventions as “self-realizing”? What kind of propensity for over- or underinclusion would be acceptable? Can one ever truly be confident concluding in an ex post setting that a particular invention, or class of invention, would have emerged in the absence of patent protection? Hindsight bias is apt to be problematic.³⁵ Moreover, the plethora of incentives to invent that emanate from sources other than the patent system will surely affect individual prospective inventors in unique ways. The potential for reputational gain, or the innate thrill of discovery, may prove compelling to one inventor yet insufficient to another.³⁶

31. 545 F.3d 943, 961-62 (Fed. Cir. 2008) (en banc), *cert. granted sub nom.* *Bilski v. Doll*, 129 S. Ct. 2735.

32. *Id.*

33. *See, e.g., supra* notes 23-27.

34. *See infra* Part II.A.

35. *See, e.g.,* Gregory N. Mandel, *Patently Non-Obvious II: Experimental Study on the Hindsight Bias Issue Before the Supreme Court in KSR v. Teleflex*, 9 YALE J.L. & TECH. 1, 8 (2007); Gregory N. Mandel, *Patently Non-Obvious: Empirical Demonstration That the Hindsight Bias Renders Patent Decisions Irrational*, 67 OHIO ST. L.J. 1391, 1403 (2006); Colleen M. Seifert, *Now Why Didn't I Think of That? The Cognitive Processes That Create the Obvious*, 12 LEWIS & CLARK L. REV. 489, 504-07 (2008); *see also* Lorie M. Graham & Stephen M. McJohn, *Cognition, Law, Stories*, 10 MINN. J. L. SCI. & TECH. 255, 256-57 (2009); Gregory N. Mandel, *Another Missed Opportunity: The Supreme Court's Failure To Define Nonobviousness or Combat Hindsight Bias in KSR. v. Teleflex*, 12 LEWIS & CLARK L. REV. 323, 324 (2008) [hereinafter Mandel, *Another Missed Opportunity*].

36. *See* Glynn S. Lunney, Jr., *Patent Law, the Federal Circuit, and the Supreme Court: A*

Technically, the former should be denied the patent protection that would be awarded the latter. Yet idiosyncratic and heavily specific inquiries of this kind carry inordinate risks. Similarly, broad or sweeping conclusions concerning certain fields of innovation are surely dangerous and may carry an unacceptably high risk of false positives (Type I errors).³⁷ Even if the courts can distinguish self-realizing inventions from other valuable innovation with flawless precision—surely a quixotic assumption—an inventor’s mere perception that she may be improperly denied her reward may impede innovation.

These are weighty concerns that have significant repercussions for the construction of optimal rules. Indeed, their import requires that many inevitable inventions remain within the purview of the patent system. Such false negatives (Type II errors)³⁸ are the cost of implementing an optimal patent law in the presence of significant informational constraints.

Despite these concerns, we conclude that certain business methods are the kind of self-realizing inventions that can safely be withdrawn from the field of patentable subject matter. In particular, because business methods are consumed by their inventors themselves, their operation will often remain internal to the business and hidden from competitors. Such methods can be protected adequately by trade secret law. And as mentioned, even if such inventions received no proprietary protection, an inventor would still have an incentive to create a new and useful business method because it would presumably improve his bottom line. Moreover, unlike non-

Quiet Revolution, 11 SUP. CT. ECON. REV. 1, 64 (2003) (“Even in the absence of patent protection, the availability of lead-time rents or reputation rents will ensure an adequate incentive for the creation of less costly (or ‘routine’) innovations.”).

37. See, e.g., A. Neil Campbell & J. William Rowley, *The Internationalization of Unilateral Conduct Laws—Conflict, Comity, Cooperation, and/or Convergence?*, 75 ANTITRUST L.J. 267, 320 (2008); Michael A. Carrier, *Of Trinko, Tea Leaves, and Intellectual Property*, 31 J. CORP. L. 357, 373 (2006); Marina Lao, *Aspen Skiing and Trinko: Antitrust Intent and “Sacrifice,”* 73 ANTITRUST L.J. 171, 178 (2005); John E. Lopatka & William H. Page, *Monopolization, Innovation, and Consumer Welfare*, 69 GEO. WASH. L. REV. 367, 387 (2001); Jonathan Remy Nash, *Standing and the Precautionary Principle*, 108 COLUM. L. REV. 494, 502 n.36 (2008) (citing Jonathan B. Wiener, *Precaution in a Multirisk World*, in HUMAN AND ECOLOGICAL RISK ASSESSMENT: THEORY AND PRACTICE 224 (Dennis D. Paustenbach ed., 2002)); Jessie Cheng, Note, *An Antitrust Analysis of Product Hopping in the Pharmaceutical Industry*, 108 COLUM. L. REV. 1471, 1505 (2008).

38. See, e.g., Campbell & Rowley, *supra* note 37, at 320.

self-consumed products, internal business methods require no ex post capital for commercialization, so proprietary control is not needed to recoup those costs. And inventors generally patent internal business methods to enjoin the operation of rivals.³⁹ This conduct creates unnecessary social costs given that the business method would likely have been invented for the benefit of the business even in the absence of patent protection.

For these and other reasons, this Article contends that the Supreme Court, which granted certiorari and recently heard oral argument in *Bilski*, should reconcile the patentable subject matter inquiry with patent law's utilitarian roots by denying patentability to internal business methods (like the one at issue in that case). In particular, this Article explains how this approach is consistent with Supreme Court precedent and honors "the constitutional and statutory goal of promoting 'the Progress of Science and the useful Arts.'"⁴⁰

I. PATENT LAW AS A SYSTEM OF INCENTIVES

A. *The Utilitarian Foundation of Patent Law*

A vociferous debate continues to rage regarding the IP system as a whole. Should an artist's right to her work be founded in natural rights, allowing her to control her work's use and dissemination in a manner of her choice? Or should the existence of this right depend on a utilitarian calculus that weighs society's larger interests in the work?⁴¹ Some commentators even argue that the unique attributes

39. For an example of such a tactic, see Craig P. Opperman, *Business Method Patents (Enter the Debate or Seize the Opportunity?)*, 637 PLI/PAT 1027, 1032 (2001).

40. *Diamond v. Chakrabarty*, 447 U.S. 303, 315 (1980) (quoting U.S. CONST. art. I, § 8).

41. See, e.g., Robert C. Bird & Lucille M. Ponte, *Protecting Moral Rights in the United States and the United Kingdom: Challenges and Opportunities Under the U.K.'s New Performances Regulations*, 24 B.U. INT'L L.J. 213, 213-15 (2006); Joseph P. Liu, *Copyright and Time: A Proposal*, 101 MICH. L. REV. 409, 444-45 (2002); Lucille M. Ponte, *Preserving Creativity from Endless Digital Exploitation: Has the Time Come for the New Concept of Copyright Dilution?*, 15 B.U. J. SCI. & TECH. L. 34, 45 n.63, 50-51 (2009); Rikki Sapulich, *When Less Isn't More: Illustrating the Appeal of a Moral Rights Model of Copyright Through a Study of Minimalist Art*, 47 IDEA 453, 455 (2007); Joan Pattarozzi, Note, *Can the Australian Model Be Applied to U.S. Moral Rights Legislation?*, 15 CARDOZO J. INT'L & COMP. L. 423, 423-24 (2007); Patrick G. Zabatta, Note, *Moral Rights and Musical Works: Are*

of information require such creations to be available to all for use in cumulative or “follow-on” innovation and costless consumption.⁴²

Even if one rejects the position that information “wants” to be, and hence should be, free, there remains serious debate over whether certain IP rights should be based on utilitarian principles, particularly in the realm of copyright law.⁴³ Indeed, it is clear that a plethora of rules within copyright law offer protection in instances in which the rules cannot be reconciled with economic theory. For example, utilitarianism cannot easily explain why doctoral students receive copyrights in their dissertations, even though the students are required to produce that work anyway to meet university requirements. Similarly, utilitarianism does not explain why artists enjoy copyright protection for their natural lives plus seventy years.⁴⁴ For one, this rule creates asymmetric incentives by rewarding younger artists more than their older colleagues.⁴⁵ More fundamentally, it strains credibility to imagine that a person would be incentivized in a serious incremental way by granting her a term of proprietary control over her work that far surpasses her natural life.⁴⁶

Composers Getting Berned?, 43 SYRACUSE L. REV. 1095, 1104 (1992).

42. See STEWART BRAND, *THE MEDIA LAB: INVENTING THE FUTURE AT MIT* 202 (1987); Jack M. Balkin & Reva B. Siegel, *Principles, Practices, and Social Movements*, 154 U. PA. L. REV. 927, 936-37 (2006); R. Polk Wagner, *Information Wants To Be Free: Intellectual Property and the Mythologies of Control*, 103 COLUM. L. REV. 995, 998-99 (2003) (arguing that powerful IP rights ultimately increase the amount of information in the public domain).

43. See generally William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325 (1989) (positing a system of copyright that is driven by economic efficiency).

44. 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, 284 (1970); Michael H. Davis, *Extending Copyright and the Constitution: “Have I Stayed Too Long?”*, 52 FLA. L. REV. 989, 996-1000, 1022 (2000); Christina N. Gifford, *The Sonny Bono Copyright Term Extension Act*, 30 U. MEM. L. REV. 363, 397-400 (2000); Marci A. Hamilton, *Copyright Duration Extension and the Dark Heart of Copyright*, 14 CARDOZO ARTS & ENT. L.J. 655, 656 (1996); Lawrence Lessig, *Copyright’s First Amendment*, 48 UCLA L. REV. 1057, 1066-67 (2001); Robert Patrick Merges & Glenn Harlan Reynolds, *The Proper Scope of the Copyright and Patent Power*, 37 HARV. J. ON LEGIS. 45, 57-59 (2000).

45. See Avishalom Tor & Dotan Oliar, *Incentives To Create Under a “Lifetime-Plus-Years” Copyright Duration: Lessons from a Behavioral Economic Analysis for Eldred v. Ashcroft*, 36 LOY. L.A. L. REV. 437, 453 (2002). For an interesting discussion of the possible benefits of “a system of indefinite copyright renewals,” however, see William M. Landes & Richard A. Posner, *Indefinitely Renewable Copyrights*, 70 U. CHI. L. REV. 471, 473-75 (2003).

46. See, e.g., BENJAMIN KAPLAN, *AN UNHURRIED VIEW OF COPYRIGHT* 114 (1967) (“I doubt

Indeed, some have argued that there is room for a moral rights theory within U.S. copyright law.⁴⁷ Even outside the copyright realm, which is surely the most controversial area given its interplay with issues of free speech and liberal ideology,⁴⁸ considerable controversy surrounds the proper contours of trade secret and trademark law.⁴⁹

Unlike these other areas of IP, such fraught issues tend not to dominate patent law, for which the utilitarian case has proved compelling.⁵⁰ Technological advancement, conducted in large part by private industry, offers a far more convincing basis for creating property rights in innovation. Although broad swathes of artistic activity exist that one might reliably presume to be largely unaffected by the presence of copyright laws—after all, some artists derive enough utility from the act of creation itself⁵¹—the same cannot be said for the considerable majority of innovative activity subject to patent creation. The pharmaceutical industry, for example, essentially would cease to exist absent IP protection.⁵² The

a convincing case has been made for extending copyright in works of natural authors a generation's worth beyond the present statutory term.”)

47. See, e.g., Ihyung Lee, *Toward an American Moral Rights in Copyright*, 58 WASH. & LEE L. REV. 795, 798-99 (2001).

48. See, e.g., Alan E. Garfield, *The Case for First Amendment Limits on Copyright Law*, 35 HOFSTRA L. REV. 1169, 1170-71 (2007); Steven J. Horowitz, *A Free Speech Theory of Copyright*, 2009 STAN. TECH. L. REV. 2; Adrian Liu, *Copyright as Quasi-Public Property: Reinterpreting the Conflict Between Copyright and the First Amendment*, 18 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 383, 390-96 (2008); Lee Ann W. Lockridge, *The Myth of Copyright's Fair Use Doctrine as a Protector of Free Speech*, 24 SANTA CLARA COMPUTER & HIGH TECH. L.J. 31, 38, 48-54 (2007); William McGinty, *First Amendment Rights to Protected Expression: What Are the Traditional Contours of Copyright Law?*, 23 BERKELEY TECH. L.J. 1099, 1112 (2008).

49. For a particularly important discussion of the economic role of trade secret law, see Mark A. Lemley, *The Surprising Virtues of Treating Trade Secrets as IP Rights* 2-3 (Stanford Law & Econ. Olin Working Paper No. 358, 2008), available at <http://ssrn.com/abstract=1155167> [hereinafter Lemley, *Surprising Virtues*].

