Unknown Futures and the Known Past: What Can Patent Learn from Copyright in the New Technological Age?

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Abstract

The debate over the patentability of business methods has raised broader questions as to the proper standard for patentability under 35 U.S.C. § 101 and the Constitution’s Progress Clause. As the issue has risen to the Supreme Court, various parties have proposed a broad array of standards. These standards range from the Federal Circuit’s “machine-or-transformation” test to IBM’s proposed “technology” test. Virtually every one of the proposed standards is fatally flawed. The machine-or-transformation test essentially removes “process” from § 101 by linking the patentability of a process to other forms of § 101 subject matter. The technology test is simply too vague, as even the Federal Circuit has acknowledged that the definition of technology changes over time. Such limitations on patentable subject matter serve only to limit future innovation by restricting patent
incentives to only those technologies encompassed by judicial language. In doing so, they fail to promote Progress as the Progress Clause requires.

This article presents and analyzes the differing perspectives of patent and copyright through a pair of case studies: it provides historical accounts of video games and copyright, on the one hand, and business methods and patent, on the other. Through comparison of the studies, the article arrives at the conclusion that copyright is more flexible in its acceptance of new innovations, and that patent law can better achieve its goal of promoting progress by becoming more like copyright. Noting that copyright courts have always concentrated on the how (expression) rather than the what (books, statues, musical works, etc.), the article proposes that patent law does the same. By concentrating on application of fundamental principles, rather than whether a machine, composition, or process is technological, patent law can be made more adaptive, ensuring that unexpected future innovations will be protected by patent.

I. Introduction

Courts often compare patent and copyright law, and they frequently apply patent doctrine in copyright cases. For example, the Supreme Court has used patent law to devise the test for secondary liability in copyright, noting that the copyright rule reflects the Patent Act’s balancing of the “public interest in access to [an] article of commerce” and incentivizing innovation. Courts have also imported patent misuse standards into copyright law. The Supreme Court has, however, warned against blanket cross-application of patent and copyright law.

These judicial comparisons likely arise at least in part due to the many similarities between patent and copyright laws. For example, despite differing arguments in each regime over the proper balance of the goals of protecting

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3 See Sony, 464 U.S. at 440-442. See also Grokster, 545 U.S. at 936-37.
4 Lasercomb America, Inc. v. Reynolds, 911 F.2d 970, 973 (4th Cir. 1990); A&M Records, Inc. v. Napster, Inc., 239 F.3d 1004, 1026-27 (9th Cir. 2001); DSC Communications Corp. v. DGI Techs., Inc., 81 F.3d 597, 601 (5th Cir. 1996).
innovative creators and promoting social welfare by encouraging access to and use of new things, the two bodies of law perform closely-related functions. Each is subject to a constitutional mandate to promote “Progress.” Each grants certain exclusive rights in the intangible fruits of human creativity and innovation and permits owners to sue for infringement of these exclusive rights. The two regimes have some overlapping subject matter. These similarities have led at least one commentator to suggest that there should be one law for both regimes.

Following the judicial trend, many commentators have applied patent doctrine to copyright law. It is far less common among scholars, and virtually

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6 John Shepard Wiley, Jr., Copyright at the School of Patent, 58 U. CHI. L. REV. 119, 119 (1991) (“[T]he two laws perform the same function. People debate whether these regimes should strive for justice for creators or economic efficiency for consumers, but no partisan recommends one goal for patent and another for copyright.”).

7 U.S. Const. Art. I, § 8, cl. 8 (granting Congress the power “to promote the Progress of Science and the Useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”).


10 See COMMISSION ON NEW TECHNOLOGICAL USES FOR COPYRIGHTED WORKS’ FINAL REPORT AND RECOMMENDATIONS 20, available at http://digital-law-online.info/CONTU/PDF/Chapter3.pdf (hereinafter CONTU REPORT) (stating that copyright can protect computer programs because copyright “protects the program as long as it remains fixed in a tangible medium of expression but [does not protect] the electro-mechanical functioning of [the] machine.”). See also id. at 16 (noting that patent, trade secret and unfair competition law may protect certain aspects of a computer program, but “[e]ach of these forms of protection may inhibit the dissemination of information and restrict competition to a greater extent than copyright).

11 Wiley, supra note 6, at 119 (“Indeed, the obvious but largely unasked question is why we have two different laws at all, rather than a single system of innovation policy.”).

unheard of within the courts, to apply copyright doctrine to patent law. This predominantly one-way-street between the two related intellectual property regimes is odd given the close relationship and many similarities between patent and copyright.

This article argues that copyright can also inform patent law. The close relationship between the regimes magnifies a critical distinguishing characteristic between the two regimes: adaptation to technological change. Copyright generally adapts relatively quickly to technological changes. Such ready adaptation to technological change is notable because copyright is directed at creative, non-functional (i.e. non-technological) works of authorship. Although copyright may protect aspects of otherwise technological works, it is not intended to protect technological advances themselves. Despite copyright’s consistent adaptation to technology – and indeed, one of the purposes of the 1976 Copyright Act was to ensure that copyright made such adaptations more readily – modern scholars...


14 See, e.g., Sony, 464 U.S. at 430 (“From its beginning, the law of copyright has developed in response to significant changes in technology.”). See also id. at 430 n.11.


16 17 U.S.C. § 102(b) (2009) (“In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.”).

17 For example, copyright can protect the expression contained in a computer program. See CONTU REPORT, supra note 10, at 20. See also Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240, 1247 (3d Cir. 1983) [hereinafter Apple Computer, Inc.].

18 See 17 U.S.C. § 102(b). See also Sony, 464 U.S. at 430 n.11 (noting that copyright has adapted to works embodied in new technologies, not the technologies themselves); CONTU REPORT, supra note 10, at 20. See also Dennis Karjala, Distinguishing Patent and Copyright Subject Matter, 35 CONN. L. REV. 439, 449 (2003) (describing traditional patent subject matter as “functional” and traditional copyright subject matter as “informational”).

19 See H.R. Rep. No. 94-1476, 94th Cong., 2d Sess. 54 (1976), reprinted in 1976 U.S.C.C.A.N. 5659, 5665 (1976) (stating that the purpose of the “tangible medium of expression” standard was to “avoid the artificial and largely unjustifiable distinctions, derived from cases such as White-Smith Publishing Co. v. Apollo Co., 209 U.S. 1 (1908), under which statutory copyrightability in certain cases has been made to depend upon the form or medium in which the work is fixed.”).
sometimes argue against such adaptation. For example, arguments are frequently made against, or at least for narrowing, copyright’s currently broad application to computer programs, one of the more recent technological fields that copyright has extended to.

In contrast, and counter-intuitively, technology-oriented patent law does not adapt to technological changes as readily. This failure to adapt occurs despite what may be characterized as “technology-adaptive” doctrines, such as the “person having ordinary skill in the art,” the doctrine of equivalents, and the

20 See, e.g., Pamela Samuelson, CONTU Revisited: The Case Against Copyright Protection For Computer Programs in Machine-Readable Form, 1984 DUKE L.J. 663 (1984) (arguing against the provision of copyright protection to computer programs in machine-readable form); CONTU REPORT, supra note 10, at 31 (Commissioner Hersey, dissenting) (arguing that forcing computer programs into the rubric of copyright “must in the long run tend to corrupt and erode the essential purposes of copyright). See also Edward Lee, Technological Fair Use, 84 S. CAL. L. REV. (forthcoming 2010) (arguing that copyright is ill-equipped to handle the complexities of technology in fair use, and calling for a specialized version of fair use for technological matter).


22 See AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 1356 (Fed. Cir. 1999) (“As this brief review suggests, this court (and its predecessor) has struggled to make our understanding of the scope of [patentable subject matter] responsive to the needs of the modern world.”); Rebecca S. Eisenberg, The Story of Diamond v. Chakrabarty: Technological Change and the Subject Matter Boundaries of the Patent System, in INTELLECTUAL PROPERTY STORIES 327, 327 (Jane C. Ginsburg & Rochelle Cooper Dreyfuss ed., 2006) [hereinafter, Eisenberg, Story].


23 See Dan L. Burk & Mark A. Lemley, Is Patent Law Technology-Specific?, 17 BERKELEY TECH. L.J. 1155, 1157 (2002) [hereinafter, Technology-Specific] (“the PHOSITA provides needed flexibility for patent law, permitting it to adapt to new technologies without losing its essential character.”). The PHOSITA is a legal construction used in obviousness and enablement determinations. Id. at 1156.

24 See Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 608 (1950) (doctrine of equivalents may be invoked against an accused device “if it performs substantially the same function in substantially the same way to obtain the same result… The theory on which it is founded is that if two devices do the same work in substantially the same way, and accomplish
broad scope of patentable subject matter embodied in the 1952 Patent Act.\textsuperscript{25} These adaptive doctrines did not ensure patentability of computer-implemented inventions or genetically modified micro-organisms – each of which was subject to litigation before being accepted as patent subject matter.\textsuperscript{26}

The subject matter question pending before the Supreme Court, in \textit{Bilski v. Doll},\textsuperscript{27} further demonstrates the relative inflexibility of patent law. Patent protection is supposedly granted to “anything under the sun that is made by man.”\textsuperscript{28} Despite this broad protection, prior to 1998 there existed a generally-recognized “exception” to patentability for methods of doing business.\textsuperscript{29}

In the 1998 decision \textit{State Street Bank & Trust Co. v. Signature Financial Group, Inc.}, the Federal Circuit rejected this business method “exception” and held that business methods are patentable so long as they produce a “useful, concrete and tangible result.”\textsuperscript{30} The Federal Circuit then abrogated that decision in \textit{In re Bilski}, opting instead to apply a “machine-or-transformation” test to determine the patentability of a given process.\textsuperscript{31} Such conflicting interpretations...
of patent law by the same court represent patent law’s inflexibility with respect to technological change.

Bilski and State Street arise out of the fact that patent law has never fully established what its technological assumptions are. Nor has patent law reached a viable standard for adaptation to relevant technological changes. Copyright, by contrast, has ignored technology for the most part, and in doing so, it has purchased some useful adaptability.

This article illustrates and analyzes the different perspectives of patent and copyright law through a pair of case studies: historical accounts of video games and copyright, on the one hand, and business methods and patent on the other. Video games are characterized as a modern archetype of flexible, adaptive interpretation of intellectual property law having a positive effect on an unknown future industry. Business methods, on the other hand, show the difficulty patent law has with adapting to technology. In light of these accounts, the article argues that courts should adopt a more flexible, adaptive stance towards patentable subject matter, one that borrows from copyright law.

In doing so, the article proceeds as follows. Part II presents a conceptual framework for the article by discussing patterns of interactions between intellectual property law and industries characterized by technological change, particularly in the patent and copyright fields. Part III presents the history of video games as a specific example of this industry/law interaction, and offers observations on the critical judicial decisions in the field. It argues that copyright law successfully adapted to legal and economic changes presented by this emerging industry. Part IV presents the similar history of the interaction between patent law and business methods. It suggests that patent law’s struggle to accommodate innovation in the business method arena is rooted in the inherent

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32 Arguably, patent’s failure to address its technological assumptions and reach a viable, adaptive standard has the potential to make it obsolete in the future. See Karjala, supra note 18, at 439 (“If patent is to be limited to physical artifacts and their manipulation by industrial processes, it is likely to become increasingly irrelevant as we move more and more to an information-as-product economy.”); see also Richard S. Gruner, Intangible Inventions: Patenable Subject Matter for an Information Age, 35 Loy. L.A. L. Rev. 355, 360-61 (2002) (noting that “information-processing innovation is at the heart of many of the most important changes now underway in our individual, social, business, and governmental activities”); R. Carl Moy, Subjecting Rembrandt to the Rule of Law: Rule-Based Solutions for Determining the Patentability of Business Methods, 28 WM. MITCHELL L. Rev. 1047, 1086 (2002) (retaining a requirement of physical transformation for method patents will make the patent system increasingly inapplicable to the information economy and will cause its replacement by other regimes of intellectual property protection).

33 See H.R. Rep. 94-1476, at 5665.
inflexibility of the patent regime. Part V argues for similar judicial treatment of business method patents in light of the similarities between business method patents and video game copyrights. Further, Part V presents a flexible standard that may be applied to patentable subject matter issues, rather than the current inflexible standard rooted in “an industrial age decades removed from” the present and “link[ed] … to the age of iron and steel at a time of subatomic particles and terabytes.”34 Importantly, the argument presented in Part V supports applying this standard regardless of the outcome of *Bilski* itself. Part VI concludes.

II. The Law/Industry Interaction

The copyright and patent regimes are intended to interact with industry, not merely with individuals. The protection these regimes grant is intended to promote “the Progress of Science and the Useful Arts,”35 so their purpose is directed toward industrial outcomes. Indeed, both regimes can be traced back to industrial shifts: the modern copyright system arose as a response to the publishing industry,36 and the industrial roots of patent law require little elaboration.37 These shifts led to the introduction of the patent and copyright regimes. Patent law has been characterized as the “primary policy tool to promote innovation, encourage the development of new technologies, and increase the fund of human knowledge.”38 Copyright is intended to encourage creation and public dissemination of expressive works to the benefit of society.39 Just how the

34 *Bilski*, 545 F.3d at 1011 (Rader, J., dissenting).


