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The History and Future of E-Commerce Patents

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THE **HISTORY** AND
FUTURE OF
E-COMMERCE
PATENTS

BY DENNIS D. CROUCH AND MITCHELL L. TERRY

The past two decades have seen a great rise in the patenting of e-commerce inventions. Now, those same patents are taking an equally great fall. In a series of four recent cases, the U.S. Supreme Court has shifted the doctrine of patent eligibility and, in the process, raised the bar for e-commerce and software patents—making it more difficult to obtain and enforce those types of patents. Although there is no affirmative bar against patenting these business-focused inventions, the expanded “abstract idea” approach creates significant hurdles. Pointedly, if reviewed under the new doctrine, we expect that several hundred thousand already-issued patent claims would be found lacking patentable subject matter. Because the Supreme Court eligibility decisions are applied retroactively to already-issued patents, the result is that these patents have been implicitly rendered unenforceable. And, in many cases, we would expect that attempts at enforcement would lead to sanctions or an award of attorneys’ fees.¹ This loss of entitlement represents a significant financial loss for the patent holders. However, Ronald Coase’s work should remind us that the change creates new value and new entitlements for those who would use the ideas previously restricted by patent rights.² Looking forward, the patent office and courts are struggling to apply the new doctrine in a principled manner, while innovators and operating companies are shifting business plans to better take advantage of the new regime.

Some History of Patent Eligibility

Patent rights have deep roots in U.S. history. The U.S. Constitution empowers Congress to offer inventors “exclusive Right” to their “Discoveries.”³ Although written well before the advent of law and economics, this patent and copyright clause is expressly designed as an incentive structure “to promote the Progress of Science and useful Arts.” After enactment of the first Patent Act in 1793,⁴ Thomas Jefferson took the charge as the initial patent examiner.⁵ Elements of the 1793 Act have remained virtually unchanged over the law’s 220-year reign; this includes the statutory statement of patent eligibility that is now found in § 101 of Title 35: “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”⁶ Section 101 is written broadly and positively and without any express exceptions indicating what is *not* patentable. The Supreme Court has filled that gap by barring the patenting of “laws of nature, physical phenomena, and abstract ideas.”⁷ Those nonstatutory exceptions are, according to the court, “manifestations of . . . nature, free to all men and reserved exclusively to none.”⁸

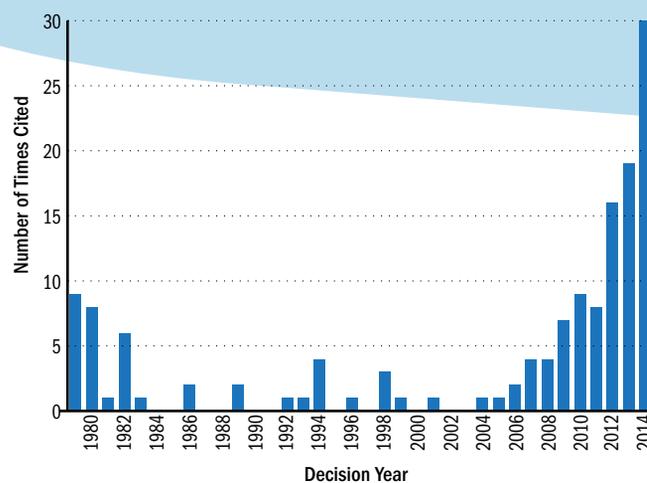
Contemporary history of these exceptions goes back to Supreme Court decisions from the 1970s and early 1980s. The first two cases—*Benson*⁹ and *Flook*¹⁰—both restricted patent eligibility in important ways. *Benson* held that a process using electronic “shift registers” to algorithmically convert numbers from binary-coded decimal to pure binary format was ineligible because the mathematical formula used is an abstract idea and—because the process was only practically useful in a digital computer—the claimed process was seen as “wholly pre-empt[ing] the mathematical formula and in practical effect would be a patent on the algorithm itself.”¹¹ *Flook*

also involved a mathematical algorithm—but this time it was applied to the very particular problem of setting an alarm limit in a catalytic converter process. As such, there was no question of broad preemption. Still, the Supreme Court found the patent to be ineligible because the unpatentable algorithm was the only novel feature of the invention. The Court wrote:

[T]he discovery of such a phenomenon cannot support a patent unless there is some other inventive concept in its application. . . . A competent draftsman could attach some form of post-solution activity to almost any mathematical formula; the Pythagorean theorem would not have been patentable, or partially patentable, because a patent application contained a final step indicating that the formula, when solved, could be usefully applied to existing surveying techniques.¹²

