

January 2016

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Recommended Citation

Daniel Taylor, *Down the Rabbit Hole: Who will Stand Up for Software Patents after Alice?*, 68 Me. L. Rev. 217 (2016).
Available at: <http://digitalcommons.minelaw.maine.edu/mlr/vol68/iss1/15>

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DOWN THE RABBIT HOLE: WHO WILL STAND UP FOR SOFTWARE PATENTS AFTER *ALICE*?

Daniel Taylor

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Daniel Taylor*

ABSTRACT

In June 2014, the Supreme Court changed patent law completely when it issued a decision in *Alice Corporation v. CLS Bank International*. In one fell swoop, the Court cast doubt on the validity and enforceability of hundreds of thousands of issued software and technology patents. Since the *Alice* decision, federal district courts have applied the *Alice* test and have already invalidated more than one hundred software patents as a matter of law. This Comment discusses why the *Alice* decision expands the judicial doctrine of creating “exceptions” to the Patent Act, and shifts the statutory factual inquiry of “obviousness” into a legal inquiry that enables courts to invalidate patents as a matter of law in pretrial motions. Given the role of software in our economy, *Alice* places billions of dollars of technology products and services in peril and threatens future investment in American technology companies. In light of *Alice*, this Comment asks when technology companies will begin lobbying Congress to reaffirm the Patent Act and to legislate to overcome the wrong-headed thinking of *Alice*.

INTRODUCTION

Technology has become an integral part of the U.S. economy to the point where few could imagine a world without mobile devices, software, and the Internet. The technology industry has long relied on a system of intellectual property for protecting innovation and investment—patents, copyrights, and trademarks underlie the business model for making and selling technology products, services, and even media. In 2014, U.S. companies invested \$313 billion¹ in developing software to support their businesses, and, to protect that investment, the U.S. Patent & Trademark Office issued 68,374 software-related patents² that claimed innovations in a variety of technologies, ranging from semiconductors and relational databases

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1. *National Data, Table 5.6.5. Private Fixed Investment in Intellectual Property Products by Type*, U.S. BUREAU OF ECON. ANALYSIS, http://www.bea.gov/iTable/index_nipa.cfm (interactive table; follow “Begin using the data” button) (last visited Aug. 27, 2015) (demonstrating that, in 2013 U.S. companies invested 45.5%, or \$295 billion, of their annual IP investments in software, compared to 32.5% for IP investments in manufacturing). According to the data set available for download, in 1970, U.S. companies invested five dollars in manufacturing technologies for every dollar investment in software. *Id.* (file available for download; click on “download” button to view data from 1970 onward).

2. Patent Technology Monitoring Team, *EXTENDED YEAR SET - Patenting By Geographic Region (State and Country), Breakout By Technology Class Count of 1963 - 2014 Utility Patent Grants*, U.S. PATENT & TRADEMARK OFFICE, http://www.uspto.gov/web/offices/ac/ido/oeip/taf/stcteca/allstcl_gd.htm (classes 345, 348, 369–70, 375, 379–80, 382–86, 455, 700–26) (last visited Aug. 27, 2015).

to distributed software and Internet applications delivered to mobile devices.³

The original Patent Act was drafted in 1790 and required for patents to be examined by the Secretary of State, the Secretary of War, and the Attorney General.⁴ For obvious reasons, this was an untenable approach, and it was replaced in 1793 with a registration system.⁵ In 1836, Congress passed the first modern patent statute,⁶ which created the Patent Office, established a system of patent examination, and introduced the requirement of a written description⁷ complete with patent claims.⁸ Congress enacted a number of changes to the statute in 1870⁹ and performed a full overhaul to create the modern statute in 1952.¹⁰ Within the Patent Act, the role of section 101 is to define patent eligibility: “[w]hoever 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.”¹¹ Meanwhile, the Supreme Court has asserted that it has “long held that [section 101] contains an important implicit exception: Laws of nature, natural phenomena, and abstract ideas are not patentable.”¹²

Over the past fifty years, as software has become integral to the U.S. economy, inventors and companies have invested more and more money to develop software. Along with these technology developments, companies have invested in patents to protect software innovations. As these software innovations have become important to the financial success of technology-based companies, there has been a corresponding increase in litigation over software patents. With each new lawsuit, courts frequently revisit the question of whether software is patent-eligible under section 101’s categories or if the “abstract idea” exception to patent protection applies.¹³ The Supreme Court first answered this question in the negative in 1972 when it decided *Gottschalk v. Benson*.¹⁴ In that case, the United States Patent & Trademark Office (USPTO) had denied a patent application for an algorithm for translating binary coded decimal numbers into pure binary numbers on a computer—

3. See *US Classes by Number with Title Menu*, U.S. PATENT & TRADEMARK OFFICE, <http://www.uspto.gov/web/patents/classification/selectnumwithtitle.htm> (last visited Aug. 27, 2015) (linking to definitions for individual U.S. patent classifications).

4. See The First United States Patent Statute. Sec. 1., ch. 7, 1 Stat. 109-12 (April 10, 1790) (repealed 1793).

5. See Patent Act of 1793, ch. 11, 1 Stat. 318-23 (February 21, 1793) (repealed 1836).

6. See Patent Act of 1836, ch. 357, 5 Stat. 117 (July 4, 1836) (amended 1870).

7. *Id.* at Sec. 6 (“[An inventor] shall deliver a written description of his invention or discovery, and of the manner and process of making, constructing, using, and compounding the same, in such full, clear, and exact terms, avoiding unnecessary prolixity, as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make, construct, compound, and use the same[.]”).

8. *Id.* (“[The written description] shall particularly specify and point out the part, improvement, or combination, which he claims as his own invention or discovery.”).

9. See generally Patent Act of 1870, ch. 230, 16 Stat. 198-217 (July 8, 1870).

10. See Patent Act of 1952, ch. 950, 66 Stat. 792 (July 19, 1952).

11. 35 U.S.C. § 101 (1952).

12. *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2116 (2013) [hereinafter *Myriad*] (citations omitted) (internal quotation marks omitted). For reasons to be discussed, the Court’s basis for these “judicial exceptions” is shaky at best. See discussion *infra* Part II.C.

13. See discussion *infra* Part I.E.

14. 409 U.S. 63 (1972).

the Court agreed with the USPTO and rejected the patent application as claiming a process that was “so abstract and sweeping as to cover both known and unknown uses[.]”¹⁵

In reaching its decision, the Court relied heavily on a 1966 report¹⁶ from President Johnson’s Commission on the Patent System that had recommended that software should not be patented.¹⁷ At the time, the Court suggested:

If these programs are to be patentable, considerable problems are raised which only committees of Congress can manage, for broad powers of investigation are needed, including hearings which canvass the wide variety of views which those operating in this field entertain. The technological problems tendered in the many briefs before us indicate to us that considered action by the Congress is needed.¹⁸

This nominal deference left the door open for Congress to amend the Patent Act to make explicit that software could not be patented. However, the Court’s actions in invalidating the software patent were premature because Congress never changed the statute, and software remained patent eligible under section 101. At the same time, *Benson* created common law precedent that contradicted the Patent Act, solidified the “abstract idea” judicial exception, and forced subsequent decisions to embrace, explain, and extend judicial activism.¹⁹ Over the next forty years, three subsequent Supreme Court decisions addressed the question of the patentability of software,²⁰ though the question was more directly addressed in the Court of Appeals for the Federal Circuit²¹—the same court which, in 1982, had been granted primary appellate jurisdiction over all patent cases.²² During the “dotcom” boom of the late 1990s, Federal Circuit precedent encouraged broad software patenting under a liberal standard that simply required claimed inventions to produce a “useful, concrete, and

15. *Id.* at 68.

16. PRESIDENT’S COMM’N ON THE PATENT SYSTEM, “TO PROMOTE THE PROGRESS OF . . . USEFUL ARTS” IN AN AGE OF EXPLODING TECHNOLOGY, S. Doc. No. 90-5, at 20-21 (1967).

17. *Id.* at 20 (“A series of instructions which control or condition the operation of a data processing machine, generally referred to as a ‘program,’ shall not be considered patentable regardless of whether the program is claimed as: (a) an article, (b) a process described in terms of the operations performed by a machine pursuant to a program, or (c) one or more machine configurations established by a program.”). While Congress did not adopt the recommendations, the Commission claimed that section 101 was unclear on whether software was patentable and explained, with absolutely no sense of irony, about the role of computing and software in performing the precise task, that “[t]he Patent Office now cannot examine applications for programs because of the lack of a classification technique and the requisite search files.” *Id.* at 21.

18. *Benson*, 409 U.S. at 73 (footnotes omitted).

19. *See, e.g.*, *Bilski v. Kappos*, 561 U.S. 593, 601-02 (2010) (discussing the judicial exceptions as long-settled “statutory *stare decisis* going back 150 years”).

20. *See Bilski*, 561 U.S. at 593 (holding invalid under section 101 a patent application for an economic hedging algorithm); *Diamond v. Diehr*, 450 U.S. 175 (1982) (upholding application of mathematical formula to curing rubber); *Parker v. Flook*, 437 U.S. 584 (1978) (upholding an examiner rejection of an algorithm for updating alarm limits).

21. *See In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008); *AT&T Corp. v. Excel Commc’ns, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999); *State St. Bank & Trust Co. v. Signature Fin. Grp.*, 149 F.3d 1368 (Fed. Cir. 1998) [hereinafter *State Street*]; *In re Bergy*, 596 F.2d 952 (C.C.P.A. 1979).

22. 28 U.S.C. § 1295(a)(4) (2012).

tangible result.”²³

By 2013, American companies had invested heavily in software innovations²⁴ and nearly a quarter of U.S. patents issued that year were for software-related inventions.²⁵ Also, software patents were the source of enough litigation that the term “patent troll” had entered the American vernacular.²⁶ Generally speaking, the American public had developed a negative opinion of trolls and their patent assertion strategies.²⁷

The following year, the Supreme Court again heard arguments about the patent eligibility of software inventions. This time, far more was at stake in *Alice Corp. v. CLS Bank Int'l*.²⁸

One could imagine the meetings that were happening throughout 2014 in the boardrooms of technology companies. One after the next corporate counsel explained to management that things were uncertain—a single Supreme Court decision could wipe out billions of dollars in software patents that protect hundreds of billions of dollars in economic output.²⁹

Imagine the collective sigh of relief that everyone breathed when it became clear in the *Alice* decision that the Court would not eliminate software patenting altogether.³⁰ Imagine further the horror that then ensued as judges across the country

23. *State Street*, 139 F.3d at 1373 (Fed. Cir. 1998) (quoting *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (en banc)) (“[T]he transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces ‘a useful, concrete and tangible result[.]’”).

24. See *supra* note 1.

25. See *supra* note 2.

26. See 496: *When Patents Attack...Part Two!*, THIS AM. LIFE (May 31, 2013), <http://www.thisamericanlife.org/radio-archives/episode/496/when-patents-attack-part-two>; 441: *When Patents Attack!*, THIS AM. LIFE (Jul. 22, 2011), <http://www.thisamericanlife.org/radio-archives/episode/441/when-patents-attack>.

27. A common criticism of “patent trolls” is that the companies do not make products and simply assert their patent rights. This is a requirement not found in the Patent Act. Issued patents are “presumed valid,” 35 U.S.C. § 282(a) (2012), and patent owners have “the right to exclude others from making, using, offering for sale, or selling [an] invention throughout the United States,” 35 U.S.C. § 154(a)(1) (1994).

28. 134 S. Ct. 2347 (2014).

29. See *CLS Bank Int'l v. Alice Corp.*, 717 F.3d 1269, 1313 (Fed. Cir. 2013) [hereinafter *CLS Bank*] (Moore, J., dissenting) (“[T]his case is the death of hundreds of thousands of patents, including all business method, financial system, and software patents as well as many computer implemented and telecommunications patents.”). See also *Examining Recent Supreme Court Cases In The Patent Arena: Hearing Before the Subcomm. on Courts, the Internet, and Intellectual Property of the H. Comm. on the Judiciary*, 114th Cong. 2 (2015) (statement of Herbert C. Wamsley, Exec. Dir., Intellectual Prop. Owners Ass’n) (“It will take a while to determine the impact of Alice. The long-term effect will depend on how the lower courts, particularly the Federal Circuit, interpret and apply Alice. Courts have had problems for years with consistency and predictability in making determinations about patent eligibility. The lack of clarity in Alice makes it more difficult for innovators to determine when it is appropriate to invest in patent protection, and casts the shadow of uncertainty on all patents, even good ones.”).

30. David J. Kappos, *Symposium: Supreme Court leaves patent protection for software innovation intact*, SCOTUSBLOG (Jun. 20, 2014 4:00 PM), <http://www.scotusblog.com/2014/06/symposium-supreme-court-leaves-patent-protection-for-software-innovation-intact/> (“From the perspective of the parties involved, this week’s *Alice Corp. v. CLS Bank* decision held that a process that lessens settlement risk for trades of financial instruments is too abstract for patenting. However, to the leagues of interested onlookers holding their collective breath across our country and indeed around the world, the Supreme

became *de facto* patent examiners, applying the rule articulated in *Alice* to invalidate issued U.S. patents *as a matter of law* on motions to dismiss, on motions on the pleadings, and at summary judgment.³¹

Within the first ten months after the *Alice* decision, U.S. courts had invalidated 3,026 claims in 117 U.S. patents in pretrial motions.³² By comparison, this represents more patents than those same courts had invalidated in the previous five years—often after detailed factual and legal inquiries.³³

On one hand, the Court's test in *Alice* is a sensible approach to resolving a long-simmering dispute about the patent eligibility of software and business methods under section 101 of the Patent Act.³⁴ One could argue that the Supreme Court was simply cleaning up a mess that had been festering for years at the Federal Circuit, where an *en banc* court had failed to reach meaningful consensus on the issue of *Alice*'s patents.³⁵ This has been part of the Supreme Court's increased involvement in intellectual property,³⁶ and it was a definitive stand to provide clarity and predictability while maintaining consistency with the Court's earlier decisions. On the other hand, *Alice*'s "abstractness" test³⁷ is extremely subjective, and the lack of clarity at the Federal Circuit could be the result of the Supreme Court's deferential intervention in section 101 as far back as 1972 in *Benson*.³⁸ It was arguably a mistake for the Court to get involved in crafting exceptions to section 101, especially when there are numerous examples of the Court staying out of the affairs of Congress, even in relation to the Patent Act.³⁹

Either way, federal courts are now in the business of questioning the validity of issued U.S. patents—*as a matter of law*—based upon a body of case law developed by the Supreme Court. This case law articulates three judicially-defined "exceptions" to the four categories of invention as defined by Congress in section 101 of the Patent Act.

Judging from its effects, the *Alice* decision will ultimately stand for a number of

Court's unanimous ruling subtly conveyed a much more significant judgment: software, as a class, is every bit as worthy of patent protection as any other medium in which innovation can be practiced.").

31. See Robert R. Sachs, *Twenty-Two Ways Congress Can Save Section 101*, BILSKIBLOG (Feb. 12, 2015), <http://www.bilskiblog.com/blog/2015/02/twenty-two-ways-congress-can-save-section-101.html>.

32. See Robert R. Sachs, *Tracking #ALICESTORM: The Dead Keep Piling Up*, BILSKIBLOG (Apr. 10, 2015), <http://www.bilskiblog.com/blog/2015/04/alicestorm-update.html>.

33. Sachs, *supra* note 31.

34. 35 U.S.C. § 101 (1952).

35. *CLS Bank Intern. v. Alice Corp.*, 717 F.3d 1269 (Fed. Cir. 2013) (per curiam).

36. See, e.g., *Key Patent Law Decisions of 2014*, JONES DAY (Mar. 2015), http://www.jonesday.com/files/upload/Key_Patent_Law_Decisions_of_2014.pdf ("[T]he Supreme Court is on pace to double the number of patent law decisions issued in any previous decade.").

37. See discussion *infra* Part II.C.

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

39. See *Microsoft Corp. v. AT&T Corp.*, 550 U.S. 437, 442 (2007) ("Plausible arguments can be made for and against extending § 271(f) to the conduct charged in this case as infringing AT&T's patent. Recognizing that § 271(f) is an exception to the general rule that our patent law does not apply extraterritorially, we resist giving the language in which Congress cast § 271(f) an expansive interpretation. Our decision leaves to Congress' informed judgment any adjustment of § 271(f) it deems necessary or proper."); *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 528 (1972) ("[W]e find the Fifth Circuit's definition unacceptable because it collides head on with a line of decisions so firmly embedded in our patent law as to be unassailable absent a congressional recasting of the statute.").

economic, legal, and policy premises. Economically, *Alice* raises doubts about the future of technology companies and their investments in the U.S. economy. With patent protection for software and biotechnology in doubt, the economic question is whether companies will continue to invest in those areas or if they will shift their activities to other technologies or other regions of the world.⁴⁰

This Comment will argue that, legally, *Alice* represents a form of judicial activism, explained under the guise of *stare decisis*,⁴¹ in which the Supreme Court continues to craft legal doctrine in addition to the statutory text of the Patent Act⁴² and without deference to the acting administrative agency, the USPTO.