39 See, e.g., *Eldred*, 537 U.S. at 227 (discussing the purposes of copyright law and noting the “twin purposes of encouraging new works and adding to the public domain.”); *Sony*, 464 U.S. at 429 (noting that copyright acts to motivate creative activity so as “to allow the public access to the products of their genius after the limited period of exclusive control has expired.”).
laws of Progress interact with industry is unclear.

This part examines the interaction of intellectual property law and industry through established rubrics of property theory. Because scholars have wrestled with the relationships between law and other institutions in developing these rubrics, their observations can shed light on the interaction between law and industry.

The touchstone article explaining the development of property rights was published by Harold Demsetz in 1967. Demsetz’s essentially argued that property laws develop in response to market shifts. As the value of appropriable resources increase, Demsetz argued, rights emerge around these resources, eventually resulting in the creation of market institutions to enable their exchange.

Three “archetypal decision-making rules” emerged in the wake of Demsetz’s theory. First, the prevailing marketplace theory, which generally follows Demsetz’s theory, is characterized by unanimous agreement among affected parties. Second, the unitary rule occurs where a single actor controls a rights shift. Finally, the majoritarian rule requires that a majority of the affected parties agree before a property rights shift occurs.

Boiled down to their most basic, these rules yield three modes of interaction between law and industry. The prevailing marketplace rule yields the conclusion that legal changes occur in response to market shifts. The unitary rule results in industrial reaction to legal shifts. The majoritarian rule takes an

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41 See Id. at 350 (“It is my thesis … that the emergence of new property rights takes place in response to the desires of the interacting persons for adjustment to new benefit-cost possibilities.”).


43 See Id. at 130-31.

44 Id.

45 Id. at 131.

46 See Demsetz, supra note 40, at 351-53 (noting that hunting was carried out primarily for food and clothing purposes prior to the establishment of the fur trade, but that increased hunting provided the necessary incentive for the creation of property rights). See infra Part III.A.

47 See infra Part II.B.
intermediate stance: law and industry directly affect each other, such that they evolve contemporaneously.\footnote{See infra Part II.C.}

As a conceptual framework for the rest of the article, this part presents the three alternative rules of legal/industrial interaction derived from the property rules introduced above. Section A presents the possibility that the evolution of law occurs in response to changes in industry. This rule follows closely the Demsetzian prevailing marketplace view. Section B presents the opposite, demonstrating that industry may follow the law. This rule resembles the unitary rule. Finally, Section C shows that law and industry may evolve together – something akin to the majoritarian rule. Each section offers observations based on historical examples.

A. The Law Adapts to Industry

Demsetz derived his property rights argument from the way such rights arose in Native American cultures involved in the fur trade. His most basic point essentially stated that legal shifts occur in response to industrial changes. The copyright and patent laws provide several historical examples of this kind of interaction.

Copyright’s historic adaptive stance towards new technology\footnote{See supra Part II.C.} provides several examples of the law’s adaptation to industrial change. The copyright doctrine of fair use inherently follows industry due to its vagueness. The “fair use analysis must always be tailored to the individual case,”\footnote{Harper & Row Publishers, Inc. v. Nation Enterprises, 471 U.S. 539, 552 (1985).} so it is necessarily a reactive doctrine, although trends have arisen in court decisions in certain “industry” scenarios.\footnote{For example, commercial photocopying, even for educational purposes, is generally found not to be fair use. See Princeton University Press v. Michigan Document Services, Inc., 99 F.3d 1381 (6th Cir. 1996); American Geophysical Union v. Texaco, Inc., 60 F.3d 913 (2nd Cir. 1994); Television Digest, Inc. v. U.S. Telephone Ass’n, 841 F.Supp. 5 (D. D.C. 1993); Basic Books v. Kinko’s Graphics, 758 F.Supp. 1522 (S.D.N.Y. 1991). “Parody” of a prior work, on the other hand, is generally found to be fair use. See Campbell v. Acuff-Rose Music, Inc., 510 U.S. 569 (1994); SunTrust Bank v. Houghton Mifflin Co., 268 F.3d 1257 (11th Cir. 2001).} Some technology-specific industries also evidence legal adaptation to the market place. Xerox machines, cable television, and VCRs, for example, have each led to changes in copyright law.\footnote{See generally Sony, 464 U.S. 417. See also id. at 430 n.11.} Perhaps the best example
of such change is an industry where protection under copyright laws is viewed as a given today, but which was apparently not even considered at the inception of copyright law.

The first modern-day copyright statute – the Statute of Anne – “was invented to solve a particular problem for book publishers.”\(^{53}\) At the time the Statute was enacted, 1710, the concept of author’s rights did not clearly extend to some present-day forms of expression, including musical works.\(^ {54}\) At the time, most professional musicians and composers were employed directly by the wealthy.\(^ {55}\) Slowly and apparently unrelated to the Statute, public concerts and musical festivals became more popular throughout the 18\(^{th}\) century.\(^ {56}\) The popularity of live performances led to a growth in the market for printed music.\(^ {57}\) Despite the objections of music publishers,\(^ {58}\) printed music was eventually accepted under the Statute of Anne.

Johann Christian Bach, the youngest son of Johann Sebastian Bach,\(^ {59}\) was a popular composer who obtained a printing privilege from the English Crown for his music.\(^ {60}\) After coming into conflict with the publishing firm Longman & Lukey, Bach brought suit under his printing privilege and eventually under the Statute of Anne.\(^ {61}\) The Chancellor certified to the King’s Bench the question of whether musical compositions were “within” the Statute of Anne, and the Bench found that they were.\(^ {62}\)

\(^{53}\) Carroll, *supra* note 36, at 910.

\(^{54}\) Id.


\(^{56}\) Carroll, *supra* note 36, at 926-27.

\(^{57}\) Id. at 927.

\(^{58}\) Id. at 930 (“In contrast to professional musicians and their equivocal response to the Statute of Anne, music publishers appear to have been hostile toward music copyright.”).

\(^{59}\) Carroll, *supra* note 36, at 942.

\(^{60}\) David Hunter, *Music Copyright in Britain to 1800*, 67 MUSIC AND LETTERS 269, 278-79 (1986).

\(^{61}\) Carroll, *supra* note 36, at 944-45.

Although it is unclear if other composers benefited immediately from the *Bach* decision,\(^6^3\) the case makes clear that composers had begun to rely on new markets to support their art.\(^6^4\) And so, the *Bach* decision and its progeny – eventually including the copyright of music – may be characterized as legal reaction to change in the music industry.

A seminal patent law case, *Diamond v. Chakrabarty*,\(^6^5\) represents a major legal shift in light of a changing industrial climate. Ananda Chakrabarty developed a genetically modified bacterium capable of breaking down crude oil.\(^6^6\) The question at the Supreme Court was whether a living, human-made micro-organism was patentable subject matter under 35 U.S.C. § 101.\(^6^7\)

The case was heard twice at the Court of Customs and Patent Appeals (CCPA)\(^6^8\) before the Supreme Court granted certiorari. The subject matter of Chakrabarty’s patent was not unknown in the patent system; methods of producing antibiotics from microbes and microbial processes for waste treatment had existed for decades.\(^6^9\) The questionable aspect of Chakrabarty’s patent application was his claim to the bacteria themselves.\(^7^0\) This product’s patentability was supported by market changes prior to the decision.

Recombinant DNA techniques were invented in the early 1970s.\(^7^1\) While

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\(^{6^3}\) Carroll, *supra* note 36, at 945.

\(^{6^4}\) *Id.* at 957 (“[T]he result in *Bach* should be viewed positively because composers had begun to rely on market exchange and self-publication to support their art, and the extension of copyright marginally improved their ability to compose independently of their patron’s desires.”).

\(^{6^5}\) 447 U.S. 303 (1980).

\(^{6^6}\) *Id.* at 305.

\(^{6^7}\) *Id.*

\(^{6^8}\) The CCPA was the predecessor court to the Federal Circuit. The Circuit was intended to consolidate patent appeals in one court. Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, 96 Stat. 25.

\(^{6^9}\) *See* Eisenberg, *Story, supra* note 22, at 333 (citing *In re* Mancy, 449 F.2d 1289 (C.C.P.A. 1974) (upholding patent claims to process of making antibiotic by cultivating strain of bacteria); City of Milwaukee v. Activated Sludge, 69 F.2d 577 (7th Cir. 1934) (patent on method of treating raw sewage)).

\(^{7^0}\) Eisenberg, *Story, supra* note 22, at 333.

\(^{7^1}\) *Id.* at 339.
gene-splicing was met with public and scientific consternation at its birth,72 the concerns of scientists had subsided by the time Chakrabarty was litigated.73 As concerns over gene-splicing were mitigated, it became apparent that the industry could be incredibly valuable. The Washington Post characterized the case as “represent[ing] a potential gold mine for corporations involved in genetic engineering research.”74 Even the lone amicus brief filed against Chakrabarty noted that patents like the one at issue “would significantly contribute to the profit potential of the genetic industry, thus generating a greater momentum in research and development of genetic engineering technologies,” resulting in a “rapid proliferation of genetic techniques … in many other aspects of the nation’s economic life.”75 This growth in industrial support for a field once viewed with consternation provided the necessary incentive for courts to expand patent law to ensure that such technologies were protected in the future.

Generally, it appears that law only adapts to industrial change over time. Such a change could occur more quickly in the case of certain disruptive technologies,76 but such circumstances appear rare. In either circumstance, as in Demsetz’s rule, sufficient market forces appear to be the driving factor in causing a shift in legal standards.77

B. Industry Adapts to the Law


73 See Daniel J. Kevles, Ananda Chakrabarty wins a patent: Biotechnology, law, and society, 1972-1980, 25 Hist. Stud. In the Physical and Biological Sciences 111, 121(1994) (“By 1978, most molecular biologists were convinced that the dangers had been exaggerated.”).


75 Brief on Behalf of the People’s Business Commission, Amicus Curiae at 3 (filed Dec. 13, 1979) (Westlaw Supreme Court Briefs file).

76 For example, the technology in Sony was relatively new, yet the Sony decision had a profound impact on industry. See generally James Lardner, Fast Forward: Hollywood, the Japanese, and the Onslaught of the VCR (1st ed. 1987) (discussing how the movie industry adapted to the Sony decision by creating a profitable aftermarket). See also Chakrabarty, 447 U.S. 303.

77 See Paul Goldstein, Copyright’s Highway: From Gutenberg to the Celestial Jukebox 4 (Stanford Univ. Press 2003) (1994) (“[T]he marketplace will determine whether a work has commercial value .... [I]f the work has commercial value, copyright’s aim is to put that value in the copyright owner’s pocket.”).
Alternatively, industry may adapt to changes in the law. This is especially true where decision-making authority is concentrated in one or few actors, as in the unitary rule. The Supreme Court or Congress can act as unitary decision-makers in the patent and copyright fields, and the Federal Circuit frequently acts as a unitary decision-maker in the patent field. Because the legal shift originates from a single actor, participants in affected markets must adapt their actions to the legal shift. Therefore, where significant authority is concentrated in few actors, industrial shifts will likely occur in response to legal changes.

In copyright, industrial adaptation tends to occur through the exploitation of narrow legal rules. Professor Jessica Litman points to several industries that evolved in response to such narrow changes in copyright law.\(^78\) For example, “[a]n enterprising group of talking machine manufacturers used the copyright exemption for the performance of musical compositions on coin-operated devices to launch the jukebox industry.”\(^79\) Such legal shelters also led to industries oriented around specific technologies like player pianos\(^80\) and phonograph records.\(^81\) They have also contributed to more general industries; the video tape rental industry, for one, arose thanks to the first sale doctrine.\(^82\) Notably, it was predicted that this industry would cause irreparable harm to the television and motion picture industries\(^83\) – an outcome that never came to pass.

\(^{78}\) Jessica Litman, Digital Copyright 106 (2001) (“History teaches that whenever we have discovered or enacted a copyright exception, an industry has grown up within its shelter.”). See also id. at 106 (noting that jukebox industry arose in light of the exemption accorded to “the reproduction or rendition of a musical composition by or upon coin-operated machines.”). See Copyright Act of March 4, 1909, § 1(e), 35 Stat. 1075; U.S. Library of Congress, Second Supplementary Report of the Register of Copyrights on the General Revision of the U.S. Copyright Law: 1975 Revision Bill, ch. X (1975).

\(^{79}\) Litman, supra note 78, at 49.

\(^{80}\) See Kennedy v. McTammany, 33 F. 584 (CC MA 1888); White-Smith Music Publishing Co. v. Apollo Co., 209 U.S. 1 (1908).


\(^{82}\) Litman, supra note 78, at 106. See also 17 U.S.C. §109. First sale doctrine allows the owner of a copy of a copyrighted work to dispose of that copy as he or she pleases.