50. See *supra* note 1; see also Burton T. Ong, *Patenting The Biological Bounty: Re-Examining the Status of Organic Inventions as Patentable Subject Matter*, 8 MARQ. INTELL. PROP. L. REV. 1, 40 (2004).

51. See, e.g., Yochai Benkler, *Coase's Penguin, or, Linux and The Nature of the Firm*, 112 YALE L.J. 369, 423-43 (2002); Adam D. Moore, *A Lockean Theory of Intellectual Property*, 21 HAMLINE L. REV. 65, 73 (1997); Adam D. Moore, *Intellectual Property, Innovation, and Social Progress: The Case Against Incentive Based Arguments*, 26 HAMLINE L. REV. 601, 619 (2003); Mark S. Nadel, *How Current Copyright Law Discourages Creative Output: The Overlooked Impact of Marketing*, 19 BERKELEY TECH. L.J. 785, 811-12 (2004).

52. See RICHARD A. EPSTEIN, *OVERDOSE: HOW EXCESSIVE GOVERNMENT REGULATION STIFLES PHARMACEUTICAL INNOVATION* 24, 58 (2006); ADAM B. JAFFE & JOSH LERNER,

average cost of researching, developing, and commercializing a drug has been estimated to be up to, and even exceeding, one billion dollars.⁵³ Such levels of capital will hardly be regularly forthcoming on an altruistic basis. More generally, all forms of technological advancement that require significant capital to be devoted *ex ante* are likely in need of patentability to ensure their production.⁵⁴

Moreover, the argument for moral rights over scientific advancement in the commercial setting is surely more attenuated than with respect to works of art.⁵⁵ In any event, academic commentators have resoundingly embraced the position that patent law exists to promote purely utilitarian concerns.⁵⁶ More importantly, the U.S. Supreme Court has consistently reaffirmed the same view on several occasions.⁵⁷

INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS, AND WHAT TO DO ABOUT IT 39-41 (2004); James Bessen & Michael J. Meurer, *Lessons for Patent Policy from Empirical Research on Patent Litigation*, 9 LEWIS & CLARK L. REV. 1, 8 (2005).

53. See Steve Hickman, *Reinventing Invention: Why Changing How We Invent Will Change What We Patent and What To Do About It*, 91 J. PAT. & TRADEMARK OFF. SOC'Y 108, 125 (2009); Bruce Patsner, *Problems Associated with Direct-to-Consumer Advertising (DTCA) of Restricted, Implantable Medical Devices: Should the Current Regulatory Approach Be Changed?*, 64 FOOD & DRUG L.J. 1, 19 (2009); Victor E. Schwartz et al., *Marketing Pharmaceutical Products in the Twenty-First Century: An Analysis of the Continued Viability of Traditional Principles of Law in the Age of Direct-to-Consumer Advertising*, 32 HARV. J.L. & PUB. POL'Y 333, 343 n.42 (2009); Adam R. Young, Note, *Generic Pharmaceutical Regulation in the United States with Comparison to Europe: Innovation and Competition*, 8 WASH. U. GLOBAL STUD. L. REV. 165, 175 (2009).

54. See, e.g., Hickman, *supra* note 53.

55. This does not mean, of course, that proprietary rights play no role in motivating the creation of art. The availability of copyright protection might spur the creation of some artistic works, particularly those made in a commercial setting. Moreover, copyright and patent law sometimes overlap, as in the field of computer software. Nevertheless, on the whole, it seems fair to characterize the field of patentable subject matter as more industrial, more capital-intensive, and less individualistic than the artistic accomplishments that are primarily covered by copyright.

56. See *supra* note 1.

57. See *J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 131 (2001); *Diamond v. Chakrabarty*, 447 U.S. 303, 307 (1980) (referring to the constitutional command that Congress promote the progress of science and the useful arts and stating that "[t]he patent laws promote this progress by offering inventors exclusive rights for a limited period as an incentive for their inventiveness and research efforts" (quoting *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 480-81 (1974))); *Kewanee*, 416 U.S. at 480 (observing that "[t]he productive effort thereby fostered [by the Patent Act] will have a positive effect on society through the introduction of new products and processes of manufacture into the economy, and the emanations by way of increased employment and better lives for our citizens"); see also

But what are those utilitarian concerns and how does the law actually implement them? The economic foundation of patent law seeks to maximize long-run social welfare by inducing an optimal amount of innovation.⁵⁸ “Optimal” in this sense is not synonymous with “maximum.”⁵⁹ Each increment in scarce resources that is devoted to the innovation process is one less resource that can be employed for other uses.⁶⁰ Conceivably then, the law should cause inventors’ incentives to mirror those of society—in other words, the law should cause prospective patentees to internalize the full social costs and benefits of their actions.⁶¹ This is presently achieved by granting inventors property rights in their technological discoveries, thereby allowing them to appropriate at least part of the social value that their inventions create.

But why are property rights required at all? The answer lies in a market failure that affects the incentive to invent. The essential value of an invention lies in the information it contains—how the particular invention works, how it can be made and commercialized, and so on. Once this information is disclosed, that information becomes a public good, which in economic terms means that it is nonexcludable and nonrivalrous.⁶² Being nonexcludable means just

Graham v. John Deere Co., 383 U.S. 1, 8-9 (1966) (rejecting a “natural-rights theory in intellectual property rights” and recognizing “the social and economic rationale of the patent system”).

58. See, e.g., ROBERT P. MERGES ET AL., *INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE* 12-15, 137-38 (2d ed. 2000).

59. See, e.g., Barbara van Schewick, *Towards an Economic Framework for Network Neutrality Regulation*, 5 J. TELECOMM. & HIGH TECH. L. 329, 383 (2007).

60. *Id.* Also, increasing IP protection will not necessarily maximize the rate of innovation. See Daryl Lim, *Copyright Under Siege: An Economic Analysis of the Essential Facilities Doctrine and the Compulsory Licensing of Copyrighted Works*, 17 ALB. L.J. SCI. & TECH. 481, 503-04 (2007).

61. Of course, this is likely impossible to achieve in practice. Some spillover or externality will invariably exist such that an inventor will not be able to internalize the full social value of his invention. See, e.g., Michael Abramowicz, *The Uneasy Case for Patent Races over Auctions*, 60 STAN. L. REV. 803, 812-13 (2007). Even if this were possible, however, it would not be desirable to allow inventors to appropriate the full social value of their inventions. See Ian Ayres & Paul Klemperer, *Limiting Patentees’ Market Power Without Reducing Innovation Incentives: The Perverse Benefits of Uncertainty and Non-Injunctive Remedies*, 97 MICH. L. REV. 985, 987, 989 (1999).

62. See David W. Barnes, *Trademark Externalities*, 10 YALE J.L. & TECH. 1, 3-4 (2007); Seth Robert Belzley, *Grokster and Efficiency in Music*, 10 VA. J.L. & TECH. 10, 15 (2005); Brett Frischmann & Dan Moylan, *The Evolving Common Law Doctrine of Copyright Misuse: A Unified Theory and Its Application to Software*, 15 BERKELEY TECH. L.J. 865, 908 (2000).

that—one person cannot exclude another person from using the good.⁶³ If a noninventor discovers how an invention works, perhaps by discovering it on his own, reverse-engineering the product or being told how it operates, then the original inventor cannot exclude the noninventor from that knowledge. Once the cat is out of the bag, it cannot be put back in.

Being nonrivalrous means that one person's use of this information does not reduce the ability of another person to use the information.⁶⁴ The mere fact that a noninventor knows how an invention works does not, by itself, affect the inventor's knowledge of the invention. More than one person can possess the same information at any given time without diminishing the information itself.

Economic theory (and common sense) suggests that it is a good thing when an invention is nonrivalrous. Unlike with traditional goods, in which one person's use and enjoyment comes at the expense of another's, information goods are free for all to consume once they become publicly available.⁶⁵ Nevertheless, and as noted by Thomas Barnett, although information might want to be free, inventors want to get paid.⁶⁶ Thus, although possession of information is nonrivalrous, use of that information might very well be rivalrous.⁶⁷ If one discovers a new way to build a widget, and another becomes privy to that information, the former's knowledge of that information does not reduce the latter's knowledge store. However, if both parties use that information to build competing widgets, then the latter's knowledge might very well cause the former financial pain (or even drive her out of the widget-making business). Because of this phenomenon, absent some form of property right in her invention, an inventor will likely be seriously undercompensated relative to the social value she creates.⁶⁸ Worse

63. See Note, *Designing the Public Domain*, 122 HARV. L. REV. 1489, 1492 (2009).

64. *Id.*

65. *Id.*

66. See Thomas O. Barnett, *Interoperability Between Antitrust and Intellectual Property*, 14 GEO. MASON L. REV. 859, 865 (2007).

67. See Henry E. Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 YALE L.J. 1742, 1744 (2007).

68. Some undercompensation is both inevitable and desirable, because it is likely impossible to create a system of property rights such that all externalities are prevented. See, e.g., van Schewick, *supra* note 59, at 383. Even if such a system were possible, the transaction

still, her inability to profit from her invention might discourage her from working toward discovering the invention in the first place. Patent law therefore bestows property rights on inventors of worthy technologies, thus artificially rendering such discoveries excludable and allowing a market to develop for the technology at issue.⁶⁹

This process of propertizing information is further justified on another basis: namely, the incentive to commercialize.⁷⁰ This is quite apart from the danger that third parties will appropriate an inventor's technology without payment. It has been well-demonstrated, most capably by Scott Kieff, that patent protection is critical to move inventions beyond their conceptual discovery to an actual marketable product.⁷¹ Without an ability to exclude, one who discovers a valuable technology and attempts to bring that technology to market will be vulnerable to free riding by others.⁷² The latter group will happily sit on the sidelines while the inventor engages in commercial testing, manufacturing set-up, advertising, and distribution, only to join the fray as soon as the product is proven commercially viable.⁷³ Without a legal right to prevent such free riding, an inventor may have scant incentive to bring his discovery to market, with the undesirable result that consumers may be denied valuable technology.⁷⁴

B. Innovation, the Cost of Monopoly, and the Failure of Nonobviousness

The preceding discussion described how patent law operates as a system of incentives, designed to induce the creation and dissemination of otherwise easily appropriated technology. But the patent

costs involved would be prohibitive. *Id.*

69. *See, e.g.,* N.V. Philips' Gloeilampenfabrieken v. Atomic Energy Comm'n, 316 F.2d 401, 409 (D.C. Cir. 1963) ("If there were no patent system at all, anyone would be free to use any invention. A patent, however, gives one person the right to exclude all others. This monopoly is the property right in the patent.").

70. *See* F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697, 710 (2001) [hereinafter Kieff, *Property Rights*].

71. *Id.*

72. *Id.* at 708-09.

73. *Id.*

74. *Id.* at 710.

regime also creates serious social costs.⁷⁵ An inventor awarded a patent, in effect, is granted a monopoly over her invention, with the result that consumers cannot freely avail themselves of its nonrivalrous characteristics.⁷⁶ If the technology at issue is sufficiently valuable—such as if the patented invention is highly useful and has few if any substitutes—the monopoly that is granted becomes an economic monopoly.⁷⁷ As a result, the inventor will set the price at the point where marginal cost equals marginal revenue and charge a monopoly price, which exceeds what she would charge in a competitive market.⁷⁸ This process results in what economists refer to as “deadweight loss.”⁷⁹ As price increases beyond the competitive level, it will exceed the reservation prices for some consumers who would have purchased the technology in a competitive market.⁸⁰ Consequently, a monopoly pricing causes not only a wealth transfer but allocative inefficiency caused by foregone transactions.⁸¹

In light of these monopoly costs and given patent law’s utilitarian foundation—a foundation we have shown is ubiquitously accepted—the use of patents is desirable only when the incentive benefits they create exceed the allocative inefficiency they cause through distortions of the pricing mechanism. Indeed, the quintessential feature of an “incentive to invent” system of property rights should be the denial of patent rights in “self-realizing” inventions—those discoveries that would materialize in a timely fashion even if they were denied patent protection. Granting exclusive rights in such inventions would not incentivize their creation (because they would

75. See Rebecca S. Eisenberg, *Analyze This: A Law and Economics Agenda for the Patent System*, 53 VAND. L. REV. 2081, 2088 (2000); Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1059-60 (2005); Gregory Mandel, *The Non-Obvious Problem: How the Indeterminate Nonobviousness Standard Produces Excessive Patent Grants*, 42 U.C. DAVIS L. REV. 57, 62 (2008).