The Court's unanimous voice and its unquestioning assessment of text lifted from nineteenth and twentieth Century cases is a poor reading of patent law that misunderstands the role of section 101 and the interplay between patent eligibility and patentability as defined in key sections of the Patent Act. For example, in *Alice* the Court's search for an "inventive concept" in a patent claim is broadly equivalent to the "flash of genius" requirement of invention that Congress specifically overturned when it created the new requirement of nonobviousness in section 103 of the 1952 Act.

Furthermore, as a policy implement, *Alice* is a cudgel and not a scalpel—it is a crude tool that will quickly eliminate a large number of software patents. Initially, technology companies will appreciate the work *Alice* will do in quickly removing poor quality, broadly claimed software patents from Article III litigation. Once that has happened, litigants will turn the *Alice* test in the direction of more valuable assets that protect product lines with ongoing revenues. As this happens, technology companies will face a moment of truth, and either the Supreme Court will have to unwind *Alice*, or technology-based industries will ultimately have to fight *Alice* in the courts or in Congress.

In addressing this outcome, this Comment poses three questions: (1) *who* will be inspired to act in response to the forthcoming mass invalidation of software patents as well as patents in other fields of endeavor; (2) *why* are technology companies acting as if *Alice* is business as usual;⁴³ and (3) *when* will the tide turn

40. See, e.g., David J. Kappos, Partner, Cravath Swaine & Moore LLP, The Great Patent Debate: Changing Horizons, Address at Intellectual Asset Management (IPBC/Global) Meeting the NPE Challenge (Mar. 13, 2015), available at <http://www.iam-media.com/files/Kappos%20speech.pdf> ("Make no mistake: if America denies robust protection to software innovations, decreased investment will inevitably follow—eroding a competitive advantage in a sector that has proven vital to the United States economy. Again, to the benefit of overseas competitors who would like nothing better than an open ticket to copy U.S. software innovation.").

41. See *Bilski v. Kappos*, 561 U.S. 593, 601-02 (2010) (citations omitted) ("The Court's precedents provide three specific exceptions to § 101's broad patent-eligibility principles . . . these exceptions have defined the reach of the statute as a matter of statutory *stare decisis* going back 150 years.").

42. *Id.* ("While these exceptions are not required by the statutory text, they are consistent with the notion that a patentable process must be 'new and useful.'"). The Court acknowledges that nothing in the statute suggests these exceptions, though, here in *Bilski*, the Court suggests that the *novelty* and *utility* requirements seem to imply the exceptions—an argument that is weak at best. *Id.*; *contra* cases cited *supra* note 39.

43. See *Examining Recent Supreme Court Cases In The Patent Arena*, *supra* note 29 ("We conclude that it is too early to tell what long-term effect *Alice* will have on deterring or decreasing abusive behaviors in patent litigation. *Alice* was decided only months ago. Reports suggest a significant increase in district courts invalidating patents on software-related inventions as lacking eligible subject matter. However,

against *Alice*?

In the right circumstance, the Supreme Court could address or limit *Alice*, but that is highly unlikely given that it was a unanimous decision. Of the other potential actors, technology companies are in prime position to lobby Congress for meaningful reform on section 101 that will provide a clear avenue for software patenting now and into the future. However, technology companies have been unwilling to tackle the issue of software patents for several reasons. First, the public perception that software patents are valueless and that only patent trolls assert them makes a public battle over software patent legislation a costly affair in Congress—both in terms of money and in political capital—even though America’s largest technology companies—including IBM, Google, Microsoft, and Apple—together apply for thousands of software patents each year.⁴⁴ Second, many technology companies have diversified their product portfolios to reduce their dependence on software profit margins and to instead, as in the case of Apple, generate those margins by linking between product lines and services. Third, most technology companies pursue cross licensing agreements to protect product lines and entire lines of business. If *Alice* leads to large-scale invalidation of large numbers of software patents, then technology companies could be waiting to see if the impacts are distributed evenly across technology companies or if they disproportionately impact some companies and not others. For each of these reasons, there is little cost for technology companies to *wait and see* what happens in the aftermath of *Alice*.

Of course, the impacts of *Alice* will cascade across the technology industry when companies will no longer be able to prevent other companies from directly copying their technologies and competing with them. This is the inevitable groundswell of *Alice*.

This Comment will first discuss, in Part I.C, the scope, scale, and economic impact of software patents. Part I.D is a primer on patent law terms as it relates to software patents, and it includes a discussion of the particular challenges facing software patents. Part II outlines the procedural differences between modern section 101 cases before and after *Mayo*, culminating in a discussion of the *Alice* decision in Part II.A, measurable impacts of *Alice* in Part II.B, and legal implications of *Alice* in Part II.C. Finally, in Part III, this Comment will discuss why *Alice* is the product of the technology industry and why technology companies must ultimately take responsibility for unwinding *Alice* through Congressional action.

I. SOFTWARE PATENTS IN CONTEXT

Article I of the Constitution grants Congress control over intellectual property: “[t]he Congress shall have power . . . [t]o promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries”⁴⁵ This *exclusive* patent right is a monopoly which enables a patent owner to prevent others from making, using, offering for sale,

there is too little data to say whether this is a trend or a temporary spike. Some say reports of the death of software patents have been greatly exaggerated.”)

44. See *infra* Figure 4.

45. U.S. CONST. art. I, § 8, cl. 8.

or selling any patented invention.⁴⁶ As property, a patent consists of the right to exclude others.⁴⁷ “It is, in effect, a bundle of rights which may be divided and assigned, or retained in whole or part.”⁴⁸ The patent grant is also territorial in nature and is focused on acts performed in the United States.⁴⁹ However, at its core, the Patent Act is a system of disclosure, in which an inventor demonstrates to the public how to make and use an invention in return for limited monopoly protection.⁵⁰ An issued patent is a legal document that is presumed valid⁵¹ in court and that provides notice to other inventors, technologists, and product developers in a given industry.⁵²

To understand the scope of software patents, one only need to visit a website—something as simple as the Google homepage. Sitting behind that single web page and its innocent-looking search box is millions (if not billions) of lines of software code, embodying billions of dollars of research and development.⁵³ This innovation is captured in thousands of patents for search engine technologies, Internet advertising, distributed computing, databases, graphical user interfaces, and so forth. In this context, the patent right enables companies such as Apple, Google, IBM, and Microsoft to prevent competitors from copying.

However, in order to prevent others from copying, the patent right requires a patent owner to file suit in federal district court.⁵⁴ Once a patent owner has filed suit against an alleged infringer, the defendant has the right to assert a series of defenses which include (1) that the asserted patent is invalid; and (2) that the defendant is not infringing.⁵⁵ The first defense—patent invalidity—is particularly concerning in relation to software inventions, because software is ultimately a process or a method, and a key argument against the validity of process inventions is to assert that the process is simply an “abstract idea” and is therefore not patentable.⁵⁶ A key challenge for software is that inventions can be articulated as processes, machines, or even products, but the validity of a patent based upon the invention hinges on whether the underlying process is an abstract idea. In this, we say that the claims “rise or fall together,” specifically, the patent claims rise and fall with the underlying

46. 35 U.S.C. § 271(a) (1952) (“Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States, or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.”).

47. 35 U.S.C. § 154(a)(1) (1994) (“Every patent shall contain a short title of the invention and a grant to the patentee, his heirs or assigns, of the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States, and, if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States, or importing into the United States, products made by that process, referring to the specification for the particulars thereof.”).

48. *Vaupel Textilmaschinen KG v. Meccanica Euro Italia SPA*, 944 F.2d 870, 875 (Fed. Cir. 1991).

49. 35 U.S.C. § 154(a)(1) (1994); *see also* 35 U.S.C. § 271 (2012) (defining the scope of patent infringement as within the United States).

50. *See* 35 U.S.C. § 112 (2012). *See also* Sean B. Seymore, *The Teaching Function of Patents*, 85 NOTRE DAME L. REV. 621, 625 (2010) (detailing the disclosure requirement).

51. 35 U.S.C. § 282 (2012) (presumption of validity).

52. 35 U.S.C. § 112 (2012).

53. *See* *CLS Bank Int'l v. Alice Corp.*, 717 F.3d 1269, 1313 (Fed. Cir. 2013) (Moore, J., dissenting).

54. *See* 35 U.S.C. § 271 (2012).

55. *See* 35 U.S.C. § 282 (2012).

56. *See* discussion *infra* Part I.E.

process.⁵⁷ As we see in the *Alice* decision, processes as articulated in software inventions are particularly vulnerable to subjective challenge under section 101 of the Patent Act.

A. 1952 Patent Act

Opponents to software patents often assert that software patents are overly broad and that there is no invention to be found in much of software.⁵⁸ Since this Comment discusses the Patent Act, it is helpful to understand the modern patent statute, how it eliminated the requirement of “invention,” and how the requirements of the statute work together. The 1952 Patent Act made a major change to the way patent law worked by eliminating the common law test of “invention” and replacing it with section 103, which created a statutory test for “obviousness.”⁵⁹

During the Nineteenth Century, in *Hotchkiss v. Greenwood*,⁶⁰ the Supreme Court developed the common law principle of inventiveness.⁶¹ By the middle of the Twentieth Century, the Supreme Court had begun to expand the principle of inventiveness, in *Cuno Engineering Corp. v. Automatic Devices Corp.*,⁶² to include an altogether new and different requirement of *genius*: “the new device, however useful it may be, must reveal the *flash of creative genius*, not merely the skill of the calling.”⁶³

Courts applied variations of the so-called “flash of genius” test in a series of cases throughout the 1940s.⁶⁴ In 1943, the National Patent Planning Commission observed that the patent system was plagued by “the lack of a definitive yardstick as to what is invention.”⁶⁵ The Commission proposed that the “patentability of an invention sh[ould] be determined by the objective test as to its advancement of the arts and sciences.”⁶⁶

By the end of that decade, some on the Supreme Court were circumspect about the role of the Court in invalidating patents. In a dissent in *Jungersen v. Ostby & Barton Co.*,⁶⁷ Justice Jackson wrote, “I doubt that the remedy for such Patent Office passion for granting patents [that it should not have] is an equally strong passion in this Court for striking them down so that *the only patent that is valid is one which this Court has not been able to get its hands on.*”⁶⁸

57. See, e.g., *CLS Bank Int'l v. Alice Corp.*, 717 F.3d 1269, 1311 (Fed. Cir. 2013) (Rader, J., concurring in part and dissenting in part).

58. See *infra* note 245 and accompanying text.

59. See *infra* note 70.

60. 52 U.S. 248 (1851).

61. See *id.* at 265 (invalidating a patent for attaching porcelain doorknobs because “no more ingenuity or skill [is] required to construct the knob in this way than that possessed by an ordinary mechanic acquainted with the business”).

62. 314 U.S. 84 (1941).

63. *Id.* at 90-91 (emphasis added) (citations omitted).

64. *Great Atl. & Pac. Tea Co. v. Supermarket Equip. Corp.*, 340 U.S. 147 (1950); *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1 (1946); *Cuno Eng'g Corp. v. Automatic Devices Corp.*, 314 U.S. 84 (1941).

65. REPORT OF THE NAT'L PATENT PLANNING COMM'N, H.R. DOC. NO. 78-239, at 10 (1943).

66. *Id.*

67. 335 U.S. 560 (1949).

68. *Id.* at 572 (Jackson, J., dissenting) (emphasis added).

I. Resolving “Invention”

Congress had taken note of the controversy surrounding *Cuno* and the “flash of genius” test of invention and had incorporated the recommendations of the National Patent Planning Commission into a legislative process that involved patent attorneys, bar associations, and companies.⁶⁹ According to the legislative history, the resulting section 103⁷⁰ “paraphrases language which has often been used in decisions of the courts, and the section is added to the statute for uniformity and definiteness.”⁷¹ The authors of the Act—P. J. Federico, Giles S. Rich, and Paul Rose⁷²—make oblique reference to *Cuno*, but the purpose of section 103 is otherwise clear: “[t]his section should have a stabilizing effect and minimize great departures which have appeared in some cases.”⁷³

Rich later clarified that the last sentence of section 103⁷⁴ was written specifically to overturn *Cuno*.⁷⁵ Furthermore, Rich has explained that he and the other drafters of section 103 sought to distance themselves from the inventiveness requirement and that “[t]he use of the term ‘invention’ was, in fact, carefully avoided with a view to making a fresh start, free of all the divergent court opinions and rhetorical pronouncements about ‘invention.’”⁷⁶

a. *Graham v. Deere*

In its 1966 *Graham v. Deere*⁷⁷ decision, the Supreme Court definitively interpreted section 103: “[w]e have concluded that the 1952 Act was intended to codify judicial precedents . . . and that, while the clear language of § 103 places emphasis on an inquiry into obviousness, the general level of innovation necessary to sustain patentability remains the same.”⁷⁸ This interpretation provided guidelines

69. See generally *Patent Law Codification and Revision: Hearings on H.R. 3760 Before the Subcomm. No. 3 of the H. Jud. Comm.*, 82nd Cong. 30 (1951) (statement of Henry R. Ashton, Chairman of Coordinating Committee, National Council of Patent Law Associations).

70. 1952 Patent Act, Pub. L. No. 82-593. 66 Stat. 798 (“§ 103 Conditions for patentability; non-obvious subject matter. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title if the difference between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.”).

71. S. Rep. No. 82-1979, at 2393, 2400 (1952).

72. See *Patent Law Codification and Revision*, *supra* note 69 (“It also seems appropriate to record here our thanks to the officers and members of the legislative committees of our associations and other individuals who have worked so diligently, and finally to thank Messrs. [P. J.] Federico, [Giles S.] Rich, and [Paul] Rose without whose untiring and invaluable help the work of the coordinating committee could not have been carried on.”).

73. *Patent Law Codification and Revision*, *supra* note 69 (statement of P.J. Federico, Examiner-in-Chief, United States Patent Office).

74. 35 U.S.C. § 103 (2012) (“Patentability shall not be negated by the manner in which the invention was made.”).

75. Giles S. Rich, *The Vague Concept of “Invention” as Replaced by Sec. 103 of the 1952 Patent Act*, 46 J. PAT. OFF. SOC’Y 855, 867 (1964).

76. *Id.* at 864-65; *id.* at n.21.

77. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966).

78. *Id.* at 3-4.

for how courts⁷⁹ and the USPTO⁸⁰ have subsequently applied the principle of obviousness.

2. “Process” Replaces “Art”

While section 103 is considered to be one of the major innovations⁸¹ of the 1952 Act, the statute also made a minor change in defining patent-eligible subject matter in section 101. Congress replaced *art* with *process* to avoid confusion with the constitutional phrase “the useful arts” and because “process” was the more modern term.⁸² In other words, although *process* was a natural choice in 1952, at the time Congress could not have known that six decades later process inventions—implemented in software on computers—would become a major area of economic development, and that the intersection between processes and “invention” would become a hotly-contested area of patent law jurisprudence.⁸³

3. The “Coarse Filter” of Section 101

Until recently, section 101 was considered to be a “coarse filter” for evaluating the patent eligibility of the underlying subject matter of the invention—namely that patent claims must fit within the four statutory categories and those claims are then evaluated in terms of sections 101, 102, 103, and 112.⁸⁴ As a “coarse filter,” section

79. See, e.g., *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567 (Fed. Cir. 1987).

80. See generally 2141-58 MPEP (9th ed., Mar. 2014) (providing examination guidelines for section 103).

81. See S. Rep. No. 82-1979, at 2393, 2397 (1952) (“The major changes or innovations in the title consist of incorporating a requirement for invention in sec. 103 and the judicial doctrine of contributory infringement in sec. 271.”).

82. *Patent Law Codification and Revision: Hearings on H.R. 3760 Before the Subcomm. No. 3 of the H. Jud. Comm.*, 82nd Cong. 37 (1951) (statement of P. J. Federico, Examiner in Chief, United States Patent Office) (explaining the reasons why the drafters of section 101 had chosen “process” to replace “art”).

83. See *Alice Corp. v. CLS Bank, Int’l*, 134 S. Ct. 2347, 2360 (2014) (invalidating a software patent for an exchange trading system, holding the claims to be directed to an abstract idea); *Bilski v. Kappos*, 561 U.S. 593, 604 (2010) (holding a scheme for computerized economic hedging to be an abstract idea and not patentable subject matter); *Parker v. Flook*, 437 U.S. 584, 596 (1978) (upholding a patent examiner’s determination that the application of alarm limits in a manufacturing process was not patentable subject matter); *Gottschalk v. Benson*, 409 U.S. 63, 72-73 (1972) (upholding the denial of a method patent application claiming the conversion to and from binary numbers on a computer, because the algorithm was not a “process” for the purposes of section 101); *contra* *Diamond v. Diehr*, 450 U.S. 175, 191-93 (1981) (overturning the denial of a method patent application claiming a process for curing rubber by applying the Arrhenius equation to be a patentable application of a mathematical formula and not an attempt to patent the equation itself).