\(^{83}\) Litman, supra note 78, at 106-07. See Video and Audio Home Taping: Hearing on S. 31 and S. 175 Before the Subcommittee on Patents, Trademarks, and Copyrights of the Senate Committee on the Judiciary, 98 Cong., 1st sess. 276-306 (1983) (testimony of Jack Valenti, Motion Picture
Patent law provides several examples of industrial reaction to specific legal shifts. Only the judicially-created patent doctrine of experimental use is examined here. The doctrine is rooted in the Supreme Court case *City of Elizabeth v. American Nicholson Pavement Co.* and its progeny. *City of Elizabeth* arose out of Nicholson’s suit for infringement of his pavement patent. The City of Elizabeth argued that Nicholson’s patent was invalid because it was in public use for six years prior to Nicholson’s application for a patent. Upholding the patent’s validity, the Court recognized that some inventions necessarily require public testing. In such cases, a necessary public use is still experimental, and does not bar patentability.

Under the experimental use doctrine, certain industries tend to use substantial public testing while others do not. Software, for example, often undergoes “beta-testing” before, and frequently after, commercial release. Meanwhile, some industries can perform all necessary testing in private. Pharmaceutical and chemical inventions can usually be tested in laboratories.

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84 There are two doctrines of experimental use in patent law – one as an exception to the on sale bar, and the other as a narrow defense to infringement. See Burk & Lemley, *Policy Levers*, supra note 38, at 1646.

85 *97 U.S. 126 (1877).*

86 See, e.g., *Pfaff v. Wells Elecs.*, 525 U.S. 55, 64 (1998) (holding that “an inventor who seeks to perfect his discovery may conduct extensive testing without losing his right to obtain a patent for his invention–even if such testing occurs in the public eye”).

87 *City of Elizabeth, 97 U.S. at 128-29.*

88 *Id. at 129.*

89 *City of Elizabeth, 97 U.S. at 135 (“if used under the surveillance of the inventor, and for the purpose of enabling him to test the machine, and ascertain whether it will answer the purpose intended, and make such alterations and improvements as experience demonstrates to be necessary, it will still be a mere experimental use, and not a public use, within the meaning of the statute.”). See Burk & Lemley, *Policy Levers*, supra note 38, at 1648.

90 Lemley & Burk, *Policy Levers*, supra note 38, at 1648 (“[Experimental use does] not expressly differ by industry, but for obvious reasons [it is] more likely to be applied in industries where reproduction and testing of products are necessary parts of the product development process.”).

91 *Id.*
without release to the public.\textsuperscript{92} How each industry treats its experimentation is at least in part a reaction to the experimental use exception.

\section*{C. Law and Industry Evolve Simultaneously}

The final evolutionary rubric is an intermediary rule between the law-or-industry extremes.\textsuperscript{93} As such, it represents a system where neither legal nor industrial changes dictate shifts in the other field. Instead, both fields evolve simultaneously. The result is that, whereas the prevailing marketplace and unitary rules can be supported by examination of specific legal rules and events closely related to the advent of those rules, broader examination is necessary to analyze interactions when evolution occurs simultaneously.

A broader examination of the history of printed music provides an instructive copyright example. Recall that prior to \textit{Bach v. Longman} in 1777, musicians in London began to take advantage of new markets for their music.\textsuperscript{94} Despite market changes before the \textit{Bach} decision, relatively few musicians or publishers filed their works at the Stationer’s Hall – only 175 music titles were registered between 1700 and 1779.\textsuperscript{95} Between 1780 and 1789, 738 works were registered, and that number doubled between 1790 and 1799.\textsuperscript{96} This evidence shows that, while the \textit{Bach} decision may have been a legal reaction to industrial change, industry also reacted to the legal shift that \textit{Bach} embodied.

The \textit{Chakrabarty} decision is characterized above as a legal reaction to a major industrial shift,\textsuperscript{97} but the case also resulted in a major industrial reaction. As predicted,\textsuperscript{98} investment in biotechnology research and development has flourished since the decision.\textsuperscript{99}

\textsuperscript{92} Id.

\textsuperscript{93} Just as the majoritarian rule is an intermediary between the unitary and prevailing marketplace theories. \textit{See} Wyman, \textit{supra} notes 42-45, and accompanying text.

\textsuperscript{94} \textit{See} Carroll, \textit{supra} note 36, at 926-27 (noting that, as public performances became more commonplace, demand for printed music increased).

\textsuperscript{95} Records show that, between 1700 and 1779, 175 music titles were registered at the Stationer’s Hall under the Statute of Anne. \textit{Hunter, supra} note 60, at 281 tbl.1.

\textsuperscript{96} Id.

\textsuperscript{97} \textit{See supra} Part II.A.

\textsuperscript{98} \textit{See} Scott, \textit{supra} note 74; Brief on Behalf of People’s Business Commission, \textit{supra} note 75.

\textsuperscript{99} Eisenberg, \textit{Story, supra} note 22, at 357.
D. Summary

Without making any claims as to which rule is best, this article presumes that law and industry have evolved together. While in some scenarios, industry may exclusively follow law, or vice versa, parts II through V presume that law and industry evolve simultaneously. This presumption is applied because the article addresses subject matter issues, and subject matter issues appear to have more complicated interactions with the law than other issues.

With the foregoing framework in mind, the following parts discuss two law and industry interactions in much greater detail. Part II presents a historical account of the interaction between copyright law and the video game industry. Part III provides a similar account of the interaction between patent law and the business method industry.

III. Copyright Law and the Video Game Industry

The video game industry is a particularly intriguing study because the industry appears to have been largely unforeseen when its governing laws were drafted. The extension of copyright protection to computer programs, where video games have their roots, had been hotly debated since before the 1976 Copyright Act, and has continued to be a point of contention in copyright scholarship. Because it was not at all clear that copyright should extend to computer programs, the interaction between law and industry is particularly important in understanding why such rights came to be.

This part proceeds as follows. First, section A provides a synopsis of the law as it applies to video games. This section concentrates on the law as it applies to the programming in video games; it does not examine video games as audiovisual or other works in depth. Second, section B provides a historical account of the video game industry and its technological predecessors.

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100 A broad search across several applicable Westlaw databases yielded exactly one reference between 1955 and 1975 with the words “computer” or “video” within the same sentence as “game.” This reference is an argument for computer simulation in legal applications. John N. Drabak, Note, Computer Simulation and Gaming: An Interdisciplinary Survey with a View Toward Legal Applications, 24 STAN. L. REV. 712 (1972). The databases searched include case law (ALLCASES), legal periodicals (JLR), and legislative history (LH). The only other related reference is Peachey v. Boswell, 240 Ind. 604 (1960), a pinball machine case.

101 See, e.g., Steven Breyer, The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs, 84 HARV. L. REV. 281, 340-50 (1970) (arguing against provision of copyright protection to computer programs); Samuelson, supra note 20 (arguing against the provision of copyright protection to computer programs in machine-readable form).
discusses external legal issues that may have had an impact on the video game industry. Section C offers observations as to how and why copyright protection was extended to the video game industry. Section C also notes some likely unexpected results of this extension.

A. Copyright Law as it Applies to Video Games

At the output end, video games are audiovisual works, which the law readily protects. The audiovisual aspects of video games do not need to be fixed or recorded “exactly as [they are] perceived by the human eye.” So long as the audiovisual work can be reproduced, it qualifies for copyright protection.

Games may also contain specific copyrightable content such as characters or plots. Like audiovisual aspects of video games, these issues exist at the “back-end” of the video game – the end which the video game player interacts with. The true legal question lies at the front end – in the programming.

The 1976 Copyright Act appeared to extend protection to computer programs, and thus to video games. The Act protected “literary works,” which were defined as “works… expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects … in which they are embodied.” The legislative history further suggested that computer programs fell within this definition. The Act also included a “status

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103 Id. at 1007.

104 Id. at 1008. See also 17 U.S.C. § 102(a) (requiring only that a work may be “reproduced … with the aid of a machine or device.”).


106 See, e.g., Nichols v. Universal Pictures Corp., 45 F.2d 119, 121 (2d Cir. 1930) (Hand, L., J.) (noting that protection of a literary work “cannot be limited literally to the text,” and that plot may be infringed). See also Stodart v. Mutual Film Corp., 249 F. 507 (S.D.N.Y 1917) (Hand, L., J.).


109 See H.R. Rep. No. 94-1476, supra note 19, at 5667 (“The term ‘literary works’ does not connote any criterion of literary merit or qualitative value: it includes … computer programs to the
quo” provision limiting the effect the new statute had upon computer program copyrights.\textsuperscript{110}

Congress established the Commission on New Technological Uses of Copyrighted Works (CONTU) prior to the enactment of the 1976 Act in order to address, among other things, the issues relating to computer program copyrights.\textsuperscript{111} CONTU concluded that computer programs are “writings” protected by the Constitution,\textsuperscript{112} and that copyright was the least restrictive means of protecting programs.\textsuperscript{113} The majority drew the line between copyrightable subject matter and potentially patentable subject matter:\textsuperscript{114} copyright “protects the program so long as it remains fixed in a tangible medium of expression but does not protect the electromechanical functioning of a machine.”\textsuperscript{115}

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\textsuperscript{110} The 1976 Act’s § 117 stated: “Notwithstanding the provisions of sections 106 through 116 and 118, this title does not afford to the owner of copyright in a work any greater or lesser rights with respect to the use of the work in conjunction with automatic systems capable of storing, processing, retrieving, or transferring information, or in conjunction with any similar device, machine or process than those afforded to works under the law, whether title 17 or the common law or statutes of a State, in effect on December 31, 1976, as held applicable and construed by a court in an action brought under this title.” 17 U.S.C. § 117 (1976).


\textsuperscript{112} See CONTU REPORT, supra note 10, at 15 (noting that a program is created in a manner similar to “a novel, poem, play, musical score, blueprint, advertisement, or telephone directory … [and that] all these works are writings in the constitutional sense, and eligible for copyright if the Congress so provides.”).

\textsuperscript{113} Id. at 16 (noting that patent, trade secret or unfair competition “may inhibit the dissemination of information and restrict competition to a greater extent than copyright.”).

\textsuperscript{114} CONTU noted that the Supreme Court had considered three cases involving computer programs, and had found the programs ineligible for patent protection in each case. Id. at 17. See Gottschalk v. Benson, 409 U.S. 63 (1972); Dann v. Johnston, 425 U.S. 219 (1976); Parker v. Flook, 437 U.S. 584 (1978).

\textsuperscript{115} CONTU REPORT, supra note 10, at 20. CONTU also noted that “[t]he way copyright affects games and game-playing is closely analogous: one may not adopt and republish or redistribute copyrighted game rules, but the copyright owner has no power to prevent others from playing the game.” Id. (citing 1 NIMMER ON COPYRIGHT, § 37.83 (1976)). See also id. at 10 (noting that programs could be stored on “plug board, punched paper cards and tape, magnetic tapes and disks, and semiconductor chips.”).
In response to CONTU’s findings, Congress made two amendments to the Copyright Act in 1980. Section 117 was repealed and replaced, and the definition of “computer program” was added to § 101. But even after the 1980 amendment, courts found it difficult to apply copyright protection to computer programs.

As the law settled, computer programs were granted copyright protection in virtually any language or form of fixation. Shortly after 1980, though, questions revolved around distinctions between source code and object code as well as application and operating system programs. Source code, or code written in a human-readable programming language, differs from object code, which is what a computer “reads.” Application programs direct computers to perform a specific function, while operating systems assist with the general operation of a computer.

The two seminal cases on these issues were both handed down by the Third Circuit. In the first, Williams Electronics, Inc. v. Artic International, Inc.,

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117 17 U.S.C. § 101 (2009) (defining “computer program” as “a set of instructions to be used directly or indirectly in a computer in order to bring about a certain result.”).

118 See, e.g., Williams Electronics, Inc. v. Artic Int’l, Inc., 685 F.2d 870 (3d Cir. 1982) (deciding whether computer programs in source code are protected by copyright); Apple Computer, Inc., 714 F.2d 1240 (3d Cir. 1983) (deciding whether computer programs in object code are protected by copyright). See also Samuelson, supra note 20 (arguing against protection of machine-readable computer programs). The Apple circuit court reversed the district court’s holding that object code is not copyrightable based on another district court decision. See Data Cash Systems, Inc. v. JS & A Group, Inc., 480 F.Supp. 1063 (N.D. Ill. 1979), aff’d on other grounds, 628 F.2d 1038 (7th Cir. 1980) (holding that object code in ROM is not copyright protected).

119 See Apple Computer, Inc., 714 F.2d at 1246-47, 1249, 1253 (holding that source and object code are copyrightable, that object code embodied in ROM is protected, and noting that the law does not distinguish between operating or application programs).

120 The fact that these areas were unclear is evidenced by the litigation of the early 1980s involving computer programs. See Apple Computer, Inc., 714 F.2d 1240; Williams, 685 F.2d 870; Midway Mfg., 547 F.Supp. 999; Data Cash Systems, Inc. v. JS & A Group, Inc., 480 F.Supp. 1063 (N.D.Ill.1979), aff’d on other grounds, 628 F.2d 1038 (7th Cir.1980); Tandy Corp. v. Personal Micro Computers, Inc., 524 F.Supp. 171 (N.D.Cal.1981).