76. See CHISUM, *supra* note 16, § 3.01 (2008) (“The social cost is higher prices for and underutilization of the patented process or product during the period of the monopoly.”).

77. See *Ill. Tool Works, Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, 43-44 (2006) (recognizing that a patent does not necessarily convey economic market power).

78. See, e.g., RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 273-75 (6th ed. 2003).

79. See *id.* at 278-79.

80. *Id.* at 278.

81. *Id.* at 278-79.

be created anyway) but would still carry the full panoply of social harms associated with monopoly.

Patent law is not completely oblivious to this concern. The novelty requirement ensures that proprietary rights are not created in preexisting knowledge, which if allowed would perversely result in closed access to all information, wholly unacceptable bargaining and transaction costs, and preclusive levels of royalty stacking.⁸² The utility prerequisite mandates that inventors show that their discoveries possess at least some potential for practical application.⁸³ And the nonobviousness requirement excludes from patent protection those technological contributions that would have been evident to one skilled in the relevant art.⁸⁴ Presumably, obvious, useful inventions of the type excluded would come into being irrespective of the IP system's existence.

Nonetheless, these prerequisites to patentability are coarse tools that fail to filter out many self-realizing discoveries. In other words, the current system allows many inventions to be patented even when those inventions would have been created in the absence of any patent protection. As we shall see, though there might be good reason for allowing some of these inventions to be patentable, the system fails to exclude entire categories of self-realizing inventions that, from a utilitarian perspective, should not receive patent protection.

The system's failure to adequately address this issue emanates from its neglect of a basic and crucial question: what kinds of inventions can we confidently conclude would be "self-realizing," as viewed from an ex post vantage point? The answer to this question depends on two further issues. First, how far does the relevant invention jump ahead of the prior art? Second, what incentives outside of patent law spur inventors to make that jump?

82. See *Dewey & Ally Chem. Co. v. Mimex Co.*, 124 F.2d 986, 990 (2d Cir. 1942) (noting that "[t]he patent law is aimed at ... more ... than the ordinary rub of competition automatically brings out from competent workmen in the art").

83. See Michael S. Mireles, *An Examination of Patents, Licensing, Research Tools and the Tragedy of the Anticommons in Biotechnology Innovation*, 38 U. MICH. J.L. REFORM 141, 195 (2004).

84. The nonobviousness condition is not trivial; indeed, meeting this requirement is widely recognized as the most serious impediment to patenting one's invention. See, e.g., Mandel, *Another Missed Opportunity*, *supra* note 35, at 324-25.

The essential problem is that the patent system only addresses the first question, primarily through the nonobviousness doctrine, and utterly fails to consider the second. Clearly an “invention” that involves a de minimis advancement of well-understood technology is apt to be self-realizing. If obvious (and useful), it is merely a matter of time before it is implemented or discovered. Hence, the nonobviousness condition serves a crucial gatekeeping function, stripping patentability from this class of trivial “self-realizing” inventions.⁸⁵

But what of the latter point? What if the technological jump is significant (and therefore not obvious), and yet there are strong incentives independent of patent law that would push the inventor to make that jump regardless of the availability of patent protection (and hence make the invention inevitable)? This Article argues that patent law is wholly inadequate in addressing this issue. As we shall see, the patent system, as currently construed, misses half the game; it addresses some self-realizing inventions through the nonobviousness inquiry but completely neglects others that are inevitable by virtue of independent incentives. Although there is some basis for defending this dichotomy, we conclude that there are certain forms of innovative activity that can and should be excluded. In doing so, we find there is a crucial distinction between inventions that are self-realizing on account of the value of internal consumption, which constitutes a reliable heuristic, and those that are the product of broader social incentives, which acts as a less reliable proxy that is more idiosyncratic in application.

Before proceeding to this analysis, however, we first address an important predicate question: how “inevitable” must an invention be for it to be considered “self-realizing”? Innovation can take place over vastly disparate time frames. Over a sufficiently long timeline, most useful innovation is likely to be inevitable, regardless of what external incentive structures are put in place. Yet temporal delays in acquiring useful technologies themselves constitute a social cost that might be glaring.⁸⁶ For example, society suffers a loss if researchers delay studying a potentially valuable cancer medication

85. *See id.* at 325.

86. *See, e.g.,* Daniel R. Cahoy, *An Incrementalist Approach to Patent Reform Policy*, 9 N.Y.U. J. LEGIS. & PUB. POL’Y 587, 601 (2006).

because they cannot recoup a pecuniary reward for their efforts. The relevant question therefore is not whether an invention is literally “inevitable” in that it will surely occur sooner or later, but whether it would have materialized in a similarly expeditious manner.⁸⁷

Having defined an “inevitable” or “self-realizing” invention as one that would occur on a comparable timeline irrespective of patent protection, we can now try to identify what classes of innovative activity would likely fall within this rubric. The task is considerably more difficult than one might expect. In particular, the considerable danger of false positives, in addition to the unacceptable repercussions of an erroneous and unintended diminution in long term innovation, require us to accept the patenting of some self-realizing innovation. Nevertheless, as discussed below, we find that the risk of inadvertent exclusion is acceptable with respect to certain areas of innovation and we therefore advocate their elimination from the patent system.

C. Self-Realizing Inventions

It is easy to assert that self-realizing inventions should be denied patent protection. Putting that normative aspiration into effect is considerably more difficult.

There would be something profoundly disquieting about a judge determining on an ad hoc basis, without categorical guidance and from an ex post perspective, whether a given patent application before her claims something that would have been “inevitably” discovered. Apart from the fact that most federal district court judges do not have the specialized knowledge to make that determination, a rule that provides no more specificity than “deny any claims that would have arisen irrespective of patent protection” would surely be ineffective and perhaps dangerous, even in the hands of experts. Instead, reliable heuristics are needed if the law is to siphon off self-realizing inventions in a desirable fashion. Categorical analysis reveals which spheres of innovative activity can properly be treated with suspicion by a priori assumption and which

87. *Id.*

ones cannot. Although numerous areas subject to patent protection might yield some inevitable inventions, the risk of false positives associated with overbroad classifications precludes their exclusion.

This Section of the Article identifies the classes of invention that can properly be presumed to be self-realizing. Part II then explains how the patentable subject matter inquiry undertaken by the PTO and the courts can be employed to exclude such inventions. We conclude that this inquiry should be conducted such that it largely siphons off business methods from the field of patentable subject matter. Although the Federal Circuit's recent decision in *In re Bilski* partially implements this conclusion, it does so on the basis of flawed analysis.⁸⁸ This Article contends that when the Supreme Court revisits *Bilski*, it should exclude certain subject matter on explicitly utilitarian grounds.

1. Spontaneous Innovation: "Eureka" Inventions and Inadvertent Discoveries

The first potential category of self-realizing innovation relates to discoveries or inventions that do not materialize pursuant to a capital-intensive innovative process but instead from a sudden "flash of genius." Such inventions raise the question of how we should treat discoveries that come not from protracted and expensive research and development, but from ad hoc discovery. One can broadly conclude that discoveries that entail a minimum of both previous effort and subsequent utilization costs have a weak claim to IP protection on utilitarian grounds. If a person has devoted no pecuniary resources or human capital to solving a particular problem or to discovering a new process, she hardly needs the prospect of monopoly to incentivize her innovation.

Within the realm of spontaneous innovation, a special field of note involves inadvertent discovery. Should the casual inventor who unintentionally happens upon a discovery of ultimately monumental importance be granted a pecuniary reward in the form of exclusive rights?⁸⁹ The question is of some importance, as history is replete

88. 545 F.3d 943, 963-64 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S. Ct. 2735.

89. See, e.g., F. Scott Kieff, *The Case for Registering Patents and the Law and Economics*

with inventions of immense value that came about by pure happenstance.

Consider penicillin, for instance. Alexander Fleming was in the process of researching staphylococci, a type of bacteria, when he noticed that one of his sample dishes had been contaminated with a fungus that prevented the spread of the bacteria.⁹⁰ This fortuitous discovery proved to be of unparalleled social value, saving countless lives and treating even more illnesses.⁹¹ Yet humankind learned of penicillin's use not through dedicated research to a specific problem, but through serendipity. Similar tales of valuable, yet inadvertent, innovation abound.⁹²

Given the demonstrable history of many crucial discoveries taking place in unintentional fashion, one might conclude that IP protection would be ill-deserved in many of those cases. If someone inadvertently discovers a new machine, manufacture, composition of matter, or process, wouldn't the existence of a patent reward have little if any *ex ante* effect on the likelihood of such discovery?

The answer, perhaps surprisingly, is no. Indeed, there are strong practical reasons for adopting a contrary normative position. In most instances of inadvertent, valuable innovation, the inventor may not have intended to uncover the ultimate discovery but was working toward a distinct end.⁹³ Alternatively, she may have been researching a particular problem to probe possible applications without any prior expectation of what those applications might be.⁹⁴ In both of these situations, even if the actual discovery was accidental, the patent system's monetary rewards might have been

of Present Patent-Obtaining Rules, 45 B.C. L. REV. 55, 78 n.107 (2003) [hereinafter Kieff, *Registering Patents*].

90. See STUART B. LEVY, *THE ANTIBIOTIC PARADOX: HOW THE MISUSE OF ANTIBIOTICS DESTROYS THEIR CURATIVE POWERS* 37-38 (2d ed. 2002).

91. *Id.*

92. See Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1581 (2003).

93. See LEVY, *supra* note 90, at 37-38 (describing Fleming's discovery of penicillin while working with bacteria).

94. See, e.g., W. Noel Keyes, *Our Continued Need for Coordination of the United States Constitution of the Eighteenth Century's "Age of Enlightenment" with the Twenty-First Century's Ages of "Modern Science and Bioethics,"* 27 WHITTIER L. REV. 951, 954 (2006) (discussing Benjamin Franklin's experiments with electricity and invention of the lightning rod).

the impetus for the inventor (or more likely, the company funding the inventor), to pursue the research in the first place.

It is therefore not the case that unintended innovation involves a dearth of ex ante capital and effort; indeed, the opposite is likely the case.⁹⁵ By making ex post rewards available to those who engage in valuable innovation, the law encourages the devotion of capital to research and development. As innovators know that their primary research may yield unexpected but valuable results in unforeseen directions, their efforts will continue unabated. So a denial of patent protection in ancillary or unforeseen discoveries would reduce the incentive to innovate and narrow the field of innovation.

It should be clear, then, that errors in categorical analysis are apt to be preclusive in this context. Ultimately one must ask: to what extent can preexisting patent principles be molded to deny protection to certain of these inventions, without also discouraging innovation that is intimately related to and dependent upon the anticipated award of IP? The answer in the present setting is plain. There is simply no reliable basis for concluding that inadvertent discoveries are any less worthy of ex post reward than the solution to specifically targeted problems. And the law reflects this normative conclusion, as § 103 of the Patent Act provides that “[p]atentability shall not be negated by the manner in which the invention was made.”⁹⁶

But what of known problems that a person solves with a modicum of effort? To illustrate, imagine a physicist who, in a moment of genius, discovers a solution to an important practical problem that has long stymied the physics community. Imagine, also, that this person expended no pecuniary capital in solving the seemingly intractable problem and that sufficient reputational reward existed to have induced efforts by others within the community. As the invention can be communicated to others merely by publishing or otherwise explaining the solution, distributional costs are minimal. In such situations, the utilitarian justification for patent (or copyright) protection would appear to be at its minimum. Informed by the teachings of economics, then, policymakers might be tempted

95. See Burk & Lemley, *supra* note 92, at 1581 n.12.

96. 35 U.S.C. § 103(a) (2006).

not to award our hypothetical physicist any proprietary rights in his discovery, or (more relevantly) to the useful application of that discovery.⁹⁷ Indeed, one might argue that discoveries of the foregoing type may be categorically denied IP protection on the grounds that they would be discovered even if the IP system did not exist.

Again, however, that position takes too narrow a view of the indirect effects of the IP system on innovation and ignores that a given discovery might not occur if pecuniary rewards are categorically unavailable for inventions that are discovered through little effort. For example, our physicist must have attained a sufficient level of physics knowledge to address the problem, knowledge that likely required a considerable amount of human and financial capital to be expended. Cut down on the money available for a successful discovery and you reduce (on the margin) the incentive to study physics in the first place. Moreover, research grants, including from private entities, may have made the physicist's research possible. Remove from patent protection the whole category of discoveries that were achieved with ease and the total pool of funds available for research likely decreases. In short, given the advanced state of the art in most fields of technological note, putting individuals in a sufficiently informed position to tackle taxing contemporary problems is an onerous, capital intensive task that is easier taken up if financial incentives are involved.