84. See *Diehr*, 450 U.S. at 189-90 (quoting *In re Bergy*, 596 F.2d 952, 961 (C.C.P.A. 1979)) (“It has been urged that novelty is an appropriate consideration under § 101. Presumably, this argument results from the language in § 101 referring to any ‘new and useful’ process, machine, etc. Section 101, however, is a general statement of the type of subject matter that is eligible for patent protection ‘subject to the conditions and requirements of this title.’ Specific conditions for patentability follow and § 102 covers in detail the conditions relating to novelty. The question therefore of whether a particular invention is novel is ‘wholly apart from whether the invention falls into a category of statutory subject matter.’”); *Flook*, 437 U.S. at 593 (“[R]espondent incorrectly assumes that if a process application implements a principle in some specific fashion, it automatically falls within the patentable subject matter of § 101 and the substantive patentability of the particular process can then be determined by the conditions of §§ 102 and

101 has historically functioned in conjunction with section 112 as part of the “utility” requirement⁸⁵ and not as the “fine-filter” gatekeeper that the *Alice* court suggests it should be.⁸⁶

P. J. Federico, a co-author of the 1952 Act, explained the interplay between section 101 and the rest of the Act in the following way: “[a] person may have ‘invented’ a machine or a manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under section 101 *unless the conditions of the title are fulfilled*.”⁸⁷ The “conditions and requirements”⁸⁸ of the Patent Act consist of four distinct criteria:⁸⁹

Novelty. The requirement that an invention be “new” refers to the comparison between two identically similar inventions—if the inventions are not identical, then patent law does not compare them for novelty purposes. Section 102 defines the types of evidence used to determine novelty.⁹⁰

Utility. An invention with no known purpose or that produces something with no known application is not considered to be useful.⁹¹

Nonobviousness. This requirement evaluates an invention according to the perspective of a Person Having Ordinary Skill in the Art (PHOSITA) and asks the question of whether it would have been obvious for that person to combine known elements to make the claimed invention.⁹²

Enablement. This last requirement also relies on the concept of a PHOSITA and asks whether the written description in the patent or patent application shares

103.”). While *Flook* disagreed with the “coarse filter,” it articulated the principle succinctly. *Id.* Nonetheless, the USPTO continued to rely on the “coarse filter” approach in patent examination until shortly after the *Alice* decision. Compare 2106 MPEP, *infra* note 94, with source cited *infra* note 208.

85. See *In re Bergy*, 596 F.2d 952, 960-62 (C.C.P.A. 1979) (detailing statutory interpretation of the 1952 Patent Act); see also 2107 MPEP (9th ed. Rev. 11, Nov. 2013) (“Office personnel are to adhere to the following procedures when reviewing patent applications for compliance with the ‘useful invention’ (‘utility’) requirement of 35 U.S.C. 101 and 35 U.S.C. 112(a) . . .”).

86. The Great Patent Debate, *supra* note 40 (“Section 101 was always meant to be a coarse filter, and is extremely ill-suited for the fine-grained matters courts are increasingly running through it. Despite an express warning from the Supreme Court in the *Alice* opinion to ‘tread carefully’ in construing Section 101’s exclusionary principle ‘lest it swallow all of patent law’, the lower courts have read onto *Alice* a command to begin every case touching on patent validity with a Section 101 inquiry.”).

87. *Patent Law Codification and Revision: Hearings on H.R. 3760 Before the Subcomm. No. 3 of the H. Jud. Comm.*, 82nd Cong. 37 (1951) (statement of P. J. Federico, Examiner in Chief, United States Patent Office) (emphasis added).

88. 35 U.S.C. § 101 (1952).

89. See generally *In re Bergy*, 596 F.2d 952, 960-62 (C.C.P.A. 1979).

90. See 35 U.S.C. § 102(a)(1) (2012) (“A person shall be entitled to a patent unless—(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.”).

91. See 35 U.S.C. § 101 (1952); 35 U.S.C. § 112 (2012). See also *Brenner v. Manson*, 383 U.S. 519, 531 (1966) (holding that the process for making a new steroid was not useful, because there were no known uses for the new steroid); *In re Swartz*, 232 F.3d 862, 863 (Fed. Cir. 2000) (upholding the denial of a patent for cold fusion, because the results could not be duplicated, therefore failing to be useful under § 101 as well as enabled under the “closely related” requirements of § 112, ¶1).

92. 35 U.S.C. § 103 (2012) (“A patent for a claimed invention may not be obtained . . . if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.”).

enough knowledge so that a PHOSITA could make and use the invention based upon the written description.⁹³

Historically, the USPTO has applied the “coarse filter” of section 101 as a measure of patent-eligible subject matter.⁹⁴ Furthermore, the arguments against the application of section 101 as a gatekeeper are based upon the long standing coarse-filter approach, and even the Supreme Court has acknowledged that the application of the judicial exceptions is a minority approach and a crude tool—“[t]he Court has recognized, however, that too broad an interpretation of this exclusionary principle could eviscerate patent law.”⁹⁵ This Comment argues that the *Alice* decision is an overly broad interpretation of the principle.

B. What Is a Software Patent?

The intellectual property associated with software takes several different forms. Software “code” is generally protected by copyright.⁹⁶ The “look and feel” of software applications is protectable as trade dress under trademark law.⁹⁷ Patent law can protect the design of user interfaces as well as the processes, computing systems, and products associated with software. However, not all software is an “application” that runs locally on a computer or mobile device—some software sits behind websites, runs on servers, enables various forms of data processing, provides connectivity with databases, and supports corporate applications. Furthermore,

the term ‘software patent,’ . . . is often used to refer to many different types of patented innovation. . . . [and] has been used to encompass such inventions as electrical patents and business method patents simply because the patented innovation uses some type of computer software program in its implementation.⁹⁸

Software can qualify for either a design patent or a utility patent. Design patents protect the appearance of something, whereas utility patents protect the way something works or functions. For example, Apple Computer protected its famous “slide-to-unlock” feature for mobile devices in two ways: the look of the unlock button is protected by a design patent,⁹⁹ and the functionality of the slide-to-unlock button, including the operation of the capacitive touch screen, is protected by a utility

93. 35 U.S.C. § 112(a) (2012) (“The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art . . . to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.”).

94. See 2106 MPEP (9th ed. Rev. 11, Nov. 2013) (“There are two criteria for determining subject matter eligibility and both must be satisfied. The claimed invention (1) must be directed to one of the four statutory categories, and (2) must not be wholly directed to subject matter encompassing a judicially recognized exception[.]”).

95. *Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289, 1293 (2012) [hereinafter *Mayo*].

96. See 17 U.S.C. § 100 (2012) (including a definition for “computer program.”); 17 U.S.C. § 101 (1990) (defining the scope of copyright protection and statutory protections against overlap with patent rights).

97. See generally 15 U.S.C. §§ 1051–1141 (2012).

98. Adam Mossoff, *A Brief History of Software Patents (and Why They’re Valid)*, CENTER FOR THE PROTECTION OF INTELLECTUAL PROPERTY, GEORGE MASON UNIVERSITY SCHOOL OF LAW (Sept. 18, 2013), <http://cpip.gmu.edu/2013/09/18/a-brief-history-of-software-patents-and-why-theyre-valid-2/>.

99. U.S. Patent No. D675,639 (filed Sep. 19, 2011).

patent.¹⁰⁰

Software and software-related technologies that qualify for utility patents are found in classes 700-19 and 726 of the U.S. Patent Classification (USPC). Within the four statutory categories of invention, software can be patented in three of the categories: as processes, machines, and articles of manufacture.¹⁰¹ As a result, patent drafters tend to write claims encompassing all three types of invention.¹⁰² However, regardless of whether a software patent claims a process, machine, or article of manufacture, the method inherent to software is considered dominant, and the method is especially vulnerable to attack as an “abstract idea” as articulated in *Alice*.¹⁰³

Software has become an important sector in the U.S. economy to the point that U.S. companies increasingly invest capital in software. To protect these software investments, U.S. companies obtain software patents, and today, software patents account for nearly a quarter of all patents issued each year by the USPTO. Software patents rely on method claims, and method claims are in jeopardy as a result of *Alice*. This means that close to a quarter of patents issued each year are threatened by *Alice* and are potentially valueless as a result of the Supreme Court’s actions.

C. Software Patents Are Important to The U.S. Economy

It is no secret that over the past fifty years¹⁰⁴ software and the Internet have become an important part of the U.S. economy.¹⁰⁵ Also, it is no secret that the U.S. manufacturing sector has experienced rapid declines in the early part of the 21st Century.¹⁰⁶ The growth in the software industry has been accompanied by a growth in software intellectual property (IP) investment as well as growth in software patents.¹⁰⁷ Today, software accounts for nearly half of all U.S. IP investment, and software-related innovations account for a quarter of all U.S. patents issued each year.¹⁰⁸

100. U.S. Patent No. 8,665,225 (filed Jun. 30, 2008).

101. See Part I.D.1 *infra*.

102. See, e.g., U.S. Patent No. 7,479,949 (filed Apr. 11, 2008) (showing a single patent in which a mobile device and user interface is protected under system, method, and article of manufacture (*Beauregard*) claims).

103. Mossoff, *supra* note 98.

104. See Barry M. Leiner, et al, *Brief History of the Internet*, INTERNET SOCIETY, <http://www.internetsociety.org/internet/what-internet/history-internet/brief-history-internet> (last visited Oct. 28, 2014) (“[B]y the end of 1969, four host computers were connected together into the initial ARPANET, and the budding Internet was off the ground.”); *Milestones in AT&T History*, AT&T, http://www.thocp.net/companies/att/att_company.htm (last visited Sep. 2, 2015) (“1971: Researchers at Bell Telephone Laboratories create the Unix computer operating system, which is designed to be hardware independent. It eventually becomes the underlying language of the Internet.”).

105. See, e.g., *Powerful People #7 Bill Gates*, FORBES MAG, <http://www.forbes.com/profile/bill-gates> (last visited Nov. 14, 2014) (identifying Microsoft founder, Bill Gates, as “America’s richest man”).

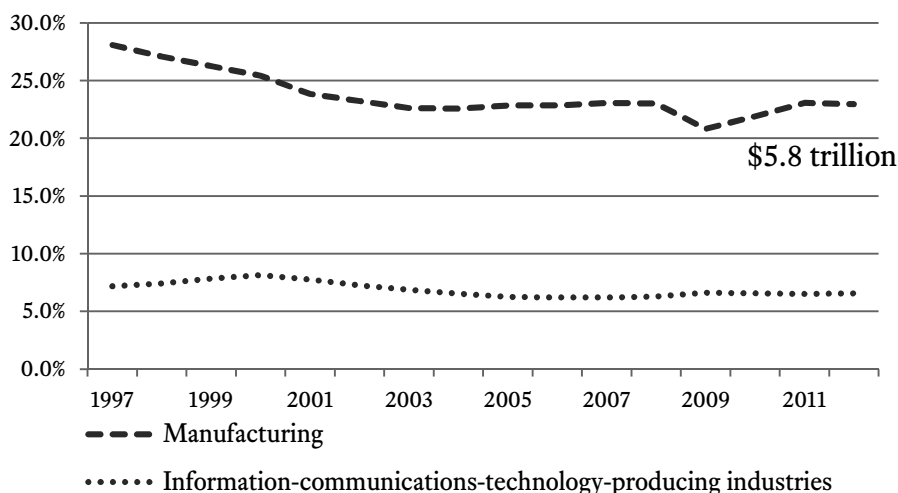
106. See, e.g., Justin R. Pierce and Peter K. Schott, *The Surprisingly Swift Decline of U.S. Manufacturing Employment*, FEDERAL RESERVE BOARD FINANCE AND ECON. DISCUSSION SERIES at 2 (Apr. 2014), <http://www.federalreserve.gov/pubs/feds/2014/201404/201404pap.pdf> (“U.S. manufacturing employment fluctuated around 18 million workers between 1965 and 2000 before plunging 18 percent from March 2001 to March 2007.”).

107. See *infra* notes 109–117 and accompanying text.

108. See *infra* notes 112–116 and accompanying text.

Figure 1 shows that in 2012, the U.S. Bureau of Economic Analysis calculated that industries that produce information and communications technologies (ICT) account for \$1.66 trillion in revenues, or 6.6%, of the U.S. private-sector Gross Domestic Product.¹⁰⁹ By comparison, manufacturing generates revenues of \$5.8 trillion, which accounts for 23%¹¹⁰ of the U.S. private-sector economy and is roughly three and a half times the size of the ICT industry.

Figure 1: Manufacturing and ICT As A Percentage Of U.S. Private-Sector GDP (1997-2012)¹¹¹



However, as Figure 2 demonstrates, U.S. companies have made significant changes in the ways in which they invest in intellectual property products.¹¹² In 1970, software accounted for 12.8% of IP investment, compared to 59.8% for manufacturing. Today those numbers have shifted, with U.S. companies investing three dollars in software for every two dollars they invest in manufacturing

109. *Industry Data, GDP-By-Industry*, U.S. BUREAU OF ECON. ANALYSIS, http://www.bea.gov/iTable/index_industry_gdpIndy.cfm (interactive table; follow “Begin using the data” button) (last visited Sept. 7, 2015) (“Information communications technology producing industries—Consists of computer and electronic product manufacturing . . . software publishers; broadcasting and telecommunications; data processing, hosting and related services; internet publishing and broadcasting and web search portals; and computer systems design and related services.”).

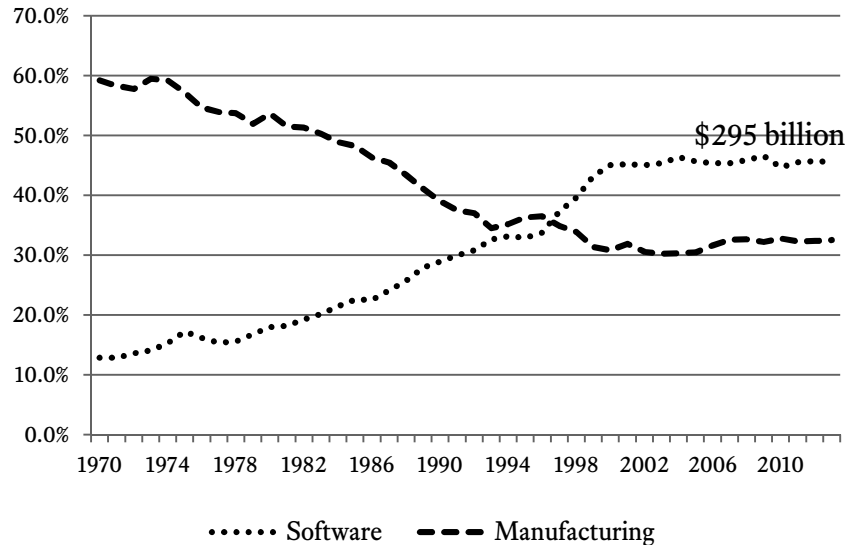
110. *Id.*

111. *Id.*

112. Steven Rosenthal et al., *Integrated Industry-Level Production Account for the United States: Intellectual Property Products and the 2007 NAICS*, U.S. BUREAU OF ECON. ANALYSIS AND U.S. DEP’T OF LABOR, (June 25, 2014) http://www.bea.gov/industry/pdf/IntegratedProductionAccount_3rdWorldKlems_BEA_BLS_paper.pdf (“[I]ntellectual property products [are] expenditures on R&D and on entertainment, artistic, and literary originals [which] were added as new intangible-capital formation.”) (last visited Sept. 7, 2015).

technologies.¹¹³ Software accounts for \$295 billion a year in IP investment.¹¹⁴

Figure 2: U.S. Private Intellectual Property Investment (1970–2013)¹¹⁵



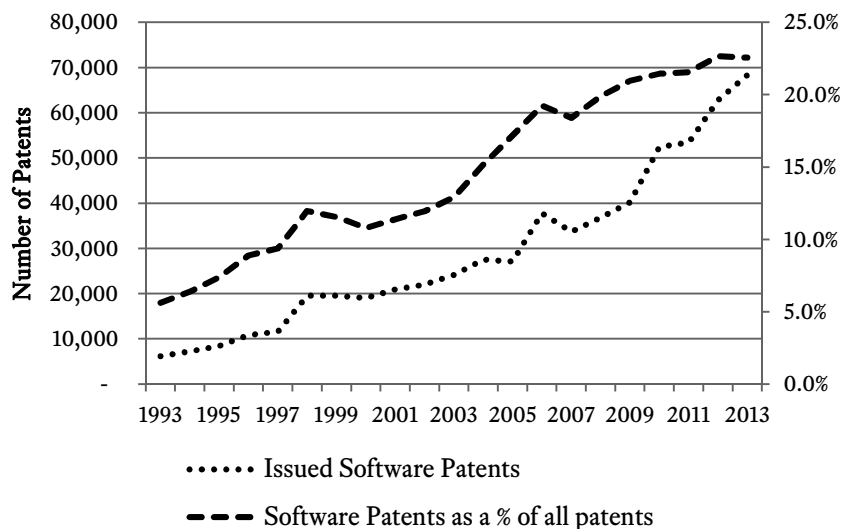
Increased investments in software intellectual property products have also led to an increase in patenting of software and related electrical and computer technologies. As chronicled in *Figure 3*, the number of issued software patents, as defined by the U.S. data processing categories in classes 700 through 719,¹¹⁶ has grown over the past twenty years, both in terms of raw numbers and as a percentage of issued U.S. patents.