121 Apple Computer, Inc., 714 F.2d at 1243.

122 Id. at 1243-44.
the plaintiff held copyrights on the DEFENDER video game. The Defendant sold circuit boards that contained a program virtually identical to DEFENDER. The second, Apple Computer, Inc. v. Franklin Computer Corp., saw the defendants copy fourteen of the plaintiff’s operating system programs. These programs were apparently the easiest way for the defendant to achieve compatibility with the plaintiff’s computers.

Williams held that computer programs are broadly protected by copyright. Williams further held that the Copyright Act protects computer programs embodied in any form of fixation. Apple expanded and clarified the Williams decision. Apple noted that, while Williams addressed only programs written in source code, the Copyright Act did not distinguish between types of code. Apple also settled the last issue Williams left open, holding that operating system programs are also protected by copyright.

These decisions effectively summarize the current state of copyright law as it applies to the copyrightability video games. Because programs are either

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123 Williams, 685 F.2d at 872.
124 Id. at 872-73.
125 Apple Computer, Inc., 714 F.2d at 1245.
126 See Id. at 1243 (“Franklin's copying of Apple's operating system computer programs in an effort to achieve such compatibility precipitated this suit.”).
127 Williams, 685 F.2d at 877.
128 Id. (noting that “[a] ‘copy’ is defined to include a material object in which a work is fixed ‘by any method now known or later developed, and from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.’”).
129 Apple Computer, Inc., 714 F.2d at 1248 (noting that the Copyright Act protects programs used “indirectly or directly” by a computer).
130 First, Franklin argued that operating system programs could not be protected because they were usually embodied in ROM, which essentially made the programs part of the computer machine. The Third Circuit rejected this argument. Id. at 1251 (“Apple does not seek to copyright the method which instructs the computer to perform its operating functions but only the instructions themselves.”). The Third Circuit noted that “protection is given only to the expression of the idea – not the idea itself.” Id. at 1252.
131 Other cases have tailored copyright law to video games, but they have done little in the way of modifying copyright’s applicability to video games. See, e.g., Lewis Galoob Toys, Inc. v. Nintendo of America, Inc., 964 F.2d 965 (9th Cir. 1992) (holding that a device which “merely enhances the audiovisual displays” that originate from a protected video game does not infringe); Sega Enterprises Ltd. v. Accolade, Inc., 977 F.2d 1510 (9th Cir. 1992) (finding copying for the purposes of reverse engineering in order to achieve game compatibility likely to be fair use); Sony
application or operating system programs, and they are either written in source or object code, the Williams and Apple decisions have effectively covered each basis for a challenge to computer programs as copyrightable subject matter, unless the Supreme Court deigns to take a case on the issue, which appears unlikely given the general agreement among circuit courts. In light of the broad protection granted to computer programs, the remainder of this section presents a historical account of the video game industry and examines the interactions between the industry and the law.

B. The History of Video Games

The roots of modern-day video games can be traced back well over a century. The oldest ancestor, aside from “games” in a general sense, is the vending machine, which first appeared in the United States in the early nineteenth century. These machines were eventually converted into gambling devices that could produce greater profits. The gambling devices eventually evolved into pinball machines, which in turn led to video games. This section traces this evolution. It also provides insight into why the leap from gambling device to video game was a salient step in the evolution.

1. Of Vending Machines, Vegas, and Pinball

The first slot machine was developed in 1887. The modified vending machine required a player to insert a nickel and pull a handle, which caused three wheels to spin. Depending on how the wheels stopped, a player could win between ten cents and one dollar. These “one-armed bandits” quickly became very popular. They also clearly displayed all three elements of gambling: consideration (the coin the player inserted), chance (the player had no control over how the wheels stopped), and reward (a winner could receive a reward

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134 JOHN SCARNE, SCARNE’S NEW COMPLETE GUIDE TO GAMBLING 430 (1961).
135 Id. at 432.
136 Id.
137 Id. at 436.
between five and ninety-five cents plus their original consideration).  

As state legislators moved to prohibit gambling, manufacturers changed their gambling devices to skirt the law. The ultimate modified device intended to evade the law was the pinball machine. At one time, these devices were so prominent that they provided a large income for organized crime, and some scholars have argued that the slot machine may not have survived World War II if not for the pinball machine.

When pinball machines first appeared in the 1930s, they were designed purely for amusement. They were “flipperless,” glass-covered labyrinths constructed of nails or “pins” into which a player would propel a metal ball. Numbered slots provided a player’s score. In 1935, pinball manufacturers added a new feature – the free replay. Three types of pinball machine emerged with the advent of the free replay feature: novelty machines, payout machines, and free-replay machines. While the free replay feature is still used in modern-

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138 Rychlak, supra note 133, at 559.
139 See City of Moberly v. Deskin, 155 S.W. 842, 844 (Mo. App. 1913):

In no field of reprehensible endeavor has the ingenuity of man been more exerted than in the invention of devices to comply with the letter, but to do violence to the spirit and thwart the beneficent objects and purposes, of the laws designed to suppress the vice of gambling. Be it said to the credit of the expounders of the law that such fruits of inventive genius have been allowed by the courts to accomplish no greater result than that of demonstrating the inaccuracy and insufficiency of some of the old definitions of gambling that were made before the advent of the era of greatly expanded, diversified, and cunning mechanical inventions.

140 See King, supra note 132, at 205.
141 Id. at 201.
143 Lester, supra note 142, at 305.
144 Rychlak, supra note 133, at 563.
145 King, supra note 132, at 201.
146 Russ Jensen, Pingames and Gambling – An Historical Survey, available at
day pinball machines, some versions of the feature created reward issues under gambling laws because the free replay feature could be used for gambling purposes. Indeed, the financial incentives for such use were significantly greater than those for legitimate use.

2. From Pinball to Playstation

The evolution from pinball to video games is not as well documented as the evolution from vending to pinball machine, but evidence does suggest that such an evolution occurred. Technologically, as electricity became generally accessible, pinball machines were modified to include “illuminated backboards, ringing bells, flashing lights, and bright colors.” Further technological advances, such as the dot matrix display, continued to enhance pinball machines – and made them look more like early video arcade games.

Notably, around the time state legislatures adapted to pinball machines, manufacturers began producing video gambling devices. These devices were cheap, portable, and low maintenance. Much like pinball machines before them, three types of video gambling device emerged similar to the three kinds of replay pinball machines. Devices designed for gambling accepted multiple coins

http://www.pinballcollectorsresource.com/russ_files/gambling.html (last visited Dec. 19, 2009) (noting that “by the mid to late 1930s there were three general types of pingames being produced.”). The payout clearly fell within gambling laws because it provided players a monetary reward, while the novelty version was clearly legal. Lester, supra note 142, at 307.

147 Lester, supra note 142, at 307.

148 While a free replay is not a monetary reward, machines could track the number of replays a player earned, and these replays could be “cashed in,” whereupon the proprietor would pay the player based on the number of replays earned. See Jensen, supra note 146. The proprietor would then reset the machine for the next player. Id.

149 See King, supra note 132, at 199 (noting that expected profits in 1964 were $200-$300 when used for gambling, but only $15-$25 when used for amusement).

150 Rychlak, supra note 133, at 563.


and included knock-off switches just as their pinball predecessors had.\textsuperscript{154} Amusement only devices were sometimes converted into gambling devices,\textsuperscript{155} mirroring the earlier pinball trend.

Two of the biggest names from the early video game industry further demonstrate the relationship between pinball and early video games. One major video game firm, SEGA, began as a pinball machine exporter and manufacturer.\textsuperscript{156} Atari, the company responsible for PONG, was rooted in the vision of a kid – Nolan Bushnell – working at a pinball arcade who wanted to fill an arcade with computer games instead of pinball machines.\textsuperscript{157}

The technological evolution from pinball to video game and the roots of SEGA and Atari suggest that video games were a natural evolution of pinball machines. This suggestion is further supported by the similar legal issues facing video gambling devices.

3. Other Legal Concerns of the Time

Though it is now settled law, it was not clear in the late 1970s and early ‘80s that copyright extended to immoral or obscene subject matter. At one time, courts refused to protect immoral or obscene subject matter with patent rights.\textsuperscript{158} Some courts held similar objections to copyrighting immoral or obscene works,\textsuperscript{159} but some did not.\textsuperscript{160} In 1958, the United States Attorney General noted that such

\begin{footnotesize}
\item[154] Rychlak, \emph{supra} note 133, at 566.
\item[155] Gambling Hearing, \emph{supra} note 153, at 104-106.
\item[156] \textit{GameSpot}, \emph{supra} note 153, at 104-106.
\item[157] \textit{Id.} at \url{http://www.gamespot.com/gamespot/features/video/hov/p2_02.html}.
\item[158] See Reliance Novelty Co. v. Dworzek, 80 F. 902, 903 (C.C.N.D. Cal. 1897); Schultz v. Holtz, 82 F. 448 (C.C.N.D. Cal. 1897); National Automatic Device Co. v. Lloyd, 40 F. 89 (C.C.N.D. Ill. 1889).
\item[159] See Simonton v. Gordon, 12 F.2d 116, 124 (D.C.N.Y. 1925) (holding that public policy required denying copyright protection for “blasphemous, seditious, immoral, or libellous” subject matter, but that the work at issue was not immoral); Hoffman v. Le Traunik, 209 F. 375 (1913) (“To be entitled to be copyrighted, the composition must be ‘original, meritorious, and free from illegality or immorality.’”); Broder v Zeno Mauvais Music Co., 88 F. 74, 77-79 (C.C.N.D. Cal. 1898) (holding that song was not entitled to copyright protection because lyrics were immoral); Martinetti v. Maguire, 16 F. Cas. 920, 922 (C.C. Cal. 1867) (holding that Congress’ exclusion of immoral subject matter is consistent with the progress limitation of the Progress Clause).
\item[160] See \textit{e.g.} Board of Trade of City of Chicago v. Christie Grain & Stock Co., 198 U.S. 236, 25 S.
\end{footnotesize}
works are not entitled to copyright protection.\textsuperscript{161}

The bar to immoral or obscene subject matter, like other areas of copyright law, was not immune to influence from industry. Industries based on “immoral” or “obscene” matter, like pornography, were on the rise, and popular acceptance of such industries led the courts to whittle away at the exception. In 1979, the Fifth Circuit eliminated the exclusion completely,\textsuperscript{162} and other courts have since followed that example.\textsuperscript{163}

It is notable, then, that obscenity and immorality were still viewed as potential bars to copyright at the time that the video game industry was emerging. The implications of this potential bar are discussed below.\textsuperscript{164}

C. Observations on the Interaction of Copyright Law and Video Games

Copyright is now broadly applicable to computer programs, and through them, to video games.\textsuperscript{165} But what can be taken from the history of video games as they struggled to acquire the broad protection the industry enjoys today? Five critical observations can be made.

\textsuperscript{161} 1958 WL 6521 (U.S. Att'y Gen. 1958) (“It has been generally accepted for years that seditious, libelous, obscene or immoral works are not entitled to copyright.”). \textit{See also} D'RONE, A \textsc{TREATISE ON THE LAW OF PROPERTY IN INTELLECTUAL PRODUCTIONS} 181-87 (1879); HOWELL, \textsc{THE COPYRIGHT LAW} 46 (1952 ed.).

\textsuperscript{162} Mitchell Bros. Film Group v. Cinema Adult Theater, 604 F.2d 852, 858 (5th Cir. 1979) (“We can only conclude that we must read the facially all-inclusive 1909 copyright statute as containing no explicit or implicit bar to the copyrighting of obscene materials, and as therefore providing for the copyright of all creative works, obscene or non-obscene, that otherwise meet the requirements of the Copyright Act.”)

\textsuperscript{163} \textit{See}, e.g., Jartech, Inc. v. Clancy, 666 F.2d 403, 406 (9th Cir. 1982); Schnapper v. Foley, 667 F.2d 102, 112 (D.C. Cir. 1981).

\textsuperscript{164} \textit{See infra} Part III.C.4.

\textsuperscript{165} \textit{See}, e.g., \textit{Apple Computer, Inc.}, 714 F.2d at 1248 (“At issue in \textit{Williams} were not only two audiovisual copyrights to the … video game, but also the computer program which was expressed in object code embodied in ROM and which controlled the sights and sounds of the game.”); \textit{Id.} at 1249 (citing Stern Electronics, Inc. v. Kaufman, 669 F.2d 852 (2d Cir. 1982) (audiovisual display of video game “fixed” in ROM)).
1. **Broad Interpretation of the Act’s Language**

Perhaps most importantly, the expansive language of the Copyright Act was interpreted broadly: for example, it is difficult to characterize a functional series of 0’s and 1’s as expressive content. This breadth was based in part on the legislative history, which specifically stated that computer programs are a category of literary work. Although the initial language of the Copyright Act was broad enough to encompass computer programs, Congress amended the Act in 1980 to provide for specific limitations upon computer program copyrights.

While the amendment made a clearer statement that computer programs were copyrightable, it did not change the subject matter language which protected computer programs in the first place. Congress’s provision of limitations upon computer program copyrights, without changing the scope of copyright subject matter, is evidence that Congress viewed computer programs as copyrightable prior to the 1980 amendment. It simply took courts time to arrive at that conclusion.