Additionally, even if one solves a scientific quandary with a modicum of effort, commercial implementation of that discovery may require the existence of property rights over the invention. A rule that categorically denies patent protection to inadvertent discoveries or ones achieved with near instantaneous success would not only be massively overbroad but would also stifle the dissemination and commercialization of valuable information. Returning to an earlier example, Alexander Fleming's discovery of penicillin did not immediately result in the creation of commercial antibiotics. Instead, his paper was left for others to implement, which did not take place until more than a decade later.⁹⁸ Patent rights play an

97. See Kieff, *Registering Patents*, *supra* note 89, at 78 n.107 (noting that "if the metric were hard work, then accidental inventions would not be patentable").

98. See James Robert Dean, Jr., *FDA at War: Securing the Food That Secured Victory*, 53 *FOOD & DRUG L.J.* 453, 497 (1998).

important role in facilitating the commercialization of such discoveries, even if they do not play a central role in unearthing the discovery itself.⁹⁹

Most vexing of all, it would seem nearly impossible to distinguish between the inventor who solves an obstinate problem in a flash of brilliance and the one who prevails only after years of devoted effort. An inventor (or her employer) would always have a financial incentive to claim that she poured blood, sweat, and tears into the discovery, and the PTO and the courts would hardly be in a position to determine if that were true. A rule that denied patent protection to serendipitous or easily-achieved (but nonobvious) inventions might also encourage wasteful conduct, such as encouraging an inventor to engage in “busywork” to make it seem that the problem she solved was really more complicated than it actually was.

So it is not necessarily the case that financial return in the form of ownership of the resulting discovery will have limited impact on ex ante efforts to discover a solution. Rather, it seems likely that the creation of such inventions would, at a minimum, be indirectly incentivized by the presence of a pecuniary reward. Moreover, a system that denied patent protection to “eureka” or near-instantaneous inventions would likely be impossible to administer, and the particular innovations in this realm that could be properly excluded without untoward consequences would likely be extraordinarily limited.

Accordingly, in order to find self-realizing innovation of the kind that can reliably be excluded from patent protection by a priori assumption, we must look further.

2. Innovation Made Pursuant to Social Incentives

A second category of “inevitable” innovation involves discoveries spurred by reputational or institutional incentives to invent that exist independent of proprietary control of any resulting invention. The paradigmatic example of this kind of invention includes

99. See George E. Frost, *Let's Remember Sam*, 76 J. PAT. & TRADEMARK OFF. SOC'Y 277, 288-89 (1994) (observing that “the stimulus of patent rights to the promotional activity is often critical to the practical application of inventions” and citing Alexander Fleming’s discovery of penicillin as an illustration).

discoveries by professors and researchers in academic settings, where the need to publish is a prerequisite to achieving success and tenure and where pecuniary incentives are thought to play a diminished role.¹⁰⁰

At first glance, the case for patent protection in such settings might seem to be quite weak. If the creation of these inventions would occur regardless of whether they were patentable, there is no need to give property rights in these inventions and thereby create unnecessary deadweight loss. For example, if a medical researcher is studying a particular cancer gene because it is her life's passion, not because she cares about the pot of gold that might lie at the end of her research, one might think that society need not provide her, *ex ante*, with a monetary incentive to research because she would do it anyway.

Again, however, there are a host of problems that prevent this category of "inevitable" invention from being easily excluded from patent protection. As before, administering such an exclusion would be highly problematic. Although one inventor may not give a whit about pecuniary awards, other inventors might put primacy of place on such a prospect. For a court to distinguish between the two—requiring it to drill down into subjective intent—would likely be an impossible task.¹⁰¹ Moreover, categorically excluding from patent protection inventions by "academics" would make it less likely, at least on the margin, that those academics who care at least somewhat about pecuniary rewards would enter the research endeavor altogether.

Second, even if a particular researcher is not motivated by a pecuniary incentive, the organization that employs her, whether it be a university, research hospital, or nonprofit organization, might very well care about obtaining property rights in her inventions. The fact that such organizations care about patent rights is evidenced by the large number of patent applications that these

100. See, e.g., Risa L. Lieberwitz, *The Marketing of Higher Education: The Price of the University's Soul*, 89 CORNELL L. REV. 763, 784 (2004); John Swinson, *Copyright or Patent or Both: An Algorithmic Approach to Computer Software Protection*, 5 HARV. J.L. & TECH. 145, 167 n.73 (1991) (noting that "the academic may invent regardless of incentives").

101. See, e.g., Kenneth Rosenthal, *Prosecutor Misconduct, Convictions, and Double Jeopardy: Case Studies in Emerging Jurisprudence*, 71 TEMP. L. REV. 887, 912 (1998) (noting that "[p]roof of subjective intent is problematic in any setting").

organizations file and patents they hold.¹⁰² Indeed, in an era when IP rights have taken on heightened importance, such organizations would seem more likely than ever before to care about protecting such rights.

Moreover, denying IP rights to academic institutions might have significant negative spillover effects in other research areas not related to the ones denied patent protection. If, for example, a research university receives patent rights over a blockbuster new drug, it can use the proceeds from licensing that patent to fund other research projects. So denying pecuniary rights in these types of inventions could have widespread and profoundly deleterious effects on research activity in other realms.¹⁰³

We must therefore continue our search for “inevitable” inventions that can, as a practical matter, be excluded from the realm of patentable subject matter.

3. Inventions Giving Rise to “Self-Consumption”—Herein of Business Methods

As we shall see, inventions giving rise to “self-consumption” are a particularly important category of self-realizing inventions. Under

102. See Dov Greenbaum, *Academia to Industry Technology Transfer: An Alternative to the Bayh-Dole System for Both Developed and Developing Nations*, 19 *FORDHAM INTELL. PROP. MEDIA & ENT. L.J.* 311, 377 (2009) (noting the pervasive patent culture at universities); Peter Mikhail, Note, *Hopkins v. CellPro: An Illustration That Patenting and Exclusive Licensing of Fundamental Science is Not Always in the Public Interest*, 13 *HARV. J.L. & TECH.* 375, 375 (2000) (noting that “[b]ecause the prestige and royalties associated with patents have replaced the traditional reward of publication and recognition in the furtherance of science, the university is starting to resemble commercial research laboratory”); see also Ron A. Bouchard, *Balancing Public and Private Interests in the Commercialization of Publicly Funded Medical Research: Is There a Role for Compulsory Government Royalty Fees?*, 13 *B.U. J. SCI. & TECH. L.* 120, 165 (2007) (discussing the public contribution to university research costs stemming from the “transaction costs of [an] inefficient patent and regulatory system”); Risa L. Lieberwitz, *Law: The Corporatization of Academic Research: Whose Interests Are Served?*, 38 *AKRON L. REV.* 759, 764-65 (2005) (noting the impact of the Bayh-Doyle Act on new patent applications filed by American universities since 1980).

103. The positive spillover effects associated with patent grants are well known. See, e.g., Robert Bird & Daniel R. Cahoy, *The Impact of Compulsory Licensing on Foreign Direct Investment: A Collective Bargaining Approach*, 45 *AM. BUS. L.J.* 283, 285 n.6 (2008) (citing Bronwyn H. Hall, *The Private and Social Returns to Research and Development*, in *TECHNOLOGY, R&D, AND THE ECONOMY* 140, 140-41 (Bruce L.R. Smith & Claude E. Barfield eds., 1996)) (summarizing the positive spillover effects from innovative activity).

standard economic theory, when someone consumes a product or service, she usually does so because consumption increases her utility in some way.¹⁰⁴ For example, a consumer might buy a particular good she wants to own or a particular service she needs completed. Similarly, a company might purchase a new piece of capital equipment to achieve its goals more efficiently.

Sometimes, however, a company consumes an invention—often-times a process—that it invents itself. The paradigmatic modern example of a “self-consumed” invention is the business method.¹⁰⁵ For example, suppose an inventor at a company comes up with a more efficient process for creating a product that the company sells. Regardless of whether the product is patentable, the company and its agent (that is, the inventor) have an independent incentive to invent the process because it cuts costs and hence improves the company’s bottom line.

At first glance, it would seem that no patent right would be necessary to promote this kind of invention because the profit motive would encourage its production anyway. Perhaps this is the first category of “self-realizing” inventions we have encountered that we can exclude from the patent system?

Perhaps, though the matter is not as simple as it first seems. To illustrate the effect of the patent system on such innovation, imagine a world without patent protection. We start with “standard” inventions, which we define as ones that the inventor does not consume herself.

Suppose an inventor at GE discovers a new filament for light bulbs that is cheaper than, but just as effective as, a conventional light bulb filament. Now suppose that this invention enables GE to cut the marginal cost of manufacturing and marketing a light bulb from \$2.00 to \$1.80 per bulb. Assume also that the relevant market is subject to perfect competition, such that price equals marginal cost. Thus, the preinvention market price is \$2.00. Under standard economic theory, and given its marginal cost-reducing innovation,

104. See, e.g., HUGH GRAVELLE & RAY REES, MICROECONOMICS 11-45 (3d ed. Prentice Hall 2004).

105. See, e.g., ROBERT P. MERGES, PATENT LAW AND POLICY 155 (2d ed. 1997) (“[T]he relatively frequent innovations in the financial services industry prior to the era of patentability suggest that firms had adequate means to appropriate the value of their new financial innovations.”).

GE could then sell the light bulb at $\$2.00 - \epsilon$ (that is, $\$1.99$), and thereby capture the entire market.¹⁰⁶

GE's competitors, however, will not just idly sit back (for if they do, they will lose market share and perhaps go out of business). Rather, the competitors will seek out their own inventions to cut the price of their light bulbs, or more likely, they will buy a GE light bulb and use reverse-engineering to determine the composition of GE's new filament. Once that is accomplished, they can freely use the new filament in their light bulb (because in this hypothetical world, there would be no patents to protect GE's invention).

Of course, there is a cost to reverse-engineering, and there are certain inventions that cannot be reverse-engineered at all.¹⁰⁷ But there is a good reason to believe that the cost of reverse-engineering will generally be less than the cost of engineering a product in the first instance. Creating something new (from scratch) is generally harder and more expensive than copying an invention that already exists.¹⁰⁸ So it is a fair assumption that if it is possible to reverse-engineer the new filament, and the benefits from selling the new filament are substantial, then some competitors will attempt to reconstruct the relevant technology.

Assuming GE's competitors can successfully reverse-engineer the filament, they too should be able to sell the improved light bulb at a price as low as $\$1.80$. In fact, given the significant costs that GE might expend in designing the new light bulb—costs that its competitors would not have to incur—it is possible that GE might not be able to recoup its sunk investment with a price of $\$1.80$. GE's

106. There is some reason to question whether the market actually works this way. For example, if GE were a market leader with a well-defined brand name for light bulbs (or if it maintained a reputation as selling better light bulbs), it could retain its market share even if it sold slightly more expensive light bulbs. On the other hand, if a lesser-known company invented the improved, low-cost filament, it is possible that it would not capture an increase in market share simply because people prefer the "brand name," GE. There is a cost, from the perspective of a risk-averse consumer, in changing brands to something unfamiliar. If that cost exceeds the monetary benefit of choosing the new brand, the consumer might refrain from switching to the new brand, even if doing so would be in her best interest. Nevertheless, for illustrative purposes, the current hypothetical suffices.

107. See *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, 24 (D.D.C. 1999) (discussing the practical impossibility of a competitor cloning the 32-bit Windows API).

108. Were this not the case, we would see considerably less reverse-engineering in practice. See, e.g., Pamela Samuelson & Suzanne Scotchmer, *The Law and Economics of Reverse Engineering*, 111 YALE L.J. 1575, 1587 (2002).

competitors, in contrast, did not have to pay for the fixed cost of the innovation and only had to pay the likely reduced cost of reverse-engineering. Hence, it is conceivable that GE would actually be in a *worse* position than if it had not invented the filament at all.

Now consider GE's position *ex ante*. It knows that research on a new light bulb might yield a promising new product. But it also knows that in a world without patents, this invention could be copied by reverse-engineering. So GE's *ex ante* decision about whether to spend money researching the new filament would balance factors such as the probable cost of the research, the chance of success, the likely benefits from a successful product, the likelihood of competitors trying to adopt the same technology, and the probable cost and time it would take for competitors to reverse-engineer the product and bring it to market. It should be clear from this example that obtaining a patent—which would allow GE to prevent its competitors from copying its invention—would help tilt this otherwise murky mix of factors in favor of innovation. Hence, the potential of the patent system to incentivize such innovation is clear.