113. *National Data, Table 5.6.5. Private Fixed Investment in Intellectual Property Products by Type*, U.S. BUREAU OF ECON. ANALYSIS, http://www.bea.gov/iTable/index_nipa.cfm (interactive table; follow “Begin using the data” button) (last visited Sept. 7, 2015) (demonstrating that, in 2013 U.S. companies invested 45.5%, or \$295 billion, of their annual IP investments in software, compared to 32.5% for IP investments in manufacturing). In 1970, U.S. companies invested five dollars in manufacturing technologies for every dollar investment in software. *Id.*

114. *Id.*

115. *Id.*

116. See *US Classes by Number with Title Menu*, U.S. PATENT & TRADEMARK OFFICE, <http://www.uspto.gov/web/patents/classification/selectnumwithtitle.htm> (last visited Sept. 7, 2015) (linking to definitions for individual U.S. patent classifications).

Figure 3: Growth In U.S. Software Patents (1993-2013)¹¹⁷

Today, software patents account for 22.6% of all patents issued in the United States.¹¹⁸ This number is potentially much larger because patents are often categorized in multiple patent classes, and software innovations related to other types of invention may be found in secondary classes not counted in the USPTO statistics.¹¹⁹ Also, given that it takes three or more years for the USPTO to issue a patent based upon an application, patent statistics tend to lag behind actual technology investments. For example, the jump in software patents in the late 1990s most likely resulted from investments several years earlier, and the increase in software patents around 2006 was likely the result of patent applications filed during the technology boom of the late 1990s.¹²⁰

A shift in IP investment is but one part of a much larger economic change in which the United States has transitioned from an economy focused on manufacturing to one dominated by information, software, and services.¹²¹ There have been repercussions in other areas, such as the law, where the U.S. patent system continues

117. Patent Technology Monitoring Team, *Patent Counts By Class By Year*, U.S. PATENT & TRADEMARK OFFICE, <http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cbcbby.htm> (Part I table, classes 700-19) (last visited Sept. 7, 2015).

118. *Id.*

119. *Id.*

120. See, e.g., *Performance and Accountability Report, Fiscal Year 2013*, U.S. PATENT & TRADEMARK OFFICE, at 16 (Nov. 20, 2013). <http://www.uspto.gov/about/stratplan/ar/USPTOFY2013PAR.pdf> (tracking the time from application to issue for utility patents; between 2009 and 2013, the average patent took approximately 33 months from application to issue).

121. See, e.g., *futurework - Trends and Challenges for Work in the 21st Century, Chapter 6 - Technology*, U.S. DEP'T OF LABOR, <http://www.dol.gov/oasam/programs/history/herman/reports/futurework/report/chapter6/main.htm> (last visited Sept. 7, 2015) (noting that information technology has changed the nature of the American workplace).

to struggle to keep pace with developments in computing, software, and business. As U.S. companies trade increasingly in intangible creations—ideas, plans, designs, approaches to management and so forth— intellectual property, and specifically patents, have become the key mode for protecting the underlying innovation.¹²² The areas of technology that include software are especially contentious. For example, the USPTO recently introduced a set of administrative post patent grant proceedings in which third parties may challenge the validity of an issued patent,¹²³ and to date 71% of these proceedings have related to patents in the “Electrical/Computer” arts.¹²⁴

D. Software Patents Hinge On Method Claims

With software-related innovations accounting for nearly a quarter of U.S. patents, software patents have become an important part of the U.S. patent system. In addition to the useful improvements inherent to software, the term “software patents” also refers to patented innovations that require some form of computer software in order to implement them, such as inventions involving electrical technologies and business methods.¹²⁵ While software may be patented in a number of ways, courts have focused patent invalidity challenges on the methods claimed in software patents.¹²⁶ Before this Comment addresses this case law and the recent *Alice* decision, it is important to address the four categories of invention and the ways in which software fits into these categories.

1. The Four Categories of Invention

Section 101 of the modern patent statute recites what appears to be a relatively simple rule that inventions must fit within four categories: processes, machines, articles of manufacture, and compositions of matter.¹²⁷ The Supreme Court has changed the way section 101 operates by removing a broad range of subject matter from section 101¹²⁸ with what are known as the “judicial exceptions” to section

122. See, e.g., *U.S. Patent Activity, Calendar Years 1790 to the Present, Table of Annual U.S. Patent Activity Since 1790*, U.S. PATENT & TRADEMARK OFFICE, http://www.uspto.gov/web/offices/ac/ido/oeip/taf/h_counts.htm (last visited Sept. 6, 2015) (showing that U.S. utility patent applications have grown steadily at 5.8% annually over the past 30 years).

123. See 35 U.S.C. §§ 311–329 (2012) (revising reexamination proceedings and creating *Inter Partes* Review (IPR), Post Grant Review (PGR) and the Transitional Program for Covered Business Method Patents (CBM)).

124. *AIA Progress Statistics – Graphical View and Subsets*, U.S. PATENT & TRADEMARK OFFICE (Oct. 23, 2014), http://www.uspto.gov/ip/boards/bpai/stats/102314_aia_stat_graph.pdf. See also Patrick Driscoll and Michael McNamara, *Inter Partes Review Initial Filings of Paramount Importance: What Is Clear After Two Years of Inter Partes Review Under the AIA*, MINTZ LEVIN INTELLECTUAL PROPERTY ADVISORY (Oct. 21, 2014), <http://www.mintz.com/newsletter/2014/advisories/4363-1014-nat-ip> (calculating that only 9% of all patents that enter post-grant proceedings survive without having at least one claim cancelled).

125. See *supra* note 98 and accompanying text.

126. See, e.g., *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2360 (2014) (“Put another way, the system claims are no different from the method claims in substance.”).

127. 35 U.S.C. § 101 (1952) (“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.”).

128. See discussion *infra* Part II.

101.¹²⁹ Namely, the “judicial exceptions” are, “laws of nature, natural phenomena, and abstract ideas are not patentable.”¹³⁰

The USPTO continues to issue, and courts continue to uphold, software patents in a number of USPC technology classes¹³¹ for inventions claiming methods, systems, and articles of manufacture. However, regardless of which type of invention a software patent claims, the validity of the patent hinges on the validity of the underlying process¹³² as articulated in what are known as “method claims.”¹³³

a. Patent Claims

There are several parts to a patent application, including a specification, a drawing, and an oath or declaration.¹³⁴ The specification includes a written description of the invention that can include drawings and diagrams; the purpose of the written description is to explain to others how to make and use the patented invention.¹³⁵ Within the specification, the *claims* define the scope of the invention.¹³⁶

The claims begin with “I claim:” and include each specific claim.¹³⁷ For example, U.S. Patent No. 6,206,000 for a “Canine scuba diving apparatus” includes the following claim:

I claim:

1. An underwater self-contained breathing apparatus for use by a canine, comprising:
 - a transparent rigid helmet having a skirted opening for the wearer’s neck, the helmet being sufficiently large to avoid contact with the face or nose of the canine user;
 - a regulator for supplying a breathable gas attached to the helmet;
 - a means of adjusting a position of a demand valve in the regulator to pressurize the helmet at no less than ambient pressure;
 - a harness attached to the helmet;
 - means for fastening the harness around the wearer’s torso; and
 - one or more pockets in the harness for receiving ballast weights.¹³⁸

129. *See supra* note 94.

130. *Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289, 1293 (2012) (quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980)) (internal quotation marks and brackets omitted).

131. *See supra* *Figure 3*.

132. *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2360 (2014) (holding system claims for a general purpose computer to be invalid, because the method claims had been determined to be invalid); *contra* *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1321 (Fed. Cir. 2005) (holding that a system claim with a single component in Canada and the rest of the system in the United States was infringed but that the method claim with a single step performed in Canada was not infringed).

133. *See, e.g.*, *Mossoff*, *supra* note 98.

134. 35 U.S.C. § 111(a)(2) (2012) (enumerating the contents of a patent application).

135. *See* 35 U.S.C. § 112(a) (2012) (“The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.”); *see also* 37 C.F.R. 1.71(a) (2011).

136. 35 U.S.C. § 112(b) (2012) (“The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.”).

137. *Id.*

138. U.S. Patent No. 6,206,000 (filed Apr. 30, 1997).

This is an “apparatus claim” for a machine invention. Claim One here incorporates a preamble followed by the open-ended term “comprising.”¹³⁹ Each subsequent line in the claim is a specific limitation including each element that must be found in the invention. For example, this claim is limited to inventions with all six components—helmet, regulator, adjusting means, harness, fastening means, ballast pockets—and products that include all these elements may infringe this patent. However, a product that does not have all six of these components most likely does not infringe this patent, though such a product may infringe another patent.¹⁴⁰ Depending on the type of invention, a patent may include various types of claims.¹⁴¹

2. *Software Within The Four Categories of Invention*

The four categories of patentable invention are machines, processes, articles of manufacture, and compositions of matter.¹⁴² First of all, software is not a composition of matter, which is defined to be “all compositions of two or more substances.”¹⁴³ However, the remaining three categories provide patent protection for software and software-related inventions.¹⁴⁴

a. *Software as Process*

In U.S. patent law, “[t]he term ‘process’ means process, art, or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.”¹⁴⁵ Method claims are similar to other types of claims. For example, in *Alice*, one of the patents in question was U.S. Patent 5,970,479 (the “‘479 patent”), which included the following independent claim: “33. A method of exchanging obligations as between parties, each party holding a credit record and a debit record with an exchange institution, the credit records and debit records for exchange of predetermined obligations”¹⁴⁶

Software encompasses processes or methods for manipulating information, and

139. 2111.03 MPEP (8th ed. Rev. 9, Aug. 2012) (outlining the interpretation of transitional phrases such as “comprising” and “consisting of” in patent claims).

140. There are three issues raised by this point. First, if there were also a patent that had five of these six component limitations, then the inventor here may have added the sixth limitation in order to distinguish his invention from an earlier patent. Alternatively, the sixth component may have turned the invention into a much better product for canine scuba. Second, this situation outlines the patent as a right to exclude but not to include; the patent owner can exclude others from making products with all six components, but the patent is not a license to make a product with all six components because there may be an earlier patent on a canine scuba apparatus with five of the six components, because products including all six components infringe the earlier five-component patent. Third, if the six-component product infringes the five-component patent, there are still numerous reasons why an inventor would bother to make the improvement and acquire the patent.

141. 3-8 CHISUM ON PATENTS § 8.03 (2014).

142. 35 U.S.C. § 101 (1952).

143. See *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980) (citations omitted) (internal quotation marks omitted) (“In choosing such expansive terms as ‘manufacture’ and ‘composition of matter,’ modified by the comprehensive ‘any,’ Congress plainly contemplated that the patent laws would be given wide scope.”).

144. See *supra* note 102.

145. 35 U.S.C. § 100 (2012).

146. U.S. Patent No. 5,970,479 (filed May 28, 1993).

while patents may incorporate aspects of a software invention, the method claims are the foundation.¹⁴⁷ The underlying method is often central to the patentability and infringement of the other types of claimed inventions, but this serves to narrow the rights afforded the system and product claims. For example, in comparison to other types of inventions, the patentability of the method narrows the patentability of articles of manufacture¹⁴⁸ and product-by-process¹⁴⁹ claims.

In situations where only a process patent exists, a machine that exclusively performs that process only infringes the underlying patent when it is used; selling or transferring the machine does not constitute infringement.¹⁵⁰ Furthermore, software that embodies a process or algorithm—and without an accompanying physical embodiment such as a system or product—can end up in the murky territory of “abstract ideas,”¹⁵¹ which may not be patentable subject matter¹⁵² and which may lead to the invalidation of a patent at trial under the principles outlined in *Alice*.¹⁵³ In *Alice*, the Supreme Court upheld the invalidation of four different patents—two of which did not have method claims—based upon the abstract idea analysis originating from the method claims of the other two patents.¹⁵⁴

147. See *In re Chatfield*, 545 F.2d 152, 159-60 (C.C.P.A. 1976) (Rich, J. dissenting), (citations omitted) (“It has never been otherwise than perfectly clear to those desiring patent protection on inventions which are new and useful programs for general purpose computers (software) that the only way it could be obtained would be to describe and claim (35 U.S.C. § 112) the invention as a ‘process’ or a ‘machine.’ . . . This has been demonstrated time and again by the computer program cases which have come to this court.”).

148. *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1374 (Fed. Cir. 2011) (holding a *Beauregard* claim enacting a method to be invalid when the corresponding method claim was invalidated); *In re Abele*, 684 F.2d 902 (C.C.P.A. 1982) (invalidating an apparatus claim when the underlying method claim was held to be unpatentable). *Contra Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1213 (Fed. Cir. 2010) (upholding the *Beauregard* claims but invalidating the method claims).

149. See 2113 MPEP (8th ed. Rev. 9, Aug. 2012). Product-by-process claims face two separate inquiries: the patentability of the process, and the patentability of the product itself. Either inquiry can be dispositive of patent rights. See *In re Thorpe*, 777 F.2d 695, 697 (Fed. Cir. 1985) (citations omitted) (“[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.”).

150. See, e.g., *Joy Techs., Inc. v. Flakt, Inc.*, 6 F.3d 770, 776 (Fed. Cir. 1993) (“[T]he injunction cannot be sustained on the . . . sales of equipment without use of the method.”).

151. Mossoff, *supra* note 98 (“One of the primary problems with the term ‘software patent’ is that, like other widely used terms in the patent policy debates today, it lacks an objective definition. For instance, many critics of ‘software patents’ attack them as patents on ‘mathematics’ or patents on a ‘mathematical algorithm[.]’”).

152. See 35 U.S.C. § 101 (1952); see also *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2116 (2013) (internal quotation marks and brackets omitted) (citing *Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289, 1293 (2013)) (“We have long held that [section 101] contains an important implicit exception: Laws of nature, natural phenomena, and abstract ideas are not patentable. Rather, they are the basic tools of scientific and technological work that lie beyond the domain of patent protection.”).

153. See *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2349-50 (2014) (holding software for settling accounts between trading parties to be unpatentable as an abstract idea); see also *Bilski v. Kappos*, 561 U.S. 593, 604 (2010).

154. *Alice*, 134 S. Ct. 2347, 2360 (2014) (“Because petitioner’s system and media claims add nothing of substance to the underlying abstract idea, we hold that they too are patent ineligible under § 101.”).

b. Software as a Machine

In the category of machine inventions, software running on a computer is for all intents and purposes a “machine,”¹⁵⁵ protectable with language in a patent that is referred to as an “apparatus” or “system” claim. Often, system claims may include a user interface. Also, given the rapid development of computing technologies, the machine envisioned by a system claim may take very different forms a decade later when the patent owner seeks to enforce its IP rights.¹⁵⁶ Of course, this is a desirable outcome because the policy behind the patent system is to encourage disclosure of inventions and to avoid grants of broad monopolies to inventors who have conceived of an idea but who have not reduced their invention to practice.¹⁵⁷

c. Software Outputs as Articles of Manufacture

For the past two decades, companies have been patenting software as an article of manufacture by employing *Beauregard*¹⁵⁸ claims which incorporate the software onto “a computer readable medium.”¹⁵⁹ However, *Beauregard* claims are limited in effectiveness to any corresponding method claims, and if a court holds the method claims to be invalid, any dependent *Beauregard* claims will also be invalid.¹⁶⁰

Software can be linked to a medium of some kind and patented as an article of manufacture, but the output of software—transformed and manipulated data—is more difficult to patent. Courts have been unwilling to interpret “information” or the general output of software to be a product or an article of manufacture. For example, in *State Street Bank & Trust v. Signature Financial Group*,¹⁶¹ the Federal Circuit validated the patentability of a system that performed a data transformation, “because it produces ‘a useful, concrete and tangible result’—a final share price momentarily fixed for recording and reporting purposes. . . .”¹⁶² And yet, that result—the transformed data in the form of a final share price—would be difficult to patent as an “article of manufacture,” because it would lack the novelty required

155. See, e.g., *State St. Bank & Trust Co. v. Signature Fin. Grp.*, 149 F.3d 1368, 1372 (Fed. Cir. 1998) (“[C]laim 1, properly construed, claims a machine, namely a data processing system for managing a financial services configuration of a portfolio established as a partnership, which machine is made up of, at the very least, the specific structures disclosed in the written description and corresponding to the means-plus-function elements (a)-(g) recited in the claim.”).

156. See Heather J. DiPietrantonio and Edmund J. Walsh, *Inside Views: Getting The Most Value From Your Patent Claims*, INTELLECTUAL PROPERTY WATCH (Apr. 8, 2011), <http://www.ip-watch.org/2011/08/04/getting-the-most-value-from-your-patent-claims/>.

157. See *O’Reilly v. Morse*, 56 U.S. 62, 63 (1853) (invalidating Samuel Morse’s claim 8 to all forms of telecommunication using electromagnetic radiation “however developed” for claiming beyond the scope of his actual invention, the telegraph). *Contra* *Consol. Elec. Light Co. v. McKeesport Light Co. (Incandescent Lamp Patent)*, 159 U.S. 465, 472 (1895) (overturning a patent that claimed a genus of incandescent filaments, because Thomas Edison filed a later patent application for a species of the genus).

158. *In re Beauregard*, 53 F.3d 1583 (Fed. Cir. 1995).

159. *Id.* at 1583.

160. *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1374 (Fed. Cir. 2011) (holding a *Beauregard* claim enacting a method to be invalid when the corresponding method claim was invalidated); *In re Abele*, 684 F.2d 902 (C.C.P.A. 1982) (invalidating an apparatus claim when the underlying method claim was held to be unpatentable).

161. 149 F.3d 1368 (Fed. Cir. 1998).