In the early 1980s, the Supreme Court issued a pair of decisions that have served as counterpoints to the narrowing focus of *Flook* and *Benson*. In *Diehr*,¹³ the Court held that a process for molding and curing rubber was patent eligible even though the process was based around use of the Arrhenius equation. Although the Court maintained that the equation alone is an abstract idea, the claimed process was patent eligible because it represented a practical implementation involving “transforming or reducing an article to a different state or thing.”¹⁴ In *Chakrabarty*,¹⁵ the Court held that a genetically modified bacterium was patent eligible. The decision famously found congressional intent that patent eligibility includes “anything under the sun that is made by man.”¹⁶

Court Citations of *Parker v. Flook*, 437 U.S. 584 (1978)



The Court of Appeals for the Federal Circuit was formed by Congress soon after *Diehr* and *Chakrabarty* and took on its appointed role of solidifying and unifying patent law.¹⁷ In that process, the appellate “patent court” latched onto the two more recent and more expansive Supreme Court cases while

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largely ignoring *Benson* and *Flook*.¹⁸ Through that process, the court began allowing the patenting of a wider scope and variety of software and business methods relating to e-commerce. That approach reached its expanse with the 1998 Federal Circuit opinion in *State Street Bank* holding that a data processing system for implementing a particular investment portfolio strategy was patent eligible.¹⁹ That decision also found that business methods are patent eligible:

We take this opportunity to lay this ill-conceived exception to rest. Since its inception, the “business method” exception has merely represented the application of some general, but no longer applicable legal principle, perhaps arising out of the “requirement for invention”—which was eliminated by § 103. Since 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.²⁰

In the follow-on case of *AT&T Corp. v. Excel Communications*, the Federal Circuit took its broad eligibility position a step further and essentially wrote off the abstract idea test: “the judicially-defined proscription against patenting of a ‘mathematical algorithm,’ to the extent such a proscription still exists, is narrowly limited to mathematical algorithms in the abstract.”²¹ With an expanded eligibility doctrine and explosion of online business activity, the U.S. Patent and Trademark Office began issuing e-commerce and Internet software related patents in droves—a process that continued largely unabated for the next decade.

The Newest Quartet of Supreme Court Cases

After a 30-year hiatus, the Supreme Court has again focused its attention on subject matter eligibility with what has turned into a second four-part series (with ongoing potential for expansion). The first of this revival quartet was the 2010 decision in *Bilski v. Kappos*.²² *Bilski* involved a classic business method patent application, claiming the hedging of risk in a commodity market that basically operates by initiating a set of transactions with consumers (based on the consumer’s risk position) and another set of transactions with market participants who have risk positions counter to the consumers.²³ Although the claims do not expressly require the use of software or computers, many of them—especially those requiring Monte Carlo simulations—would require such technology in practice. In reviewing the claimed invention, the Supreme Court found that *Bilski*’s method was an abstract idea and therefore not patent eligible. To reach this conclusion, the Court first hit the “reset” button by rejecting the whole of Federal Circuit doctrine on the topic of patentable subject matter. The Court explained that “nothing in today’s opinion should be read as endorsing interpretations of § 101 that the Court of Appeals for the Federal Circuit has used in the past.”²⁴ At the same time, the Court also rejected calls to create a bright-line ban on e-commerce patents. Instead, the court simply pointed to the aforementioned cases of *Benson*, *Flook*, and *Diehr* as controlling without further substantive analysis. Four justices refused to join the majority but instead concurred in judgment—arguing flatly that “business methods are not patentable.”²⁵

The 2012 decision of *Mayo v. Prometheus*²⁶ did not relate to e-commerce or software inventions directly, but is important for the way that it set up the most recent e-commerce decision of

Alice Corp. v. CLS Bank.²⁷ In *Mayo*, the patent at issue related to a personalized method of iterative drug dosing that required the raising or lowering of the dosage of a particular drug (thiopurine) in order to reach a known threshold blood level of a specified metabolite of the drug. In reaching its conclusion that the patent was improperly directed to a law of nature, the Supreme Court first categorized the correlation between metabolite blood level and an overdose or underdose of thiopurine as an unpatentable law of nature. As the second step in the analysis, the Court considered the additional limitations in the claims but found them insufficient to transform the identified natural law into a patent eligible process. The opinion repeatedly and favorably cites the had-been black-sheep *Flook* case in finding that the physical and transformative elements of the invention were simply postsolution activity and patent attorney tricks.²⁸ As to the claimed practical application steps, the *Mayo* Court found it relevant and important that those additional steps were already known in the art and thus lacking the innovative weight necessary for patent eligibility.

The third member of the new quartet is the *Myriad Genetics* case.²⁹ That case focused on Myriad’s discovery of the BRCA gene mutations that predict a high likelihood of early onset breast or cervical cancer in women. In deciding patent eligibility, the Supreme Court held that Myriad’s patented claims to an “isolated” form of the BRCA gene were ineligible as a product of nature but that a lab-created cDNA version of the naturally occurring mutant gene was eligible. The difference, according to the court, was that creation of the cDNA involved a substantial molecular transformation while mere isolation of naturally occurring DNA did not. Of course, the physical transformation that was sufficient here is ordinarily lacking in e-commerce inventions.