Now consider a different invention—suppose GE discovers a new method of manufacturing a light bulb within its factory that enables it to reduce the marginal cost of a bulb to \$1.80. Perhaps GE accomplishes this by discovering a novel way to cut costs on labor (for example, through better use of automation) or by using a better way to reorganize its assembly line so that costs are reduced. This new process is an example of a “self-consumed” invention—one that is consumed by the inventor (or his company). Such an invention does not appear in the final product that is sold, even though it decreases the cost of the final product.

As we have seen, both the new light bulb filament and the self-consumed business method for producing a light bulb reduce the marginal cost of the light bulb by 10 percent (from \$2.00 to \$1.80). And in theory, both of these inventions have the same potential to increase the inventor's (or his company's) bottom line, so an inventor should be equally incentivized to invent either. But although we saw that patent protection would greatly enhance the incentives for creating the new filament (the “standard” invention),

it is less clear whether patent protection is needed to incentivize the creation of the business method (the “self-consumed” invention).

The reason for this difference is that inventors and their competitors treat “standard” inventions and “self-consumed” inventions differently. Indeed, there are at least three characteristics that plausibly distinguish “self-consumed” inventions and make (at least a subset of) them less in need of patent protection.

First, and perhaps most importantly, self-consumed inventions are often invisible to competitors, and hence the cost of reverse-engineering them is higher than standard inventions. The hidden nature of a self-consumed invention stems, not surprisingly, from the fact that the invention is consumed by its producer. Unlike the new filament, which a competitor could obtain just by going to the store, the self-consumed business method is largely hidden from competitors and copying it requires inside information on how GE runs its light bulb factory. Of course, some of this information could be obtained by hiring former GE employees who could spill these manufacturing secrets or by using some other form of corporate espionage, but noncompete agreements and legal sanctions exist to discourage this kind of behavior.¹⁰⁹ Moreover, to the extent that GE maintains confidentiality over its business process, trade secret law would protect that innovation as well. In short, because self-consumed inventions are used by the creator of the invention, it is often harder and costlier for competitors to obtain information about these inventions than information about “standard” inventions. Accordingly, companies can feel more confident that, once invented, they do not have to pursue patent rights to protect self-consumed internal business processes.

Second, it is likely that self-consumed inventions are, on average, less expensive to create as compared to “standard” inventions. A major reason for this is that commercialization costs are not a major issue for self-consumed inventions. Once invented, a self-consumed invention need not be distilled into a “commercial” form for consumers. This, of course, is because the only consumer that matters for such an invention is the producer itself.¹¹⁰ Given that commercial

109. See Lemley, *Surprising Virtues*, *supra* note 49, at 9-11.

110. A self-consumed invention also need not be marketed in the same way as a standard invention, which also results in cost savings. This is not to say that a company could not tout

implementation is often a large portion of the total cost of bringing an invention from concept to final product, the absence of this cost in self-consumed inventions makes them, in this sense, relatively cheaper.¹¹¹ And because the costs of creating the invention are cheaper, there is less of a need for patent rights to protect the inventor's investment in creating the invention in the first place.¹¹²

Finally, unlike standard inventions, self-consumed inventions are tailored to only one consumer—the company producing the invention itself. It follows that the value a competitor might get in stealing or reverse-engineering such an invention is often less. Returning to the light bulb example, GE's novel business method for reducing the cost of manufacturing a light bulb might work only in the manufacturing setting in which GE operates. A competitor would benefit from expropriating the business method only to the extent that it could be applied in its own manufacturing setting.

To illustrate more concretely, if the business method involves automating a particular portion of the manufacturing process or implementing a more efficient way of managing inventory, then those business practices are likely to be quite GE-specific and depend on the particular attributes of GE's manufacturing facilities. Of course, it is possible that a competitor could pick and choose aspects of this invention that are applicable to its own facility. But unlike in the standard context in which, in the absence of patent rights, a properly reverse-engineered product is identical to the product it is copying, there is a diminished probability that a

its novel, self-consumed invention as a way to distinguish itself from the competition. For example, GE could note that its novel light bulb manufacturing process produces better lights at lower cost as a way of "branding" itself.

111. See Kieff, *Property Rights*, *supra* note 70, at 707-08 (discussing the costs of commercial implementation).

112. Another potential reason that self-consumed inventions are cheaper is that they arguably require less research and development capital than standard inventions. This pertains to the relative complexity of coming up with a "standard" invention versus a self-consumed invention. Returning to the light bulb example, GE could improve its filament in a myriad of different ways—for example, it could try to design a bulb that is brighter, longer lasting, more environmentally friendly, cheaper, and so on. There are many "degrees of freedom" in which this form of innovation can operate. On the other hand, the degrees of freedom are often more limited when it comes to self-consumed inventions, as they are often motivated by a singular consideration—cutting cost. As noted, this is something that a company is likely to be looking into anyway; it hardly needs patent rights to incentivize prudent cost-cutting and the installation of more efficient production technology.

competitor would be able to appropriate the entire value of a self-consumed, internal business method. Because the benefit that competitors gain from appropriating a self-consumed invention is less than that from a “standard” invention, the competitors’ incentive to expropriate the self-consumed invention is also diminished, and so is the need for patent rights to protect that invention in the first place.

Given these characteristics, we can see that there is less of a need to patent self-consumed inventions, particularly those that are internal business methods. We would expect, therefore, that many companies would choose not to patent such methods,¹¹³ given the relatively heavy (and growing) cost of obtaining a patent and asserting it in court. Indeed, we would expect that such companies would rely primarily on trade secret law as a means of protecting their self-consumed business methods,¹¹⁴ and that the only business methods that would be patented would be ones that were quite visible to competitors and could be easily copied.

But in fact, that is not what we see. Even if there is little chance of reverse-engineering certain self-consumed business methods, we see companies trying to patent these inventions anyway. Indeed, the growth of business method patents has exploded after the Federal Circuit’s 1998 decision in *State Street Bank*.¹¹⁵

If these companies are not worried about their business methods being copied—if, for example, these methods could easily be kept secret and cost little to develop—then why do these companies

113. This conclusion holds generally true for non-self-revealing inventions, which inventors have no rational basis to patent. For one author’s more expansive views on this subject, see Alan Devlin, *Restricting Experimental Use*, 32 HARV. J.L. & PUB. POL’Y 599, 626-28 (2009). As noted below, a major exception to this conclusion lies in abuse of the patent system. The inventor of a non-self-revealing process may wish to use the patent system to enjoin the use of similar trade secret protected processes by his rivals.

114. There are other reasons to suspect that trade secrets would be a better avenue of IP protection for many business methods. For example, a company may not want to patent a business method whose operation is closely tied with a confidential or trade secret protected practice. If Coca-Cola devises a new method for mixing ingredients to produce Coke, it might not want to disclose that method simply because the enablement and best mode requirements might require the company to disclose information that would shed light on its secret Coke formula. So a company might not want to reveal business methods that give competitors some tangential insight into an otherwise confidential business operation.

115. See *In re Bilski*, 545 F.3d 943, 1004-05 (Fed. Cir. 2008) (en banc) (Mayer, J., dissenting), cert. granted sub nom. *Bilski v. Doll*, 129 S. Ct. 2735 (2009).

go through the cost and trouble of patenting these inventions? In other words, what is the advantage of patenting internal business methods that do not need patent protection? Occam's razor provides an answer, and the simplest explanation is both convincing and troubling: the companies are trying to create patent portfolios that they can use offensively against their competitors, rather than as a means to recoup fixed costs in creating the invention.¹¹⁶ By creating these kinds of patent portfolios, companies put themselves in a position to attack competitors who use their business methods.¹¹⁷ Indeed, the existing literature on business method patents highlights the many ways in which this kind of conduct can occur.¹¹⁸

Moreover, not only are business method patents often used as a sword, these patents also can be used as a shield. In many situations, companies are locked in a prisoner's dilemma—each one would be better off if no one decided to obtain any business method patents because they would all save the cost and trouble of obtaining and fighting over these exclusivity-protected processes. However, each company individually has an incentive to obtain as many patents as possible because that enables it to use the patents offensively and gives it a competitive advantage over its rivals. As a result, companies engage in a patent arms race, gathering up business method (and other) patents at an increasing rate.¹¹⁹ In such a situation, business method patents are not encouraging the creation of new and useful methods of conducting business—indeed, companies would implement internal business methods regardless

116. Xuan-Thao Nguyen & Jeffrey A. Maine, *Acquiring Innovation*, 57 AM. U. L. REV. 775, 790-91 (2008).

117. Moreover, if the business method itself is not that complicated (though it is nonobvious), an inventor might seek to patent the method simply to forestall the competitor from independently discovering that or a similar method, which, given the simplicity of the business method, the competitor inevitably would do.

118. There is also a perverse interaction between patent law and trade secret law that encourages this kind of "offensive" patent use. When a company keeps a business method a trade secret, that method does not count as prior art for purposes of patentability. Hence a company could obtain a patent on a business method that another company had invented first and was using in secret; the patentee could then preclude that company from using the method, even though the company had invented the method first.

119. The phenomenon of patent races is far from desirable. See generally Michael R. Baye & Heidrun C. Hoppe, *The Strategic Equivalence of Rent-Seeking, Innovation, and Patent-Race Games*, 44 GAMES & ECON. BEHAV. 217 (2003), available at <http://www.nash-equilibrium.com/baye/Innovation.pdf> (noting the negative externalities associated with patent races).

of whether they could obtain patent protection for them. Rather, such business method patents are obtained simply as a form of strategic maneuvering vis-à-vis a competitor. Needless to say, the net social benefit of such actions is dubious.¹²⁰

But what about the many self-consumed business method patents that, as noted above, might not be easily discovered and expropriated by competitors? What would be the purpose of obtaining patent protection on these business methods if competitors are not going to discover or use them anyway?

A potential explanation here stems from the uncertainty surrounding patent grants. As compared to IP rights, the metes and bounds of patents are relatively indeterminate.¹²¹ Despite the primacy of patent claim language, where a patent grant begins and where it ends is usually a matter of interpretation.¹²² Indeed, it is often uncertain whether a patent claim is valid at all, given the many ways in which it can be invalidated in court and the high probability that this will occur.¹²³

Hence, even if a competitor's business method does not infringe on a patent by an objectively verifiable metric, if it comes close to doing so (or at least close enough that a patentee can make a nonfrivolous argument of infringement), then the patentee can sue the competitor on the patent.¹²⁴ The patentee could have myriad reasons for doing this—as noted, it could be trying to use the patent as a bargaining chip in negotiations with the competitor (given that the competitor probably has his own slew of patents that it can assert against the patentee), or the patentee could be trying to use the patent offensively to harm its competitor.

This potential for strategic behavior, along with the general monopoly costs associated with patents, suggests that it is particularly harmful to allow patenting of internal business methods. Moreover, like other self-consumed inventions, such business

120. *Id.*

121. See Alan Devlin, *Indeterminism and the Property-Patent Equation*, 28 YALE L. & POL'Y REV. (forthcoming 2009) (manuscript at 17-24), available at <http://ssrn.com/abstract=1435902>.

122. See *id.*

123. See generally Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, 19 J. ECON. PERSP. 75 (2005).

124. See Devlin, *supra* note 121, at 17-24.

methods are likely to be produced even in the absence of patent protection because they are largely invisible to competitors and are often produced pursuant to standard cost-cutting procedures.

In sum, therefore, self-consumed inventions—particularly internal business methods—are arguably a determinate and well-delineated example of self-realizing inventions that can be excluded from patent protection. Part II below indicates how the patent system could accomplish this, focusing in particular on the import of the Federal Circuit’s recent decision in *In re Bilski*.¹²⁵

II. TYING THE PATENTABLE SUBJECT MATTER INQUIRY TO UTILITARIANISM

The preceding Part described the patent system’s utilitarian foundation, indicated the profound incongruity within the present body of law that allows the patenting of much self-realizing innovation, and demarcated the boundaries of inevitable invention that can safely be withdrawn from the sphere of patent protection. This Part advocates the use of the patentable subject matter inquiry as a threshold screening device to deny patentability to certain inevitable inventions. To understand this argument, it is important both to appreciate the contemporary legal rules governing the foregoing inquiry and to review historical precedent that continues to yield great explanatory power. Part II.A performs these tasks and explains how the patentable subject matter inquiry has gone astray, bearing little if any relation to the incentives the patent system is supposed to bestow. Part II.B then charts a path toward correcting this problem by describing an “incentive to invent” theory of patentable subject matter.