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

under section 102 of the Patent Act.¹⁶³

3. Method Claims Are Protected Differently

Software patents are synonymous with method claims.¹⁶⁴ Method claims are unique, because infringement of a method claim requires that a single party perform all of the steps in a claimed process.¹⁶⁵ A party selling or licensing the “know how” inherent to a process is not the same as performing the process. For that reason, licensing of a patented process does not rise to the level of “selling” for purposes of the Patent Act.¹⁶⁶ Without a separate system claim addressing the physical embodiment of the process, the owner of a process patent cannot prevent another party from making or selling a machine that performs the patented process, even if the *sole purpose* of the machine is to perform the patented process.¹⁶⁷ And yet, even if a software patent includes a machine or article of manufacture claim, the patentability of the machine and product will be limited according to the patentability of the underlying method.¹⁶⁸ However, in an infringement analysis, the method must be performed in order to find infringement of the machine or article of manufacture claims, because the infringement of the method claim can only come through use.¹⁶⁹

E. “Abstract Ideas”—The Challenge For Software Patents

A software patent provides intellectual property protection for the way a software-related technology functions or is designed.¹⁷⁰ In general, software patents encompass a wide range of technologies, from electrical circuitry, computers, data processing, robotics, and telecommunications to business methods. This is because various forms of software are used to implement inventions in these technology areas.¹⁷¹ Software patents are distinct from, and provide different protections than, trademarks and copyright.¹⁷²

Over the past fifty years, software patents have become an important aspect of the U.S. economy. Between 2012 and 2013, software represented \$1.66 trillion in U.S. gross domestic product, \$295 billion in annual private investment. In addition, software patents constitute an expanding proportion of patent law, with 70,000 patents issued, accounting for 22.6% of all U.S. patents.¹⁷³

163. See 35 U.S.C. § 102 (2012).

164. Mossoff, *supra* note 98 and accompanying text.

165. *Roberts Dairy Co. v. United States*, 530 F.2d 1342, 1354 (Ct. Cl. 1976) (citations omitted) (“It is well established that a patent for a method or process is not infringed unless all steps or stages of the claimed process are utilized.”).

166. See *In re Kollar*, 286 F.3d 1326, 1332 (Fed. Cir. 2002) (holding that the licensing of technology covered by a patent does not invoke the “on sale” bar under section 102(b) of the Patent Act).

167. See Karen G. Hazzah, *Are system claims better than method claims for computer-implemented inventions?*, ALL THINGS PROS (Mar. 6, 2011) <http://allthingspros.blogspot.com/2011/03/are-system-claims-better-than-method.html>; *Joy Techs., Inc. v. Flakt, Inc.*, 6 F.3d 770, 776 (Fed. Cir. 1993) (“[T]he injunction cannot be sustained on the . . . sales of equipment without use of the method[.]”).

168. See *supra* note 148 and accompanying text.

169. See *supra* note 167.

170. See *supra* notes 98-100 and accompanying text.

171. See *supra* notes 98-100 and accompanying text.

172. See *supra* notes 96-97 and accompanying text.

173. See *supra* Part I.C.

At the same time, software is vulnerable, because software and software-related inventions depend on method claims, which offer broader protections than other types of inventions, but are plagued by case law that has created gaps in coverage for processes and methods.¹⁷⁴ Software is afforded less protection in the U.S. patent system than are physical products, manufactured goods, and manufacturing processes.¹⁷⁵

However, the greatest challenge software faces is the “abstract ideas” judicial exception to section 101. The Supreme Court has found some types of processes performed by software to be “abstract ideas” that are not patentable under section 101 of the Patent Act.¹⁷⁶ This has enabled accused infringers to assert that a software patent claims an abstract idea and to ask a court to invalidate the patent in pretrial motions.¹⁷⁷

In 2013, Randall Rader, then Chief Judge of the Federal Circuit, pointed to USPTO post-grant adversarial proceedings where a large number of issued patents had been invalidated, calling these proceedings “death squads” for patents.¹⁷⁸ Rader also noted that the Federal Circuit’s decision in *CLS Bank International v. Alice Corporation*¹⁷⁹—the precursor to the *Alice* decision—was the greatest failure of his judicial career.¹⁸⁰

There is no comparison between USPTO post-grant proceedings and the *Alice* decision, because for reasons to be discussed later in this Comment, *Alice* provides a significantly faster and more cost-effective way for an accused infringer to invalidate a software patent without a single evidentiary hearing, and without claim construction.¹⁸¹

II. ALICE AND A NEW ERA OF PATENT LAW

In few areas has patent law been as contentious as it has been in the area of

174. See *supra* notes 148-150 and accompanying text.

175. See *supra* Part I.D.

176. See *Alice Corp. v. CLS Bank, Int’l*, 134 S. Ct. 2347, 2351-2352, (2014) (invalidating a software patent for an exchange trading system, holding the claims to be directed to an abstract idea); *Bilski v. Kappos*, 561 U.S. 593, 604 (2010) (holding a scheme for computerized economic hedging to be an abstract idea as opposed to patentable subject matter); *Gottschalk v. Benson*, 409 U.S. 63, 72-73 (1972) (invalidating a method patent claiming the conversion to and from binary numbers on a computer).

177. See *Alice Corp.*, 134 S. Ct. 2347, 2353 (citations omitted) (internal quotation marks omitted) (“[T]he parties filed cross-motions for summary judgment on whether the asserted claims are eligible for patent protection under 35 U.S.C. § 101. The District Court held that all of the claims are patent ineligible because they are directed to the abstract idea of employing a neutral intermediary to facilitate simultaneous exchange of obligations in order to minimize risk.”).

178. See Brian Mahoney, *Software Patent Ruling a Major Judicial Failure, Rader Says*, LAW 360 (Oct. 25, 2013), <http://www.law360.com/articles/482264>.

179. 717 F.3d 1269 (Fed. Cir. 2013).

180. See *supra* note 178. See generally *CLS Bank*, 717 F.3d at 1334-35 (Rader, C.J., additional reflections) (“Twenty years ago, Judges Newman, Lourie, and I still unanimously agreed on the outcome of *Arrhythmia*. The intervening commotion leaves us with little, if any, agreement amongst us even though the statute has not changed a syllable[.]”).

181. See *infra* Part II.C. By comparison, the AIA post-grant proceedings provide all those tools in a hearing before a panel of technically-trained patent judges. See *infra* Part II.C.4.

software. Since the late 1960s and early 1970s,¹⁸² courts have wrestled with the question of whether software is a patent-eligible invention to be addressed as a legal question under section 101¹⁸³ of the Patent Act, or if section 101 is a “coarse filter,”¹⁸⁴ making the primary issues of software patentability mixed questions of fact and law addressed in other sections of the statute.¹⁸⁵

The validity of a patent takes center stage when a patent owner seeks to enforce the patent right, because invalidity is a statutory defense to infringement.¹⁸⁶ As a legal question, section 101 opens the door for an accused patent infringer to take an early exit in pretrial motions or at any point until a jury verdict is final. If a patent is directed to ineligible subject matter, a court could determine, based solely upon a reading of the patent, that the patent claim is invalid and the infringement suit should be dismissed.¹⁸⁷

The Supreme Court has created doctrine stating three exceptions to patent eligibility under section 101—laws of nature, physical phenomena, and abstract ideas.¹⁸⁸ One of those exceptions—abstract ideas—is the primary avenue for challenging the validity of software patents.¹⁸⁹ The *Alice* decision defines the newest test for applying the *abstract idea* judicial exception to a software patent and determining whether the subject matter of a software invention is eligible for a patent and whether an issued software patent is valid and enforceable.¹⁹⁰ The practical effect of *Alice* will be mass judicial invalidation of software patents that will require technology companies to intervene and push for corrective changes to the Patent Act.¹⁹¹

182. See *Gottschalk v. Benson*, 409 U.S. 63 (1972) (evaluating the subject-matter eligibility of software that performed binary code conversion); *In re Chatfield*, 545 F.2d 152 (C.C.P.A. 1976); *In re Prater*, 415 F.2d 1393 (C.C.P.A. 1969).

183. 35 U.S.C. § 101 (1952) (“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.”).

184. *Bilski v. Kappos*, 561 U.S. 593, 602 (2010) (quoting 35 U.S.C. § 101 (1952)) (“The § 101 patent-eligibility inquiry is only a threshold test. . . . The claimed invention must also satisfy the ‘conditions and requirements of [the Patent Act].’”).

185. 35 U.S.C. §§ 102, 103 & 112 (2011). See also David J. Kappos, Partner, Cravath Swaine & Moore LLP, *The Great Patent Debate: Changing Horizons*, Address at Intellectual Asset Management (IPBC/Global) Meeting the NPE Challenge (Mar. 13, 2015), available at <http://www.iam-media.com/files/Kappos%20speech.pdf> (“Section 101 was always meant to be a coarse filter, and is extremely ill-suited for the fine-grained matters courts are increasingly running through it. Despite an express warning from the Supreme Court in the *Alice* opinion to ‘tread carefully’ in construing Section 101’s exclusionary principle ‘lest it swallow all of patent law’, the lower courts have read onto *Alice* a command to begin every case touching on patent validity with a Section 101 inquiry. . . . The courts need to place primary emphasis on the Section 102, 103, and 112 standards for patentability. They will find most inquiries better addressed, and more helpfully addressed for patentees and the public alike, under these standards.”).

186. 35 U.S.C. § 282 (2012) (“The following shall be defenses in any action involving the validity or infringement of a patent and shall be pleaded: (1) Noninfringement, absence of liability for infringement, or unenforceability. (2) Invalidity of the patent or any claim in suit on any ground specified in part II as a condition for patentability. . . .”).

187. See, e.g., *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709 (Fed. Cir. 2014).

188. See, e.g., *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).

189. Mossoff, *supra* note 98.

190. See generally *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014).

191. See discussion *infra* Parts II.B, III.

A. Alice Decision

The context for *Alice* comes from a procedural shift in the type of section 101 cases that the Supreme Court has recently begun taking, as well as two recent cases in which the Supreme Court evaluated the patentability of method patents under section 101.

1. Ex Parte Appeals Have Dominated

The Supreme Court first addressed the question of the patentability of software in 1972 in *Gottschalk v. Benson*.¹⁹² At the time, the Court noted that a presidential commission had recommended changing the 1952 Act to give greater deference to Congress and to make it clear that software could not be patented. The Court then established the first precedent¹⁹³ for judicial exceptions to section 101.¹⁹⁴ Over the next forty years, section 101 and the patentability of software remained a question addressed almost entirely at the patent office and in appeals of *ex parte* denials of patent application. These appeals remained exclusively in the Court of Appeals for the Federal Circuit, which retains exclusive appellate jurisdiction over patent cases.¹⁹⁵

Between 1972 and 2010, the Supreme Court heard five section 101 cases, all of which were appeals of *ex parte* patent rejections during patent prosecution.¹⁹⁶ In this type of case, no patent has issued, the applicant has appealed a final rejection to the Patent Trial and Appeal Board (PTAB),¹⁹⁷ and the patent applicant has initiated a lawsuit to review the USPTO patent denial.¹⁹⁸ In the appeal before the Supreme Court, the patent applicant argues against the patent office solicitor.¹⁹⁹

There is a second type of case that involves patents that have passed the regime of examination, have been issued, and are presumed valid and enforceable as against potential infringers.²⁰⁰ Since 2012, the Supreme Court has reviewed three such section 101 cases resulting from an invalidity challenge to an issued patent involved in litigation at the time. The first two, *Mayo Collaborative Services v. Prometheus Laboratories*²⁰¹ and *Association for Molecular Pathology v. Myriad Genetics*,²⁰²

192. 409 U.S. 63 (1972).

193. See discussion *infra* Part II.C (debunking the myth of long-standing judicial exceptions to section 101 as originating in a series of cases beginning in the 1850s—*Benson* is actually the first case to decide on the existence of an exception and provides very sparse analysis of why such an exception should exist).

194. See *Gottschalk*, 409 U.S. at 72-73.

195. See 28 U.S.C. § 1295 (2012).

196. See *Bilski v. Kappos*, 561 U.S. 593 (2010); *Diamond v. Diehr*, 450 U.S. 175 (1981); *Diamond v. Chakrabarty*, 447 U.S. 303 (1980); *Parker v. Flook*, 437 U.S. 584 (1978); *Gottschalk v. Benson*, 409 U.S. 63 (1972).

197. 35 U.S.C. § 134(a) (2012).

198. 35 U.S.C. § 145 (2012) (“An applicant dissatisfied with the decision of the Patent Trial and Appeal Board in an appeal under section 134(a) may, unless appeal has been taken to the United States Court of Appeals for the Federal Circuit, have remedy by civil action against the Director in the United States District Court for the Eastern District of Virginia . . .”).

199. *Id.*

200. 35 U.S.C. § 281 (1952) (“A patentee shall have remedy by civil action for infringement of his patent.”); 35 U.S.C. § 282(a) (2012) (“A patent shall be presumed valid.”).

201. 132 S. Ct. 1289 (2012).

202. 133 S. Ct. 2107 (2013).

were focused on biotechnology. The third was *Alice*.

2. *Bilski* & *Mayo*

In the 2010 *Bilski v. Kappos*²⁰³ decision, the Supreme Court determined that nothing in the Patent Act precluded the patenting of software or business methods. In a narrow application of post-*Benson* case law, the Court upheld the Federal Circuit and determined that an economic hedging algorithm was not patent eligible subject matter under section 101. However, the Court disapproved of the Federal Circuit's proposal of an exclusive "machine-or-transformation" test and otherwise provided little guidance as to a test for section 101.²⁰⁴ This presented challenges, because in *In re Bilski*²⁰⁵ the Federal Circuit had departed from the use of two of its earlier section 101 tests for software: the Freeman-Walter-Abele test,²⁰⁶ and the "useful, concrete and tangible result" test.²⁰⁷ Since *Bilski*, patent attorneys, courts, and the USPTO, have struggled to find a test from *Bilski* or elsewhere to determine whether a software patent claims an excepted "abstract idea."²⁰⁸

In the 2012 *Mayo v. Prometheus*²⁰⁹ decision, the Supreme Court invalidated a patent for the treatment of Crohn's Disease and outlined a test for Section 101 subject-matter eligibility that requires "an examination of the particular claims before us in light of the Court's precedents."²¹⁰ Furthermore, the test in *Mayo* said that if a patented process focuses on the use of a natural law, the court must look for "other elements or a combination of elements, sometimes referred to as an 'inventive concept,' sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the natural law itself."²¹¹ The inclusion of an "inventive concept" in the analysis, though not new, appeared to be problematic.²¹² However, the

203. *Bilski v. Kappos*, 561 U.S. 593 (2010).

204. *Id.* at 596 ("we by no means foreclose the Federal Circuit's development of other limiting criteria . . .").

205. *In re Bilski*, 545 F.3d 943 (2008).

206. *Id.* at 959.

207. See *State St. Bank v. Signature Financial Grp.*, 139 F.3d 1368, 1373 (Fed. Cir. 1998) (quoting *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (en banc)) ("Today, we hold that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces 'a useful, concrete and tangible result' [.]").

208. See, e.g., *CLS Bank Intern. v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269, 1334-35 (Fed. Cir. 2013) (Rader, CJ, "additional reflections") (citations omitted) ("Although *Diehr* and *Chakrabarty* betokened decades of enforcing the patent law as written, these giants too have bowed to new judicial influences. Twenty years ago, Judges Newman, Lourie, and I still unanimously agreed on the outcome of *Arrhythmia*. The intervening commotion leaves us with little, if any, agreement amongst us even though the statute has not changed a syllable.").

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

210. *Id.* at 1294.

211. *Id.*

212. See, e.g., *Parker v. Flook*, 437 U.S. 584, 594 (1978) ("Our approach to respondent's application is, however, not at all inconsistent with the view that a patent claim must be considered as a whole. Respondent's process is unpatentable under § 101, not because it contains a mathematical algorithm as one component, but because once that algorithm is assumed to be within the prior art, the application, considered as a whole, contains no patentable invention. Even though a phenomenon of nature or mathematical formula may be well known, an inventive application of the principle may be patented.

decision did not address “abstract ideas” or “software,” and many in the patent community breathed a sigh of relief and interpreted *Mayo* to relate specifically to the judicial exceptions of natural phenomena and laws of nature.²¹³

3. *Facts and Travel of Alice*

Alice Corporation is an Australian company that owns a number of patents related to financial services.²¹⁴ The patents include numerous claims, including method claims, system (or machine) claims, and product (article of manufacture) claims.²¹⁵ CLS Bank sued Alice in the U.S. District Court for the District of Columbia for declaratory judgment that the patent claims were not infringed, as they were invalid and unenforceable.²¹⁶ Alice filed cross motions for infringement. Both parties then moved for summary judgment—which the district court granted in favor of CLS, reasoning that the patents claimed an “abstract idea” which was covered as an exception to patentable subject matter under section 101 of the Patent Act.²¹⁷

A divided Federal Circuit panel reversed the district court.²¹⁸ Upon rehearing *en banc*, the Federal Circuit affirmed the district court’s grant of summary judgment in favor of CLS Bank in a one-paragraph *per curiam* decision that was followed by four concurrences and dissents, as well as “additional reflections” from Chief Judge Rader. It is a heavily divided decision with no clear agreement.²¹⁹

4. *Alice Corporation v. CLS Bank International*²²⁰

In 2014, the Supreme Court responded with a unanimous 9-0 decision in *Alice*, explaining that the *Mayo* test also applies to the *abstract ideas* judicial exception, and that *Mayo* had, in fact, “set forth a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.”²²¹ Furthermore, the Court clarified that *Mayo* had articulated a two-step test:

First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts. If so, we then ask, “[w]hat else is there in the claims before us?”