2. **Significant Opposition to Protection**

Next, there was significant opposition to the expansion of copyright subject matter to include computer programs. This opposition began before Congress passed the 1976 Act and continued long after the 1980 amendment.

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166 H.R. Rep. No. 94-1476, supra note 19, at 5667.


169 The 1980 Amendment did not change the definition of “literary works” within 17 U.S.C. § 101.

170 See Breyer, supra note 101, at 340-50.

Ongoing worries about over-restriction of innovation through the provision of copyright for computer programs\textsuperscript{172} have proven unfounded as information technology producers continue to release products at a rapid rate.\textsuperscript{173} This opposition to computer program copyright mirrors the much earlier opposition to musical works under the Statute of Anne.\textsuperscript{174}

3. Video Games: The (Once) Unknown Future of Computer Programs

There appear to be no references to video games in the literature, the legislative history, or case law, prior to the 1976 Act.\textsuperscript{175} Video games existed prior to 1976,\textsuperscript{176} but those that did exist did not fulfill the copyright requirement of expression as they were purely functional applications of scientific apportionment of rights between authors and value-added users to encourage dissemination, exchange, and use of ideas; J.H. Reichman, Computer Programs as Applied Scientific Know-How: Implications of Copyright Protection for Commercialized University Research, 42 VAND. L. REV. 639 (1989) (arguing that patent law provides too much protection while copyright provides too little); Pamela Samuelson, Creating a New Kind of Intellectual Property: Analyzing the Lessons of the Chip Law to Computer Programs, 70 MINN. L. REV. 471 (1985) (advocating sui generis protection); Richard H. Stern, Tales from the Algorithm War: Benson to Iwahashi, It’s Déjà Vu All Over Again, 18 A.I.P.L.A.Q.J. 371 (1991) (advocating two tiers of protection: patent and sui generis). See also Julian Velasco, Comment, The Copyrightability of Nonliteral Elements of Computer Programs, 94 COLUM. L. REV. 242, 261 (1994) (noting that copyright law may provide “too much protection” for computer programs).

\textsuperscript{172} See, e.g., Matthew Fagin et al., Beyond Napster: Using Antitrust Law to Advance and Enhance Online Music Distribution, 8 B.U. J. SCI. & TECH. L. 451, 499 (2002) (noting three ways in which copyright protection threatens innovation in new mediums).

\textsuperscript{173} See Mark A. Lemley, Ignoring Patents, 2008 MICH. ST. L. REV. 19, 19-20 (2008) (noting that information technology industries face an apparent anticommons issue if they make products in their industries, “yet make products they do.”). This point is an imperfect fit, as Lemley is examining patents, not copyrights, but that distinction arguably makes the point stronger: with both patent and copyright protection restricting use of many innovations in the information technology industries, the anticommons issue should be exacerbated. Yet the IT industries continue to make new and innovative products.

\textsuperscript{174} Carroll, supra note 36, at 930.

\textsuperscript{175} See supra note 100.

\textsuperscript{176} Depending upon the account, something like video games have existed since the 1950s or ‘60s. See David Winter, PONG-Story: Main Page, http://www.pong-story.com/intro.htm (last visited Nov. 1, 2009) (citing a 1952 electronic tic-tac-toe game); id. (describing Willy Higginbotham’s modified oscilloscope as a type of tennis video game from 1958); id. (citing the Spacewar game from 1961). None of these games were “true” video games, id., and were not likely taken too seriously by the law.
The first video game system to which copyright law could potentially be applied was released after Congress passed the Copyright Act, so it is not surprising that the legislature neglected to address the issue in any discussions.

The essential point is that video games appear to have been a completely unforeseen arena for the application of copyright law. In hindsight, technology was clearly heading in a direction that would lead to protecting video games through copyright as computer programs. And, the passage of the law was in relatively close temporal proximity to the industry shift. Yet, there was striking lack of discussion of video games in discussions of the new Copyright Act. Even with an apparent industrial trend and close temporal relationship to the discussions, the emergence of video games as a viable major industry appears to have been unexpected by Congress.

4. Copyright Signals

Copyright protection for video games may also provide a signal akin to that which Professor Clarisa Long argues is present in patent industries.178 Her point is essentially that patents can have a “signaling” value to external parties in addition to their potential value based on market exclusion and rents.179 Professor Long’s theory, while not directly applicable to copyrights,180 does provide a

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177 Prior to the release of the Fairchild Channel F in 1976, all video games had dedicated circuits—and thus no code. See A History of Home Video Games from Atari to Xbox, Playstation and Wii, http://thegameconsole.com/ (last visited Feb. 23, 2010) (“The Channel F was the first programmable video game system, having plug-in cartridges containing ROM and microprocessor code rather than dedicated circuits.”).


179 See id. (arguing that patents may have value beyond the standard “rents” view). Professor Long notes that “worthless patents abound,” Id. at 626, yet firms continue to patent, even when they are receiving worthless patents. See also Mark A. Lemley, Rational Ignorance at the Patent Office, 95 NW. U. L. Rev. 1495, 1503-04 (2001) (presenting statistics on patent abandonment); 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, 603 (1999) (stating that most patented technologies “will not be economically viable or commercially successful.”); Edmund W. Kitch, Property Rights in Inventions, Writings, and Marks, 13 HARV. J. L. & PUB. POL. 119, 122-23 (1990) (describing claims in most patents as “so narrow” as to be “worthless, or very nearly worthless.”). Professor Long notes that these worthless patents cannot be justified unless patents provide value outside of the market rents view.

180 See Long, supra note 178, at 657 (“In order to make credible claims, innovative firms must engage in behaviors that impose substantial monetary or reputational costs if the signal is inaccurate.”). Acquiring patents incurs such costs, while copyright acquisition does not
useful insight: under certain circumstances, the presence of copyright can provide some value outside of the potential for exclusion or rent.

Video games arose around the same time as copyright was going through its morality dilemma.\textsuperscript{181} Given that video games evolved from immoral gambling devices,\textsuperscript{182} they were in a precarious position in terms of protection from the start. For the first several years of its existence, the video game industry proceeded under the risk of having no copyright protection.

As courts began taking video game and computer program cases, these cases were generating an industry-wide “signal.” Unlike patent signals, which are emitted by specific patents or patent portfolios,\textsuperscript{183} this signal applied to all video games. Not only were video games copyrightable, but copyrightability indicated that these video games are legitimate, non-gambling devices. Thus, copyright could potentially act as a “legitimizing” signal,\textsuperscript{184} informing potential purchasers or licensees that a given video game avoids gambling laws.

5. The Law and Industry Interaction

Lastly, it should be noted that there is a constant interplay between law and the precursors to the video game industry. Before video games, courts noted that gambling devices were regularly modified in reaction to legal change.\textsuperscript{185} Meanwhile, law makers responded to these changes.\textsuperscript{186} As video game manufacturers expanded into the gambling field,\textsuperscript{187} states once again responded to the new technology.\textsuperscript{188}

\textsuperscript{181} See supra Part III.B.3.

\textsuperscript{182} Gambling devices were considered immoral. See Reliance Novelty Co. v. Dworzek, 80 F. 902, 903; Schultz v. Holtz, 82 F. 448; National Automatic Device Co. v. Lloyd, 40 F. 89.

\textsuperscript{183} See Long, supra note 178.

\textsuperscript{184} The term “legitimizing,” as used here, only means that a copyright could be used as evidence against illegal activity.

\textsuperscript{185} City of Moberly v. Deskin, 155 S.W. 842, 844 (Mo. App. 1913) (noting that ingenuity is readily applied to design gambling devices that “comply with the letter, but do violence to the spirit” of the law).

\textsuperscript{186} Rychlak, supra note 133, at 560 (characterizing the interaction between manufacturers and lawmakers as a game of “leap frog,” with lawmakers criminalizing one device, only to have manufacturers design a new machine that did not fall within the prohibition).

\textsuperscript{187} See Eisenrauch, supra note 152, at 558.

\textsuperscript{188} For example, South Carolina, which historically adhered to an anti-gambling policy, see 7 S.C. Jurisprudence Gaming § 2 (1991), created an exception to its gambling prohibition for video poker
Further, computers and video games interacted directly with intellectual property laws. As computer programming became a viable technological field, the Copyright Office began accepting computer program registrations under a “rule of doubt.” Congress established CONTU with this issue in mind. With CONTU’s findings in mind, the Apple court unequivocally extended copyright protection to all forms of computer program.

Apple provided exactly the protection necessary for the video game market to recover from the crash of the video game industry in the early 1980s. While cartridge-based games existed prior to Apple, their programming was not clearly protected, so they could be freely ported from one competitor’s system to another. The resulting overproduction of similar games contributed to the crash. After the Apple decision, Nintendo was able to manufacture and protect the source and object code in cartridge games. Porting could now, at worst, be considered a derivative work that Nintendo had rights over.

The interaction between law and video games continued long after it was

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192 See supra Part III.A.

193 The video game market crashed in the early 1980s due in large part to missteps by the two major developers at the time. Atari, for its part, produced more copies of one game than it had produced consoles, and it proceeded to release a new, incompatible console shortly after the release. This led to Atari’s parent company, Warner Communications, posting a stock drop of 32% in a single day. See GameSpot, supra note 156, at http://www.gamespot.com/gamespot/features/video/hov/p5_01.html (last visited Nov. 2, 2009).

Coleco, for its part, decided not to continue investing in its wildly successful ColecoVision, but instead attempted to develop and market a computer that eventually led to Coleco posting a $284M loss in 1984. *Id.*
established that video games fell under copyright’s protection. As video game manufacturers attempted to use their copyrights in ways not envisioned by the Act, fair use was used to further incentivize innovation by allowing new market entrants in both the cartridge and platform markets. It appears unlikely that the co-evolution of video games and copyright law will end any time soon.

6. Conclusion

The video game industry is a valuable example of how liberal interpretation and flexible application of an intellectual property law can help foster innovation, particularly in unforeseen fields. Video game programs, as functional subject matter, were arguably not copyrightable, despite clearly falling within the statutory language. As is common when intellectual property rights are applied to new subject matter, the application of copyright to computer programs received significant opposition. Yet, as is also common, fears over stifling innovation have proven unfounded. Additionally, the broad provision of federal intellectual property protection to the industry has resulted in a legitimizing signal that has allowed the video game industry to escape its roots in illicit gambling.

IV. Patent Law and the Business Method “Industry”

Unlike the video game industry, which is a clearly definable market, several fields fit within the indefinable business method “industry.” The PTO has established a classification for “modern business data processing,” Class 705, directed to “diverse business functions.” Class 705 includes insurance, stock

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194 See Sega, 977 F.2d 1510 (finding defendant’s reverse engineering for the purpose of creating compatible games to be fair use).

195 See Sony v. Connectix, 203 F.3d 596 (extending Sega to defendant’s reverse engineering for the purpose of creating a competitive platform).

196 See eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 397 (2006) (Kennedy, J., concurring) (noting in a business method patent decision the “suspect validity of some of these patents,” possibly implying that business methods are of suspect validity); Excel Commc’ns, Inc. v. AT&T Corp., 528 U.S. 946, 946-47 (1999) (stating that “[t]he importance of the question presented in this certiorari petition makes it appropriate to reiterate the fact that the denial of the petition does not constitute a ruling on the merits,” expressing doubts over the constitutionality of business method patents). See also Carroll, supra note 36, at 930 (noting that copyright printed music received significant opposition from publishers); Leo Raskind, The State Street Bank Decision: The Bad Business of Unlimited Patent Protection for Methods of Doing Business, 10 FORDHAM INTELL. PROP. MEDIA. & ENT. L.J. 61, 61 (1999) (describing State Street as “so sweeping a departure from precedent as to invite a search for its justification).

197 See USPTO White Paper, Automated Business Methods, available at
and bond trading, health care management, tax processing, and other financial services. As used herein, the term “business method industry” refers generally, but not solely, to these fields.

There are many parallels between the fields of the business method industry and the video game industry. They both stand on the edge of their respective intellectual property regimes: video game programs are highly functional, a traditional bar to copyrightability, while business methods are not viewed as technological, the traditional hurdle for patentability. They have also both been subject to significant opposition. Other observations on the parallels between business methods and video games are made at the end of this part.

This section discusses the application of patent law to business methods. This discussion demonstrates patent law’s relative inflexibility toward non-paradigmatic technological innovations. Section A discusses the law, both as it stands post-Federal Circuit Bilski and as it stood before Bilski. Section B provides a historical background of the business methods as an industry. Section C provides observations.

A. Patent Law as it Applies to Business Methods

There are, at present, three general periods of disparate treatment of business methods in patent law. The first is the period prior to the State Street Bank decision in 1998. During this period, courts treated business methods as an exception to patentable subject matter, although the United States Patent and Trademark Office (“USPTO”) occasionally allowed business methods to be patented. The State Street decision is the beginning of the second period, where both courts and the USPTO accepted business methods as patentable subject matter. The third period began with Bilski. The actual outcome of this period is irrelevant for the purposes of this article, but a general discussion is provided.