The final case in the recent quartet is *Alice Corp. v. CLS Bank*.³⁰ In *Alice*, the court took another important step in holding that the two-step approach to patent eligibility applied to laws of nature in *Mayo* applies to the abstract idea analysis as well. Thus, under *Alice*, the eligibility test begins with a question of whether the patent claim encompasses an abstract idea and, if so, then asks whether the invention includes an “inventive concept” sufficient to “transform” that abstract idea into a patentable invention.³¹ In *Alice*, the Supreme Court particularly held that transformation is not satisfied by the mere recitation of standard computer limitations or other limitations written at a “high level of generality.”³² The patent at issue in *Alice* claimed a computer-implemented system for managing settlement risk by using a third-party intermediary. In rejecting the patent eligibility, the Court held that the claimed invention was directed to the abstract idea of intermediated settlement and that the computer-related elements were claimed at such a high level of generality as to be insufficient to transform the abstract idea into a patent eligible invention. Although *Alice* is still relatively new, dozens of software and business method patents have already been held invalid based on its new precedential force.

E-Commerce Patents

One way to think through the impact of the new eligibility doctrine is to look back on some well-known e-commerce related patents and ask whether those patents would still be considered patent eligible. Here, we walk through four examples: the

financial services data processing patent from the Federal Circuit's 1998 *State Street Bank* decision, Amazon's "one-click" patent, Google's PageRank algorithm, and Apple's primary patent covering its "slide-to-unlock" feature. Although all four were previously judged patent eligible, our analysis is that only one remains viable.

Data Processing in *State Street Bank*

In the early 1990s, Signature Financial obtained a patent covering a data processing system for a "hub and spoke" financial services configuration.³³ This system manages the flow of data, and makes the calculations necessary to run a partnership portfolio holding a set of partnership funds (the hub and spokes respectively). The particular approach and structure were designed to reduce potential capital gains tax for the portfolio as a whole. Although not claimed as a method per se, this patent has been repeatedly pointed to as a classic business method patent.

In its 1998 decision, the Federal Circuit found the patent eligible for protection.³⁴ In our hypothetical analysis here, we suggest that the patent no longer passes muster. The first question under *Alice* is whether the patent is directed to an abstract idea. Although the particular definition of an abstract idea is not well expounded, it is fairly easy to characterize the general notion of structuring a partnership portfolio in a hub-and-spokes mechanism for tax avoidance as an abstract idea. The tax avoidance structure has much in common with the escrow approach in *Alice* and the risk-hedging scheme in *Bilski*—all of which are essentially "fundamental economic principles" that cannot be patented. The particular computer limitations in the Signature Financial patent require a "processor," "data storage," and a way to calculate profits and losses in the various portions of the system. As in *Alice*, those limitations are all claimed at a very high level of generality with nothing inventive added within those application steps. As such, they would not be sufficient to transform the unpatentable abstract idea into a patent eligible invention.

Verdict: unpatentable.

Amazon's One-Click

Amazon's one-click patent has repeatedly been a point of discussion since its issuance in 1999.³⁵ As the name suggests, the patent covers a method and system for placing an order over the Internet using just one "click" of a mouse (a "single action"). Then in response to the single action, a user's computer submits a purchase order and a server system brings in stored information about the user (such as payment and address information) and begins the fulfillment process.³⁶

The abstract idea being claimed here is simply that of making an order by using a single action. As in the prior cases discussed, this is an old and common approach in business for an established customer to simply call and order where the customer already has a payment method on file and the prices are already known or negotiated. Amazon's patent does require user and server computers, but those were all well known at the time of Amazon's invention and are claimed at a high level of generality.

Verdict: unpatentable.

Google's PageRank

A major aspect of Google's early search engine success was its patented PageRank algorithm.³⁷ The general idea was that

important search information about a page could be derived based on what others are saying about that page. Using that principle, the patent claims an iterative method of ranking a first document (such as a web page) based on the rank of a set of other documents linking back to the first document.

After the decision in *Alice*, it is difficult to see how this patent is still valid. In several cases, the Supreme Court has stated that mathematical algorithms are unpatentable abstract ideas. Here, the Google patent is directed toward a ranking algorithm that is, according to the definition, an abstract idea. Further, the general idea of ranking importance of a work according to its back citations is also well known in academia. The claim is "computer implemented" but there are no innovative concepts that rely on that implementation, and the claim only calculates a rank rather than making any transformation. Thus, there are no additional elements that would transform the abstract algorithm into a patentable invention. As *Alice* held, "simply implementing a mathematical principle on a physical machine, namely a computer, is not a patentable application of that principle."³⁸

Verdict: unpatentable.