Conversely, the discovery of such a phenomenon cannot support a patent unless there is some other inventive concept in its application.”).

213. See Commissioner for Patents, *Preliminary Examination Instructions in view of the Supreme Court Decision in Alice Corporation Pty. Ltd. v. CLS Bank International, et al.*, U.S. PATENT & TRADEMARK OFFICE, (Jun. 25, 2014), http://www.uspto.gov/sites/default/files/patents/announce/alice_pec_25jun2014.pdf; cf. *In re Bergy*, 596 F.2d 952, 986 (C.C.P.A. 1979) (“Moreover, *Benson* was discussing computer software or program patentability, a subject on which the President’s Commission on the Patent System had made a recommendation, suggesting there should be no patents on ‘programs,’ and the Court had observed ‘technological problems’ in patenting such inventions. No such problems in examining inventions like those of the appealed claims have been suggested. The PTO has been handling them for years. They are easier to handle than many ‘chemical’ cases.”).

214. *CLS Bank Int’l v. Alice Corp.*, 717 F.3d 1269, 1274 (Fed. Cir. 2013).

215. See, e.g., U.S. Patent No. 5,970,479 (filed May 28, 1993).

216. *CLS Bank*, 717 F.3d at 1273.

217. *Id.*

218. *Id.* at 1313.

219. *Id.*

220. *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014).

221. *Id.* at 2355.

To answer that question, we consider the elements of each claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application. We have described step two of this analysis as a search for an ‘inventive concept’— i.e., an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’²²²

Following this test, the Court found that Alice Corporation’s invention of a global financial trading process and system was not eligible for a patent, because “the claims at issue amount to ‘nothing significantly more’ than an instruction to apply the abstract idea of intermediated settlement using some unspecified, generic computer. Under our precedents, that is not ‘enough’ to transform an abstract idea into a patent-eligible invention.”²²³ The court then dismissed Alice’s “machine”²²⁴ and article of “manufacture”²²⁵ claims as patent ineligible under Section 101, reasoning that these claims “add nothing of substance to the underlying abstract idea.”²²⁶

Since the *Alice* decision, as of March 2015, Article III courts have applied the *Alice* test seventy-eight times and have invalidated fifty-five patents in the process.²²⁷ As Judge Moore warned in her dissent in part to the Federal Circuit decision preceding *Alice*, “this case is the death of hundreds of thousands of patents, including all business method, financial system, and software patents as well as many computer implemented and telecommunications patents.”²²⁸

For example, in *Ultramercial, Inc. v. Hulu, LLC*,²²⁹ the Federal Circuit evaluated, for a third time, an interactive video advertising insertion patent that the court had upheld twice before under Section 101.²³⁰ As the saying goes, the third time’s the charm: a Federal Circuit panel applied the *Alice* test and determined that Ultramercial’s granted patent “claims are directed to no more than a patent-ineligible abstract idea” and are therefore invalid.²³¹ That being said, not every application of *Alice* invalidates a patent—the Federal Circuit has applied the *Alice* test and has upheld patent eligibility,²³² as have district courts.²³³

222. *Id.* (footnote omitted) (quoting *Mayo Collaborative Servs. v. Prometheus Laboratories*, 132 S. Ct. 1289, 1294-98 (2012)).

223. *Id.* at 2360 (citing *Mayo* at 1297-98).

224. 35 U.S.C. § 101 (1952).

225. *Id.*

226. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2361 (2014).

227. *See Sachs, supra* note 32.

228. *CLS Bank Int’l v. Alice Corp.*, 717 F.3d 1269, 1313 (Fed. Cir. 2013) (Moore, J., dissenting).

229. *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709 (Fed. Cir. 2014).

230. *Id.* at 712-13. (outlining the travel of the case, including two reversals by the Supreme Court, the first to factor in the test outlined in *Mayo*, and the second to factor in the test as articulated by the *Alice* decision).

231. *Id.* at 717.

232. *See, e.g., DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014) (upholding, in a divided panel, a software patent under section 101).

233. *See, e.g., Cal. Inst. of Tech. v. Hughes Commc’ns Inc.*, No. 2:13-cv-07245-MRP-JEM, 2014 WL 5661290 (C.D. Cal. Nov. 3, 2014).

B. Measurable Post-Alice Impacts

The impact of *Alice* is significant, because in the first seven months following the decision, “over one hundred patents have been invalidated for claiming ineligible subject matter, more than the total number of patents invalidated under Section 101 in the past five years. . . . [and] in the next six months we are likely to see another hundred patents invalidated.”²³⁴

The law firm Fenwick & West has been tracking *Alice* statistics on a weekly basis and reported in April 2015 that in more than seventy-eight court decisions, 117 patents have been invalidated, accounting for 3,026 invalidated claims at a claim rejection rate of over 80%.²³⁵ This is significant because these are judicial determinations—as a matter of law—about the patent eligibility of patented inventions, without any claim construction or factual findings. Furthermore, each of these decisions relates to issued patents that have been through the examination process and are otherwise afforded the presumption of validity.²³⁶

I. Business Implications

The true significance of *Alice* is best understood from the perspective technology companies, many of which have invested in software innovation and also invested tens of thousands of dollars in acquiring one of the 68,374 software-related patents issued in 2013.²³⁷ Management of these companies are asking a series of questions about the investments they have made in software-based innovation, the company’s ability to continue relying on software investments, and the company’s ability to prevent competitors from copying their underlying technology.

The attorney representing a technology company that is active in software-based business has most likely already presented the bleak news to corporate management. First, existing software patents may be worthless. Whether a company has a few, a dozen, hundreds, or even thousands of software patents, each and every one may be worth nothing. This may represent millions of dollars in research and development as well as hundreds of thousands of dollars, or more, in patent investments.²³⁸

Second, in-process patent applications may be saved. For those inventions capable of passing the *Alice* test, existing patent claims may need to be amended. Alternatively, family patents, such as continuations and continuations-in-part may be possible to obtain so long as amended, *Alice*-ready claims are supported by the existing patent specification. Third, patents that cannot be saved may lose priority and may be prior art as against future innovations. There may be a generation of innovations that will be excluded from patent protection. Fourth, a company’s licensing agreements and patent portfolio may be in jeopardy.

While there are many so-called “software” companies that have expressed distaste for software patents and continue to lobby against them, there are many other companies that continue to invest in software-based technologies and patents to

234. Sachs, *supra* note 31.

235. See Sachs, *supra* note 32.

236. 35 U.S.C. § 282 (2012).

237. See *supra* p. 18 and note 117.

238. See *supra* note 53.

protect those innovations.²³⁹

2. Patent “Trolls” Are The Elephant In The Room

The *amicus curiae* briefs in *Alice* demonstrate overwhelming support in the business community for overturning software patents.²⁴⁰ Within the business and software communities, there is extensive opposition to what are called “patent trolls.” For example, a recent opinion piece in the New York Times announced that these so-called *trolls* “make money by threatening companies with expensive lawsuits and then using that cudgel, rather than the merits of a case, to extract a financial settlement.”²⁴¹

It is socially acceptable to dislike patents²⁴² and trolls for any number of reasons, and through the past several years, Congress has sought to write new legislation to specifically address the abuses of patent litigation.²⁴³ In the recent *Ultramercial* decision, Judge Mayer wrote in concurrence that “[r]esolving subject matter eligibility at the outset provides a bulwark against vexatious infringement suits.”²⁴⁴ He goes on to discuss “[t]he scourge of meritless infringement claims” filed by patentees “who own vague and overbroad business method patents.”²⁴⁵

Mayer has been a vocal advocate for applying section 101 as an aggressive gatekeeper, but here, he points to his policy argument, that relying on section 101 as a gatekeeper and treating it like the heightened pleading requirement of *Twombly* is a desirable policy to eliminate abusive litigation.²⁴⁶

C. Legal Implications of Alice

The legal implications of *Alice* are messy, because the Court’s section 101 jurisprudence has become a legislative exercise. As the Court attempts to limit its activism and overreach—and to craft decisions within the narrow context of recent decisions such as *Benson*, *Flook*, *Chakrabarty*, *Diehr*, *Bilski*, and *Mayo*—each subsequent decision becomes even more difficult to apply. The surprising part of *Alice* is that it is a unanimous 9-0 decision. This Comment argues that *Alice* is a poor decision that is based on a fundamental misunderstanding of the changes inherent to the 1952 Act as well as the risks associated with citing cases from before Congress changed the statute. Judge Rich was correct when he said that evaluating

239. See *infra* Figure 4.

240. *Alice Corporation Pty. Ltd. v. CLS Bank International*, SCOTUSBLOG, <http://www.scotusblog.com/case-files/cases/alice-corporation-pty-ltd-v-cls-bank-international/> (last visited Oct. 2, 2015) (documenting 18 amicus briefs filed in support of CLS Bank and none filed on behalf of petitioner—and patent owner—Alice Corp.).

241. Randall R. Rader, Colleen V. Chien & David Hricik, *Make Patent Trolls Pay in Court*, N.Y. TIMES, (Jun. 4, 2013), <http://www.nytimes.com/2013/06/05/opinion/make-patent-trolls-pay-in-court.html>.

242. See generally Michele Boldrin and David K. Levine, *The Case Against Patents*, FEDERAL RESERVE BANK OF ST. LOUIS, <http://research.stlouisfed.org/wp/2012/2012-035.pdf> (last visited Apr. 24, 2015) (documenting popular sentiment against patents in general).

243. See, e.g., H.R. 3309, 113th Cong. (2013).

244. *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 719 (Fed. Cir. 2014) (Mayer, J., concurring).

245. *Id.*

246. *Id.*

“patentability by the presence of ‘invention’ gives judges . . . too much freedom to decide patentability of new and useful inventions on the basis of a personal view as to what *should* be patentable, instead of accepting the view of the legislature on that question of national policy.”²⁴⁷

The legal impact of *Alice* is that tens of thousands of software patents can be invalidated. Many more patent applications have already been rejected or delayed, ending overnight patenting in an area of technology that amounts to nearly a quarter of all patents issued each year.

1. *Alice Has Brought Back A Test For “Invention”*

The 1952 Patent Act specifically overturned *Cuno*’s “flash of genius” test for invention and replaced it with a “third requirement” for patentability—section 103 nonobviousness.²⁴⁸ While other post-1952 Supreme Court decisions have mentioned the requirement of an “inventive concept,”²⁴⁹ *Alice* places the search for an *inventive concept* in step two of the analysis in which a court must look for “something more” than the judicial exception. There are three problems with this. First, because the judicial exceptions are non-statutory, there is no definition of what is and is not within the scope of the exceptions; therefore, the decision to say whether a patent claims an exception is highly subjective.²⁵⁰ Second, the determination of what is an *inventive concept* is highly subjective and difficult to standardize.²⁵¹ Third, by placing this inquiry inside of a section 101 test for patent eligible subject matter, the Court is making a section 103 *patentability* analysis part of what the Court is determining to be a gatekeeping function of section 101—this is recursive logic.

As discussed in Part II.A.2 *supra*, the “inventive concept” principle found in *Mayo* and *Alice* stems from the Supreme Court’s 1978 *Flook* decision in which the Court adopted language from pre-1952 cases.²⁵² However, this pre-1952 common law requirement of “invention” had been replaced by the statutory requirement of “obviousness” in section 103 of the 1952 Act.²⁵³ Furthermore, by design the 1952 Act made no mention of the term “invention,”²⁵⁴ making the Court’s reliance on the term a quarter century later in *Flook* anomalous and wholly unsupported by the statute. In fact, when the Supreme Court refers to an “inventive concept,” the Court is talking about statutory “obviousness” but is using language superseded by statute.

In *Graham*,²⁵⁵ the Court clarified that a section 103 *obviousness* analysis is an inherently factual inquiry that depends on a variety of factors, including prior art and the capabilities and knowledge of a person having ordinary skill in the art.²⁵⁶ *Alice*

247. Rich, *supra* note 75, at 875.

248. Rich, *supra* note 75, at 874.

249. Parker v. Flook, 437 U.S. 584, 594 (1978).

250. Cal. Inst. of Tech. v. Hughes Comm’ns Inc., No. 2:13-cv-07245-MRP-JEM, 2014 WL 5661290, at *8 (C.D. Cal. Nov. 3, 2014) (“*Alice* . . . leav[es] the boundaries of § 101 undefined.”).

251. *Id.* at *10-*11. See also Rich, *supra* note 75, at 875.

252. Parker v. Flook, 437 U.S. 584, 591 (1978) (citing pre-1952 cases and language discussing “patentable invention”).

253. See *supra* Part I.A.1.

254. Rich, *supra* note 76.

255. Graham v. John Deere Co. of Kansas City, 383 U.S. 1 (1966).

256. *Id.* at 17.

turns *Graham* on its ear and requires a court considering a judicial exception to preview the obviousness analysis as a solely *legal question* and to determine whether a patent—based solely on the claims—is obvious in light of the judicial exception.

By turning obviousness into a solely legal question, *Alice* turns back the clock on section 103 and creates case law in direct opposition to *Graham*—at least as it relates to the judicial exceptions to statutory subject matter. The *Alice* decision enables a court to employ a set of “judicial exceptions” to the Patent Act to determine that a software patent claims an “abstract idea.” If the court finds an “abstract idea,” the court may then perform an obviousness analysis and search for an “inventive concept” or “something more” based solely on the patent claims and the court’s subjective knowledge—even though the Supreme Court has said that such an inquiry is inherently factual.²⁵⁷

2. *Alice Has Turned Section 101 Into A Gatekeeper*

When Congress passed the 1952 Act, the patent-eligible subject matter aspect of section 101 had not been interpreted as a gatekeeper to the rest of the statute. Instead, the 1952 Act focused on the patentability requirement that inventions be new, useful, and nonobvious.²⁵⁸ *Alice* places the section 101 exceptions in front of those inquiries with some knowledge that the Court must “tread carefully in construing this exclusionary principle lest it swallow all of patent law.”²⁵⁹ On this, the horse is already out of the barn, and the judicially-defined attribute of section 101 has already become a gatekeeper. However, in *Alice* the Court did not clarify the burdens required of moving parties. *Alice* appears to have been decided on a more-likely-than-not standard, though it is unclear whether, in future *Alice* analyses, patents will be presumed valid,²⁶⁰ and whether the moving party will be required to prove invalidity by clear and convincing evidence.²⁶¹

3. *Alice Has Expanded The Scope And Legitimacy Of “Judicial Exceptions”*

In *Alice*, the Court continued to support the paradoxical concept of a “judicial exception” to a statute, rationalizing the exception as longstanding: “[w]e have interpreted § 101 and its predecessors in light of this exception for more than 150 years.”²⁶² Unfortunately, hundred-year-old *dictum* does not provide a legal basis for what is otherwise judicial activism.

The paradox of a judicial exception is found in a term that acknowledges that courts read words that do not exist into a statute that is otherwise clear. The Court has faced few challenges in interpreting section 101,²⁶³ and the Court’s claim to 150

257. *Id.*

258. Rich, *supra* note 75, at 874 (“One [practical suggestion] is to have a sort of wallpaper border printed up to run around all the patent examiner’s rooms on which the words NEW – USEFUL – UNOBVIOUS – PATENTABLE IF NO BAR are repeated endlessly.”).

259. *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2354 (2014). Given the rate at which patents have been invalidated, the horse is already out of the barn. See Sachs, *supra* note 32.

260. 35 U.S.C. § 282 (2012) (“A patent shall be presumed valid.”).

261. See *generally* *Microsoft Corp. v. i4i Ltd. P’ship*, 131 S. Ct. 2238 (2011).

262. *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2354 (2014).

263. See, e.g., *Diamond v. Diehr*, 450 U.S. 175, 182-85 (1982) (engaging in statutory interpretation of section 101 and finding no ambiguity).

years of exceptions has no basis in fact.