1. Business Methods, Pre-State Street


198 Id.

199 See 17 U.S.C. § 102(b); CONTU REPORT, supra note 10, at 20.

200 See infra notes 281, 296-298 and accompanying text.

201 See infra Part V.C.
The existence of an actual exception to patentability for business methods is debatable. Prior to 1998, patent lawyers operated under an assumption that business method patents were not patentable. The “rule” is essentially just a specific application of the rule that ideas are not patentable. But the business method rule itself has never been applied by an appellate patent court to invalidate a patent.

While most lawyers were under the impression that business methods were not patentable, some were willing to file patent applications for business methods. As far back as 1777, patents were granted for business methods. Such patents have been granted consistently, albeit infrequently, since then. Indeed, even the patent at issue in State Street issued prior to litigation. Thus, the state of the law prior to State Street was that lawyers, and presumably district courts, operated under a presumption that business methods are not patentable, while appellate courts and the USPTO operated under the presumption that they are.

2. The State Street Period

This duality continued until 1998, when the Federal Circuit clearly laid the business method exception to rest. The patent at issue in State Street was a data

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202 See Del Gallo, supra note 29, at 403.
203 Id. at 404.
204 State Street Bank & Trust Co., 149 F.3d 1368, 1375 (1998) (“The business method exception has never been invoked by this court, or the CCPA, to deem an invention unpatentable.”). See also Del Gallo, supra note 29, at 403.
205 See Bilski, 545 F.3d at 989 (Newman, J., dissenting) (citing No. 1197 to John Knox (July 21, 1778) (“Plan for assurances on lives of persons from 10 to 80 years of age.”); No. 1170 to John Molesworth (Sept. 29, 1777) (“Securing to the purchasers of shares and chances of state-lottery tickets any prize drawn in their favor.”); No. 1159 to William Nicholson (July 14, 1777) (“Securing the property of persons purchasing shares of State-lottery tickets.”), cited in Bennet Woodcroft, Alphabetical Index of Patentees of Inventions 383, 410 (U.S. ed. 1969)).
207 See U.S. Patent No. 5,193,056 (issued March 9, 1993).
208 State Street, 149 F.3d at 1375 (“We take this opportunity to lay this ill-conceived [business method] exception to rest.”).
processing system for implementing an investment structure.\footnote{Id. at 1370.} Although it originally contained method claims,\footnote{Id. at 1371.} the issued patent only contained machine claims.\footnote{Id. at 1372 (“claim 1, properly construed, claims a machine”).} Notably, the Federal Circuit hinted that the outcome of its analysis would be the same if the method claims were part of the issued patent.\footnote{State Street, 149 F.3d at 1372 (“for the purposes of a § 101 analysis, it is of little relevance whether claim 1 is directed to a “machine” or a “process,” as long as it falls within at least one of the four enumerated categories of patentable subject matter, “machine” and “process” being such categories.”).} 

The Federal Circuit noted that “[s]ince the 1952 Patent Act, business methods have been, and should have been, subject to the same legal requirements for patentability as applied to any other process or method.”\footnote{Id. at 1375.} Following this reasoning, the Circuit applied a “useful, concrete and tangible result” test.\footnote{State Street, 149 F.3d at 1373 (holding that a “practical application of a mathematical algorithm, formula, or calculation” is patentable because it produces a “useful, concrete and tangible result”). The useful result was “a final share price” used by regulatory authorities and subsequent trades. Id. In other words, the “useful result” was entirely business-oriented.} As \textit{State Street} “triggered an awareness of the ‘business method claim’ as a viable form of patent protection,”\footnote{USPTO White Paper, \textit{supra} note 206, at iv.} business method patent filing skyrocketed from the occasional application before to several thousand each year a short time after \textit{State Street}.\footnote{See \textit{Hearing on Issues Relating to the Patenting of Tax Advice Before the Subcomm, on Select Revenue Measures of the H. Comm. on Ways and Means}, 109th Cong. 8 (2006) [hereinafter, \textit{Patent Hearings}], available at http://waysandmeans.house.gov/Hearings/transcript.aspx?NewsID=10219 (last visited April 3, 2010).} 

3. \textbf{The Bilski Period}

This period is not well-established enough to make any qualitative observations on \textit{Bilski}’s effect on business method innovation. Nor is it certain that \textit{Bilski} will stand, as the Supreme Court has granted certiorari.\footnote{See \textit{Bilski v. Doll}, 129 S. Ct. 2735 (2009).} It suffices to say that the Federal Circuit held that a process is patentable if: “(1) it is tied to a
particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.”

The decision abrogated State Street’s useful, concrete and tangible result test, although the new machine-or-transformation test is perhaps less clear than the useful, concrete and tangible test. Regardless of the Supreme Court’s decision, the Bilski decision is illustrative of the unnecessarily conservative interpretation of patentable subject matter.

B. The History of Business Methods

There are two distinct tracks in the history of business methods. The first, the historical patenting of business-related inventions in the United States, is referenced above and is not substantive enough to discuss in further detail. Suffice to say that business patents have existed in the United States at least since 1777, and several of these patents were granted for methods of doing business.

Industrial issues external to patent law may also have induced firms to file

218 In re Bilski, 545 F.3d 943, 954 (2008), citing Gottschalk v. Benson, 409 U.S. 63, 70 (1972) (“Transformation 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.”); Diamond v. Diehr, 450 U.S. 175, 192 (1981) (holding as patent-eligible a mathematical algorithm in a process that “transform[s] or reduc[es] an article to a different state or thing”); Parker v. Flook, 437 U.S. 584, 589 n.9 (1978) (“An argument can be made [that the Supreme] Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a ‘different state or thing’”); Cochrane v. Deener, 94 U.S. 780, 788 (1876) (“A process is ... an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.”).

219 See Bilski, 545 F.3d at 959-60 (concluding that the “useful, concrete and tangible result” test is inadequate).

220 Id. at 995 (Newman, J., dissenting) (“From either the machine or the transformation viewpoint, the processing of data representing “price, profit, percentage, cost, or loss” in State Street Bank is not materially different from the processing of the Bilski data representing commodity purchase and sale prices, market transactions, and risk positions; yet Bilski is held to fail our new test, while State Street is left hanging.”); Id. at 996 (Newman, J., dissenting) (noting that “any practical embodiment would be conducted with the aid of a machine – a programmed computer – but the court hold that since computer-implementation is not recited in claim 1, for that reason alone the process fails the ‘machine’ part of the court’s machine-or-transformation test... [and] the process fails the ‘transformation’ test because no ‘physical objects or substances’ are transformed.”).

221 See supra notes 205-06 (citing historical business method patenting in the United States).

222 See Bilski, 545 U.S. at 989 (Newman, J., dissenting) (citing patents from 1777 and 1778 that qualify as either business methods or financial subject matter that require significant human activity to perform). See also USPTO White Paper, supra note 206, at 23-29 (citing business-related patents, including several methods).
more patent applications. The latter half of the twentieth century saw economics evolve into a more technology-oriented field. Just as video games evolved from the gambling industry, business methods may have been influenced by the financial scandals around the turn of the century.

1. Becoming Technology

From an industrial perspective, the critical trend is the changing view of economics and business as a science. The relative dearth of business-oriented patent applications throughout the nineteenth and early twentieth centuries evidences a majority view that business did not directly overlap with technology. The latter half of the twentieth century has seen a trend towards merging economics and technology. This trend is perhaps more important than any business patent filing statistics. While the internet has almost certainly played a part in the increase in business method innovation, the industrial shift began long before the internet became a viable technology.

The increasing convergence of economics and technology is rooted in the 1950s. An article from the *Journal of the Operations Research Society of America* surveyed the field of “operations research,” concluding that the field “has origins in common with modern science” and that the evolution of operations research was “a logical evolution, rather than a radical innovation.” By 1959, fields such as “management science,” “engineering economics,” and “operations research” were flourishing fields in which significant work was being done by “mathematicians, statisticians, engineers, and physical scientists.”

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223 See John F. Duffy, *Draft, Why Business Method Patents?*, 5 available at http://ssrn.com/abstract=1501317 (last visited Jan. 19, 2010) (“Most importantly, however, any attempt to explain the rise in business method patents must take into account the enormously important developments that were occurring outside the legal system.”) (emphasis in original).

224 See Linda M. Beale, *Is Bilski Likely the Final Word on Tax Strategy Patents? Coherence Matters*, 9 J. MARSHALL REV. INTLL. PROP. L. 110 at n.46-48 (2009) (noting that businesses, “especially those that have global connections or use the internet and other electronic commerce” have developed proprietary models, and that “[c]ompetitive pressures have led many of these businesses to seek protection for these proprietary models at the Patent Office.”). See also Kevin M. Baird, *Comment, Business Method Patents: Chaos at the USPTO or Business as Usual?*, 2001 U. ILL. J.L. TECH. & POL’Y 347, 347 (2001).


The last two decades of the twentieth century saw the acceleration of the convergence between economics and technology. The early 1980’s saw American Express name an “Ex-Physicist” to head a newly-created consumer financial services group. By the middle of that decade, “[Wall] Street’s newest professionals are the ‘rocket scientists’ and ‘quants’ – oftentimes former academics in the pure sciences or mathematics and physics – who search for new ways to apply the computer to all sorts of [business] problems.” This hiring trend has continued since the 1980s. According to Professor Andrew Lo, Director of MIT’s Laboratory for Financial Engineering, the market crash of the 2000s, for example, has not deterred Wall Street from bringing in more scientists and engineers.

Business methods have become viewed as more “scientific” in the academic world, as well. Since the late 1980s, for example, academic literature has increasingly discussed “financial engineering” as a heavily mathematical area of finance. This field has been recognized as “the innovative component of financial applications.” Innovation has become a major aim of the field.

Just as innovation drives university research in the traditional technology regimes, the innovative purpose of financial engineering has led many leading research institutions to create departments directed at researching financial engineering and related topics. Such departments have become commonplace.

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227 Duffy, supra note 223, at 17 (“Economics, business, finance and similar fields began to develop into much more technological disciplines during the last quarter of the twentieth century”).

228 Ex-Physicist to Head American Express Unit, N.Y. TIMES, Aug. 27, 1981, at D2.


230 Dennis Overbye, They Tried to Outsmart Wall Street, N.Y. TIMES, March 10, 2009, at D1 (“The recent debacle has only increased the hunger for scientists on Wall Street.”) (attributing view to Professor Lo).

231 Duffy, supra note 223, at 23.


234 Duffy, supra note 223, at 24.
in top-tier engineering institutions throughout the country.\footnote{See Id. at 27-32 (presenting information on top-20 engineering schools with financial engineering or related curricula).}

2. Financial Scandal

One last note on the history of business methods is called for in light of events from around the turn of the century. Areas of law aside from intellectual property may have played a part in encouraging increased filing in business methods. Specifically, the financial scandals around the turn of the century may have had an impact on the business method industry.

Perhaps the best-known examples of these financial scandals are Enron and WorldCom. Without getting into detail, the Enron scandal involved manipulation of the company’s financial results through the use of special purpose entities.\footnote{See James A. Fanto, Subtle Hazards Revisited: The Corruption of a Financial Holding Company by a Corporate Client’s Inner Circle, 70 BROOK. L. REV. 7, 18-19 (2004). See also id. at 18 n.29.} WorldCom involved accounting fraud centered on presenting significant liabilities as capital assets.\footnote{Id. at 25.} Even Freddie Mac, a quasi-private entity, provided misleading financial results.\footnote{See Office of Fed. Hous. Enter. Oversight, Report of the Special Examination of Freddie Mac 74-82 (Dec. 2003). See also Fanto, supra note 236, at 27.} The exact details are not important here. The timing is: signs of Enron’s deteriorating financial position were observed in May of 2001, although the knowledge did not become widespread until later.\footnote{Edward Wyatt, Enron’s Many Strands: Warning Signs; Credit Agencies Waited Months To Voice Doubt About Enron, N.Y. TIMES, Feb. 8, 2002, at C1 (reporting that S&P, Moody's, and Fitch each delayed downgrading Enron's credit ratings until just before Enron filed bankruptcy).} WorldCom admitted to improper accounting in June of 2002.\footnote{Marilyn Geewax, WorldCom Debacle: Scandals Energizing Financial Reform, ATLANTA J. & CONST., June 30, 2002, at Q1 ("The firestorm of June headlines included … [WorldCom’s admission that] it had improperly accounted for more than $3.8 billion of expenses.").} Even more recently, issues involving tax shelters have created a stir among the legal community,\footnote{See, e.g., Mark Hamblett, Role of Opinion Letters Take Center Stage in KPMG Trial, N.Y.L.J., Oct. 17, 2008, available at http://www.law.com/jsp/article.jsp?id=1202425353536 (last visited Jan. 11, 2010).} a topic which Congress has also recently addressed.\footnote{See Patent Hearings, supra note 216.}
How does the timing of these scandals demonstrate an influence on the filing of business method patents? First, there was a notable increase in business method patent filing in 2001243 – the year that news of Enron broke. In 1998, there were approximately 1,500 business method patents filed.244 There were approximately 9,000 applications filed in 2001, with a current filing rate of 8,200 applications per year.245

While this does not necessarily establish a link between business method patents and financial scandal, the scandals are closer, temporally, to the largest jump in business method filings than are the internet or State Street. Further, the business method field includes areas like tax processing, accounting and financial management.246 These business areas are those most closely linked with the financial scandals. Accounting practices and financial management were directly at issue in the Enron and WorldCom scandals,247 while the tax shelter cases are clearly related to tax processing.