Apple's Slide-to-Unlock

The final patent that we analyze here can only loosely fit within the e-commerce category. The slide-to-unlock feature is a well-known aspect of contemporary handheld devices such as Apple's iPhone. Apple's patent covers a device with a touch screen that can be unlocked via gestures performed on the touch screen.³⁹ The basic idea is that the device is unlocked if contact with the display corresponds to a predefined gesture for unlocking the device that includes moving an unlock image across a touch screen display. The slide-to-unlock patent is one of the several patents that Apple has successfully asserted against Samsung in recent years.

This case is more difficult to fit within the *Alice* model. Certainly, the general idea of a sliding lock is well known and—at least at that level of generality—could be considered an abstract idea. However, Apple's implementation offers significantly more because it is designed to solve a problem specific to touch-sensitive displays. Further, the approach offers a particular technological solution involving the tracking of a "continuous" movement on the touch display, linking that to a corresponding interactive graphical image, and comparing the movement with a predefined unlock pattern or location set. Thus, this particular application appears to provide the "something more" required by *Alice*, although that term has not been well defined. A court may question, for instance, whether touch screens were already so well known by Apple's 2005 patent application date that they should be seen as equivalent to general purpose computers.

Verdict: patent eligible.

Conclusion

In the e-commerce realm, the bottom line is that a high percentage of patents issued over the past two decades have been implicitly rendered invalid by the recent quartet of Supreme Court subject matter eligibility cases. While parties will still battle over threshold tests of the meaning of "abstract idea" and "innovative concept," there is no question that the bar has been significantly raised. Going forward, we expect business

innovators to forgo patent protection unless their new idea comes with a strong technological innovation. ■

Endnotes

1. See *Octane Fitness, LLC v. ICON Health & Fitness, Inc.*, 134 S. Ct. 1749 (2014) (lowering the standard for awarding attorneys' fees under 35 U.S.C. § 285).

2. See Ronald Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

3. U.S. CONST. art. I, § 8, cl. 8 (ratified 1788).

4. Patent Act of 1793, ch. 11, 1 Stat. 318.

5. William I. Wyman, *The Patent Office and Invention Since 1845: How the Government Has Kept Pace with the Inventor*, 112 SCI. AM. 533, 533 (1915).

6. 35 U.S.C. § 101.

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

8. *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).

9. *Gottschalk v. Benson*, 409 U.S. 63 (1972).

10. *Parker v. Flook*, 437 U.S. 584 (1978).

11. *Benson*, 409 U.S. at 71–72.

12. *Flook*, 437 U.S. at 590, 594.

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

14. *Id.* at 192.

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

16. *Id.* at 309.

17. Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, 96 Stat. 25.

18. See Dennis Crouch, *The Revival of Parker v. Flook*, PATENTLY-O (Oct. 5, 2012), <http://patentlyo.com/patent/2012/10/the-revival-of-parker-v-flook.html> (diagram reproduced here with permission).

19. *State St. Bank & Trust Co. v. Signature Fin. Grp., Inc.*, 149 F.3d 1368 (Fed. Cir. 1998).

20. *Id.* at 1375.

21. *AT&T Corp. v. Excel Commc'ns, Inc.*, 172 F.3d 1352, 1356 (Fed. Cir. 1999).

22. 561 U.S. 593 (2010).

23. See U.S. Patent Application No. 60/015,756 (filed Apr. 16, 1996), available at <http://patentlyo.com/media/docs/2009/08/bilskiappliation.pdf>.

24. *Bilski*, 561 U.S. at 612.

25. *Id.* at 614 (Stevens, J., concurring).

26. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289 (2012).

27. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014).

28. See Dennis Crouch, *Mayo v. Prometheus: Natural Process + Known Elements = Normally No Patent*, PATENTLY-O (Mar. 20, 2012), <http://patentlyo.com/patent/2012/03/mayo-v-prometheus-natural-process-known-elements-normally-no-patent.html>.

29. *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107 (2013).

30. *Alice*, 134 S. Ct. 2347.

31. *Id.* at 2357.

32. *Id.*

33. U.S. Patent No. 5,193,056 (filed Mar. 11, 1991).

34. *State St. Bank & Trust Co. v. Signature Fin. Grp., Inc.*, 149 F.3d 1368 (1998).

35. U.S. Patent No. 5,960,411 (filed Sept. 12, 1997).

36. See *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343 (Fed. Cir. 2001).

37. U.S. Patent No. 6,285,999 (filed Jan. 9, 1998).

38. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2357–58 (2014).

39. U.S. Patent No. 8,046,721 (filed June 2, 2009). Note there are other related unlock patents.



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