These so-called judicial exceptions are on shaky ground for several different reasons. First, the sources of these exceptions predate the 1952 Patent Act, and it is difficult to translate these earlier cases into modern precedent without factoring in the differences between the 1952 Act and the underlying statutes in effect at the time as well as the differences between modern uses of words and prior legal meanings of terms such as “invent” and “invention.”²⁶⁴

Second, in the cases cited as *stare decisis*,²⁶⁵ the referenced text is often *dictum* and not central to the decision of the court. The premise is often stated without proof or reference to any supporting argument. For example, in *Mackay Radio & Telegraph v. Radio Corp. of America*²⁶⁶ the court announced the enticing axiom that “a scientific truth, or the mathematical expression of it, is not patentable invention. . . .” and then “assume[d], without deciding the point, that this advance was invention even though it was achieved by the logical application of a known scientific law to a familiar type of antenna.”²⁶⁷ In *Mackay Radio*, the court found the infringement analysis dispositive of the case and never decided on the underlying validity of the patent. Similarly, *Le Roy v. Tatham*²⁶⁸ is cited as standing for the proposition that “[i]t is admitted, that a principle is not patentable.”²⁶⁹ However, the court in *Le Roy* never addressed the subject, because “[t]he question [of the patentability of a principle]. . . was not in the case.”²⁷⁰

Third, in a series of citations beginning with *O’Reilly v. Morse*,²⁷¹ the *dictum* in *Le Roy* began to stand for the proposition that a “principle” could not be patented. The *O’Reilly* decision said that “the court [in *Le Roy*] held that he was not entitled to a patent for this newly-discovered principle or quality in lead; and that such a discovery was not patentable,”²⁷² even though the court never addressed that question in *Le Roy*.²⁷³ This quote from *O’Reilly* is also *dictum*, because the Court never addressed the question of whether a “principle” could be patented, and instead ruled Morse’s claim eight invalid for lack of support and enablement in the

264. *In re Bergy*, 596 F.2d 952, 959 (C.C.P.A. 1979) (“The problem of accurate, unambiguous expression is exacerbated by the fact that prior to the Patent Act of 1952 the words ‘invention,’ ‘inventive,’ and ‘invent’ had distinct legal implications related to the concept of patentability which they have not had for the past quarter century. Prior to 1952, and for sometime thereafter, they were used by courts as imputing patentability. Statements in the older cases must be handled with care lest the terms used in their reasoning clash with the reformed terminology of the present statute; lack of meticulous care may lead to distorted legal conclusions.”).

265. *See, e.g.*, *Bilski v. Kappos*, 561 U.S. 593, 594 (2010).

266. 306 U.S. 86 (1939).

267. *Id.* at 94.

268. 55 U.S. 156 (1852).

269. *Id.* at 174-75.

270. *Id.* at 177.

271. 56 U.S. 62 (1853).

272. *Id.* at 117 (citing *Le Roy v. Tatham*, 55 U.S. 156 (1852)).

273. *Le Roy*, 55 U.S. at 177.

specification.²⁷⁴ And yet, the Court in *Tilghman v. Proctor*²⁷⁵ asserted that there was an altogether different outcome for *O'Reilly*: “[t]he eighth claim of Morse's patent was held to be invalid, because it was regarded by the court as being not for a process, but for a mere principle.”²⁷⁶

Fourth, in much of the precedent, an altogether different principle of patent law is in play, and the court does not decide on the basis of patent eligible subject matter, making the citation *dictum*. For example, *O'Reilly v. Morse* erroneously cites to *dictum* in *Le Roy* and yet continues to be cited by the Supreme Court as standing for the proposition of a judicial exception to section 101,²⁷⁷ even though *O'Reilly* has long been understood to stand for overbroad claims that were not supported by the specification.²⁷⁸

The citation to *O'Reilly* in *Tilghman* is also *dictum* but continues to be cited to stand for the proposition that a principle cannot be patented, even though the only challenge to the patent in *Tilghman* was for lack of usefulness.²⁷⁹ Similarly, in *Rubber-Tip Pencil Co. v. Howard*,²⁸⁰ the *dictum* and the decision are juxtaposed: “[a]n idea of itself is not patentable, but a new device by which it may be made practically useful is. The idea of this patentee was a good one, but his device to give it effect, though useful, was not new.”²⁸¹ The patent was invalid for lack of novelty, not for claiming an “idea.” Furthermore, the first clause of the sentence in the quote has no legal or logical relation to that determination—it is *dictum*—and yet *Rubber-Tip Pencil* continues to be cited as standing for the proposition that there is a judicial exception to patent eligible subject matter.²⁸²

The modern section 101 cases, beginning with *Gottschalk v. Benson*,²⁸³ are precedent in their own right, and the Supreme Court has been willing to craft section 101 decisions within the constraints of these decisions.²⁸⁴ However, the Court appears unwilling to rely on *Benson* as a foundation for the exceptions and continues to claim that “these exceptions have defined the reach of the statute as a matter of

274. *O'Reilly*, 56 U.S. at 119-20 (“[C]laim [eight] can derive no aid from the specification filed. It is outside of it, and the patentee claims beyond it. And if it stands, it must stand simply on the ground that the broad terms above-mentioned were a sufficient description, and entitled him to a patent in terms equally broad. In our judgment the act of Congress cannot be so construed.”).

275. 102 U.S. 707 (1880).

276. *Id.* at 726 (citing *O'Reilly v. Morse*, 56 U.S. 62, 117-18 (1853)).

277. See, e.g., *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012) (citing generally to pages 112-120 of *O'Reilly v. Morse*).

278. See, e.g., *CLS Bank Int'l v. Alice Corp.*, 717 F.3d 1269, 1327 (Fed. Cir. 2013) (Newman, J., concurring in part and dissenting in part) (“the Court did not discuss ‘eligibility,’ but simply held that this claim was not limited to the ‘specific machinery’ described in the specification, and was unduly broad.”).

279. *Tilghman v. Proctor*, 102 U.S. 707, 730 (1880) (“It is objected that the particular apparatus described in the patent for carrying the process into effect cannot be operated to produce any useful result.”).

280. 87 U.S. 498 (1874).

281. *Id.* at 507.

282. See *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014); *Diamond v. Diehr*, 450 U.S. 175, 185 (1982); *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972).

283. 409 U.S. at 63.

284. See, e.g., *Bilski v. Kappos*, 561 U.S. 593, 609 (2010) (“[T]his Court’s decisions in *Benson*, *Flook*, and *Diehr* . . . show that petitioners’ claims are not patentable processes because they are attempts to patent abstract ideas.”).

statutory *stare decisis* going back 150 years.”²⁸⁵

Judicial exceptions are a paradoxical form of statutory interpretation—an otherwise unambiguous statute has become a feeding ground for judicially-created statutory exceptions otherwise unmentioned within the Patent Act.²⁸⁶ For reasons described above, the judicial exceptions to section 101 are based on *dicta* from cases that predate the 1952 Act and that sometimes stand for other propositions within patent law, but at no point does the Supreme Court point to any definitive case or decision explaining the source of, or the rationale for, these alleged judicial exceptions.

4. Supreme Court Involved In Policy

Alice is the fourth section 101 case in as many years²⁸⁷ involving patents in litigation. By comparison, in the preceding forty years, the Supreme Court heard only five section 101 cases, and all of those were appeals from *ex parte* denials of patent applications.²⁸⁸ While there is no standard or requirement for cases the Court can choose to accept, the Court’s increased involvement in section 101 litigation could be interpreted as policy action. However, the divided decision below in the Federal Circuit also presents good reasons for the Court to intervene.

As policy, *Alice* creates more problems than it fixes. By failing to acknowledge the explicit changes in the 1952 Act, *Alice* turns the clock back sixty years.

a. Congress Has Already Acted On This Issue

Alice is truly wrong-headed policy, because Congress has already acted on this very policy question when it sought to correct the number of overly broad patents by creating USPTO post-grant proceedings.²⁸⁹

The district court granted CLS Bank summary judgment a week before the America Invents Act²⁹⁰ (AIA) was passed, so post-grant proceedings were not an option in this case.²⁹¹ However, in future cases, PTAB post-grant proceedings remain an option and should be encouraged, because Congress created these adversarial proceedings in which third parties can challenge the validity of an issued patent. When these proceedings result in a final written decision,²⁹² estoppel attaches and the finding is binding on the parties. The practical effect of a post-grant proceeding before the USPTO is to preclude the accused infringer from claiming, in

285. *Id.* at 602. *See also* *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. at 2354; *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2116 (2013); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012).

286. *See, e.g., Diamond*, 450 U.S. at 182-85.

287. *See supra* Part II.A.

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

289. *See infra* notes 292-295 and accompanying text.

290. Leahy-Smith America Invents Act, Pub. L. No. 112–29, 125 Stat. 284 (2011) (codified in various sections of 35 U.S.C. and other titles).

291. *CLS Bank Int’l v. Alice Corp.*, 768 F.Supp.2d 221 (D.D.C. 2011). The district court decision was issued on March 9, 2011, and AIA was passed a week later on March 16, 2011. *See Leahy-Smith America Invents Act*, Pub. L. No. 112–29, 125 Stat. 284 (2011) (codified in various sections of 35 U.S.C. and other titles).

292. *See* 37 C.F.R. § 42.73 (2015).

district court, that the patent is invalid.

The AIA post-grant proceedings consist of post-grant review (PGR),²⁹³ *inter partes* review (IPR),²⁹⁴ and the transitional program for covered business method patents (CBM),²⁹⁵ which operates under the PGR procedural umbrella.

PGR is available in the first nine months after a patent issues, and challenging parties must act quickly to assemble a petition of no more than eighty pages that “demonstrate[s] that it is more likely than not that at least 1 of the claims challenged in the petition is unpatentable.”²⁹⁶ Alternatively, the petitioner may show “that the petition raises a novel or unsettled legal question that is important to other patents or patent applications.”²⁹⁷ The scope of PGR is broad and can include challenges under sections 101, 102, 103 and 112 of the Patent Act.²⁹⁸ Financial and business method patents can be reviewed at any time as a CBM proceeding under the PGR standards.²⁹⁹

IPR petitions are limited to sixty pages in length, and the petitioner must demonstrate a “reasonable likelihood” of prevailing with respect to at least one of the claims challenged in the petition.³⁰⁰ Invalidity grounds are limited to novelty and nonobviousness in sections 102 and 103 of the Patent Act.

During a post-grant proceeding, parties are encouraged to settle, but an outcome becomes binding and estoppel attaches when the PTAB issues a “final written decision.”³⁰¹ While it could be argued that *Alice* provides a very useful tool for these PTAB proceedings,³⁰² *Alice* provides an alternative venue, district court, that may draw invalidity challenges away from the PTAB.

b. Separation of Powers

One need not be a constitutional scholar to identify the separation of powers issue associated with the Supreme Court’s active involvement in crafting exceptions to an unambiguous statute when the Constitution specifically gives this authority to Congress.³⁰³ In relation to other sections of the Patent Act, the Court has been

293. See 35 U.S.C. § 321 (2012) (allowing third parties to challenge the validity of a patent filed after March 16, 2013 within nine months of patent issue under 35 U.S.C. §§ 101, 102, 103 & 112).

294. See 35 U.S.C. § 311 (2012) (enabling third parties to challenge pre-AIA patent validity, on novelty or obviousness grounds, from issue until twelve months from the filing of an infringement claim against the third party in district court; for post-AIA patents, the IPR window begins on the later of nine months from patent issue or the termination of a PGR proceeding).

295. See 37 C.F.R. §§ 42.300–304 (2015) (creating CBM as a PGR proceeding that applies to pre- and post-AIA patents related to a “financial product or service”; the CBM program is scheduled to sunset on September 15, 2020).

296. 35 U.S.C. § 324(a) (2012).

297. 35 U.S.C. § 324(b) (2012).

298. See 35 U.S.C. § 324(a) (2012) (outlining the threshold standard for PGR implementation at patentability of at least one claim); 35 U.S.C. § 282(b) (2012) (defining the scope of patentability challenges); *Aristocrat Techs. Australia Pty v. Int’l Game Tech.*, 543 F.3d 657, 661-62 (Fed. Cir. 2008) (interpreting the scope of patentability challenges under § 282).

299. See *supra* note 295.

300. See 35 U.S.C. § 314(a) (2012).

301. 35 U.S.C. §§ 318(a), 328(a) (2012).

302. See *Sachs*, *supra* note 32 (showing that PTAB “CBM” proceedings have a 100% patent invalidation rate under section 101).

303. U.S. CONST. art. I, § 8, cl. 8.

unwilling to go beyond the statutory text and usurp Congressional authority.³⁰⁴ In light of separation of powers, policy appears to be the only explanation for the Court's action in *Alice*. Either way, it is poor policy that fails to recognize Congressional authority and fails to defer to existing legislation directed at this precise set of policy questions.

5. System, Product, And Method Claims Tied Together

The final legal implication of *Alice* is that patents that claim a system implemented on a general purpose computer, a mobile device, the Internet, and other similar mediums will rely on the method claims for patent eligibility. If the method claims fail, so do the system and product claims.³⁰⁵ While this is most likely not the end of system claims in a software patent, this further reduces the strength of a software patent and will focus invalidity challenges on the method, because the method is the weakest part. As *Alice* demonstrated, an invalid method can topple related patents for machines and products. Meanwhile, patent attorneys will most likely work to find ways to link system embodiments to specific computing platforms, though this will most likely hurt the innovation the patent system seeks to protect.

6. Alice Will Backfire

As a policy tool, *Alice* provides an effective means through which the patent system can rid itself of overly broad patents that should not have been issued in the first place. For example, even though the specification supporting *Alice*'s patents is long and details a great deal of engineering, the patent claims are significantly broader than the specification and are possibly too broad.³⁰⁶ At some level, it may have been "right" for the Court to invalidate *Alice*'s patents, but the path to this legal conclusion is fraught with difficulties. First, the doctrine of "judicial exceptions" to a statute in the absence of textual ambiguity perpetuates judicial activism.³⁰⁷ Second, the Court's subjective test for patent eligibility based upon "invention" misreads the 1952 Act and the reasons for its passage.³⁰⁸ Third, patent eligibility for electrical or computer innovations becomes a matter of labeling in which the assertion that a patent claims an "abstract idea" appears to shift the burden onto the patent owner.³⁰⁹ Finally, the Court provides no guidance as to the findings of fact necessary for lower courts to determine whether there is sufficient "inventive concept" in a given patent

304. See *supra* note 39.

305. See *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2360 (2014) (citations omitted) ("Put another way, the system claims are no different from the method claims in substance. The method claims recite the abstract idea implemented on a generic computer; the system claims recite a handful of generic computer components configured to implement the same idea. This Court has long warn[ed] . . . against interpreting § 101 in ways that make patent eligibility depend simply on the draftsman's art.").

306. See, e.g., U.S. Patent No. 5,970,479 (filed May 28, 1993).

307. See discussion *supra* Part I.C.

308. See discussion *supra* Part I.A.

309. See discussion *supra* Part I.E. This runs contrary to the rest of patent law where the party asserting patent invalidity as a defense carries the burden of proving invalidity, 35 U.S.C. § 282 (2012), by clear and convincing evidence, *Microsoft Corp. v. i4i Ltd. P'ship*, 131 S. Ct. 2238, 2242 (2011).

claim.³¹⁰

Alice is a golem, and technology companies will be unable to stop it. At some point, when *Alice* has been used to eliminate all the overly broad software and business method patents that many people agree should not have issued, that is the point when *Alice* will be used to invalidate so-called “good” patents.³¹¹ When that happens, the problem will be that the courts will be unable to stop *Alice*, and in light of the unanimous support of the Supreme Court, it is highly unlikely that the courts will see fit to overturn or limit *Alice* at any time in the near future.³¹² The true fix for *Alice* must come from Congress, and for that to happen, someone will need to advocate for a legislative solution to *Alice*.³¹³

III. WHO WILL STAND UP FOR SOFTWARE?

There are numerous legislative approaches through which to resolve the challenges presented by *Alice*.³¹⁴ Unfortunately, it is not as easy as Judge Rader suggests, that we simply “consult the statute.”³¹⁵ While the statute is instructive, too much has happened, and courts have decided on too many cases for us to turn the clock back to 1953 and pretend that all the modern section 101 cases have not been decided.

A. Software Patents Are A Policy Issue

As discussed in Part II.C.4 *supra*, the question of whether software should be patented is a policy question. This is one element of its decision in *Benson* that the Supreme Court got right.³¹⁶ However, courts are poorly suited to create policy or to

310. See David Bohrer, *Guest Post: In Rush to Invalidate Patents at Pleadings Stage, Are Courts Coloring Outside the Lines?*, PATENTLYO (Jul. 1, 2015), <http://patentlyo.com/patent/2015/07/invalidate-pleadings-coloring.html>; see also Hidetada James Abe, Marsha E. Diedrich, *Pretrial Dismissals and Judgments in Post- Alice Courts*, ALSTON & BIRD (Apr. 23, 2015), <http://www.alston.com/publications/pretrial-dismissals-and-judgements-in-post-alice-courts>.

311. See, e.g., U.S. Patent No. 8,798,438 (filed Dec. 7, 2012). This patent, entitled “Automatic video generation for music playlists” is representative of software patents in general. *Id.*

312. It would be possible to limit *Alice* by imposing burdens on the moving party, see *Microsoft Corp. v. i4i Ltd. P’ship*, 131 S. Ct. 2238 (2011), or by acknowledging that *Alice* presents either a mixed question or a question of fact. See, e.g., *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831 (2015) (holding that factual determinations in patent claim construction are reviewed for clear error and not *de novo*). Such limitations might slow the impact of *Alice* in district court litigation, removing the section 101 patent eligibility determination from early to late pretrial, but this would have no effect on the granting of patents by the USPTO, where *Alice* could preclude patenting in large areas of technology.

313. See David J. Kappos, Partner, Cravath Swaine & Moore LLP, *The Great Patent Debate: Changing Horizons*, Address at Intellectual Asset Management (IPBC/Global) Meeting the NPE Challenge (Mar. 13, 2015), available at <http://www.iam-media.com/files/Kappos%20speech.pdf> (“Make no mistake: if America denies robust protection to software innovations, decreased investment will inevitably follow—eroding a competitive advantage in a sector that has proven vital to the United States economy. Again, to the benefit of overseas competitors who would like nothing better than an open ticket to copy US software innovation.”).