The business method industry has developed and evolved consistently since the 1950s. Over the course of its evolution, it has also faced many issues similar to those that the computer program industry faced while that industry was fighting for intellectual property protection. Each of the observations made in the computer program discussion248 is mirrored here.

1. Broad Interpretation of the Act’s Language

While the law is still in a state of flux with respect to business methods, the State Street decision provides a roadmap for broad interpretation of the Patent Act. That decision acknowledged that at least as far back as the 1952 Act,

243 See id. (statement of James Toupin, General Counsel, U.S. Patent and Trademark Office) (stating that there were approximately 1,500 business method patents filed in 1998, but approximately 9,000 in 2001).
244 Id.
245 Id.
246 Id.
247 See Fanto, supra note 236, at 18-19, 25.
248 See supra Part III.C.
business methods were statutory subject matter. The Act defines patentable method subject matter as “any new and useful process…” It further defines a process as “process, art or method.”

The Supreme Court has cautioned against reading limitations into the statutory subject matter which Congress did not intend. Section 101 is written in broad language, and judicially-created exceptions like the business method exception serve only to narrow Congress’s intended scope. Because courts and legislatures cannot anticipate new technologies, such unnecessary exceptions serve only to impede innovation. Thus, when a subject matter issue arises over a new technology, broad interpretation serves better the purposes of patent law than does the application of judicial exceptions created without grounding in statutory language. Thus, any method is statutory subject matter, so any rejection of a business method application should be based on the other requirements for patentability, not on § 101.

2. Significant Opposition to Protection

Business method patents have faced significant opposition. In cases not addressing subject matter, the Supreme Court has questioned the validity of business method patents. Bilski has essentially eliminated the viability of business methods as patents by requiring that a method be tied to a machine or transform matter.

Commentators have also opposed the protection of business methods.

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249 State Street, 149 F.3d at 1375.
252 See Chakrabarty, 447 U.S. at 308 (“We have also cautioned that courts ‘should not read into the patent laws limitations and conditions which the legislature has not expressed.’”) (citations omitted).
253 See State Street, 149 F.3d at 1372 (“The plain and unambiguous meaning of § 101 is that any invention falling within one of the four state categories of statutory subject matter may be patented, provided it meets the other requirements for patentability set forth in Title 35, i.e., those found in §§ 102, 103, and 112, ¶ 2.”). See also In re Bergy, 596 F.2d 952, 960 (CCPA 1979).
254 See eBay, 547 U.S. at 397 (Kennedy, J., concurring); Excel Commc’ns, Inc., 528 U.S. at 946-47.
255 Bilski, 545 F.3d at 959-60.
Some only oppose business methods as applied to certain industries. Others viewed the *State Street* decision as too sweeping a departure from previous law. Some have even accused the Federal Circuit of attempting to expand the patent domain through “judicial fiat.”

3. The Unknown Future of Business Methods

While concerns over business method patents are not unfounded, the predicted risks are just that: predictions. It is just as plausible that business methods will prove beneficial to innovation. As with computer programs and video games, nobody can predict exactly what effect intellectual property protection for new subject matter may have.

Even the Federal Circuit has acknowledged that it is impossible to predict how technology will develop, admitting that some developments “may present difficulties for the machine or transformation test.” Judge Newman further stressed the point in her dissent, stating that the decision’s “impact on the future, as well as on the thousands of patents already granted, is unknown.” Because of the uncertainty in predicting where and how technology will develop, the Patent Act was drafted to provide broad protection, “lest advance restraints inhibit the unknown future.”

Nowhere is this inability to foresee technological change more evident than in the business method arena. The current Patent Act was drafted around the

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257 Raskind, *supra* note 196, at 61 (1999) (describing the *State Street* decision as “so sweeping a departure from precedent as to invite a search for its justification.”).


259 *Id.* at 956. Beyond admitting that “difficulties” might arise, the Federal Circuit further acknowledged the limitations in their new test, stating that “we certainly do not rule out the possibility that this court may in the future refine or augment the test or how it is applied.” *Id.*

260 *Id.* at 976 (Newman, J., dissenting) (“[The Bilski decision’s] impact on the future, as well as on the thousands of patents already granted, is unknown.”).

261 *Id.* at 977 (Newman, J., dissenting).
same time that economics began evolving into a technological field.\textsuperscript{262} Even given this temporal proximity, it is unlikely that the drafters anticipated how quickly and closely economics and technology would converge. Critically, even without such foresight, the Patent Act was drafted in a manner capable of encompassing what came of that convergence; indeed, for a short time it did, by way of \textit{State Street}.

Judge Newman’s point on the unknown future also bears upon the opposition to business method patents. Opponents tend to concentrate on potential negatives. As Judge Newman aptly observes, there are also potential benefits in providing protection for business methods. It thus seems wiser to make business methods patentable, thereby ensuring that a court’s decision does not bar a future useful art from patentability.

4. Patent Signals

Professor Long’s patent signals theory is directly applicable in the area of business methods.\textsuperscript{263} Patents are expensive to obtain\textsuperscript{264} — unlike copyrights\textsuperscript{265} — and therefore, a firm’s willingness to invest in patents enforces any signal a patent may send.\textsuperscript{266} After all, firms are unlikely to invest $20,000 a patent without the intent to use the patent in some way — either as a signal generator, a means for obtaining rent, or any other use.\textsuperscript{267} Large patent portfolios may emit even stronger


\textsuperscript{263} \textit{See} Long, \textit{supra} note 178.


\textsuperscript{265} \textit{See supra} Part IV.C.4.

\textsuperscript{266} \textit{See} Long, \textit{supra} note 178, at 657.

\textsuperscript{267} \textit{See id.} at 626-27 (discussing costs of obtaining patents and arguing that, economically, there must be some value obtained, even from “worthless” patents).
signals due to the increased costs of acquisition and maintenance.

While such signals may be important between patent-holding entities and investors, they may send even more critical signals to consumers. One particular signal that business method patents may send is not addressed by Professor Long: legitimization. Just as a copyright may serve as a “legitimizing” signal in the case of video games, a patent may emit an even stronger legitimizing signal based on the necessary expenditures and risks inherent in obtaining it.

Business method patents can send signals that mitigate the worries over the financial scandals that were uncovered around the time the Federal Circuit eliminated the business method exception. Where a firm owns at least one business method patent, that patent can act as a signal, informing potential customers or investors of the legality of a firm’s practices. Where a firm owns a large patent portfolio, that signal may be even stronger.

5. The Law and Industry Interaction

The history of business methods, like computer programs, demonstrates the simultaneous evolution of law and industry. In the first instance, the trend toward economics as a field of technology makes economics studies “feel” more patentable. Indeed, Professor John Duffy has argued that this shift was “the catalyst for the burgeoning number of business method patents.”

As the business industry increasingly became technology-oriented, the legal world began to react. The first Manual of Patent Examining Procedure (“MPEP”), published in 1949, treated business methods as one of four exceptions to patentable subject matter. In 1995, the USPTO published a revised edition of

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268 Id. at 627 (“Possession of a portfolio of intellectual property rights is an attribute that is voluntary, under a firm's control, and readily measurable, at least along some margins. If an easily measurable firm attribute such as patent counts is positively correlated with other less readily measurable firm attributes such as knowledge capital, then patent counts can be used as a means of conveying information about these other attributes.”).

269 See id. at 644.

270 As in the Copyright Signals discussion, supra Part III.C.4., the term “legitimizing” is used here to describe the way a patent may be used as evidence against illegal activity.

271 See supra Part IV.B.2.

272 Duffy, supra note 223, at 17.

273 MPEP § 706.03(a) (1st ed. 1949), available at
the MPEP that no longer listed business methods as a special exception to patentable subject matter.\textsuperscript{274}

The USPTO’s view officially changed with the removal of the business method exception from the MPEP, but it had unofficially withdrawn its support for the exception at least two years prior. The patent at issue in State Street was filed in 1991, and the USPTO issued a patent in 1993.\textsuperscript{275} With the State Street decision in 1998, the judiciary simply followed the USPTO’s example in holding that there is no business method exception. Further, State Street noted that business methods should have been patentable since the 1952 Act.\textsuperscript{276} The forty-six year lapse between when business methods “should have been” made patentable and when the judiciary made them such was a time of major change in the business industry. The two institutional changes, at the PTO and the Federal Circuit, occurred with the culmination of this industrial shift.

Around the turn of the century, two separate groups of legal events occurred to induce firms to file business method patent applications. The first, the State Street decision itself,\textsuperscript{277} certainly made patent attorneys and businessmen aware of the potential for business method patents.\textsuperscript{278} The financial and tax scandals, the second group, provided the incentive for businessmen to file patent applications.\textsuperscript{279} Because of the signals patents can send, firms with business method patents may be able to improve public confidence in light of recent financial scandals – which in turn, would improve profits.

6. Conclusion

The business method industry has evolved in a very similar manner to video games. Like video game programs and copyright, business methods easily

\textsuperscript{274} MPEP § 706.03(a)(1) (6th ed., rev. 1 1995), available at http://www.uspto.gov/web/offices/pac/mpep/old/E6R1_700.pdf (“Though seemingly within the category of an “art” or method, the law is settled that a method of doing business can be rejected as not being within the statutory classes [of patentable subject matter.”). The MPEP cited Hotel Security Checking Co. v. Lorraine Co., 160 F. 467 (2d Cir. 1908).

\textsuperscript{275} See U.S. Patent No. 5,193,056 (issued Mar. 9, 1993).

\textsuperscript{276} 149 F.3d at 1375.

\textsuperscript{277} 149 F.3d 1368 (Fed. Cir. 1998).

\textsuperscript{278} USPTO White Paper, supra note 206, at iv.

\textsuperscript{279} See infra Part IV.C.4.
fall under the subject matter of patent law, although the provision of patent protection to business methods went against well-established doctrine. This change in course by the courts was met with significant opposition, both within the courts and among commentators. Business method patents can send very important signals to consumers and investors. All said, business method patents have overcome similar hurdles, and provide similar benefits to computer program copyrights.

V. What Copyright Can Teach Patent, and How Patent Can Apply That Lesson

The above reviews demonstrate that recent innovations have challenged the patent and copyright systems in very similar ways. The video game and business method industries are prime examples of the disparity between patent and copyright’s abilities to expand to new areas. Both clearly fit within their intellectual property’s statutory language, both have seen legal and market shifts occur which made them valuable enough to patent, and both are capable of emitting signals.

Yet copyright is much more adaptable to the innovations it is meant to encourage, while patent law is much less so. Despite the fact that programs may fall within a statutory exception to copyright, courts and commissions have stretched to define a distinction between the expressive content of computer programs and their functional aspects. Business methods, on the other hand, clearly fall within the statutory subject matter but do not readily fit any exception. At worst, they may fall under the algorithm exception, though business methods apply algorithms to a useful end, which should be enough to

280 Programs, depending on viewpoint, could be processes, methods, or systems; each of which is an exception to copyright law. See 17 U.S.C. § 102(b).

281 See, e.g., CONTU REPORT, supra note 10, at 20; Apple Computer Inc., 714 F.2d at 1251 (“Apple does not seek to copyright the method which instructs the computer to perform its operating functions but only the instructions themselves.”).

282 Recall that the business method exception has been “laid to rest” by the Federal Circuit. State Street, 149 F.3d at 1375.

283 See Diehr, 450 U.S. at 186 (noting that an algorithm “is like a law of nature, which cannot be the subject of a patent.”).

284 See, e.g., State Street, 149 F.3d at 1375 (the useful result of the patent method was “expressed in numbers, such as price, profit, percentage, cost, or loss.”).
make them patentable.\textsuperscript{285}

This distinction is disconcerting for two related reasons. First, patent and copyright laws arise from the same source.\textsuperscript{286} Second, like copyright, patent is intended to encourage the very innovation the law may be hindering.\textsuperscript{287} With identity in source and purpose, the regimes should be equally adaptive. So why does one regime adapt while the other languishes?

This Part attempts to answer that question. In doing so, it proposes a novel standard for determining patent eligibility that is based upon the success of copyright, but which does not diverge far from historical patent practice. The first section presents the groundwork for and reasoning behind the proposed standard. The second section presents the standard.

A. Defining Technology… Adaptively

What exactly does copyright possess, but patent lacks, which allows the former, but not the latter, to adapt in extremely similar situations? The answer lies somewhere between the statutory language and judicial interpretation of that language.

Upon examination of the statutes, the first thing that stands out about the statutes is what they are directed at. Copyright is directed towards expression, an

\textsuperscript{285} \textit{AT&T v. Excel}, 172 F.3d at 1360 (our inquiry here focuses on whether the mathematical algorithm is applied in a practical manner to produce a useful result.”) (emphasis added). \textit{See also Funk Bros. Seed Co.}, 333 U.S. at 130 (what renders subject matter patentable is “the application of the law of nature to a new and useful end.”).