A. Process Patents and the Evolution of Patentable Subject Matter

This Section first describes the core patentable subject matter exclusion—the prohibition on patenting of abstract ideas, laws of nature, and scientific principles. It then tracks how this core exclusion has informed the development of the somewhat tortured and

125. 545 F.3d 943 (Fed. Cir. 2008) (en banc), *cert. granted sub nom. Bilski v. Doll*, 77 S. Ct. 2735 (2009).

incongruous jurisprudence on subject matter eligibility. Consistent with Part I.C.3's identification of certain business methods as the most likely category of excludable self-realizing processes, this discussion explains the evolution of law governing these phenomena. It also highlights the remarkably attenuated relationship between the development of this doctrine and patent law's utilitarian foundation. The Section concludes by analyzing *In re Bilski* and exploring its consequences.

1. The Core Exclusion: Abstract Ideas, Laws of Nature, and Scientific Principles

The question of which forms of innovation should be eligible for patent protection is a fundamental one. At first blush, one could be forgiven for concluding that any promotion of scientific knowledge ought to be patent-eligible, if only because technological progress of any kind is presumably worth incentivizing. Indeed, the U.S. Constitution provides that Congress should "promote the Progress of Science ... by securing for limited Times to ... Inventors the exclusive Right to their ... Discoveries."¹²⁶ Given the separate gatekeepers of patentability—utility, nonobviousness and novelty—which in theory cumulatively operate to ensure that only worthy inventions qualify, one might question the need for categorical exclusions of any kind of subject matter.

Nevertheless, the exclusion of certain categories of innovation is, and always has been, a foundational tenet of the patent system.¹²⁷ Most fundamentally, the law prohibits the patenting of abstract ideas, scientific and mathematical principles, and laws or products of nature.¹²⁸ As the U.S. Supreme Court has declared: "[A] principle is not patentable. A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented."¹²⁹ As a result, even major scientific discoveries, such as Einstein's $E = mc^2$

126. U.S. CONST. art. I, § 8, cl. 8.

127. See *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (citing *Parker v. Flook*, 437 U.S. 584 (1978)); *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972); *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948); *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 112-21 (1853); *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1852).

128. *Diamond*, 447 U.S. at 309.

129. *Tatham*, 55 U.S. at 175.

equation, cannot be patented.¹³⁰ However, the useful application of such discoveries toward specific ends may qualify for protection.¹³¹

If we accept that the sole purpose of the patent system is to create an incentive to invent valuable technology and bring it to market, the rule that abstract ideas and discoveries are not patentable must make economic sense. Yet it is not clear that it does. The principal function of the patent grant is to allow a deserving inventor to appropriate a certain proportion of the social value associated with his invention or discovery.¹³² The more valuable the innovation, the greater the demand for the information, which means the greater the pecuniary reward to the inventor, and thus the greater the incentive to engage in the process of innovation *ex ante*.

The discovery of theretofore unappreciated fundamental truths may be of immense value. Moreover, the process of this discovery may have been extraordinarily onerous, both in terms of human and pecuniary capital. Although allowing an upstream discovery of considerable practical importance to be patented may entail large negotiation and transaction costs, those costs are what create value for the inventor *ex post*. In a single-period state of the world, social welfare is clearly maximized by allowing open access. But as explained above, not all fundamental truths and laws of nature are discovered pursuant to a cost-free process. Indeed, the opposite is surely the case. From a utilitarian perspective, therefore, one can perhaps legitimately question the law's exclusion of scientific principles and abstract ideas from the realm of patentability.

Regardless of this criticism, the fact remains that the prohibition is so firmly ingrained within the patent system that no one could reasonably expect to change it. Moreover, this tenet of the law is of limited practical concern. One discovering an abstract idea should be able to apply that idea to a specific end and thereby derive pecuniary value from the discovery's practical application.¹³³ If such an application is not possible, one might question the true value of the idea (or at least the idea's short-term value).

130. See Kieff, *Property Rights*, *supra* note 70, at 745.

131. *Id.*

132. See Abramowicz, *supra* note 61, at 812.

133. See *State St. Bank v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1374 (Fed. Cir. 1998) (noting that "a process, machine, manufacture, or composition of matter employing a law of nature, natural phenomenon, or abstract idea is patentable subject matter").

A more relevant issue involves instances when the prohibition on patenting “abstract” ideas has influenced how courts have treated other areas of broader concern. Such areas include computer software, which involves the use of mathematical algorithms that by themselves would not be patentable,¹³⁴ and business methods, which bear an innate relationship to intangible ideas and mental steps.¹³⁵ The somewhat abstract nature of these categories of inventions has long led courts to view them with a degree of suspicion, leading to a convoluted jurisprudence concerning their patentability.

2. *Toward the “Useful, Concrete and Tangible Result” Test*

The law has displayed a far greater wariness toward process patent applications than those directed at machines, manufactures, or compositions of matter (collectively, products).¹³⁶ This caution emanates from a judicial aversion to innovation that takes an abstract form, as compared to innovation that results in a concrete, tangible product.¹³⁷ By placing an unwarranted focus on abstraction, the courts have lost sight of the utilitarian purpose of the patent laws. Business methods, computer programs, and other methods should not be denied patent protection merely because they are more “abstract” than other inventions. Rather, patent protection should be denied only if such a reward were not necessary to induce the creation and dissemination of the method. In other words, the relevant inquiry of whether a method should be patentable should be framed in economic terms, under an incentive to invent rationale.

The law’s misguided preoccupation with abstraction has been long-standing. For example, it was long understood that processes

134. *In re Alappat*, 33 F.3d 1526, 1582 (Fed. Cir. 1994).

135. *See In re Comiskey*, 499 F.3d 1365, 1374 (Fed. Cir. 2007). Questions of patentability also surround genetically engineered organisms, with protection being denied where the organisms are a “product of nature.” *See Diamond v. Chakrabarty*, 447 U.S. 303, 308-10 (1980) (overruling the determination of a patent examiner who had concluded that a genetically engineered bacterium was a product of nature, and holding that man-made genetically engineered bacterium was not found in nature).

136. *See, e.g., Peter Yun-Hyoung Lee, Inverting the Logic of Scientific Discovery: Applying Common Law Patentable Subject Matter Doctrine To Constrain Patents on Biotechnology Research Tools*, 19 HARV. J.L. & TECH. 79, 104 (2005).

137. *See id.*

that did not involve a physical transformation were not patentable.¹³⁸ Although this limitation has since been discarded, courts remain focused on the abstract nature of an invention,¹³⁹ particularly with regard to the patentability of business methods and computer programs.

Taking the former sphere of innovative activity first, it was long the rule that methods of doing business were not patentable under any circumstances. In 1893, the Southern District of New York emphasized that “a method of transacting common business” did not fall within the sphere of patentable subject matter.¹⁴⁰ Soon thereafter, in the well-known case of *Hotel Security Checking Co. v. Lorraine Co.*, the Second Circuit held that a “system of transacting business disconnected from the means of carrying out the system is not, within the most liberal interpretation of the term, an art” that may be patented.¹⁴¹ The court explicitly based its determination on the fact that “[n]o mere abstraction, no idea, however brilliant, can be the subject of a patent.”¹⁴²

Such judicial focus on abstraction is, as explained above, ill-placed. Rather, the focus of the relevant inquiry should be on the underlying incentive to invent rationale for the patent system. The Second Circuit in *Lorraine* gave some credence to this concern, explaining its skepticism in part because the business method at issue “would ... occur to any clever and ingenious person familiar with the needs of that business. The truth of this proposition will be made apparent by a brief survey of the prior art.”¹⁴³

Although this insight is consistent with economic principles, it was made pursuant to the wrong inquiry. The question is whether business methods as a category should be patentable. Only when

138. See, e.g., *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

139. See *In re Schrader*, 22 F.3d 290, 294-96 (Fed. Cir. 1994) (opining that subject matter that is merely “representative of” physical things may be patentable).

140. *U.S. Credit Sys. Co. v. Am. Credit Indem. Co.*, 53 F. 818, 819 (S.D.N.Y. 1893).

141. 160 F. 467, 469 (2d Cir. 1908).

142. *Id.* Other subsequent cases also echoed the same prohibition on business methods. See, e.g., *Loew's Drive-In Theatres, Inc. v. Park-In Theatres, Inc.*, 174 F.2d 547, 552 (1st Cir. 1949) (“[A] system for the transaction of business, such, for example, as the cafeteria system for transacting the restaurant business, or similarly the open-air drive-in system for conducting the motion picture theatre business, however novel, useful, or commercially successful is not patentable.”).

143. *Hotel Security Checking*, 160 F. at 470.

this threshold is reached should the courts move to consider the more general requirements of patentability, including the obviousness and novelty conditions noted by the court. Thus, although the Second Circuit was quite right as a utilitarian matter to be concerned over the novelty and utility of the relevant business method, such concern was premature insofar as the court used the facts of the particular case to make a broader pronouncement about business methods.

More generally, the Supreme Court has long struggled to articulate congruent principles governing the patentability of processes. Over a series of cases, the Court attempted to reconcile its manifest aversion to abstraction with the unquestionably useful claimed methods that were coming before it. The result was an inharmonious body of law that was, and is, difficult to reconcile. The most important decisions that made up this law were three decisions issued by the Court within a span of ten years: *Gottschalk v. Benson*,¹⁴⁴ *Parker v. Flook*,¹⁴⁵ and *Diamond v. Diehr*.¹⁴⁶

For the purposes of this Article, there is neither need nor space to delve into these cases in great depth. Nevertheless, a brief overview of their principal holdings is helpful. In *Benson*, the Court confronted an algorithm that converted binary-coded decimal numerals into pure binary numerals on a general purpose computer.¹⁴⁷ In holding that the claim at issue failed to state patentable subject matter, the Court found that the claim involved neither a transformation nor the use of a specialized computer or other machine.¹⁴⁸ As a result, “the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself.”¹⁴⁹ *Benson* exposed the tension between the judiciary’s fundamental prohibition on the patenting of abstract ideas and the statutory provision that “any new and useful process” be patentable.¹⁵⁰

144. 409 U.S. 63 (1972).

145. 437 U.S. 584 (1978).

146. 450 U.S. 175 (1981).

147. *Benson*, 409 U.S. at 64.

148. *Id.*

149. *Id.* at 72.

150. 35 U.S.C. § 101 (2006).

Subsequent leading decisions did little to harmonize the uneasy tension between an ill-conceived judicial aversion to abstraction (an element of which is inherent in virtually any method)¹⁵¹ and the explicit congressional mandate that new and useful processes be patentable. In *Flook*, the Court again denied patent protection, this time to a method for monitoring a catalytic conversion process by updating alarm limits based on variables such as pressure and temperature.¹⁵² The claimed process entailed the use of a mathematical algorithm, which the Court viewed as nonpatentable subject matter.¹⁵³ In so holding, the Court determined that “conventional or obvious” postsolution activity cannot transform an otherwise unpatentable principle into a patentable process.¹⁵⁴

In *Diehr*, the Court signaled a change in direction, displaying greater flexibility toward allowed processes that entail the use of mathematical algorithms to be patented.¹⁵⁵ The inventor at issue claimed a method for curing rubber in a mold, using a commonly known algorithm to calculate the length of time the mold should remain closed.¹⁵⁶ The Court deemed the invention patentable, notwithstanding its recent preceding decisions in *Benson* and *Flook*. It justified this outcome on the basis that the process was centered not on a mathematical algorithm but an industrial process.¹⁵⁷ The Court strained to reconcile the relevant case law—a difficulty aptly pointed out by Justice Stevens in dissent.¹⁵⁸

As *Diehr* demonstrates, by the early 1980s, the Court was clearly moving in favor of expanding eligible subject matter. Still, this trend of cases remained highly averse to abstract methods—indeed, the *Diehr* Court was explicitly wary of granting claims that might “seek to pre-empt the use of” a fundamental principle.¹⁵⁹ The more industrial and tangible the method that employed a mathematical algorithm, the more likely it was (and is) to be

151. Indeed, this is a point that has been recognized by the Supreme Court itself. See *Parker v. Flook*, 437 U.S. 584, 589 (1978).

152. *Id.* at 585-86.

153. *Id.* at 585.

154. *Id.* at 590.

155. See *Diamond v. Diehr*, 450 U.S. 175 (1981).

156. *Id.* at 179.

157. *Id.* at 184.

158. *Id.* at 200-05 (Stevens, J., dissenting).

159. *Id.* at 187 (majority opinion).

patentable. Unfortunately, this trend persists even when patent protection might be necessary to incentivize the creation of an “abstract” invention in the first place.