314. See Sachs, *supra* note 31.

315. *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 717 F. 3d 1269, 1334-35 (Fed. Cir. 2013) (Rader, C.J., “additional reflections”).

316. See *Gottschalk v. Benson*, 409 U.S. 63, 73 (1972) (footnote omitted) (“The technological problems tendered in the many briefs before us indicate to us that considered action by the Congress is needed.”).

write legislation, which is why *Alice* and the accompanying section 101 cases are so problematic. Once the Supreme Court acknowledged that there are “judicial exceptions” to section 101, the Court ended up, unsuccessfully, in the business of harmonizing these unwritten exceptions into a single, cohesive rule.³¹⁷

B. *Why Technology Companies Will Need to Step Up*

There are five possible groups of “actors” that could lead the way to overturn *Alice* and to set the record straight on the underlying patent eligibility of software related technologies and the underlying process inventions. These potential actors include: technology companies, Congress, the USPTO, the judiciary, and the general public.

Of these, we can eliminate the general public, Congress, and the judiciary. The public has neither love for, nor understanding of patent law, and in general, the public sentiment tends to sway against patents.³¹⁸ Similarly, public sentiment against patent trolls appears to cross party lines, and Congress has taken numerous bi-partisan actions in recent years to address abusive litigation practices. Thus, it is unlikely that Congress will—without prompting—initiate reform to overturn *Alice* and to strengthen protection for software patents.³¹⁹ Given the unanimous voice with which the Supreme Court has spoken in recent section 101 cases,³²⁰ it is unlikely that the judiciary will act *sua sponte* to overturn *Alice* or to undo several decades of activism with respect to section 101. On the other hand, the Federal Circuit could limit *Alice* by clarifying the burdens on moving parties and by articulating whether the *Alice* test is a factual or a mixed question. However, these potential limitations would not address the impact of *Alice* on patent examination and the issuance of software patents by the USPTO.³²¹

This leaves two possible actors: the USPTO and technology companies.³²² The USPTO will let technology companies take the lead in overturning *Alice* for two reasons. First, as an administrative agency, the USPTO will have to live with the judiciary over the long run, so it is doubtful the USPTO will take the lead in overturning a Supreme Court decision. Second, and more importantly, technology companies have gotten the patent system they asked for—this is a system that has prioritized throughput of patent examination over patent quality.³²³ As the USPTO

317. See generally *CLS Bank*, 717 F.3d at 1269 (demonstrating a divided decision arising out of the confusion associated with working within a series of exceptions as opposed to statutory text).

318. See *supra* note 26.

319. See, e.g., H.R. 3309, 113th Cong. (2013).

320. See *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014) (9-0); *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107 (2013) (9-0); *Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289 (2012) (9-0); *Bilski v. Kappos*, 561 U.S. 593 (2010) (9-0).

321. See *supra* note 312.

322. See *supra* note 43.

323. See *Mathews v. Eldridge*, 424 U.S. 319, 335 (1976) (defining a due process balancing test for administrative processes). Patents are a property right entitled to due process protection and follow *Mathews v. Eldridge* balancing. See *Patlex Corp. v. Mossinghoff*, 771 F.2d 480, 485 (Fed. Cir. 1985). In USPTO terms, the balance is between the number of patents issued and the quality of those patents. See Dominique Guellec, Catalina Martinez & M. Pluvia Zuniga, *Pre-Emptive Patenting: Securing Market Exclusion and Freedom of Operation*, OECD SCIENCE, TECHNOLOGY AND INDUSTRY WORKING PAPERS (Dec. 30, 2009), <http://dx.doi.org/10.1787/218405082642> (finding that patent pre-emption and product

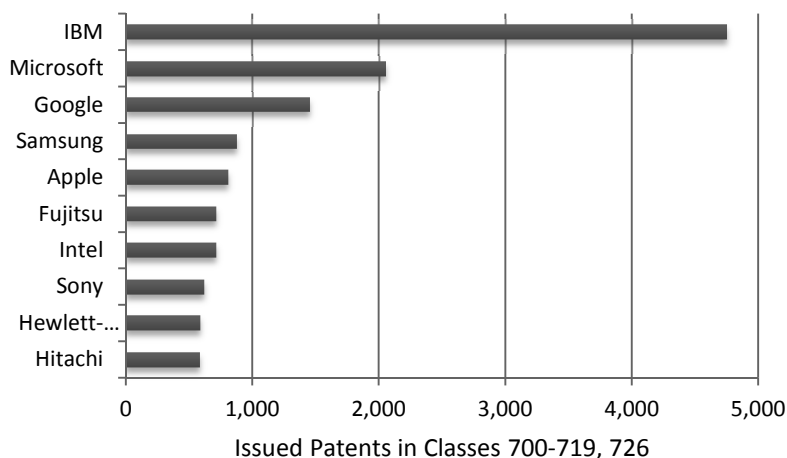
will say to the technology industry: “you broke it, and it’s up to you to fix it.”

Regardless of the reason for the shift to diversified software/hardware patent portfolios, the practical effect is that a large number of high technology companies have diversified their product portfolios and reduced their dependence solely on software patents. For example, U.S. Patent No. 7,479,949³²⁴ is indicative of the type of patent protection that technology companies seek today, incorporating machine, article of manufacture, and process claims into a single invention.

C. Technology Companies Have Built This System

The USPTO is an administrative agency that responds to the applications presented to it by inventors and technology companies. In setting fees, the USPTO must balance between patent prosecution speed, the quality of issued patents, and the overall cost of obtaining a patent. Technology companies have significant input into how the USPTO and patent offices around the world function.

Figure 4: Top 10 Companies Patenting Software In The United States, 2013³²⁵



Of the companies patenting software and software-related technologies as found in Figure 4, the top ten include companies that sell a diversified mix of both hardware and software. IBM is the largest patentee by far, with 4,746 software and software-related patents issued in 2013 alone.³²⁶ Numbers two and three in the list are Microsoft and Google, and both companies have ventured into hardware businesses.

clearance/freedom-to-operate objectives pressure technology companies to prioritize patent quantity over quality).

324. See *supra* note 102.

325. Patent Technology Monitoring Team, *Ranked List Of Organizations With 50 Or More Patents, As Distributed By The Year Of Patent Grant And/Or The Year Of Patent Application Filing Granted: 01/01/1995 - 12/31/2014, ELECTRICAL COMPUTERS, DIGITAL PROCESS SYSTEMS, INFORMATION SECURITY, ERROR/FAULT HANDLING: ALL CLASSIFIED UTILITY PATENTS*, U.S. PATENT & TRADEMARK OFFICE http://www.uspto.gov/web/offices/ac/ido/oeip/taf/ec_dps_is_efh.htm#PartB (last visited Nov. 17, 2014).

326. *Id.*

Microsoft acquired Nokia's mobile device business in 2014, and Google divested Motorola Mobility after purchasing the company in 2012.³²⁷

The primary challenge for companies that rely solely on software and distributed computing services is that the high-technology business model has shifted from one that rewards companies that sell software, as was considered to be the innovation of the 1980s and 1990s,³²⁸ to one in which leading companies—such as Apple, Samsung, Microsoft, IBM, Hewlett-Packard, and so forth—earn their profits by selling a combination of hardware and software.³²⁹ At this time, it is unclear whether this shift in business model is a result of gaps in the underlying patent protection available for software or if it is simply a broader business trend.

Economic analyses by the OECD suggest that technology companies have gotten the patent system they asked for, because the priorities for product clearance, also known as “freedom to operate,” and pre-emption tend to focus patent resources across a larger number of patents, often compromising patent quality.³³⁰ The large numbers of patents owned by large technology companies in software and other industries reflects a focus on numbers of patents over quality and diversification of technologies.³³¹

With a risk that a large number of software-related patents are now worthless after *Alice*, technology companies must decide whether to continue to invest in software patent protection, to abandon their patenting efforts, or to lobby for legislation to overturn *Alice*.

D. Alternative Points of View

There are several different points of view on software patenting that would suggest an altogether different approach following *Alice*. The voices against software patenting would do nothing and let software patents fall to the wayside.

327. See Peter Burrows and Dina Bass, *Google's Moto Sale Casts Doubts on Microsoft's Nokia Plan*, BLOOMBERG BUSINESS (Jan. 30, 2014, 12:01 AM), <http://www.bloomberg.com/news/articles/2014-01-30/google-s-moto-sale-casts-doubts-on-microsoft-s-nokia-plan>.

328. See Nathan Myhrvold, *Invention: The Next Software*, INTELLECTUAL VENTURES (Mar. 7, 2006), http://www.intellectualventures.com/assets_docs/Invention_Next_Software_Transcript_2006_Speech.pdf (“In 1987, as a representative of Microsoft, I went to a conference . . . Now, we had a proposition and the proposition was not only can you make software valuable without hardware; software was actually a better business without hardware, because if you separated yourself off and you just became a software company you could focus on making the software best as opposed to always being a tug of war, who’s on first, who’s most important? An independent software company can target everybody’s stuff. . . . Well, broadly speaking, we were right. I don’t just mean Microsoft; I mean the software industry was right.”).

329. See Steven A. Ballmer, *Shareholder Letter*, MICROSOFT 2013 ANNUAL REPORT (Sep. 27, 2013), <https://www.microsoft.com/investor/reports/ar13/shareholder-letter/index.html> (“Last year in my letter to you I declared a fundamental shift in our business to a devices and services company. . . . Our strategy: High-value activities enabled by a family of devices and services.”).

330. See *supra* note 323.

331. See, e.g., *A37 Top PCT Applicants, 2013*, WORLD INTELLECTUAL PROPERTY INDICATORS, <http://www.wipo.int/ipstats/en/wipi/> (last visited Sept. 24, 2015) (identifying the top 20 Patent Cooperation Treaty applicants in 2013). The number of large technology companies helps to put things into perspective—technology companies compete in many markets, and patents are a necessary part of their business, especially because the average technology company spends approximately 10% and 12% of revenues on research & development. See Michael Casey & Robert Hackett, *The 10 Biggest R&D Spenders Worldwide*, FORTUNE, (Nov. 17, 2014, 4:40 PM), <http://fortune.com/2014/11/17/top-10-research-development>.

The issue is not as clear as the anti-software patent/anti-patent community would make it appear.

1. *Are Software Patents Worthless?*

Some have suggested that software patents are of categorically low quality and are not worth very much.³³² Judge Mayer has spoken to this idea.³³³ However, “studies of invalidation rates have consistently demonstrated that software patents are not statistically prone to being ‘bad’ patents.”³³⁴

There are two factors at play in public sentiment about software patents. First, the average person is more apt to take notice of software patenting and software patent litigation, because it impacts technologies that people interact with on a daily basis. For example, litigation over the date-picker feature in Microsoft Outlook³³⁵ is something that many people would understand. The same is true of recent litigation over patents related to podcasting technologies.³³⁶

Second, when a layperson reads a single patent, he or she has very little context to understand that patent within the context of thousands of other patents and inventions. Each individual patent looks like a specious attack on some prized innovation.³³⁷ Of course, out of context, just about any legal document—for example, a severability clause in a contract—would be confusing to a layperson. The difference with software patents is that people think they understand technology, and they are disappointed to find an incomprehensible jumble of words surrounded in statutory and legal complexity and bundled together into a patent publication.

2. *Alice Levels The Playing Field*

If software is not patentable, and if all technology companies face the challenges presented by *Alice*, then all companies should be on a level playing field. However, this statement fails to factor in the differences between companies, the geographies in which they operate, and the markets in which they sell. An open source software company such as Red Hat is opposed to software patents because the underlying business model of open source focuses patenting on narrow areas and in smaller numbers than other software businesses.³³⁸ Yet, a company like IBM might have an altogether different business objective in a given market. These differences mean that *Alice* will impact technology companies in different ways.

Furthermore, patents are territorial rights, and companies in international markets must address protections in those markets anyway, so U.S. patenting is just

332. See Mike Masnick, *Patent Troll Says It Owns Podcasting; Sues Adam Carolla*, HowStuffWorks, TECHDIRT (Feb. 7, 2013, 5:38 AM), <https://www.techdirt.com/articles/20130206/07215421891/patent-troll-says-it-owns-podcasting-sues-adam-carolla-howstuffworks.shtml>.

333. See *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 719 (Fed. Cir. 2014) (Mayer, J., concurring).

334. See Kappos *supra* note 313.

335. See *Lucent Tech., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1308 (Fed. Cir. 2009) (awarding Lucent \$357 million in damages).

336. See 496: *When Patents Attack...Part Two!*, THIS AM. LIFE (May 31, 2013), <http://www.thisamericanlife.org/radio-archives/episode/496/when-patents-attack-part-two>.

337. See *generally supra* note 332.

338. See *Red Hat, Inc. Statement of Position and Our Promise on Software Patents*, http://www.redhat.com/legal/patent_policy.html (last visited Dec. 7, 2015).

part of their business. On the other hand, some jurisdictions, such as countries within the European Union, do not support software patenting, though international treaties leave the door open.³³⁹

3. Patent Laws Are Unclear

The argument that patent laws are unclear is specious, because the Supreme Court takes no issue with the statutory interpretation of section 101.³⁴⁰ However, even if Congress were to accept public sentiment against patent trolls and software patents and decide to exclude software from patenting, the solution itself would be problematic. Without amending the Constitution, it would be difficult to exclude some technologies from patenting while including others, and as articulated *supra*, software is such a critical part of so many innovations today that it would be nearly impossible to exclude software patents without also eliminating patent protection for just about any technology that involves computing or electronics. Furthermore, software patents are only part of section 101 jurisprudence, and as recent cases such as *Mayo* and *Myriad* have shown, the Court is equally suspect about patenting medical treatments and biotechnology.³⁴¹ Companies working in these other areas of technology will be natural allies when the high-technology industry approaches Congress to amend the Patent Act to overcome *Alice*.

IV. CONCLUSION

Section 101 of the Patent Act allows inventors to seek patents for processes, machines, products, and compositions of matter. However, the Supreme Court has decided that section 101 contains three judicial exceptions and that abstract ideas, natural phenomena, and laws of nature cannot be patented. Software has become an important part of the global economy, and software patents have been challenged as being “abstract ideas” and therefore excepted from patent-eligible subject matter. Since 1972, the Supreme Court has explained that section 101 does not prevent the patenting of software but that the judicial exceptions do apply, and the Court has upheld the invalidity of software patents that the Court has determined to claim an “abstract idea.” The case law explaining these “judicial exceptions” has been difficult to implement as either a rule or a test.

In *Alice*, the Court articulated a two-step test for evaluating whether a software patent claims an “abstract idea” and how to identify whether there is an “inventive concept” sufficient to overcome the judicial exception and to make the subject matter

339. See TRIPS: Agreement on Trade-Related Aspects of Intellectual Property Rights Art. 27, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, The Legal Texts: The Results Of The Uruguay Round Of Multilateral Trade Negotiations 320 (1999), 1869 U.N.T.S. 299, 33 I.L.M. 1197 (1994) (defining patentable subject matter).

340. See, e.g., *Diamond v. Diehr*, 450 U.S. 175, 184 (1982) (“Industrial processes such as this are the types which have historically been eligible to receive the protection of our patent laws.”). In general, it is worth noting that the Supreme Court has not taken issue with section 101, *id.* at 181-84, and the source of the Court’s interference in patent eligibility is premised entirely on the existence of the so-called “judicial exceptions,” *id.* at 185.

341. See *supra* note 339, at 331 (The TRIPS agreement Article 27(3)(a) allows member nations to exclude from patentability “diagnostic, therapeutic and surgical methods for the treatment of humans or animals”).

of the invention eligible for patenting.

This Comment has argued that the judicial exceptions to section 101 are paradoxical jurisprudence with no basis in legal fact until 1972, when the Court decided *Benson* and applied the “abstract ideas” exception. While *Benson* could be understood as the Court’s failure to identify the transformative impact of the computing industry, the Court’s steadfast adherence to *Benson* and related modern section 101 jurisprudence is beyond comprehension in today’s economy.³⁴² Furthermore, for issued patents that contain what a court identifies as subject matter identified by the judicial exceptions, the *Alice* test reintroduces a test for invention—the inquiry into “inventive concept”—that Congress specifically overturned in the 1952 Act. Until *Alice*, the patent eligibility of software innovations was uncertain, but after *Alice*, the two-step test has been widely used to invalidate more than a hundred patents in Article III courts. Also, in less than a year, *Alice* has been used to invalidate thousands of patent applications in process before the USPTO, and as one commenter observed, “the dead [patents] keep piling up.”³⁴³

Alice is such a drastic decision that it is beyond judicial remedy at this point, and even if a lower court, such as the Federal Circuit, were to limit *Alice* to require findings of fact, *Alice* would continue to direct patent examination policy before the USPTO, which will continue to prevent patenting of a large number of software innovations. For this reason, technology companies will need to lobby Congress for a legislative solution that overturns *Alice* and clarifies the patent eligibility for one of the biggest innovation sectors in our economy.

342. See discussion *supra* Part I.C. A mitigating factor might be that the Supreme Court “hasn’t really ‘gotten to’ email.” Associated Press, *Kagan: Court hasn’t ‘gotten to’ email*, POLITICO (Aug. 20. 2013 4:06 PM), <http://www.politico.com/story/2013/08/kagan-supreme-court-email-95724.html>.

343. Sachs, *supra* note 32.