\textsuperscript{287} \textit{See}, \textit{e.g.}, \textit{Bilski}, 545 F.3d at 967-77 (Newman, J., dissenting) (emphasis added).

The innovations of the “knowledge economy”-of “digital prosperity”-have been dominant contributors to today's economic growth and societal change. Revision of the commercial structure affecting major aspects of today's industry should be approached with care, for there has been significant reliance on the law as it has existed, as many \textit{amici curiae} pointed out. Indeed, the full reach of today's change of law is not clear, and the majority opinion states that many existing situations may require reassessment under the new criteria.

Uncertainty is the enemy of innovation. \textit{These new uncertainties not only diminish the incentives available to new enterprise, but disrupt the settled expectations of those who relied on the law as it existed.}
abstract idea, while patent law has a specific subject matter list.\textsuperscript{288} This
distinction, which is clear in the present patent and copyright statutes, is the key to
copyright’s adaptability and patent’s inflexibility.

1. Copyright’s Expression

The law has not always been laid out this way. Copyrightable subject
matter was once listed similarly to patent,\textsuperscript{289} and it was not until 1976 that the
term “expression” was first included in the statutory language.\textsuperscript{290} This statutory
lack went unnoticed: courts looked for expression in copyright long before the
statute referenced it.\textsuperscript{291}

Photographs, for example, are “reproduction[s] of the exact features of
some natural object.”\textsuperscript{292} The creation of photographs also requires some degree of
assistance from a purely technological intermediary – the camera. Yet none of this
has sufficed to remove photographs from the ambit of copyright’s expression.\textsuperscript{293}
For example, the Supreme Court, in finding photographs copyrightable, actively
sought for some form of expression, despite the fact that the statute made no
express reference to expression.\textsuperscript{294}

2. Patentable Subject Matter

On the other hand, rather than concentrating on the purposes of patent law,
courts have attempted to shoehorn new innovations into (or in some cases, out of)

\textsuperscript{288} See 17 U.S.C. § 102(a) (providing that copyright protection subsists in “original works of
authorship fixed in any tangible medium of expression”); 35 U.S.C. § 101 (providing patent
protection for “any new and useful process, machine, manufacture, or composition of matter, or
any new and useful improvement thereof.”). Supposedly, patent protection reaches “anything
under the sun that is made by man,” Chakrabarty, 545 F.3d at 943, but this is clearly not so. See
generally Bilski, 545 F.3d 943 (finding a “method for managing the consumption risk costs of a
commodity,” a method clearly made by man, unpatentable).

\textsuperscript{289} See Copyright Act of March 4, 1909 § 1(b)-(e) (providing various rights in the work “if it be a”
literary work, nondramatic work, drama, musical work, or a model or design for a work of art).

\textsuperscript{290} See 17 U.S.C. § 102(a).

\textsuperscript{291} See, e.g., Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53, 55 (1884); White-Smith

\textsuperscript{292} See Burrow-Giles, 111 U.S. at 56.

\textsuperscript{293} See id. at 55.

\textsuperscript{294} See id. The statute itself contained a list akin to the present patent list. See 60 Revised Statutes
§ 4952 (1883).
one of the specified subjects of Section 101 without fail. In the end, the patentability of a given invention is based largely on how “technological” that invention appears to be.\textsuperscript{295} Problematically, the judiciary’s view of “technology” is rooted in a vastly different technological age.\textsuperscript{296}

More often than not, inventions that have a historically technological feel to them are found patentable. For example, two seminal decisions have reached different outcomes on substantially similar facts. In the first, Judge Learned Hand held that a purified natural substance (in this case, adrenaline) was patentable.\textsuperscript{297} Though Judge Hand recognized that the patent was essentially directed towards a product of nature,\textsuperscript{298} he believed that because “commercially and therapeutically,” the innovation was novel, it was entitled to patent protection.\textsuperscript{299}

The second decision involved inoculating bacteria. In \textit{Funk Bros. Seed Co. v. Kalo Inoculant Co.},\textsuperscript{300} the Supreme Court dealt with a patent for a product with select strains of the inoculating bacteria. At least six species of bacteria in the Rhizobium genus were known to infect various leguminous plants, but no species worked on all leguminous plants.\textsuperscript{301} Mixed cultures were created, but bacterial

\begin{itemize}
\item \textsuperscript{296} John R. Thomas, \textit{The Patenting of the Liberal Professions}, 40 B.C. L. Rev. 1139, 1139 (1999) (Patent’s “plodding acquisition procedures and formal enforcement analyses historically confined themselves to the artifacts of the Industrial Revolution and their immediate successors.”). See also \textit{Bilski}, 545 F.3d at 1011 (Rader, J., dissenting) (“[T]his court ... links patent eligibility to the age of iron and steel at a time of subatomic particles and terabytes.”); \textit{Id.} (Newman, J., dissenting) (“[T]his court now adopts a redefinition of ‘process’ in Section 101 that excludes forms of information-based and software-implemented inventions arising from new technological capabilities.”).
\item \textsuperscript{297} Parke-Davis & Co. v. H.K. Mulford Co., 189 F. 95 (S.D.N.Y. 1911) (L. Hand, J.).
\item \textsuperscript{298} \textit{Id.} at 103 (“it is of course possible logically to call this a purification of [a] principle [of nature]”).
\item \textsuperscript{299} \textit{Id.}
\item \textsuperscript{300} 333 U.S. 127 (1948).
\item \textsuperscript{301} \textit{Id.} at 129.
\end{itemize}
strains demonstrated an inhibitory effect on each other. Thus, a farmer with multiple crops would likely need to use three separate inoculants. The patent at issue was for a product that included multiple Rhizobium strains that did not inhibit each other; one product could therefore be used on multiple plants. The Supreme Court noted that the inventor “did not create [the] state of inhibition or of non-inhibition in the bacteria. Their qualities are the work of nature.” Further, the Court stated that “aggregation of species fell short of invention within the meaning of the patent statutes.” That aggregation, however, was simply the purification of several strains of a naturally occurring substance; in terms of numbers, it was a more complicated version of Parke-Davis, which only purified one substance.

Viewing the innovations this way, it is difficult to reconcile these two decisions. It is even more difficult to reconcile Funk with the patentability of metal alloys. Metal alloys, like the Funk inoculants, are simply the combination of particularly selected materials, combined in a specific way. Indeed, as in Funk, the materials are chosen specifically because of their natural characteristics.

Reconciliation is perhaps easiest when one views this history with a pragmatic eye. Logically, there is very little to distinguish Funk’s patented product from a metal allow or a purified naturally occurring chemical. When one asks “how technological do these inventions appear,” the distinction becomes readily apparent. Patent law has traditionally been tied to technology, so this

302 Id.
303 Id.
304 Id. at 130.
305 Id.
306 Id. at 131.
307 Parke-Davis depended upon the purification of the naturally occurring substance. Funk Bros. was essentially a purification of several unique strains of bacteria by removal from their inhibitive relatives. Thus, both cases involved patents that yielded commercially beneficial products through purification.
308 See, e.g., U.S. Patent No. 7,682,468 (Lead-free solder alloy); U.S. Patent 7,682,470 (Magnesium alloy).
309 See Funk Bros., 333 U.S. at 135 (Frankfurter, J., concurring) (“Everything that happens may be deemed ‘the work of nature,’ and any patentable composite[, i.e., alloy] exemplifies in its properties ‘the laws of nature.’”).
310 See supra note 295. Congress created the Federal Circuit as an exclusive appellate court for patent cases in the hopes that “increased uniformity would ‘strengthen the United States patent
should could as no surprise. And “technology,” as it has been delineated in patent law, is closely tied to historically technological fields. And the chemistry and metallurgy critical to the results in Parke-Davis and alloy patents are much more “technological” than the seemingly simple pick-and-choose in Funk.

B. Application of the Laws of Nature

This detrimental dependence upon “technological” processes, machines, manufactures, or compositions of matter has not been without merit. Through its attempts to define technology, the judiciary has created a potential escape route from the overly rigid technological orientation that has hindered patent’s adaptation to new technology.

At times, instead of concentrating on whether an innovation is technological, courts have instead examined what technology is. According to the courts, “applying laws of nature to new and useful ends is nothing other than ‘technology.’” Therein lays the key to an adaptive test for patentability: does the invention or discovery apply an idea, law of nature, or natural phenomenon to a useful end.

The term “application” is clearly defined. Merriam-Webster defines system in such a way as to foster technological growth and industrial innovation.” Markman v. Westview Instruments, Inc., 517 U.S. 370, 390 (1996) (emphasis added, citations omitted). See also Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 150-151 (1989) (“The federal patent system thus embodies a carefully crafted bargain for encouraging the creation and disclosure of new, useful, and nonobvious advances in technology and design in return for the exclusive right to practice the invention for a period of years.”) (emphasis added); Paulik v. Rizkalla, 760 F.2d 1270, 1276 (Fed. Cir. 1985) (en banc) (to be patentable, a claim must further the purpose “of advancing the useful arts - the process today called technological innovation.”).

311 See Great Atlantic & Pac. Tea Co. v. Supermarket Equipment Co., 340 U.S. 147, 154 (1950) (Douglas, J., concurring) (“The Framers plainly did not want those monopolies freely granted. The invention, to justify a patent, had to serve the ends of science-to push back the frontiers of chemistry, physics, and the like”) (emphasis added). See also supra note 263.

312 See, e.g., Bonito Boats, 489 U.S. at 150-51; Chakrabarty, 447 U.S. at 316; Great Atlantic & Pac. Tea Co., 340 U.S. at 154-55; Rizkalla, 760 F.2d at 1276 (all holding that patent protection is appropriate for innovations that are technological or scientific). See also Sfekas, supra note 295, at 214-15.

313 Bilski, 545 F.3d at 1003 (Mayer, J., dissenting). This view is corroborated by the technological orientation of patent law, see supra note 285, and the fact that what renders subject matter patentable is “the application of the law of nature to a new and useful end.” Funk Bros. Seed Co., 333 U.S. at 130.
application as “an act of applying [or] an act of putting to use.” The definition is not likely to change, unlike the definition of technology. Tying patentability to “application” ensures that patent law can readily adapt to technological advancements – as long as some unknown future discovery is applied to reach a useful result, it qualifies for patent protection. Like copyright’s “expression,” application does not limit patent to modes of technology presently in existence.

The Bilski patent, for example, satisfies the application test. The patent claimed method for “managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price...” Algorithms are “fundamental principles,” like ideas, laws of nature, and natural phenomena. This principle is applied, by way of a method, to achieve the useful result of managing risk.

The proposed application standard makes patent law more capable of handling technological advancements. It eliminates unnecessary limitations on the scope of patentable subject matter, and ensures that “anything under the sun that is made by man” is patentable, while ensuring that any underlying ideas, laws of nature, and natural phenomena are left for the public to use as they will.

VI. Conclusion

As innovation leads to potential new subject matter, patent and copyright must adapt to these innovations. The two regimes deal with very similar issues as this adaptation occurs. The interplay between law and industry when subject matters arise is usually quite apparent.

315 See supra Part IV.B.1.
317 See 17 U.S.C. § 102(a) (providing copyright protection for a work of authorship “fixed in any tangible medium of expression, now known or later developed”) (emphasis added).
318 Bilski, 545 F.3d at 949.
319 See Id. at 961 (“The same reasoning applies when the claim at issue recites fundamental principles other than mathematical algorithms.”).
320 See Diehr, 450 U.S. at 192 (recognizing that the application of a formula “in a structure or process” satisfies the requirements of § 101).
Copyright in video game programs provides an excellent view into this interaction. As computer programming became more commonplace, copyright law quickly adapted to ensure that computer programs were protected. Based on discussions in Congress and in legal scholarship, it appears that video games were completely unforeseen. And despite strong opposition to copyright protection for computer programs, both the software and video game industries have continued to grow.

The evolution of law and industry as it pertains to business methods mirrors video game copyrights, except possibly for the provision of protection. As financial industries became more technological, courts and the PTO began to whittle away at the bar to patentability. This trend has been the target of significant opposition from courts and commentators alike.

Despite opposition, courts must be careful as they may unintentionally bar unknown future technologies from protection. This concern is not a major issue in copyright, which adapts to new technologies in large because expression is clear. Patent law, which has focused on the term “technology,” does not adapt as readily, perhaps because technology is difficult to define. Additionally, by tying the patentability of a method to a machine or transformation, the Federal Circuit has limited patentable subject matter to only a subset of technology.

Based on the observable success copyright has had through its use of expression as its defining characteristic, this article proposes a similar gateway for patent law. By making patentable anything that applies an idea, law of nature, or phenomenon, the difficulty in defining technology disappears. An application standard limits concerns over subject matter decisions blocking unknown future innovations which would otherwise qualify for patent protection. Application, like expression, is a readily ascertainable standard that ensures easy adaptation to new technologies. In doing so, it furthers the patent goal of fostering innovation.