Given this myopic judicial focus on abstraction rather than incentives, it was perhaps only a matter of time before the converse problem appeared: nonabstract but self-realizing methods of conducting business were deemed patentable. In 1998, the Federal Circuit cast aside the prohibition on business method patents and certain other processes in its ground-breaking decision in *State Street Bank*.¹⁶⁰ The court stated that the “question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to—process, machine, manufacture, or composition of matter—but rather on the essential characteristics of the subject matter, in particular, the practical utility.”¹⁶¹ The court then looked beyond any categorical exclusion of business methods and instead held that a process, in order to be patentable, must merely produce “a useful, concrete and tangible result.”¹⁶²

State Street Bank was subsequently reinforced by another seminal case, *AT&T Corp. v. Excel Communications, Inc.*, which brought the distinct legal treatment of computer software to an end.¹⁶³ In its holding, the Federal Circuit reaffirmed the primacy of the “useful, concrete and tangible result” standard, and disavowed any suggestion that a process must embody a physical limitation or element to be patentable.¹⁶⁴

State Street Bank was closely followed by a deluge of patent applications claiming methods of practicing business in a field that had previously borne witness to few, if any.¹⁶⁵ Although the PTO has long been accused of failing to screen applications properly, with the

160. *State St. Bank v. Signature Fin. Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998).

161. *Id.* at 1375.

162. *Id.* at 1373 (quoting *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (internal quotation marks omitted)).

163. 172 F.3d 1352 (Fed. Cir. 1999).

164. *Id.* at 1359.

165. See *supra* notes 29-30; see also *In re Bilski*, 545 F.3d 943, 1004 (Fed. Cir. 2008) (en banc) (Mayer, J., dissenting), *cert. granted sub. nom. Bilski v. Doll*, 129 S. Ct. 2735 (2009) (“*State Street* has launched a legal tsunami, inundating the patent office with applications seeking protection for common business practices.”); Matthew E. Fink, Note, *Patenting Business Methods in Europe: What Lies Ahead?*, 79 IND. L.J. 299, 301 (2004).

result that many patents are improvidently granted, the PTO's performance has been especially poor with respect to business methods.¹⁶⁶ The Supreme Court has explicitly referred to the "potential vagueness and suspect validity" of many of these particular patents.¹⁶⁷ The qualitative deficiency can be explained in large part by the lack of prior art before the PTO, which made the agency's determinations of novelty and nonobviousness far more difficult.¹⁶⁸

Among the vast number of patents issued over business methods, some particularly egregious examples stand out.¹⁶⁹ Amazon's "one-click" patent is perhaps the most notorious, which claimed a "method and system for placing a purchase order via communications network."¹⁷⁰ The process consisted of storing customers' credit card and other relevant information such that they could make a purchase with a single click upon a return visit.¹⁷¹ Having obtained a patent, the online superstore promptly brought an action against Barnes & Noble to enjoin use of the latter's "Express Lane" shopping mechanism.¹⁷² The district court found in favor of Amazon and granted it a preliminary injunction, and this finding was sustained on appeal.¹⁷³ The result was aptly deemed "ridiculous" by some commentators, including Professor Lawrence Lessig.¹⁷⁴ Notably, one of Amazon's founding programmers, Paul Barton-Davis, character-

166. See, e.g., Jason Taketa, Note, *The Future of Business Method Software Patents in the International Intellectual Property System*, 75 S. CAL. L. REV. 943, 955 (2002).

167. See *eBay, Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 397 (2006) (Kennedy, J., concurring).

168. See 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, 589-91 (1999).

169. For a representative discussion, see *In re Bilski*, 545 F.3d at 1004-05 (Mayer, J., dissenting).

170. U.S. Patent No. 5,960,411, at [54] (filed Sept. 12, 1997). See generally Lois Matelan, *The Continuing Controversy over Business Methods Patents*, 90 J. PAT. & TRADEMARK OFF. SOC'Y 125, 134-35 (2008).

171. '411 Patent col.10 1.15-1.46.

172. See *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 73 F. Supp. 2d 1228 (W.D. Wash. 1999), *vacated*, *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343 (Fed. Cir. 2001).

173. *Id.*

174. See Thomas E. Weber, *Battles over Patents Threaten To Damp Web's Innovative Spirit*, WALL ST. J., Nov. 8, 1999, at B1.

ized Amazon's one-click patent as "a cynical and ungrateful use of an extremely obvious technology."¹⁷⁵

If one adheres to the perspective that any valuable technological advancement over the prior art should be worthy of patent protection (if capable of being applied to a specific purpose, of course¹⁷⁶) then there is much to find pleasing in *State Street Bank* and *AT&T*. The Federal Circuit merely required that a process not be inescapably abstract. To render a method patentable, an inventor need only find a useful application of that method with real-life effects.

The problem, of course, is that although the court was correct to focus on the underlying nature of the subject matter, it prematurely and myopically focused on utility. Rather than determine whether patent protection was needed to incentivize the invention of a useful process, the court allowed *all* such useful methods to be patentable. But as explored previously in this Article, even enormously useful inventions should not receive patent protection if sufficient alternative incentives to innovate and commercialize exist outside of the patent system.¹⁷⁷ *State Street Bank* and *AT&T* miss this crucial point. More specifically, their fatal shortcoming lies in overlooking that self-realizing inventions should be excluded from patent protection—a deficiency whose harm increases the more useful the claimed process at issue.¹⁷⁸

3. *In re Bilski*

Given the immense controversy surrounding business method patents, in late 2008, the Federal Circuit finally revisited its prior holding in *State Street Bank*. In *In re Bilski*, the court overruled its prior holding, discarding the "useful, tangible and concrete result"

175. See Sirkka L. Jarvenpaa & Emerson H. Tiller, Protecting Internet Business Methods: Amazon.com and the 1-Click Checkout (Mar. 30, 2001), <http://btl.mcombs.utexas.edu/IBM%20Course%20modules/bizmethpatents1.pdf> (unpublished course materials).

176. See *Diamond v. Diehr*, 450 U.S. 175, 187 (1981) ("It is now commonplace that an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.").

177. Moreover, the "useful, concrete and tangible result" condition of patentability is tantamount to meeting an elevated utility requirement and would thus seem to have limited independent purpose. See *supra* Part I.A.2.

178. This is because the greater the demand for the discovery, the greater the allocative inefficiency created by a patent grant. See *supra* Part I.B.

test and adopting a requirement that a process either be tied to a particular machine or apparatus or transform an article into a different state or thing.¹⁷⁹

Bilski involved a method for “hedging risk in the field of commodities trading.”¹⁸⁰ Writing for the court, Chief Judge Michel properly noted that the patent-eligible subject matter inquiry is a threshold one, which can bar a claim irrespective of its nonobviousness, utility, or novelty.¹⁸¹ He noted too that the claimed method fell within the literal terms of the Patent Act but emphasized that “the meaning of ‘process’ as used in § 101 is narrower than its ordinary meaning.”¹⁸² Surveying the Supreme Court precedent discussed *supra*, the court framed the issue as a simple one; namely, “whether Applicants are seeking to claim a fundamental principle (such as an abstract idea) or a mental process.”¹⁸³

Chief Judge Michel placed particular weight on the Supreme Court’s *Diehr* decision, given that it was the last time the Court addressed the issue, and contrasted that case with the ones that preceded it.¹⁸⁴ He concluded that processes must be denied patentability when granting the relevant claims would preempt all uses of the algorithms contained therein.¹⁸⁵ Noting the innate difficulty of applying this principle, the court found relief in Supreme Court precedent, which the court construed as enunciating a specific standard, observing that a “claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.”¹⁸⁶

It is far from clear, however, that Supreme Court precedent compelled such a conclusion.¹⁸⁷ A close reading of *Benson*, *Flook*, and

179. *In re Bilski*, 545 F.3d 943, 949, 954 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S. Ct. 2735 (2009).

180. *Id.*

181. *Id.* at 950.

182. *Id.* at 952.

183. *Id.*

184. *Id.* at 952-66.

185. *Id.* at 965-66.

186. *Id.* at 954.

187. See, e.g., *Gottschalk v. Benson*, 409 U.S. 63, 71 (1972) (“It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a ‘different state or thing.’ We do *not* hold that no process patent could

Diehr reveals that the Court was careful to emphasize that a “machine-or-transformation” standard was sufficient, but not necessary, for a process to be patentable—a fact pointed out by Judge Newman in dissent.¹⁸⁸ To this charge, the majority merely cited the Court’s proclamation in *Benson* that “[t]ransformation and reduction of an article to a different state or thing is *the* clue to the patentability of a process claim that does not include particular machines”¹⁸⁹—hardly a resounding endorsement of the machine-or-transformation test’s exclusive force.

While the majority focused on giving Supreme Court precedent a narrow and artificial reading, the dissenting judges busied themselves with arguing that business methods do not fall within the realm of technological or scientific progress that the patent laws were meant to protect,¹⁹⁰ pointing out the majority’s misreading of precedent,¹⁹¹ disagreeing with any test that departs from the simple prohibition on abstract ideas,¹⁹² and challenging the legislative history relied upon by the concurrence,¹⁹³ respectively.

Only Judge Mayer, in dissent, considered the issue focused upon by this Article, which is the fundamental principle at the heart of the patent system.¹⁹⁴ As explained *supra*, self-realizing inventions of the type giving rise to self-consumption have a weak claim to patent eligibility.¹⁹⁵ This effect is magnified in the context of new and useful business methods, given the relatively limited fixed capital devoted to their creation, the absence of any need to commercialize such methods, and most importantly, the processes’ typically hidden character.¹⁹⁶ As many methods of conducting business may be protected as trade secrets, an inventor will often

ever qualify if it did not meet the requirements of our prior precedents. It is said that the decision precludes a patent for any program servicing a computer. We do *not* so hold.”) (emphases added).

188. *Bilski*, 545 F.3d at 976-85 (Newman, J., dissenting).

189. *Id.* at 955-56 (majority opinion) (quoting *Benson*, 409 U.S. at 70) (internal quotation marks omitted).

190. *Id.* at 998 (Mayer, J., dissenting).

191. *Id.* at 976 (Newman, J., dissenting).

192. *Id.* at 1011 (Rader, J., dissenting).

193. *Id.* at 985-90 (Newman, J., dissenting).

194. *Id.* at 1005-06 (Mayer, J., dissenting).

195. *See supra* Part I.C.

196. *See supra* Part I.C.3.

patent such processes only to inflict costs on his competitors. Judge Mayer briefly considered some of these factors, which the majority ignored. In particular, he noted that “[b]usiness innovations, by their very nature, provide a competitive advantage and thus generate their own incentives.”¹⁹⁷ He further commented:

Business method patents, unlike those granted for pharmaceuticals and other products, offer rewards that are grossly disproportionate to the costs of innovation. In contrast to technological endeavors, business innovations frequently involve little or no investment in research and development. *Bilski*, for example, likely spent only nominal sums to develop his hedging method. The reward he could reap if his application were allowed ... vastly exceeds any costs he might have incurred in devising his “invention.”¹⁹⁸

This limited reference to the utilitarian foundation of patent law is unique among the opinions articulated by the Federal Circuit judges in *Bilski*. Even with respect to Judge Mayer’s capable dissent, the argument appears ancillary when read within the context of the opinion as a whole. Moreover, it omits reference to the nefarious inference that can be read into a company’s decision to patent an internal business method, like the one in *Bilski*, which would seem better served by trade secret protection.

4. *Bilski’s Legacy*

Although the new rule in *Bilski* will operate to exclude many kinds of business methods—a positive result given that these methods generally tend to be self-realizing and adequately protectable under trade secret law—*Bilski’s* reasoning is suspect. As noted, Judge Newman’s dissent demonstrated the frailty of the Federal Circuit’s opinion and the strained reading it gave binding Supreme Court precedent.¹⁹⁹ And the judiciary’s persisting obsession with abstraction—as difficult as that concept is to square with

197. *Bilski*, 545 F.3d at 1005 (Mayer, J., dissenting).

198. *Id.* at 1006.

199. *Id.* at 977-85 (Newman, J., dissenting).

underlying theory and as onerous as it is to apply in practice²⁰⁰—led the *Bilski* court astray. Even if one accepts the normative legitimacy of the exclusion of abstract ideas and laws of nature, the patentable subject matter inquiry should not be coterminous with that concern. All of the judges in *Bilski*, save Judge Mayer, are guilty of such myopia. Even Judge Newman, in an otherwise convincing dissent, viewed the relevant inquiry as being whether a process or product is useful, novel, and nonobvious, and overlooked the one factor that should have been of primary concern—namely, whether that product or process would have materialized in the absence of patent protection.²⁰¹

Bilski also raised a number of ancillary questions. The ostensibly simple requirement that a process, in order to be patentable, be tied to a particular machine or apparatus or transform an article into a different state or thing,²⁰² implicates several difficult issues for application. For instance, it is clear that a mere field of use requirement or use of a machine for “insignificant extra-solution activity” will not suffice.²⁰³ But what of borderline cases? Will the use of a general purpose computer suffice? It remains unclear.²⁰⁴

200. See, e.g., Richard S. Gruner, *In Search of the Undiscovered Country: The Challenge of Describing Patentable Subject Matter*, 23 SANTA CLARA COMPUTER & HIGH TECH. L.J. 395, 400 (2007) (“Much of the current uncertainty in the law of patentable subject matter stems from the failure of the Supreme Court to articulate clear principles for separating patentable applications from unpatentable abstract ideas.”).

201. *Bilski*, 545 F.3d at 991-92 (Newman, J., dissenting).

202. *Id.* at 954 (majority opinion).

203. *Id.* at 957.

204. Even though the Federal Circuit issued its seminal decision in *Bilski* in late 2008, there have already been a number of decisions that have applied the new standard. See *In re Ferguson*, 558 F.3d 1359, 1361 (Fed. Cir. 2009); *Ex parte Motoyama*, Appeal No. 2008-2753, 2009 WL 524946, at *2 (B.P.A.I. Feb. 27, 2009).

What is clear is that by granting certiorari,²⁰⁵ the Supreme Court appears ready to confront the debacle that has been the patentable subject matter inquiry. In doing so, the Court should pay heed to the issue of “self-realizing” innovation and exclude internal business methods (like the one in *Bilski*) and other categories of self-consumed inventions that one can reliably expect to materialize even in the absence of patent protection. As discussed below, this would be an important step toward an “incentive to invent” theory of patentable subject matter and would help return patent law to its utilitarian roots.

B. Toward an “Incentive To Invent” Theory of Patentable Subject Matter

It is clear that inventors invent for all sorts of reasons, and IP is often not one of them.²⁰⁶ This observation carries with it an important corollary: patent protection is sometimes unnecessary to spur innovation, and when it is unnecessary, society should not pay for its costs. In short, patent protection should not be available for categories of inventions in which an independent incentive to invent exists outside of the patent system (such as for internal business processes).

205. The questions presented to the Court in *Bilski* are:

- a) Whether the Federal Circuit erred by holding that a “process” must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing (“machine-or-transformation” test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court’s precedent declining to limit the broad statutory grant of patent eligibility for “any” new and useful process beyond excluding patents for “laws of nature, physical phenomena, and abstract ideas.”
- b) Whether the Federal Circuit’s “machine-or-transformation” test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect “method[s] of doing or conducting business.” 35 U.S.C. § 273.

See Petition for Writ of Certiorari at i, *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2009) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S. Ct. 2735 (2009).

Section 273, which was passed after *State Street Bank* was decided, limits the scope of business method patents by providing an affirmative defense to a business method patent infringement claim. See 35 U.S.C. § 273(a)(1) (2006). It defines “method” as “method of doing or conducting business” solely for purposes of that section. *Id.* § 273(a)(3).

206. See *supra* Part I.

To accept this Article's "incentive to invent" theory of patentable subject matter, however, we must tackle possible objections. In particular, unequivocal statutory language provides that patent protection is to be forthcoming for "any new and useful process."²⁰⁷ Nowhere does the Patent Act directly state that new and useful processes should be denied patentability, irrespective of their great value and nonobviousness, because they would likely have been inevitable. And the Supreme Court has emphasized that "courts should not read into the patent laws limitations and conditions which the legislature has not expressed."²⁰⁸ The Court has also counseled: "The subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting 'the Progress of Science and the useful Arts' with all that means for the social and economic benefits envisioned by [Thomas] Jefferson."²⁰⁹ Thus, the Supreme Court would appear to be in favor of minimizing Type I errors by erring on the side of over-inclusion (that is, allowing some undeserving inventions to be patented). Indeed, the problem of false positives is an important one: given the vastly beneficial role played by innovation in the modern economy, the mistaken evisceration of incentives to invent in particular industries and sciences could be seriously harmful.²¹⁰

Still, this legitimate concern does not mean that the patentable subject matter inquiry should be edentulous. As a general matter, internal business processes that result from free market competition have scant utilitarian claim to patent protection. Where such methods are not self-revealing, the basis for an inventor's decision to patent them emanates primarily from a desire to inflict harm on rivals. Although such an inventor may also wish to reap the pecuniary rewards that flow from exclusive ownership, that return is a windfall. Advantages in the form of lower costs and higher consumer demand create a sufficient incentive to invent in the context of a competitive market.

207. See 35 U.S.C. § 101 (2006) (emphasis added).

208. See *Diamond v. Diehr*, 450 U.S. 175, 182 (1981) (citing *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980)).

209. *Chakrabarty*, 447 U.S. at 315 (quoting U.S. CONST. art. I, § 8).

210. See Barnett, *supra* note 66, at 859-61 (explaining that the dynamic efficiency facilitated by IP is likely to exceed the static efficiency associated with weak IP).

The relevant question, therefore, is whether the exclusion of certain inevitable inventions can be reconciled with the statutory text. There is little question that it can. The above-cited passage from the Supreme Court's decision in *Chakrabarty* explains that the specific provisions of the Patent Act have been crafted pursuant to the constitutional demand that the development of science and technology be incentivized. Although § 101 of the Patent Act, the provision that deals with the patentability of inventions, mentions no restriction on the right to patent new and useful processes or products, such a reading emanates from a broader construction of the statute, and more fundamentally, from the U.S. Constitution itself. As explored above, there is nearly universal agreement that the patent system's foundation is utilitarian and that the patent rules crafted give force to that goal.²¹¹ In short, patent law operates as a solution to a public goods dilemma.²¹² No specific rule in the Patent Act operates in diametric opposition to that goal. So informed, it follows that § 101's allowance of "any new and useful" process can reasonably be construed as "any new and useful" process that would not be invented and developed absent patent protection.

This ought not to be controversial. In fact, a literal reading of § 101's requirement would invalidate the Supreme Court's longest-held and most fundamental principles of patent law—in particular, the prohibition on abstract ideas, mathematical principles, laws of nature, and preexisting phenomena.²¹³ The discovery of such matters may be of immense value and entirely novel from the perspective of the prior art, and would seem worthy of protection from a literal reading of § 101. Such has obviously not been the case, however, which would seem to imply at the very least that this section is not meant to be read in isolation.²¹⁴

211. See Lemley, *Economics of Improvement*, *supra* note 1, at 993-94. The Supreme Court has recognized the patent system's utilitarian foundation, and emphasized that the economic view of patents extends all the way back to the first administrator of the U.S. patent system—Thomas Jefferson. See *Graham v. John Deere Co.*, 383 U.S. 1, 8-9 (1966) (noting that Thomas Jefferson "rejected a natural-rights theory in intellectual property rights" and recognized that the patent monopoly "was a reward, an inducement, to bring forth new knowledge").

212. See Lemley, *Economics of Improvement*, *supra* note 1, at 993-99.

213. See *supra* Part II.A.1.

214. *Diamond v. Diehr*, 450 U.S. 175, 185 (1981) ("This Court has undoubtedly recognized

CONCLUSION: CRACKS IN THE FOUNDATION OF PATENT LAW

The U.S. Constitution, Supreme Court, and legal academy uniformly state that the patent system is utilitarian in design and purpose.²¹⁵ A host of legal rules pay homage to this economic *raison d'être* and further patent law's utilitarian design accordingly.²¹⁶ Yet contemporary developments in the law have revealed a startling disconnect between theory conceived and theory applied. In particular, no system premised on utilitarian principles would create property rights in "self-realizing" inventions. Such innovation occurs without regard to the prospect of exclusivity, with the result that patent protection serves only to diminish aggregate welfare.

The principal tool employed by the patent system to exclude such inevitable innovation is also the law's greatest impediment to patentability—the nonobviousness condition.²¹⁷ This requirement prevents inventions that entail a *de minimis* advancement over the prior art from receiving patent protection. Given self-realizing innovation's close relationship to then-existing technological knowledge, such scientific advancement is literally "inevitable," at least insofar as it is valuable.

But the nonobviousness condition fails to exclude another class of self-realizing innovation—namely, nonobvious technological discovery that occurs pursuant to incentive structures other than those created by the patent system. The law's present failure to exclude such innovation or even recognize this issue represents a glaring oversight.

We have demonstrated that a host of innovative technology in the "useful arts" is likely inspired by rewards other than those provided by patent law.²¹⁸ Overriding social norms that reward innovation through prestige and related factors may provide certain individuals with sufficient incentives to innovate and commercialize certain inventions. Similarly, "eureka" discoveries arrived at through *ad hoc*

limits to § 101 and every discovery is not embraced within the statutory terms.").

215. See *supra* Part II.

216. See generally WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* 294-333 (2003) (discussing the economics of patent law).

217. See *supra* notes 14-15 and accompanying text.

218. See *supra* Part I.C.

realization rather than the devotion of ex ante efforts could conceivably be inevitable and therefore unworthy of patent protection. In addition, some inventors may derive sufficient pleasure from their inventive activities to continue even in the absence of pecuniary reward.

From a theoretical perspective, such “inevitable” innovation is unworthy of patent protection under any sensible application of the law’s underlying utilitarian philosophy. Awarding exclusive rights in such inventions only creates a social cost—one that rises in direct proportion to the value of the innovation involved—without an offsetting benefit. If we could categorically define classes of discoveries that would not require patent law as a motivating force, then there would be a strong normative ground for excluding them.

Unfortunately, various pragmatic concerns require the system to tolerate the patenting of certain self-realizing inventions. Different inventors are motivated in highly distinct and idiosyncratic ways, so although altruism might spur one person to innovate, and social recognition (such as academic status or broader community reputation) might motivate another, a third person might be unmoved by these rewards. And given the difficulty of separating inventors according to their motives, any attempt to categorically exclude “eureka” discoveries or those achieved pursuant to broader social norms would be difficult if not impossible to accomplish. Thus, there is reason to believe that denying exclusive rights for such inventions would negatively impact innovation. Because innovation and dynamic efficiency yield the greatest benefits to the modern economy,²¹⁹ society must not inadvertently stifle that source of social wealth through myopic and ill-considered restrictions in patent rights.²²⁰ As a result, overinclusion of some self-realizing innovation might be necessary to preserve a vibrant patent system.

Self-consumed inventions represent a dramatic exception to this somewhat melancholy conclusion. Commercial innovation that reduces costs or increases consumer demand will likely be self-realizing, given the advantages these innovations provide in a competitive environment.²²¹ Unlike other classes of inevitable

219. See Barnett, *supra* note 66, at 859-61.

220. *Id.*

221. *Accord Developments in the Law—Competitive Torts*, 77 HARV. L. REV. 932, 939 (1964) ([The] “law of trade secrets permits innovators to develop new products for market without

discovery, certain self-consumed inventions—paradigmatically, internal business methods—would be created even if the patent system did not exist. This Article concludes that such methods have an attenuated claim to the benefits of IP.²²²

But how to exclude this form of innovation? As we have seen, the nonobviousness condition is ineffective for this purpose, so we must look elsewhere. The answer lies in the threshold inquiry of patentable subject matter—an inquiry that courts and scholars have thus far only tangentially tied to utilitarian concerns. By categorically denying patent protection to internal business methods—even if they are novel, useful, and nonobvious—the law can begin to reconcile the patent system with its utilitarian roots.

The Supreme Court now has a chance to do this in *Bilski*, as it revisits the patentable subject matter inquiry for the first time in nearly three decades. The Court should not adopt the Federal Circuit’s “machine-or-transformation” test, which mischaracterizes prior Supreme Court precedent, awkwardly reflects the judiciary’s aversion to abstraction, and raises as many questions as it answers. Rather, the Court should refocus the patentable subject matter inquiry on the incentives to invent and commercialize that have animated the patent system from its inception. As this Article explains, these principles require that internal business methods, such as the one in *Bilski*, be categorically denied patent protection. Such a rule would help reconcile the patentable subject matter inquiry with its utilitarian foundation. It is time to give force to that foundation, and put primacy of place on incentives.

disclosure to competitors. The initial lead which this protection affords may furnish sufficient competitive advantage to assure a reward for innovation.”).

222. Cf. Matthew G. Wells, *Internet Method Business Patent Policy*, 87 VA. L. REV. 729, 770-76 (2001) (analyzing the effects of market failure on internet business methods and the economic impact of patent protection).

